2012

Fish and Wildlife Service Lands Long Range Transportation Plan

Cover Photographs by Brandon Jutz, FWS

Region 3

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EXECUTIVE SUMMARY

Transportation provides critical links and resources in connecting people with nature on all Service lands, specifically, at national wildlife refuges and national fish hatcheries. To this end, the Service seeks to optimize transportation funding decisions and leverage its transportation dollars wisely. For consistency with other long range transportation planning processes, the regional long range transportation plan (LRTP) for Region 3 defines the Service's transportation infrastructure related needs for the next 20 years.

ES.1 LONG RANGE TRANSPORTATION PLAN FOR U. S. FISH AND WILDLIFE SERVICE LANDS

This regional scale LRTP was initiated within the Service to achieve the following:

- Establish a defensible structure for sound transportation planning and decision-making
- Establish a vision, mission, goals, and objectives for transportation planning in Region 3
- Implement coordinated and cooperative transportation partnerships in an effort to improve the Service's transportation infrastructure
- Bring the Service into compliance with Federal legislation requiring all Federal Land Management Agencies to conduct long range transportation planning in a manner generally consistent with those being applied to the existing statewide and metropolitan scale transportation planning processes
- Integrate transportation planning and funding for wildlife refuges and fish hatcheries into existing and future Service management plans and strategies
- Develop best management practices for transportation improvements on Service lands

ES.2 LEADING THIS EFFORT

Region 3 of the U.S. Fish and Wildlife Service in conjunction with Eastern Federal Lands Highway Division (EFLHD) of FHWA is developing this Long Range Transportation Plan. The Refuge and fisheries programs, planning and visitor services programs within the Region have been directly involved in this process because transportation related infrastructure and facilities primarily serves these four programs.

A framework has been established for the Service's transportation planning process and identifying potential partner agencies at the federal and state agency levels may provide leveraging opportunities to advance future transportation projects.

ES.3 GOALS FOR THIS LONG RANGE TRANSPORTATION PLAN

As defined by the Region 3 core planning team, the goals of this LRTP are to:

- Ensure that the transportation program helps to conserve and enhance fish, wildlife, and plant resources and their habitats within Region 3.
- Provide a safe and reliable transportation network to ensure access and mobility to and within Service lands.
- Develop and maintain a transportation network that enhances the welcoming and orienting the educational and interpretive experience of visitors.
- Integrate appropriate transportation planning strategies into Service plans and processes.
- Develop partnerships to leverage resources and develop integrated transportation solutions to identified issues and concerns.
- Adopt and promote sustainable transportation practices.

ES.4 IMPORTANCE OF TRANSPORTATION PLANNING TO THE SERVICE

Although often overlooked, transportation supports a number of important Department of Interior initiatives by connecting people with nature, improving the condition of parking areas, public and service roads and trails assets, all while resulting in meeting the primary mission of the Fish and Wildlife Service. Understanding the connection between transportation and conservation, the Service has established a transportation mission and goals statements to serve as benchmarks for evaluating improvements to the transportation system within Region 3 as part of this LRTP. Together with an understanding of existing transportation infrastructure deficiencies in the region and how they might be addressed, this plan enables the region to make better decisions regarding its most critical transportation needs. At a time when resource and infrastructure funding is scarce, this LRTP gives Service leaders with a strategy in working with gateway communities, counties, metropolitan planning organizations, state departments of transportation, other federal land management agencies, and other stakeholder agencies outside Service boundaries, many of whom could potentially contribute funding or in kind services to advance priority projects that would be mutually beneficial.

ES.5 VALUE OF THIS PLAN FOR THE SERVICE

The LRTP brings multiple benefits to the Service.

- Provides a platform for individual units to communicate transportation system needs and opportunities to regional and national decision-makers through the Refuge Fact Sheets.

- Enables Service leaders to make better informed decisions based on long term transportation and mission goals and objectives.
- Provides the Service with a better picture of future transportation needs and information for discussion regarding transportation reauthorization.
- Provides a long-term view of transportation in relation to core operations and Service priorities.
- Enables leaders to direct funding to the beneficial and high priority transportation projects.
- Enables leaders to identify the potential of obtaining alternative funding from Federal sources that are administered by other Federal Land Management Agencies, state departments of transportation (DOTs) or metropolitan planning organizations (MPOs).
- Enables leaders to synchronize transportation planning with other refuge and hatchery focuses planning efforts such as refuge comprehensive conservation plans (CCPs), comprehensive hatchery management plans (CHMPs) and other regional planning efforts outside Service boundaries.
- Provides current data on multimodal transportation issues and needs across the region.
- Provides an opportunity for Region 3 and individual refuges and hatcheries to partner and discuss areas of mutual interest with the public and regional entities such as minimizing carbon footprint, alternative transportation systems, and transportation systems linkages.
- Provides baseline information for how to potentially address sustainability and livability.

ES.6 REGION 3 AT A GLANCE

Within Region 3 there are:

- 1.3 million acres managed or co-managed by the Service across eight Midwestern states.
- 1,223 road miles
- 1,536 designated parking lots totaling 286 acres
- 160 trail miles
- 54 National Wildlife Refuges
- 6 National Fish Hatcheries
- 12 Wetland Management Districts

ES.7 PLAN IMPLEMENTATION

This plan provides a project selection framework that improves the defensibility of transportation funding decisions and gives transparency to the project selection process. The plan outlines how to quantify and communicate needs and opportunities in the areas that best align with Service goals and objectives, and projects will be more competitive in limited funding environments. The framework improves confidence in funding decisions by allowing decision makers to view

transportation system needs throughout the region, and compare how these needs rank against predefined evaluation criteria and benchmarks which represent the long term interests of the Service, as established in the officially adopted mission, goals and objectives. This decision-making framework allows projects to be compared and ranked according to their merits. A five year update cycle (similar to statewide and metropolitan transportation planning processes) is recommended in order to capture and address the latest transportation infrastructure conditions, planning strategies and practices.

ES.8 KEY FINDINGS OF THIS PLAN

Since the inception of the Refuge Roads Program in 1998, Region 3 has completed approximately 130 projects improving public roads, trails and parking lots in a number of the wildlife refuges within the Region. These improvements have enhanced the experience for the thousands of annual visitors to the Service's public lands.

The Region 3 Fisheries program has mission critical needs for transportation improvements that currently can only be met through deferred maintenance. Because deferred maintenance funds are usually prioritized for other operational improvements, transportation is typically addressed last. There is a need to allocate transportation funding specifically for addressing identified needs at the national fish hatcheries in the Region.

With any potential changes in the amount of funding or the eligibility of projects for the receipt of Federal funding not likely to be defined until the formal reauthorization of the SAFETEA-LU legislation at some future date (2012 or 2013), a funding and investment strategy is critical to the success of the Region 3 transportation program over the next 20 years. The Service must seek opportunities outside the traditional funding sources in order to keep up with the basic maintenance and improvement of its aging infrastructure. Forming partnerships with a wide range of federal, state, and local agencies will become ever more critical in this regard.

CHAPTER 1: INTRODUCTION

Region 3 of the U.S. Fish and Wildlife Service (Service), with the assistance of the Federal Highway Administration (FHWA), Eastern Federal Lands Highway Division (EFLHD), has developed this Long Range Transportation Plan (LRTP). This is the first LRTP prepared for Region 3 and one of the first of its kind in the Service. In part, it ensures that the Service mission is furthered by providing access and a sound transportation system on lands managed by the Service. The boundaries of Region 3 are shown in Figure 1.

This LRTP is intended to help the Service make investment decisions for planning, preservation, and construction on its roads, parking lots, and trails. Because funds are limited, it is essential to assess needs, set priorities, and efficiently manage and leverage funds from a variety of sources to meet future transportation needs.

Figure 1. U.S. Fish and Wildlife Service – Region 3 Boundaries

1.1 PURPOSE AND NEED

The purpose of this LRTP is to advance long range transportation planning in the Service to achieve the following:

- Establish a defensible structure for sound transportation planning and decision making.
- Establish a vision, mission, goals, and objectives for transportation planning in Region 3.
- Implement coordinated and cooperative transportation partnerships in an effort to improve the Service's transportation infrastructure.
- Bring the Service into compliance with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Specifically, Title 23, Section 204 Federal Lands Highway Program requires all federal land management agencies to conduct long range transportation planning in a manner consistent with the currently adopted metropolitan and statewide planning processes required under Sections 134 and 135 of Title 23.
- Integrate transportation planning and funding for wildlife refuges and fish hatcheries into existing and future Service management plans and strategies.
- Develop best management practices (BMP) for transportation improvements on Service lands
- Serve as another example project for regional-level transportation planning in the Service.

Transportation infrastructure provides critical links and resources in connecting people with nature on all Service lands, specifically at national wildlife refuges and national fish hatcheries. To this end, the Service seeks to optimize transportation funding decisions and leverage its transportation dollars wisely.

Long range transportation planning is necessary for the Service to define the vision and goals for the transportation system that will serve the public into the future. It also provides a mechanism to objectively set priorities for implementing projects while working toward achieving the Service's vision for the transportation system. To accomplish these tasks, planners and decision makers must collaboratively and effectively consider a complex balance between transportation efficiency, human safety, and environmental stewardship.

The Service desires a planning process that is consistent, that involves partner agencies, that is compatible with state and local transportation planning processes, and that clearly defines and offers opportunities for public input.

The key objective of such a planning process is to develop and maintain a coordinated, "seamless" transportation system for public use – ranging from auto tour routes to parking lots and trails.

Coordinated planning will also help ensure that the most critical projects receive funding and are implemented in such a manner that the infrastructure remains in place to access the natural resources within Service lands.

Another critical aspect of this LRTP is facilitating partnerships with the Service and fostering opportunities to leverage funds to accomplish transportation improvements of common interest and mutual benefit. The intention is to increase the utility of transportation facilities by investing pooled resources into efforts that satisfy the goals of multiple agencies and organizations.

At a time when resource and infrastructure funding is scarce, the LRTP serves as a tool in working with gateway communities, counties, metropolitan planning organizations (MPO), state departments of transportation (DOTs), other federal land management agencies, and stakeholder agencies outside Service boundaries, many of whom could potentially contribute funding or in-kind services to advance priority projects.

1.2 MISSION, GOALS, AND OBJECTIVES FOR THIS LRTP

The vision, mission, goals, and objectives presented in this document are intended to guide the process for evaluating and selecting transportation improvement projects for the Service lands in Region 3. Through a collaborative effort, the refuge and fisheries departments developed these foundational statements specifically for this LRTP, using the strategic goals from their respective departments with the Service. These guiding principles have shaped the development, conclusions, and recommendations of this LRTP.

LRTP Mission

To support the Service's mission by connecting people to fish, wildlife, and their habitats through strategic implementation of transportation programs.

Goals and Objectives

The goals of this long-range transportation plan for Region 3 encompass six categories including resource protection, safety and condition, welcome and orientation, planning, partnerships, and sustainability. Each goal includes distinct objectives that serve to further the sentiment expressed by the goal. The goals and objectives are listed with a description of the purpose of each objective.

Natural Resource Protection: Ensure that the transportation program helps to conserve and enhance fish, wildlife, and plant resources and their habitats.

Objective 1: Identify, research, and adopt BMPs for planning, design, construction and maintenance that mitigate impacts of transportation.

Objective 2: Reduce transportation related conflicts with fish and wildlife corridors on or adjacent to Service lands.

Safety and Conditions: Provide a safe and reliable transportation network to and within Service lands.

Objective 1: Identify and reduce safety problems and modal conflicts to and within Services lands.

Objective 2: Ensure that mission critical transportation assets are maintained at "good" condition.

Welcome and Orientation: Develop and maintain a transportation network that enhances the welcoming and orienting experience of visitors.

Objective 1: Provide public information to enable visitors to easily get to refuges and hatcheries and to use their sites.

Objective 2: Engage the visitors with compelling information so he/she has a better understanding of the purpose of wildlife conservation and enjoyment of natural resources.

Objective 3: Create a consistent and recognizable identity throughout all Service units by using standard materials for readily observed physical elements associated with the transportation system.

Planning: Integrate appropriate transportation planning into Service plans and processes.

Objective 1: Ensure consistency and coordination between the project, unit, regional, and national levels of planning.

Objective 2: Define need for infrastructure improvements and prioritize projects using a scientific and objective process.

Partnerships: Develop partnerships to leverage resources and develop integrated transportation solutions.

Objective 1: Maximize leveraging opportunities for both funding and resources.

Objective 2: Work with partners to address shared transportation issues that impact Service goals.

Sustainability: Adopt and promote sustainable transportation practices.

Objective 1: Address climate change and other environmental factors at all levels of transportation planning, design, project delivery, and maintenance.

Objective 2: Improve access to and within Service lands by transit or non-motorized transportation and information systems.

Objective 3: Reduce fossil fuel energy consumption.

1.3 REGION 3 BACKGROUND

Federal lands managed by the Service in Region 3 are widely diverse in geography and character. They receive different levels of funding and are varied in terms of existing transportation infrastructure.

1.3.1 National Wildlife Refuges and National Fish Hatcheries

Service lands in Region 3 encompass National Wildlife Refuges and Wetland Management Districts which include more than 1.3 million acres of fish and wildlife habitat in the eight-state (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio and Wisconsin) Midwest Region as shown in Figure 2.

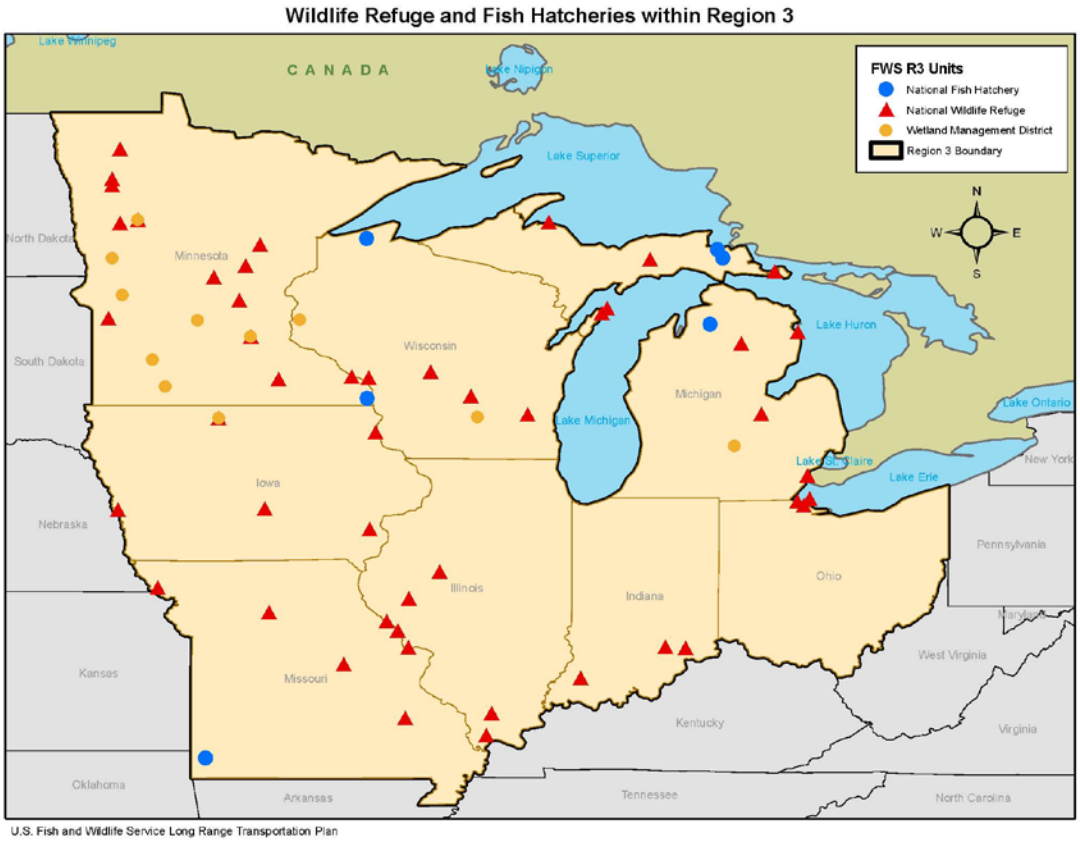


Figure 2. Wildlife Refuge and Fish Hatcheries within Region 3

Region-wide the Service manages: 54 National Wildlife Refuges that protect an amazing array of wetlands, prairies, rivers and forest habitat; and 12 Wetland Management Districts actively acquire, restore, and manage prairie wetland and grassland habitat critical to waterfowl. The Region 3 fisheries program provides a network of six fish hatcheries. All Service units in Region 3 are listed in Appendix B.

1.3.2 Region 3 Transportation System

The Service-maintained transportation facilities in Region 3 consist of paved gravel and native surfaced roads, trails, and parking lots. While a large portion of roads are open for public use, due to the conservation-based orientation of the Service, many roads are for administrative use only.

Within Region 3 there are approximately 1,223 miles of Service owned and maintained roads (120 miles are paved), 286 acres of parking lots, (22 percent of that area is paved) and approximately 160 miles of paved and unpaved trails (per the cycle 2 trails inventory) for bicycle and pedestrian use.

Based on 2009 conditions assessments, about four percent of these roads and about six percent of parking lots were described as being in either “poor” or “failing” condition.

Transportation projects are funded primarily through the Refuge Roads Program (RRP), refuge deferred maintenance funds, fisheries deferred maintenance funds, and visitor facility enhancement funds. Each of these funding sources has specific project requirements. The RRP is the most widely used for transportation projects and can be used for planning, programming, construction, reconstruction, and improvement of public roads in the National Wildlife Refuge System (refuge roads), including bridges and appurtenances, in connection with the administration of the National Wildlife Refuge System. In addition, up to five percent can be used for public use trails within refuges. Through the RRP, the Service is working to improve public access to refuges and provide a better overall visitor experience. Additional information about project funding and leveraging opportunities can be found in Chapter 3.

1.4 PRIMARY AUDIENCE

This LRTP is written for several audiences including project leaders from wildlife refuges and fish hatcheries; regional internal and external leadership from the Service; national level decision makers; and potential local and regional partners from governmental agencies or non-governmental organizations, particularly refuge and hatchery friends groups. Information provided in the LRTP is intended to support these groups in several ways.

1.4.1 Project Leaders

Project leaders will use the LRTP to determine which types of projects are being advanced and are of the highest priority. The LRTP serves as a springboard for individual refuges and hatcheries to partner with outside agencies and discuss project needs of mutual interest, such as safety concerns, alternative transportation systems, and addressing climate change, with public and regional entities.

1.4.2 Regional Management

At the regional level, this LRTP will provide the information necessary for leaders to make transportation decisions based on long term Service vision, mission, and goals. The plan also enables regional transportation coordinators to direct funding to the most beneficial and highest priority transportation projects. Furthermore, the LRTP enables regional leaders to find alternative funding from federal sources that are administered by the state DOTs or MPOs. At the regional level, the LRTP is used to synchronize transportation planning with refuge and hatchery efforts such as refuge comprehensive conservation plans (CCP), comprehensive hatchery management plans (CHMP), and other regional and statewide plans outside Service boundaries, such as MPO regional long-range transportation plans and statewide multimodal transportation plans.

1.4.3 National Management

On the national level, this LRTP will be used in the development of the Service's National Long Range Transportation Plan and Transportation Improvement Program, which is currently in draft form. Both regional-level and national-level planning efforts will provide a clear message to congressional leaders as to the mission critical transportation needs of the Service. It will also help illustrate the Service's foresight, need, and commitment to certain mission critical goals – especially when projects are being pursued jointly with other agencies or organizations, and additional federal dollars are requested.

1.4.4 Potential Partners

Potential partners may use this LRTP to identify Service projects of mutual interest. The Service recognizes the value of cooperative transportation partnerships, and seeks to leverage Service funds with other agencies, organizations, and Congress. The objective is to achieve the greatest benefit to the largest number goals and objectives held by multiple agencies and organizations.

Potential partner agencies could include state DOTs, MPOs, county and local governments, as well as Friends groups.

1.5 PUBLIC INVOLVEMENT

The Service recognizes the public involvement requirements associated with long range transportation plans developed by State DOTs and MPOs. The regulations in 23 USC § 204 requires Federal Land Management Agencies to develop transportation planning procedures that are consistent with the metropolitan and statewide planning process under 23 USC §134 and 135. A structured public involvement plan was developed with a list of potential stakeholders and actions prescribed at key milestones in the plan's development to inform the decision making processes. The approach for public involvement proposed the following:

- Solicit input from Service staff that will inform the transportation planning effort
- Inform and educate external stakeholders about decision-making in Region 3 relative to transportation planning
- Provide opportunities for stakeholders to identify their concerns, values, ideas, and interests of the Region 3 transportation system
- Provide Service staff and external stakeholders the opportunity to review and comment on the LRTP at key decision points
- Build support from internal and external stakeholders for the processes and projects adopted under the LRTP
- Strengthen existing partnerships while forging new ones
- Identify opportunities for coordination with priority MPOs and States for short and medium term project development

Given the geographic and demographic diversity of the Service lands within Region 3, it is not expected that all or even most of the potential stakeholders would be able to participate, or have interest in directly influencing the outcomes of this plan. Once this plan is finalized, a Federal Register notice will be filed to advertise the release of this document. The original public involvement plan and stakeholder list is provided in Appendix F, which serves as a guide for future public involvement activities when this plan is updated.

1.6 CONTENT AND OVERVIEW

This LRTP is structured in five chapters, including this introduction, such that each chapter builds upon the information and conclusions derived in the previous chapter(s). The document examines baseline conditions, funding, project selection, and recommendations for future action.

Chapter 2, Baseline Conditions, presents baseline conditions as they relate to the six goals of this plan. This chapter uses existing asset management systems and road inventory data maintained by the Service and FLH to present a data-informed view of the transportation system. Data such as road, service life, visitation statistics and trends, population growth, and other spatially significant issues are used to establish a baseline from which LRTP decisions can be made.

Chapter 3, Funding and Project Selection, describes a variety of funding categories currently used for transportation projects in Region 3. Using the available funding, this chapter describes how projects are selected for implementation in the context of the LRTP goals and objectives. This chapter highlights funding available from traditional federal sources and identifies opportunities for partnering with outside agencies, such as state DOTs, and local governments to leverage funding.

Chapter 4, An outreach plan describes how outreach should be conducted during the LRTP process to solicit input from interested parties and inform stakeholders for whom the LRTP may be of interest. It describes various levels of involvement and methods of outreach.

Chapter 5, Recommendations for Future Plan Activities, summarizes how this plan will be implemented by the Service and includes recommended actions for future development. Recommendations include improving data informed analysis through better data management from internal and external sources, specifically related to accident data and fish and wildlife resources; using the tools and process developed in this plan to issue a formal call for projects; and developing a long range list of project needs from the call for projects.

CHAPTER 2: GOALS AND BASELINE CONDITIONS

Understanding the current state of the transportation system in Region 3 is a prerequisite for planning future transportation projects. The dynamics of condition, safety, and visitor use are therefore considered in transportation funding decisions. Furthermore, this Region 3 long range transportation plan (LRTP) considers changes that are likely to occur in the future, such as increased traffic and visitation due to population increases which will create additional demands on the existing transportation system. As is the nature of LRTPs, the intent is to identify future needs and plan for them proactively. The baseline data (i.e., existing conditions and trends) contained in this chapter are intended to inform the project selection process described in Chapter 3, Funding and Project Selection, whereby projects would be selected based on an objective data-driven process that considers likely future conditions, rather than just an examination of existing data alone.

This chapter offers a summary of the current state of the Region 3 transportation infrastructure as it relates to the goals and objectives described in Chapter 1, Introduction. The six transportation related goal areas adopted by Region 3 are: natural resource protection, safety and condition, welcome and orientation, planning, partnerships, and sustainability. The following sections in this chapter define the intent of each goal and provide supportive data and an analysis summary supporting each goal.

The chapter provides a road-map for identifying improvement needs (i.e., potential projects) at the unit level using readily available data to analyze deficiencies or "hot spots" that may be occurring at individual units. By applying the approach demonstrated in the following sections for each goal area, Service leadership can identify potential project opportunities that are most likely to receive funds. This chapter outlines the data sources, data relationships, and extra steps that are necessary to identify needs and opportunities that correspond to the LRTP goals and objectives, as outlined in Chapter 1.

This plan has also identified a number of transportation facility related challenges and opportunities for the units within Region 3. To more easily highlight this information, most of the units have their own Refuge or Fish Hatchery Fact Sheet, which describes the unit's general background information, acreage, main activities, total square footage of parking lots, total miles of roads and trails, as well as peak visitation season and number of visitors, among other available information. The Refuge Fact Sheet provides information on the more significant transportation challenges and opportunities that each unit is facing as of 2011. The Refuge Fact Sheets are presented in Appendix I of this LRTP document and summaries of findings are presented in this chapter in its appropriate section.

2.# Goal Topic

Presents the long range transportation goals for the region, and how circumstances at the unit level can demonstrate needs and opportunities to further these goals. The chapter should be read as a unit level roadmap illustrating how to identify projects that stand the best chance of receiving funds and how to use existing data to demonstrate the need for the project.

2.#.1 Data

These sections identify the datasets used to identify need and opportunity for a particular goal area.

2.#.2 Identifying Improvement Areas

These sections explain how the data identified in 2.#.1 should be used to **demonstrate need and opportunity.**

2.#.3 Recommendations for Future Analysis

These sections identify information that would improve future efforts to identify need and opportunity.

Sidebars

Case studies show "best practice" examples of how other FLMAS have addressed similar challenges.

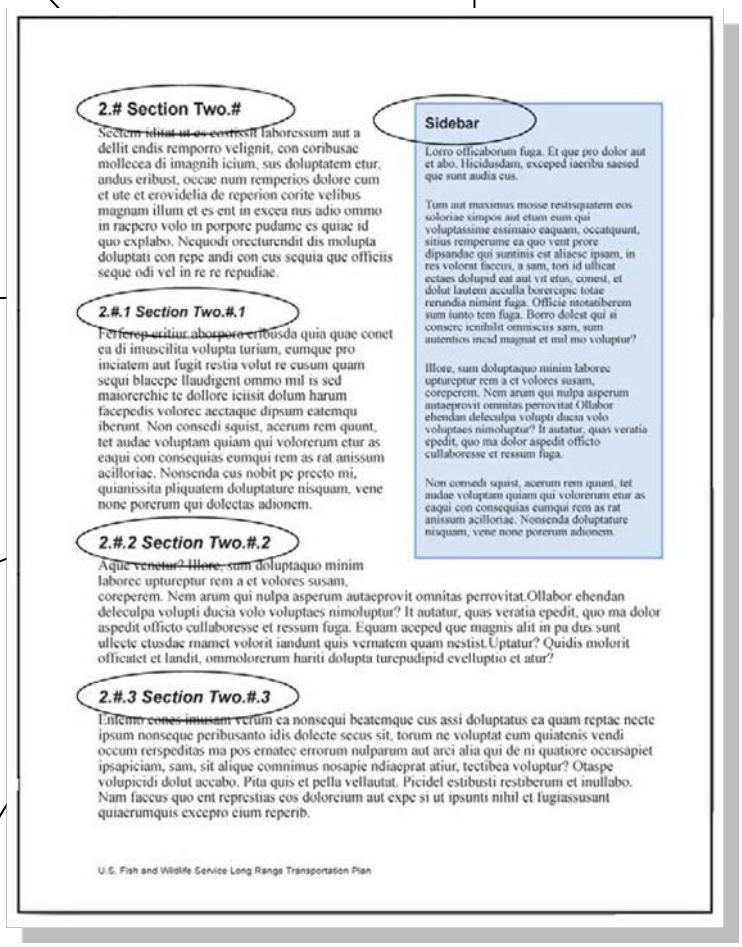


Figure 3. How to use Chapter Two

2.1 NATURAL RESOURCE PROTECTION

The Region 3 LRTP natural resource protection goal is to **"ensure that the transportation program helps to conserve and enhance fish, wildlife, and plant resources and their habitats."** The following objectives and strategies serve to further the sentiment expressed by the goal.

Objective 1

Identify, research, and adopt Best Management Practices (BMPs) for planning, design, construction, and maintenance that mitigate or avoid the impacts of transportation activities and facilities.

- Identify and adopt design guidelines and design metrics for transportation infrastructure projects.

Objective 2

Reduce transportation related conflicts within fish and wildlife corridors and habitat on or adjacent to Service lands. Strategies to achieve this objective are:

- Conduct needs assessments for wildlife crossings on and adjacent to Service lands.
- Consider aquatic organism passage during the planning and design phases of transportation project development on Service units.

Objective 3

Reduce greenhouse gas (GHG) emissions and air pollutants by increasing transportation alternatives

2.1.1 Resource Protection Data

Resource protection data are needed to evaluate both the BMP and wildlife conflict objectives. Information used to establish a baseline for the BMP-focused objective includes existing Service BMP guidance and systems. The wildlife conflict objective is informed by data that helps identify places where animal and vehicle conflicts have occurred in the past and are likely to occur in the future.

Figure 4. Sign meaning that the land behind it has been dedicated to preserving native wildlife as it can be retained along modern civilization.

Best Management Practices

The Service has a library of BMPs that promotes guidelines for planning, design, construction and maintenance pertaining to transportation projects. Transportation related BMPs are included in the Service's Draft Midwest Region 3 *Roadway Design Guidelines* provided in Appendix D. A BMP library is also available as a searchable database on the Service's website along with the Information, Planning, and Consultation system (IPaC), which allows users to preview how proposed activities may impact sensitive natural resources and which BMPs are appropriate to help mitigate negative impacts. The IPaC tool is available at http://ecos.fws.gov/ipac/.

Resource Conflicts

Wildlife conflict data helps to identify places where animal and vehicle conflicts have occurred in the past and are likely to occur in the future.

Almost all units report having animal-vehicle collision within or near their unit, 16% of those units have some endangered species within.

Ideally, this data would consist of the identification of sensitive wildlife habitat locations, wildlife corridors, and historic locations of vehicle-animal collisions. At this time, not all of this information is available; however, data on wildlife conflicts that resulted in refuge visitor fatalities is available from the National Highway Traffic Safety Administration (NHTSA). While this data is informative and provides some indication of historic conflict locations, by itself, the data is insufficient as a basis for decision making. There are too many other factors that are yet to be quantified that must be considered in resource conflict decisions.

2.1.2 Identifying Resource Protection Improvement Areas

Resource protection improvement areas are identified in both the BMP objective and the wildlife conflict objective. The BMP objective can be addressed through the use of appropriate BMPs for a proposed action. Appropriate BMPs can be found in several ways, such as using the Service's Draft Midwest Region 3 *Roadway Design Guidelines* (available in Appendix D) and using IPaC. IPaC allows users to preview how proposed activities may impact sensitive natural resources and which BMPs are appropriate to help mitigate negative impacts.

To identify areas of resource protection relevant to wildlife conflicts, one must consider multiple factors including wildlife corridors, wildlife habitat, and records of historic animal-vehicle collisions. At this time only a measure of historic fatal animal-vehicle collision is available. The data indicate that over a period of four years (2006-2009), a total of, 237 accidents involving at least one fatality occurred in the region, however, only 2 of them within one mile from a FWS unit. One of those fatal accidents occurred in US Hwy 67 in the state of Iowa in 2007 within one mile of the Upper Mississippi River NWF.

The accident is a single indicator of wildlife conflict and suggests that further study is needed to determine if this or other refuges are a resource protection improvement area.

Additional documentation regarding the presence of wildlife corridors, wildlife habitat, and the location of other non-fatal to refuge visitor collisions with wildlife would determine the appropriate need for resource protection improvements at refuges and hatcheries.

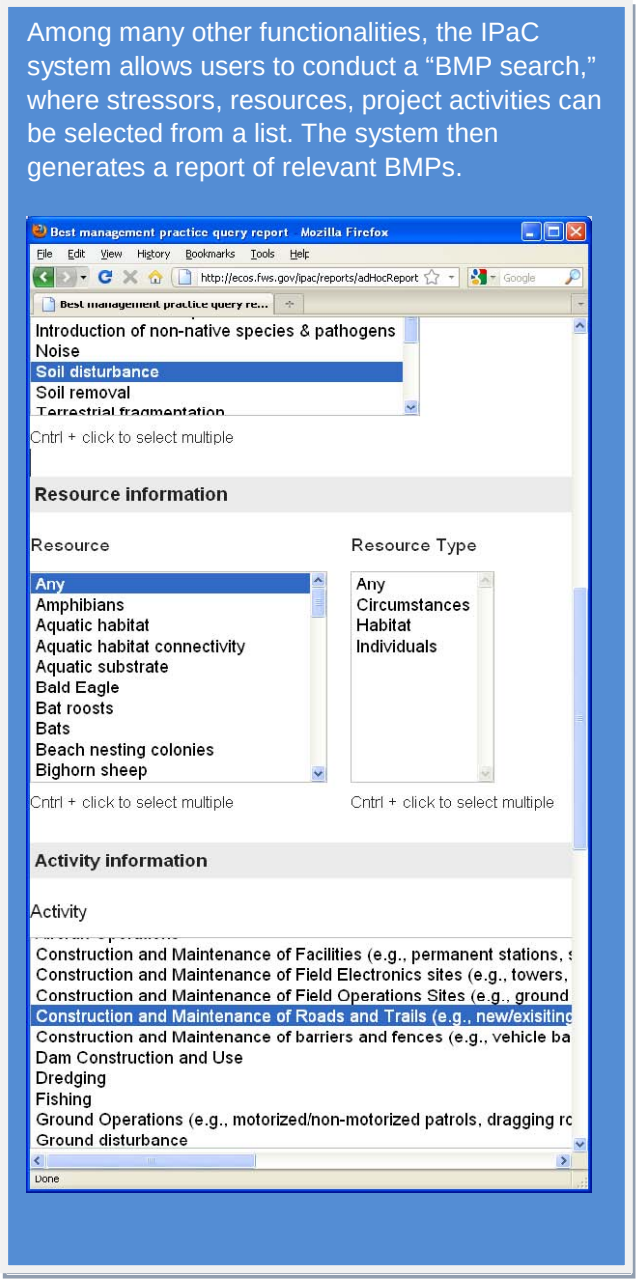


Figure 5. IPaC system

2.1.3 Recommendations for Future Analysis

Additional information is necessary to better evaluate resource protection needs. The following datasets are required to better understand where transportation related resource protection improvements should occur:

- Use a systematic method to quantify the significance of the conflicts between fish and wildlife with transportation facilities to better demonstrate a need for improvements.
- Better document wildlife habitat locations and fish passage corridors to help identify potential animal-transportation conflict areas as well as the type of potentially impacted wildlife.
- Identify the locations of access conflicts between resources (fish and wildlife habitat) and transportation facilities to help decision makers develop appropriate solutions.
- Obtain fish passage data to help identify potential fish-transportation conflict areas and potentially impacted species.
- Obtain non-fatal refuge visitor vehicle-animal collision data to provide a more complete understanding of historic vehicle-animal conflict hot-spots.
- Identify areas where pedestrians or bicycle trails may have an impact upon wildlife. This would help craft appropriate strategies on where to place bicycle racks or restrict bike/pedestrian access.
- Quantify the impacts and benefits of shuttle buses as a potential alternative to high volumes of personal vehicle traffic in key wildlife crossing areas.

2.2 SAFETY AND TRANSPORTATION ASSETS CONDITIONS

The Region 3 LRTP condition and safety goal is to "**provide a safe and reliable transportation network for all modes of transportation to and within Service lands.**" The following objectives and strategies serve to further the sentiment expressed by the goal.

Objective 1

Identify and reduce safety problems and modal conflicts to and within Services lands.

Strategies to achieve this objective include:

- Conduct road safety audits (RSAs) and/or safety need assessments.
- Increase the number of projects that address access/egress safety problems or conflicts between private motor vehicles, transit, and bicyclists and/or pedestrians.
- Identify and implement operational improvements through intelligent transportation systems (ITS) applications.
- Identify and implement appropriate safety countermeasures and tools to reduce frequency and severity of crashes.
- Use open communication among the "4Es" – engineering, education, enforcement, and emergency medical services – to collaboratively address safety issues on Service owned roads.

Objective 2

Ensure that mission critical transportation assets are maintained to good or better condition.

Strategies to achieve this objective include:

- Use comprehensive condition assessment (CCA) and Road Inventory Program (RIP) information to establish a baseline condition.
- Determine strategies needed to extend the service life of mission critical assets.

Figure 6. Boardwalk at Genoa National Fish Hatchery.

2.2.1 Safety and Transportation Assets Condition Data

Data used to identify appropriate opportunities for improving transportation system conditions include physical characteristics like surface condition and asset type as well as external factors such as an asset's importance and relationship to safety. Data used to make these determinations are obtained from regularly updated data sources like the Service's service asset maintenance management system (SAMMS) and RIP. SAMMS provides information on facility and equipment deficiencies, justifies budget requests for maintenance needs, and provides a sound basis for management decision making. RIP data is collected by the Federal Highway Administration (FHWA), Federal Lands Highway Division (FLH), on behalf of the Service, to provide ongoing condition monitoring of all public use roads, trails, and parking lots. The inventory is updated continuously and resulting datasets are compiled and released every five years.

Supplemental information from outside sources is used to help identify problem areas and opportunities for improvements. Sources of supplemental information include the United States Census, FHWA, state departments of transportation (DOT) and perhaps Metropolitan Planning Organizations (MPOs). These data help inform decision makers about issues that extend beyond basic physical condition and typically relates to transportation system issues regarding access to and through units.

Overview of Condition Data

The majority of the Service's transportation system consists of asphalt, gravel, and native roads. In Region 3, the Service owns and maintains approximately 1,223 miles of public use roads, 4 miles of which are concrete, 116 miles are asphalt, 726 miles are gravel, 319 miles are native and 58 miles are primitive (roadways not built to road design standards, for use by high clearance or 4 wheel drive vehicles). These numbers exclude roads that are used only for Service administrative purposes as well as public use roads that are double-track and unpaved.

Minnesota and Illinois have the most roads (by length) with 28.2 percent and 22.4 percent of the total Region 3 miles, respectively. Missouri is third highest (11.4 percent), followed by Michigan (10.6 percent), Indiana (8.8 percent), Wisconsin (7.6 percent), Iowa (6.1 percent) and Ohio (4.8 percent). At the unit level, Crab Orchard NWR has the most roads (by length) with 10.7 percent of total Region 3 miles, followed by Agassiz NWR with 8.4 percent, Seney NWR (7.7 percent) and Big Oaks NWR (6.6 percent). Table 1 summarizes this information.

Based on the most recent RIP inventory data for Region 3, as compiled in 2008, 73.35 percent of the region's asphalt roads have at least seven years of service life remaining. Similarly, approximately 93.98 percent of gravel roads, 67.3 percent of native roads and 59.94 percent of primitive roads have at least five years of use remaining, as expressed by remaining service life and as summarized in Table 1. The need for road improvements are also determined by a road's asset priority, facility condition index, and condition, as summarized in Appendix C (Tables 3 to 50).

Currently the Refuge Roads Program does not provide funding for hatcheries' transportation systems, however having an understanding of what assets exist within the system, provides a better opportunity to manage and prioritize them. Table 2 shows the current roads within the SAMMS system.

Table 1 . Service Road Conditions

Road Surface	Remaining Service Life (years)	Miles	Percent of total	Percent of Surface Type
Concrete	13 to 18	0.24	0.02%	5.73%
	7 to 12	2.53	0.21%	60.38%
	1 to 6	1.42	0.12%	33.89%
	Subtotal =	4.19	0.34%	-
Asphalt	19 to 20	17.47	1.43%	15.11%
	13 to 18	3.84	0.31%	3.32%
	7 to 12	63.49	5.19%	54.92%
	1 to 6	30.81	2.52%	26.65%
	Subtotal =	115.61	9.45%	-
Gravel	8 to 10	324.66	26.55%	44.73%
	5 to 7	357.42	29.22%	49.25%
	3 to 4	42.98	3.51%	5.92%
	1 to 2	0.51	0.04%	0.07%
	0	0.22	0.02%	0.03%
	Subtotal =	725.79	59.34%	-
Native	8 to 10	10.44	0.85%	3.27%
	5 to 7	204.15	16.69%	64.03%
	3 to 4	96.26	7.87%	30.19%
	1 to 2	5.04	0.41%	1.58%
	0	2.95	0.24%	0.93%
	Subtotal =	318.84	26.07%	-
Primitive	8 to 10	2.50	0.20%	4.27%
	5 to 7	32.63	2.67%	55.67%
	3 to 4	23.28	1.90%	39.72%
	1 to 2	0.08	0.01%	0.14%
	0	0.12	0.01%	0.20%
	Subtotal =	58.61	4.79%	-

Source: FHWA, Road Inventory Program; Cycle 4

Table 2 . Hatcheries Service Roads

State	FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
MI	Jordan River NFH	Hatchery entrance road	10010251	Route 010 (Old RPI 1)	Asphalt	N/A	1.12	100	0.73
		River Road Access	10050262	Route 100	Asphalt	N/A	0.09	65	0.14
WI	Genoa NFH	Road to fish holding house	10010989	RPI Route 40	Paved	N/A	0.20	65	1.21
	Iron River NFH	Schacte Creek Road section A: Hatchery water Intake Road	10011016 (10061472, 10061473, 10061474, 10061475)	-	Gravel	N/A	0.30	80	0.09
		Middle Creek Road section A: Water Intake Road, split off to two other assets: 10061469 and 10061470	10011023	-	Gravel	N/A	0.60	80	0.06

Source: SAMMS System (Spring 2011)

Supporting the Service's road network are 1,537 parking lots spanning a total of 286 acres. Table 3 summarizes parking lot conditions for the region. RIP data indicate that 22 percent of parking lots are asphalt, 38 percent are gravel, 38 percent are native surface, one percent are primitive and less than one percent are concrete. A rating of good or better is attributed to 81 percent of asphalt parking lots, 67 percent of gravel, 63 percent of concrete, 25 percent of native surface and 70 percent of primitive surface parking lots. The need for parking lot improvements can be determined by asset condition, as summarized in Appendix C (Table 51 to 100).

Table 3 . Service Parking Lot Conditions

Surface	Condition	Acres	Percentage of Surface Type	Percentage of Total
Asphalt	Excellent	9.80	15.83%	3.43%
	Good	40.59	65.54%	14.19%
	Fair	8.97	14.48%	3.13%
	Poor	2.57	4.15%	0.90%
	Subtotal	61.94	-	21.65%
Concrete	Good	0.33	63.42%	0.12%
	Poor	0.19	36.58%	0.07%
	Subtotal	0.52	-	0.18%
Gravel	Excellent	8.87	8.08%	3.10%
	Good	64.86	59.06%	22.67%
	Fair	32.24	29.36%	11.27%
	Poor	3.84	3.49%	1.34%
	Subtotal	109.81	-	38.38%
Native	Excellent	0.60	0.54%	0.21%
	Good	26.73	24.25%	9.34%
	Fair	74.08	67.22%	25.89%
	Poor	8.60	7.81%	3.01%
	Failed	0.19	0.17%	0.07%
	Subtotal	110.20	-	38.51%
Primitive	Good	0.99	26.89%	0.35%
	Fair	1.58	43.01%	0.55%
	Poor	1.11	30.10%	0.39%
	Subtotal	3.67	-	1.28%

Source: FHWA, Road Inventory Program, Cycle 4

The Service also owns and maintains approximately 160 miles of trails. These trails are used by hikers, bicyclists and during winter months, cross country skiers. Every trail offers all of the potential uses. The majority of trails are located in Minnesota (44.7 percent), followed by Michigan (14.1 percent), Wisconsin (10.6 percent), Illinois (8.3 percent), Indiana (6.9 percent), Iowa (6.3 percent), Missouri (4.6 percent) and Ohio (4.5 percent). The reported conditions of these trails are generally in good condition or better, as summarized in Table 4. Approximately 57 percent of trails have a rating of excellent and 6.5 percent of good. Only two percent of trails receive a rating of very poor; however, 27 percent of trails are unrated. Need for trail improvement is also determined by a trail's asset priority, facility condition index, and condition, as summarized in Appendix C (Tables 101 to 109).

Some trails contain specific areas that are deemed deficient due to drainage, erosion, structure, or location. Region 3 has 165 such locations, with the majority being drainage-related issues followed very closely by erosion-related issues. Shiawassee National Wildlife Refuge in Michigan has the most drainage-related issues (44 percent). Muscatatuck NWR has 42 percent of the drainage-related issues and 23 percent of the erosion-related issues. These locations are summarized in Appendix C (Tables 110).

In general, 57 percent of trails are in excellent condition; 6.5 percent in good; 5 percent in fair, 2.5 percent in poor, 2 percent in very poor and 27 percent are not rated, which are on administrative roads.

Table 4 . Trail Conditions by Type

Surface type	Condition	Miles	Percentage of Surface Type
Asphalt	Excellent	5.38	55%
	Good	2.23	23%
	Fair	1.8	19%
	Poor	0.29	3%
	Very Poor	0	0%
	Subtotal	9.7	-
Boardwalk	Excellent	1.68	90%
	Good	0.18	10%
	Fair to Very Poor	0	0%
	Subtotal	1.86	-
Concrete	Excellent	0.82	100%
	Good to Very Poor	0	0%
	Subtotal	0.82	-
Gravel	Excellent	15.59	98%
	Good	0.37	2%
	Fair to Very Poor	0	0%
	Subtotal	15.96	-
Mowed	Excellent	34.24	87%
	Good	3.19	8%
	Fair	0.4	1%
	Poor	0.22	1%
	Very Poor	1.4	4%
	Subtotal	39.45	-
Native	Excellent	32.11	68%
	Good	4.44	9%
	Fair	5.45	12%
	Poor	3.5	7%
	Very Poor	1.86	4%
	Subtotal	47.36	-
Wood Chip	Excellent	1.89	100%
	Good to Very Poor	0	0
	Subtotal	1.89	-

Source: FHWA, Road Inventory Program, Cycle 4

Overview of Safety Data

The Service is interested in supporting safe and reliable access to and through its lands. As such, safety indicators including road pavement condition, annual average daily traffic (AADT), and crash history were collected when available and analyzed to help identify potential safety problem areas on non-Service owned roads near refuges and hatcheries.

A strategic approach of a Safety Management System (SMS) would greatly benefit Fish and Wildlife Service to monitor and identify where resources are needed when it comes to addressing safety. The FWS National Long Range Transportation Plan will address strategies to fully implement existing SMS.

Some information was obtained through the RATE questionnaire related to safety. All detailed information can be found in Appendix I (Refuge and Fish Hatchery Fact Sheets) and Appendix J (Alternative Transportation Priorities and Strategies).

2.2.2 Identifying Conditions and Safety Improvement Areas

Baseline condition data helps identify areas that are in need of transportation improvements for safety, modal connections, and/or condition. Service-owned assets that could potentially benefit from condition improvements are identified by several variables including asset priority index (API), facility condition index (FCI), and observed condition. API describes the mission critical priority of an asset as determined by the Service for roads and trails. Ideally, assets with a value of 80 or greater are defined as being "mission critical" and should have a condition rating of "good" or better. FCI is the ratio of the deferred maintenance costs to the full capital replacement value of a specific asset and is used as an indicator of infrastructure condition

The need for safety improvements can be illustrated by road safety audits and/or crash data. Reducing conflicts between cars and bicyclists and/or pedestrians to and within Service lands transportation assets can be achieved by investing in either physical or operational improvements where crash history or road safety audits have demonstrated safety problems with the current transportation system. In some cases, these operational improvements may include ATS strategies to reduce the number of vehicles on the roadways.

In addition to improving Service transportation assets that are of high value and show deficiencies, the condition and safety goal may be advanced by projects undertaken jointly with either public or private sector partners to address transportation safety needs of mutual interest. Utilizing public/private partners may also be a way to address safety concerns that are outside the refuge boundaries but affect the refuge (i.e. a turn lane on a state road to access a visitor center). To identify such opportunities, non-Service condition and safety information is also examined when there is a close proximity or overlap with Service assets.

Opportunities may exist if both Service and non-Service entities have identified system condition deficiencies in shared locations.

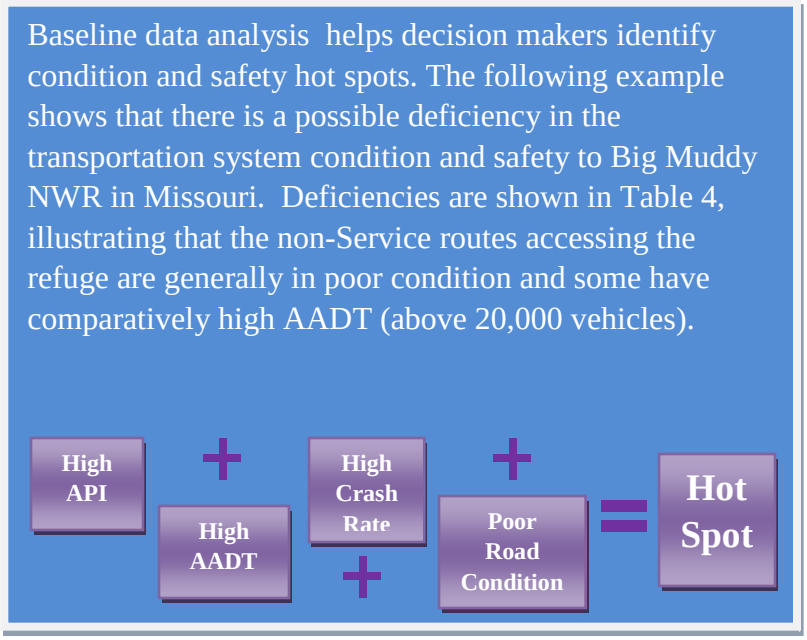


Figure 7. Safety Hot Spot Criteria

The Service is also interested in supporting safe and reliable access to its lands, regardless of facility ownership. As such, safety indicators including condition, AADT, and crash history were collected and analyzed to help identify potential safety problem areas on non-Service owned roads near refuges and hatcheries. Places where these factors are pronounced and within one mile of a Service unit were identified as areas of potential opportunity to partner with non-Service agencies to resolve safety issues of mutual interest. These "hotspot" locations are identified (and highlighted in yellow and red) in Table 5 through Table 12 and illustrated in Figure 8 through Figure 12.

Hotspots are identified as non-Service routes that **satisfy at least one** of the following criteria:

• An AADT of 20,000 or more

• An average of five or more reported crashes have occurred within the previous four-five years on a route within one-mile of a unit; and

• State DOT Road condition ratings are considered to be either "poor" or "very poor."

Table 5 . Non-Service Road Condition, Use, and Safety Hotspots (Iowa and Michigan)

State	Name	Segments of Primary and Secondary Routes within one mile of unit	Average Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
IOWA	Boyer Chute NWR	I-29/680	Good	21,000	10
	DeSoto NWR	US-30	Good	4,772	11
	McGregor District	State Hwy 76	Good	3,000	15
		US Hwy 18	Good	4,630	10
		US Hwy 52	Fair	3,300	8
	Neal Smith NWR	State Hwy 163	Good	11,531	11
	Port Louisa NWR	Co Rd E49	N/A	N/A	7
		US Hwy 63	Good	3,900	7
		US Hwy 30	Excellent	4,900	15
		State Hwy 21	Poor	2,600	7
		State Hwy 212	Excellent	1,210	16
		US Hwy 6	Poor	3,600	41
		State Hwy 220	Fair	5,600	18
		US Hwy 151	Good	5,800	11
	Upper Mississippi River NWR - Savanna District	State Hwy 62	Poor	2,510	3
		US Hwy 67 north of 210th St	Poor	3,718	23
		US Hwy 67 south of Hwy 30	Poor	5,200	28
		US Hwy 52	Fair	2,900	7
		US Hwy 61/ 151	Good	16,300	26
		US Hwy 30/67	Good	13,800	95
		State Hwy 64	Poor	1,990	1
MICHIGAN	Detroit River International Wildlife Refuge	State Hwy 85	N/A	31,050	<1
		I-75 north of Rt 39	N/A	82,650	<1
		I-75 south of I-275	N/A	64,400	-
	Shiawassee NWR	State Hwy 46	N/A	24,160	<1
		State Hwy 58	N/A	23,900	<1
		I-75/US Hwy 23	N/A	54,350	<1

Table 6 . Non-Service Road Condition, Use, and Safety Hotspots (Illinois and Indiana)

State	Name	Segments of Primary and Secondary Routes within one mile of unit	Average Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
ILLINOIS	Chautauqua NWR	State Rte 26	N/A	1,920	12
		State Rte 29	N/A	3,100	17
	Crab Orchard NWR	I-57	N/A	27,500	39
		State Rte 13	N/A	28,800	224
		State Rte 148	N/A	6,200	53
	Cypress Creek NWR	State Hwy 3	N/A	2,200	7
		State Rte 37	N/A	1,500	13
		State Hwy 127	N/A	850	10
		US Hwy 51 / State Rte 37	N/A	4,150	6
	Emiquon NWR	State Rte 78	N/A	3,400	7
		State Rte 97	N/A	3,050	16
		US Hwy 24	N/A	4,150	12
		US Hwy 136	N/A	6,000	30
	Meredosia NWR	State Hwy 104	N/A	3,400	5
	Two Rivers NWR	State Rte 100 East of State Rte 3	N/A	3,550	6
		State Rte 100 West of State Rte 3	N/A	1,410	19
	Upper Mississippi River NWR - Savanna District	South Ln	N/A	8,900	13
		State Rte 35	N/A	4,175	8
		State Rte 84 South of US Hwy 67/30	N/A	4,225	29
		State Rte 84 north of State Rte 64	N/A	5,000	45
		State Rte 84 south of State Rte 64	N/A	3,970	48
		State Rte 84 north of Army Depot Rd	N/A	1,600	6
		US Hwy 20 west of State Rte 35	N/A	17,000	9
		US Hwy 20 east of State Rte 35	N/A	10,400	35
INDIANA	Big Oaks NWR	US Hwy 250	Poor	798	<1
	Muscatatuck NWR	US Hwy 50	Poor	30,607	<1
	Patoka River NWR	State Rd 61	Poor	4,080	<1

Table 7 . Non-Service Road Condition, Use, and Safety Hotspots (Minnesota)

State	Name	Segments of Primary & Secondary Routes within one mile of unit	Avg Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
MINNESOTA	Glacial Ridge NWR	US Hwy 75	Fair	1,850	5
		US Hwy 2	Good	3,500	5
	Minnesota Valley NWR	Co Rd 101	Good	17,500	79
		Co Rd 69	Good	5,600	7
		I-35W between 694 and TH 10	Good	111,000	212
		I-35W between TH 13 and CSAH 1	Good	96,500	132
		I-494	Fair	138,000	74
		I-694 east of CSAH77	Good	104,000	144
		TH 13 / Sibley Memorial Hwy	Fair	24,400	13
		State Hwy 101	Good	5,300	23
		State Hwy 13 west of I-35W	Good	48,000	47
		State Hwy 13 west of I-35W	Fair	24,000	90
		Highway 13S between 101 and CSAH 16	Good	22,800	32
		State Hwy 41	Fair	14,400	16
		State Hwy 5	Fair	66,500	14
		State Hwy 77	Fair	89,000	73
		State Hwy 96 W / Co Rd G	Poor	20,900	72
		US Hwy 10	Fair	46,000	40
		US Hwy 169 north of Co Rd 101	Good	63,000	66
		US Hwy 169 south of Co Rd 101	Good	45,000	38
		US Hwy 169 west of State Hwy 41	Good	30,000	27
		US Hwy 212 east of State Hwy 101	Good	34,000	36
		US Hwy 212 west of State Hwy 101	Good	16,800	35
	Upper Mississippi - La Crosse District	I-90	Good	19,000	30
		State Hwy 16	Good	10,500	26
		US Hwy 61 between TH 14 and CSAH 44	Good	18,000	50
		US Hwy 61 at CSAH 6	Fair	13,800	30
		US Hwy 61 east of CSAH 12	Good	8,220	9
	Upper Mississippi - Mc Gregor District	State Hwy 26	Fair	1,800	15
	Upper Mississippi - Winona District	US Hwy 61 at CSSAH 15	Fair	14,000	50
		US Hwy 61 east of Rd 25	Good	4,900	20
		US hwy 61 east of State Hwy 60	Good	4,400	11
		US Hwy 61 west of State Hwy 60	Good	4,850	8

Table 8 . Non-Service Road Condition, Use, and Safety Hotspots (Missouri)

State	Name	Segments of Primary and Secondary Routes within one mile of unit	Average Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
MISSOURI	Big Muddy National Fish and Wildlife Refuge	State Hwy 5 between Hwy 24 and Hwy 20	Poor	615	9
		State Hwy 13	Fair	2,248	13
		I-270	Poor	123,000	424
		State Hwy 224	Poor	500	8
		US Hwy 169	Fair	34,811	115
		State Hwy 3	Fair	3,858	12
		State Hwy 340	Fair	37,356	246
		I-70 / Hwy 40	Fair	30,021	29
		State Hwy 10 west of State Hwy D	Poor	1,710	15
		State Hwy 9	Good	19,224	112
		State Hwy 19	Poor	3,542	46
		State Hwy 291 south of State Hwy 210	Very good	20,777	37
		I-70 / US Hwy 40 west side of refuge by Kansas	Poor	85,528	489
		State Hwy 5 north of US Hwy 24	Poor	1,026	1
		US Hwy 69 between Hwy 9 and Hwy 169	Fair	11,010	25
		I-35 south of I-70	Very poor	151,609	179
		State Hwy D	Poor	253	2
		State Hwy 94 east of Hwy 19	Very poor	284	10
		State Hwy 10 east of State Hwy D	Fair	2,021	6
		State Hwy 213	Very poor	1,318	<1
		State Hwy 87 between State Hwy 240 and Hwy 5	Poor	595	12
		State Hwy 7 south of Hwy 78	Very good	6,488	30
		State Hwy 370 west of Hwy 94	Fair	56,024	20
		State Hwy 78 east of I-435	Fair	20,561	69
		US Hwy 50/US Hwy 63	Fair	15,776	184
		State Hwy D	Poor	784	<1
		State Hwy 100 between Hwy C and Hwy 185	Very poor	6,704	18

Table 9 . Non-Service Road Condition, Use, and Safety Hotspots (Missouri-Continuation)

State	Name	Segments of Primary and Secondary Routes within one mile of unit	Average Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
MISSOURI	Big Muddy National Fish and Wildlife Refuge	I-70 / US Hwy 40 by Boonville	Good	33,839	239
		US Hwy 71	Fair	73,392	147
		State Hwy 1	Poor	24,335	157
		I-435 north of Hwy 210	Fair	64,174	99
		US Hwy 24 between State Hwy 41 and 11	Poor	1,975	3
		State Hwy 291 north of State Hwy 210	Very good	19,954	22
		State Hwy 179 south of I-70	Very poor	910	5
		State Hwy 122	Very poor	223	N/A
		State Hwy 210 between I-435 and Hwy 291	Poor	13,681	54
		State Hwy 141	Very poor	20,690	50
		I-670	Very poor	61,208	214
		I-29 / US Hwy 71 north of State Hwy 210	Poor	65,994	248
		US Hwy 24 west of State Hwy 224	Fair	3,748	6
		US Hwy 56	N/A	12,986	43
		US Hwy 24 east of State Hwy 129	Poor	3,100	7
		I-35 east of Hwy 29	Good	68,634	64
		US Hwy 40 east of State Hwy 5	Good	1,872	13
		State Hwy 33 / US Hwy 69	Very poor	14,615	22
		State Hwy 100 west of Hwy 89	Poor	550	2
		State Hwy Bb	Good	738	5
		State Hwy 139	Poor	414	2
		State Hwy 131	Very poor	4,341	6
		US Hwy 65 north of Hwy 24	Fair	3,600	9
		I-70 intersecting I-270	Fair	148,056	508
		US Hwy 24 east of I-495	Fair	18,944	110
		US Hwy 54 south of State Hwy 94	Fair	52,757	103
		State Hwy 98	Poor	595	2
		State Hwy 240 north of US Hwy 40	Good	1,999	6

Table 10 . Non-Service Road Condition, Use, and Safety Hotspots (Missouri-Continuation)

State	Name	Segments of Primary and Secondary Routes within one mile of unit	Average Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
MISSOURI	Big Muddy National Fish and Wildlife Refuge	State Hwy 180	Poor	28,354	113
		Hwy F	Very poor	1,740	<1
		US Hwy 24 east of Hwy 65	Very poor	2,578	2
		US Hwy 24 between State Hwy 13 and 65	Very good	1,836	9
		US Hwy 69 between Hwy 169 and Hwy 1	Fair	14,702	147
		State Hwy 364	Fair	58,136	65
		I-435 south of Hwy 210	Fair	82,545	499
		State Hwy 240 Bus	Poor	774	<1
		State Hwy 210 between Hwy 9 and I-29	N/A	10,514	155
		US Hwy 63 / State Hwy 94	Fair	18,512	32
		State Hwy 100 east to Mo Kk to Hwy T	Fair	14,328	105
		I-29 / US Hwy 71 south of State Hwy 210	Poor	72,054	310
		State Hwy 5 intersecting Hwy 40	Fair	5,366	64
		State Hwy 210 between Hwy 291 and Co Rd N	Good	6,454	34
		I-70 west of Hwy 169	Poor	68,318	25
		US Hwy 24 west of State Hwy 7	Good	8,213	13
		State Hwy W	Very poor	212	1
		State Hwy 89	Very poor	1,121	1
		US Hwy 40 intersecting I-435	Good	12,184	54
		State Hwy 100 between Sprecklemeyer Rd and Grant Ln	Very poor	4,225	6
		I-70 / I-35	Fair	79,980	187
		Us Hwy 24 east of State Hwy 11 to 129	Poor	1,494	19
		State Hwy 210 east of Co Rd N	Fair	7,280	10
		State Hwy 94 between Hwy 54 and Hwy 19	Very poor	2,162	35
		State Hwy 100 between Hwy 89 and Hwy 19	Very poor	2,500	27
		US Hwy 24 between Hwy 9 and I-435	N/A	16,945	327
		US Hwy 54 north of State Hwy 94	Fair	24,840	16
		State Hwy 87 south of Hwy 179	Very poor	1,092	3
		State Hwy 94 south of State Hwy 370	Fair	6,121	43

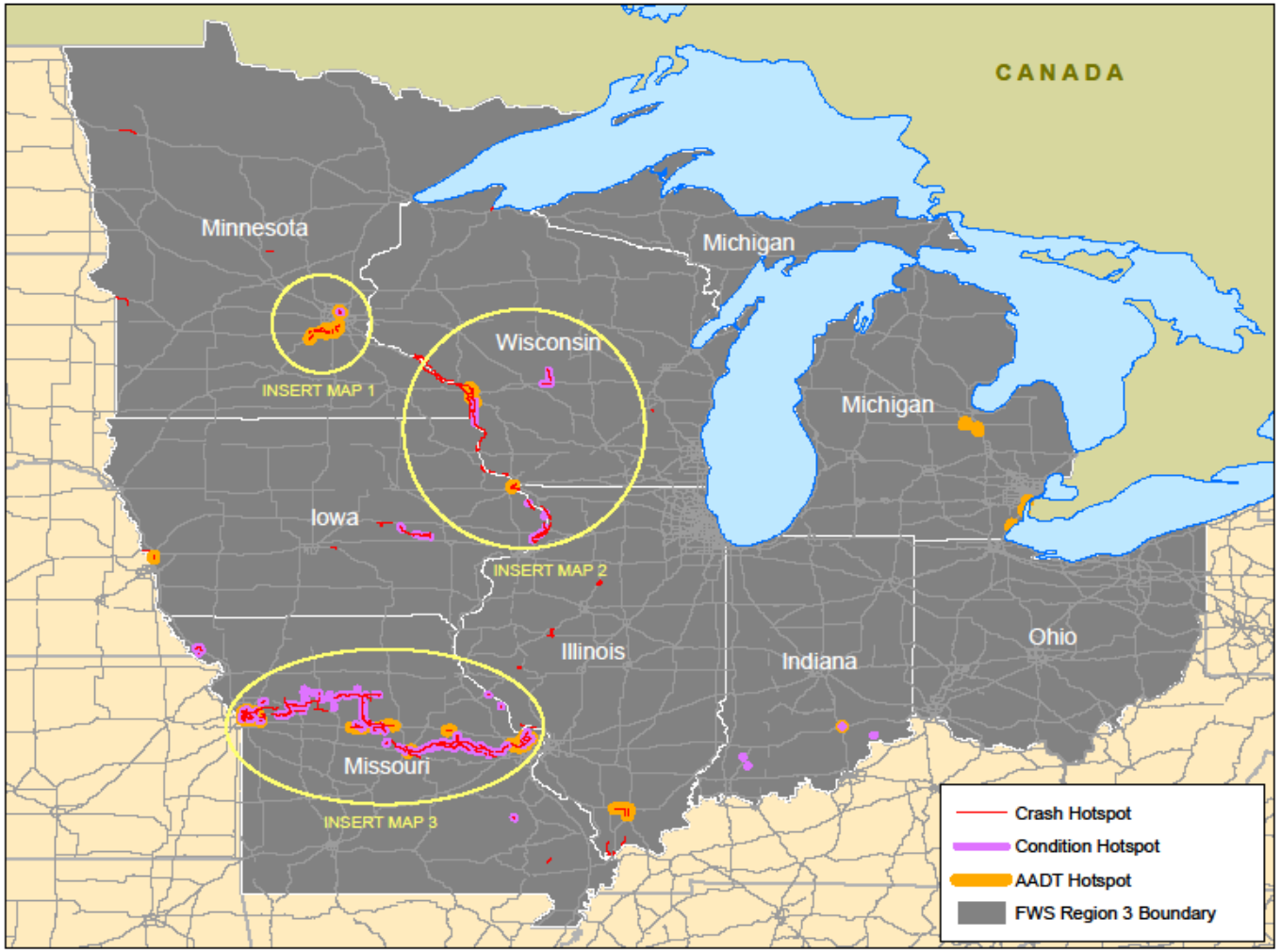
Table 11 . Non-Service Road Condition, Use, and Safety Hotspots (Missouri-Continuation)

State	Name	Segments of Primary and Secondary Routes within one mile of unit	Average Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
MISSOURI	Big Muddy National Fish and Wildlife Refuge	State Hwy 41 north of I-70	Poor	712	13
		State Hwy 179 west of Route T	Fair	1,200	9
		State Hwy 370 east of Hwy 94	Fair	50,884	66
		State Hwy 47	Very poor	3,651	88
		US Hwy 65	Good	3,410	12
		State Hwy 179 east of Route T	Poor	2,391	26
		US Hwy 65 between State Hwy 10 and 24	Good	2,672	9
		State Hwy 94 east of Hwy 47	Very poor	1,622	61
		State Hwy 129	Fair	936	5
		US Hwy 24 intersecting Hwy 131	Very poor	3,984	10
		I-64 / US Hwy 61 / US Hwy 40	Good	86,456	195
		State Hwy 12	Poor	10,740	52
		State Hwy 210 between I-29 and I-435	Poor	27,943	244
		State 78 west of State Hwy 7	Good	3,171	16
		State Hwy 100 between State Hwy 19 and Berger Rd	Poor	4,022	15
		State Hwy 87 south of Hwy 70	Very poor	1,970	3
		State Hwy 94 north of State Hwy 370	Poor	5,024	53
		State Hwy 7 between US Hwy 24 and Hwy 78	Very good	5,332	15
	Clarence Cannon NWR	State Hwy 79	Poor	1,600	1
	Mingo NWR	State Hwy 51	Fair	1,850	9
	Pilot Knob NWR	State Hwy 21	Poor	9,876	16
	Squaw Creek NWR	I-29	Poor	13,556	10
		State Hwy 111	Poor	746	<1
		State Hwy 118	Poor	690	3

Table 12 . Non-Service Road Condition, Use, and Safety Hotspots (Wisconsin)

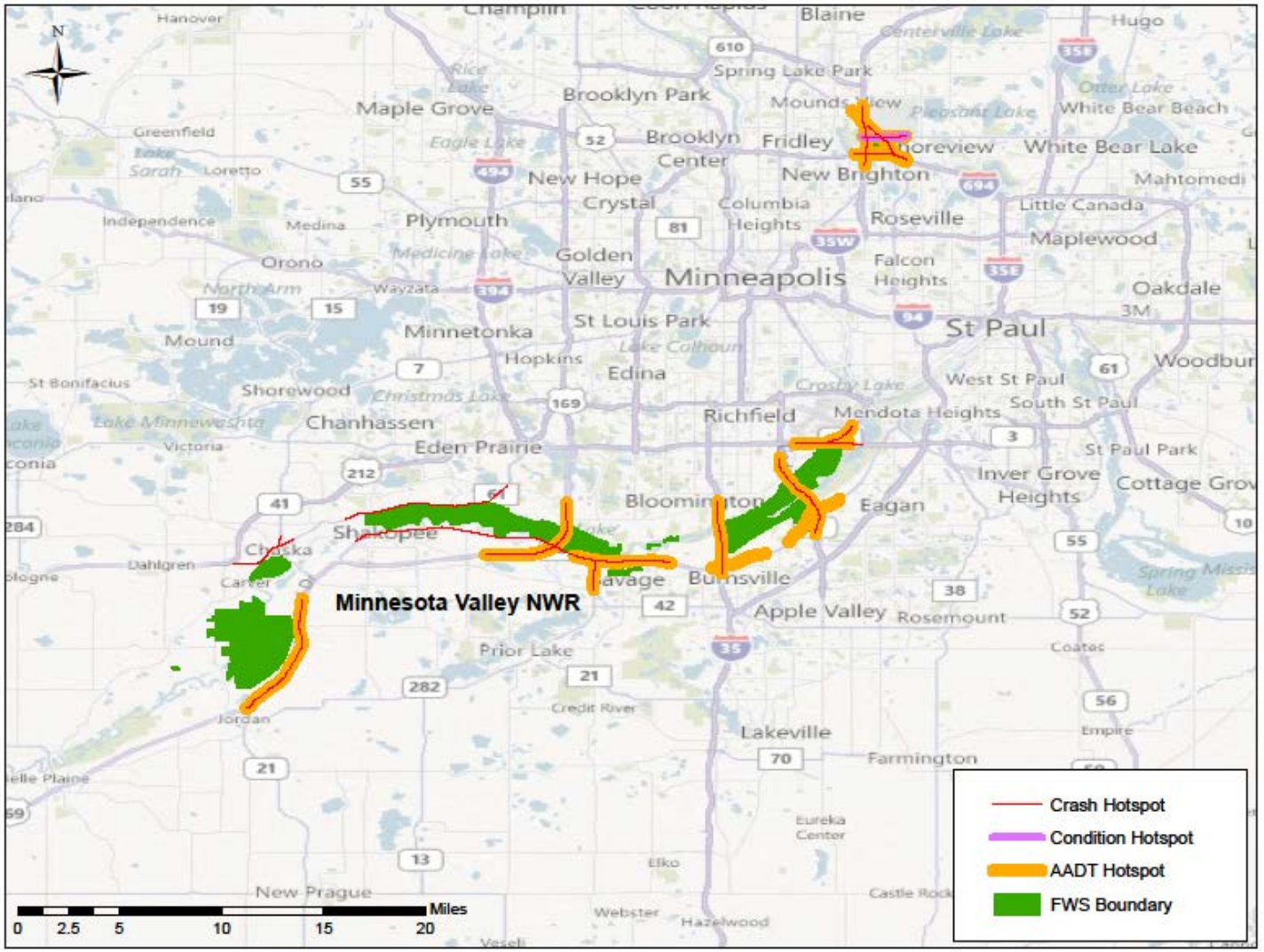
State	Name	Segments of Primary and Secondary Routes within one mile of unit	Average Condition for segment of route within one mile of unit	AADT	Annual Average number of crashes on Route segment
WISCONSIN	Horicon NWR	State Hwy 49	Fair	4,100	5
	LaCrosse District	I-90	N/A	24,900	49
		State Hwy 16	Excellent	5,400	37
		State Hwy 35 between Hwy 53 and I-90	Fair	16,000	107
		State Hwy 35 north of Co Rd Xx	Excellent	4,150	6
		US Hwy 14/61	Good	24,600	151
		US Hwy 53	Good	21,500	28
		US Hwy 53/3rd St	Fair	15,000	54
		US Hwy 53 between Hwy 61 and I-90	Good	31,200	139
		US Hwy 61	Excellent	20,000	9
	Necedah NWR	State Hwy 80	Poor	1,100	9
		State Hwy 21	Poor	6,600	8
	Mc Greggor District	State Hwy 133 at State Rd 81	Good	2,100	8
		State Hwy 133 south of Co Rd U	Fair	940	10
		State Hwy 35 north of Hwy 82	Poor/Fair	5,900	59
		State Hwy 35 south of Hwy 82	Very good	3,000	25
		US Hwy 18	Fair	9,500	8
	Savanna District	US Hwy 151	Fair	19,200	20
	Winona District	State Hwy 35 east of Hwy 25	Good	4,500	60
		State Hwy 43	Fair	10,600	7
	Whittlesey Creek NWR	US Hwy 2	Poor	7,200	7
		State Hwy 13	Poor	6,450	7

*Note: **Orange highlight means meets hotspot criteria of AADT 20,000 or higher, five or more crashes, or road conditions of poor or worse. Red highlight means locations where (Crashes/AADT)*1000>=5.00**. See appendix C for more details. **Routes**: Iowa DOT, Illinois DOT, Indiana DOT, Michigan DOT; Minnesota DOT; Missouri DOT; Wisconsin DOT; NHPN (2008); **Condition**: Iowa DOT (2009), Indiana DOT (2007) ; Minnesota DOT (2009-2010); Missouri DOT (2011); Wisconsin DOT (2007-2010); **AADT**: Iowa DOT (2009), Illinois DOT (2009), Indiana DOT (2007), Michigan DOT (2009); Minnesota DOT (2009); Missouri DOT (2010); Wisconsin DOT (2005-2010); NHPN (2008); **Crashes**: Iowa DOT (2006-2010); Illinois DOT (2006-2010); Indiana DOT (2006-2010), Michigan DOT (2006-2009); Minnesota DOT (2006-2010); Missouri DOT (2006-2010); Wisconsin DOT (2005-2009).*



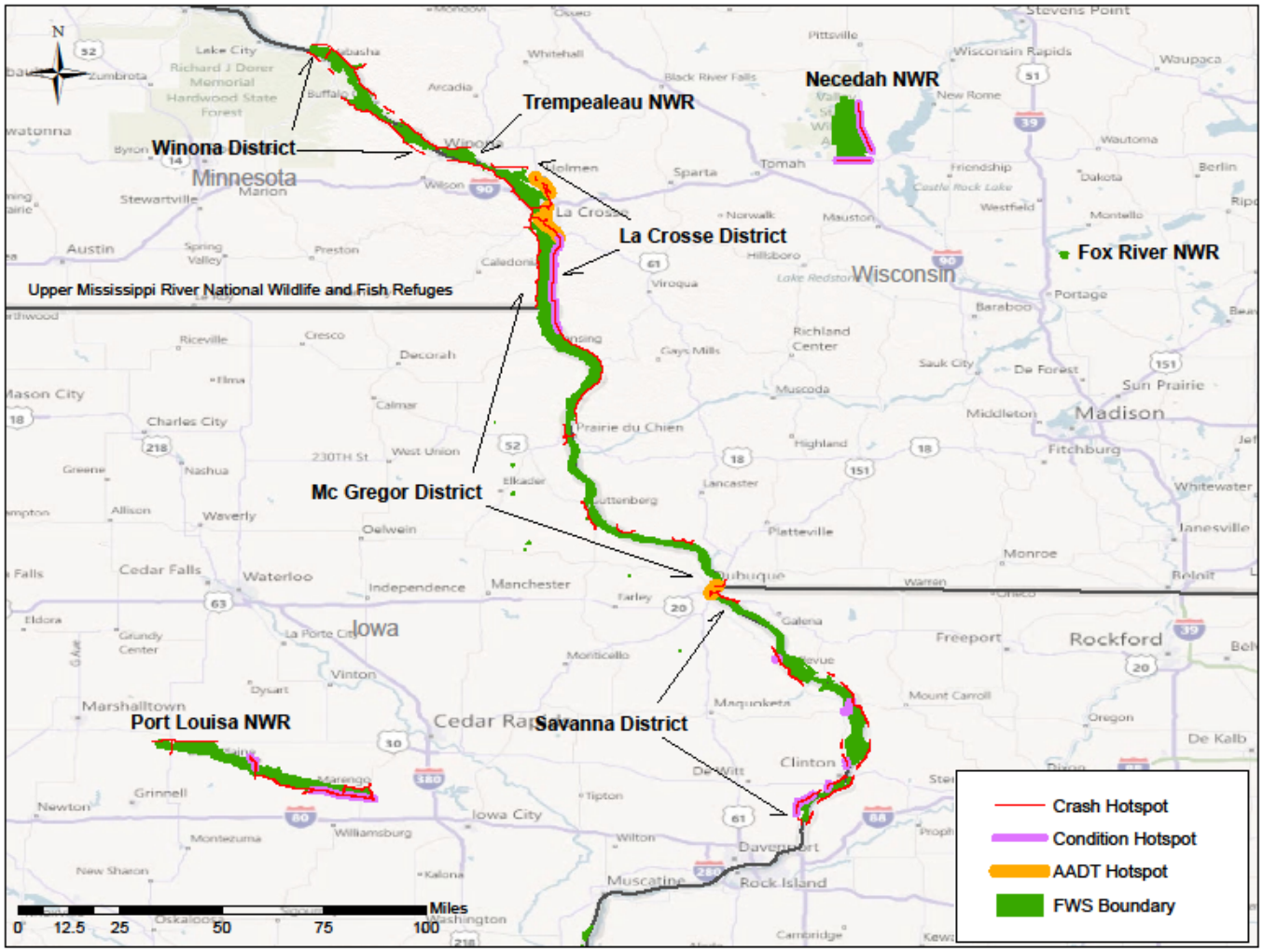
***Routes**: Iowa DOT, Illinois DOT, Indiana DOT, Michigan DOT; Minnesota DOT; Missouri DOT; Wisconsin DOT; NHPN (2008); **Condition**: Iowa DOT (2009), Indiana DOT (2007) ; Minnesota DOT (2009-2010); Missouri DOT (2011); Wisconsin DOT (2007-2010); **AADT**: Iowa DOT (2009), Illinois DOT (2009), Indiana DOT (2007), Michigan DOT (2009); Minnesota DOT (2009); Missouri DOT (2010); Wisconsin DOT (2005-2010); NHPN (2008); **Crashes**: Iowa DOT (2006-2010); Illinois DOT (2006-2010); Indiana DOT (2006-2010), Michigan DOT (2006-2009); Minnesota DOT (2006-2010); Missouri DOT (2006-2010); Wisconsin DOT (2005-2009).*

Figure 8. Non-Service Road Hotspots within one mile of Service Units in Region 3



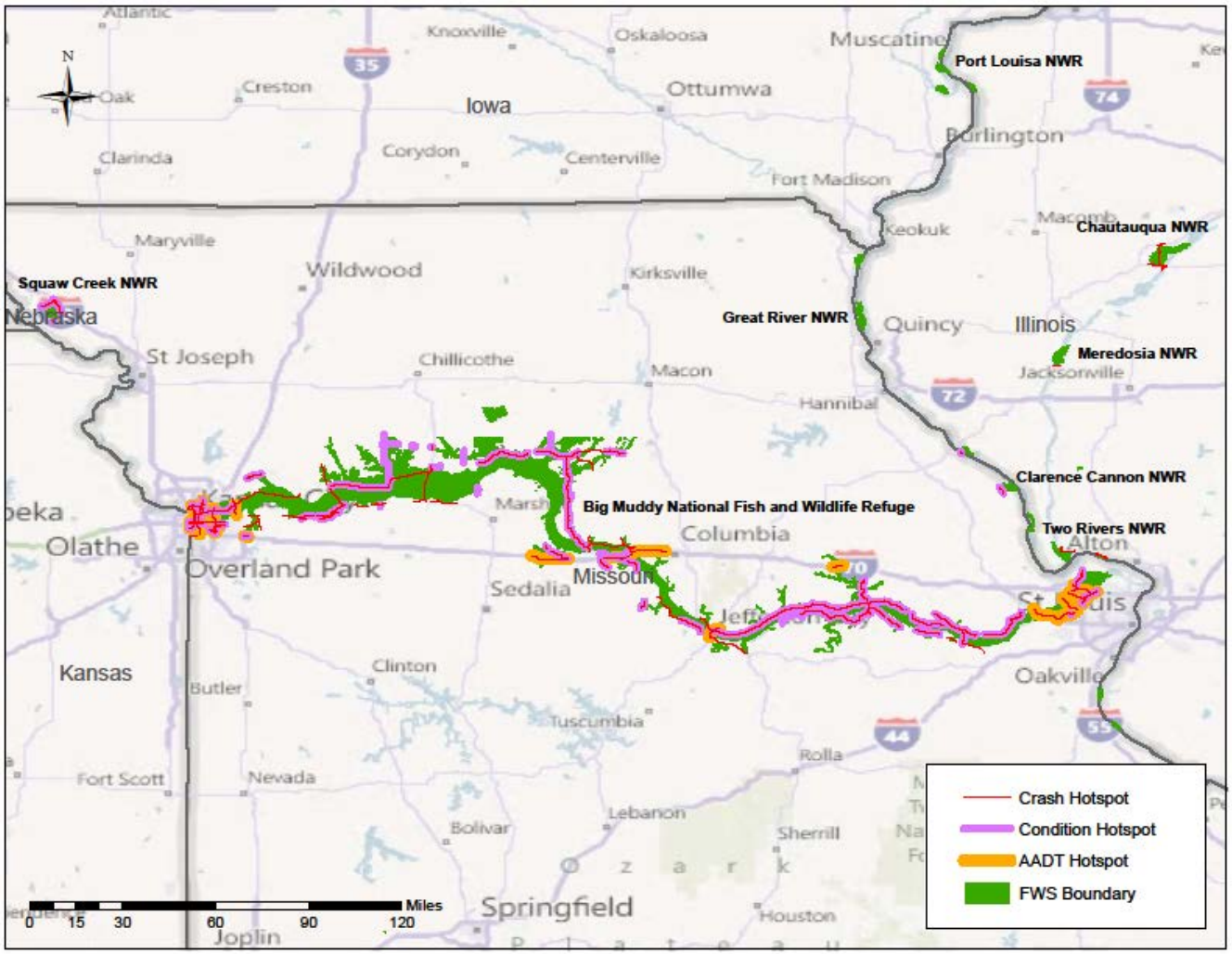
***Routes**: Iowa DOT, Illinois DOT, Indiana DOT, Michigan DOT; Minnesota DOT; Missouri DOT; Wisconsin DOT; NHPN (2008); **Condition**: Iowa DOT (2009), Indiana DOT (2007) ; Minnesota DOT (2009-2010); Missouri DOT (2011); Wisconsin DOT (2007-2010); **AADT**: Iowa DOT (2009), Illinois DOT (2009), Indiana DOT (2007), Michigan DOT (2009); Minnesota DOT (2009); Missouri DOT (2010); Wisconsin DOT (2005-2010); NHPN (2008); **Crashes**: Iowa DOT (2006-2010); Illinois DOT (2006-2010); Indiana DOT (2006-2010), Michigan DOT (2006-2009); Minnesota DOT (2006-2010); Missouri DOT (2006-2010); Wisconsin DOT (2005-2009)*

Figure 9. Minnesota Valley NWR – Hotspots



***Routes**: Iowa DOT, Illinois DOT, Indiana DOT, Michigan DOT; Minnesota DOT; Missouri DOT; Wisconsin DOT; NHPN (2008); **Condition**: Iowa DOT (2009), Indiana DOT (2007) ; Minnesota DOT (2009-2010); Missouri DOT (2011); Wisconsin DOT (2007-2010); **AADT**: Iowa DOT (2009), Illinois DOT (2009), Indiana DOT (2007), Michigan DOT (2009); Minnesota DOT (2009); Missouri DOT (2010); Wisconsin DOT (2005-2010); NHPN (2008); **Crashes**: Iowa DOT (2006-2010); Illinois DOT (2006-2010); Indiana DOT (2006-2010), Michigan DOT (2006-2009); Minnesota DOT (2006-2010); Missouri DOT (2006-2010); Wisconsin DOT (2005-2009)*

Figure 10. Hotspots in some units in Minnesota, Wisconsin and Iowa



***Routes**: Iowa DOT, Illinois DOT, Indiana DOT, Michigan DOT; Minnesota DOT; Missouri DOT; Wisconsin DOT; NHPN (2008); **Condition**: Iowa DOT (2009), Indiana DOT (2007) ; Minnesota DOT (2009-2010); Missouri DOT (2011); Wisconsin DOT (2007-2010); **AADT**: Iowa DOT (2009), Illinois DOT (2009), Indiana DOT (2007), Michigan DOT (2009); Minnesota DOT (2009); Missouri DOT (2010); Wisconsin DOT (2005-2010); NHPN (2008); **Crashes**: Iowa DOT (2006-2010); Illinois DOT (2006-2010); Indiana DOT (2006-2010), Michigan DOT (2006-2009); Minnesota DOT (2006-2010); Missouri DOT (2006-2010); Wisconsin DOT (2005-2009)*

Figure 11. Big Muddy National Fish and Wildlife Refuge - Hotspots

Figure 12 illustrates an example that there is a possible deficiency in the transportation system condition and safety within, and possibly to, Crab Orchard National Wildlife Refuge, in Illinois. Baseline data suggest that Crab Orchard is a reasonable candidate for road improvements. The first table below indicates that 43 percent of the refuge's roads are rated fair or worse. Table 5 to Table 12 show the non-service routes accessing the refuge have high AADT (above 20,000) and crashes (more than 5 per year).

Excerpt from Appendix C (Table 112)

Service Unit	Surface	Condition	Miles	% in Unit
Crab Orchard NWR	Concrete	Good	0.10	0%
		Fair	2.25	2%
		Poor	1.42	1%
	Asphalt	Excellent	2.24	2%
		Good	1.60	1%
		Fair	29.99	23%
		Poor	11.68	9%
	Gravel	Excellent	10.64	8%
		Good	50.48	38%
		Fair	4.91	4%
		Poor	0.51	0%
	Native	Good	9.68	7%
		Fair	3.83	3%
	Primitive	Good	0.94	1%
		Fair	2.19	2%
		Poor	0.08	0%

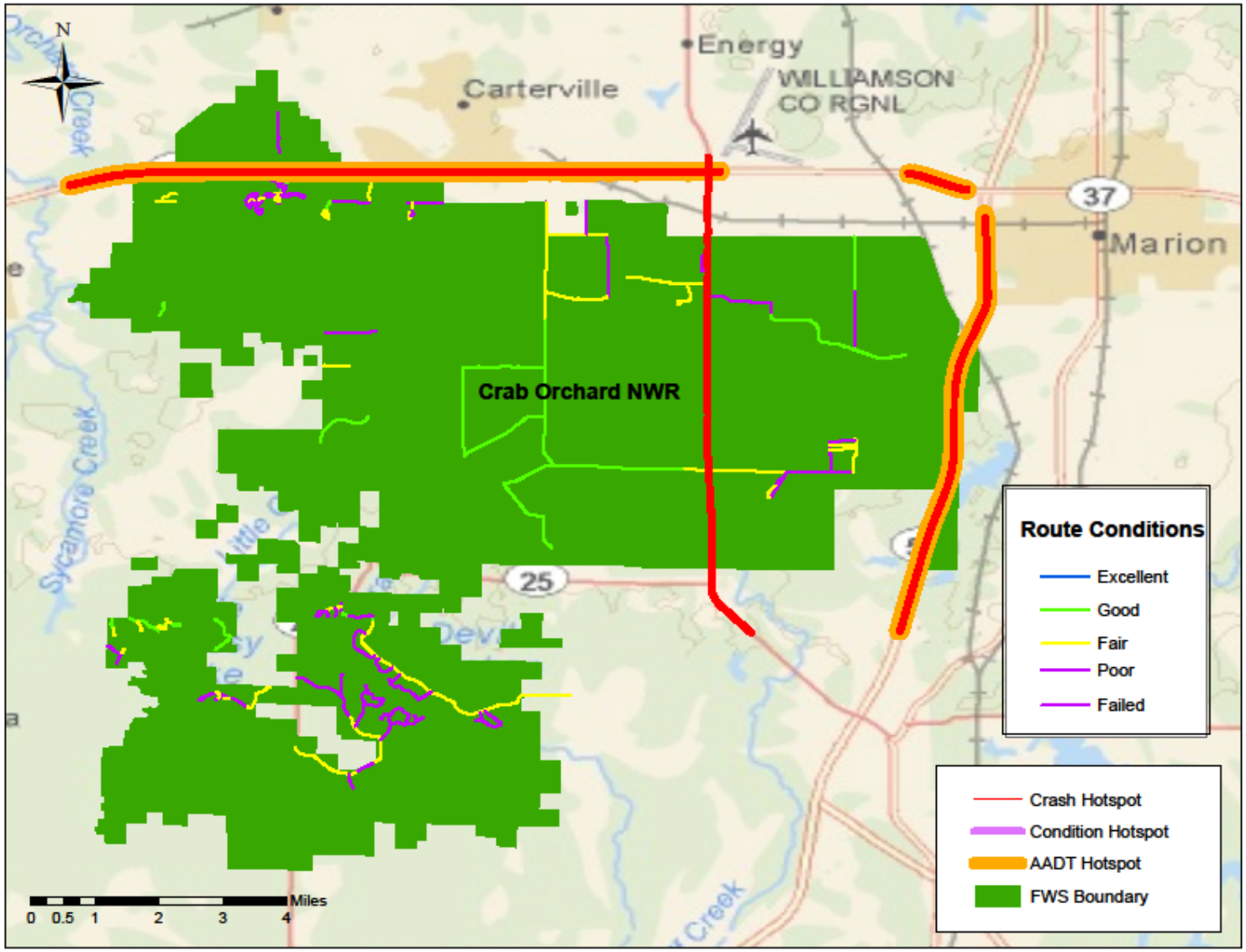


Figure 12. Crab Orchard NWR - Hotspots

At the unit level, it was found that:

- Minnesota Valley NWR & WMD faces a major challenge when it comes to congestion on roads within and leading to the unit.
- There are three units that face major challenges when it comes to bus parking: Mc Gregor District/Driftless Area, Big Oaks NWR and Squaw Creek NWR.
- 28% of units perceive having a lack of safe pedestrian access.
- 25% of units perceive the road conditions surrounding the unit are not as safe as needed.
- Approximately 16 % of units expressed a need of turning lanes to provide a safer access to their visitor centers. From those units, 62% may benefit from a right turn lane and 38% from a left turn lane.

2.2.3 Recommendations for Future Analysis

Several actions are necessary to better evaluate the need for conditions and safety improvements.

The following actions are recommended:

- Obtain AADT estimates for all Service roads on a regularly scheduled basis to help quantify use and add to the meaningfulness of need determinations.
- Collect crash data for all Service roads to help identify areas in need of safety improvements.
- Obtain complete current replacement value, asset priority index, facility condition index, and deferred maintenance for all refuge and hatchery roads, parking lots, and trails to eliminate data gaps and improve the reliability of need determinations.
- Develop a better cross-compatibility between SAMMS and RIP generated information for roads, parking lots, and trails to eliminate data gaps and increase the reliability and usefulness of need and hotspot analyses.
- Use a complete dataset of adjacent non-Service road use, condition, and crashes to eliminate data gaps in the determinations of improvement need and partnership opportunity.
- Analyze crash data on a crash/mile count basis.
- To better understand the benefits of ATS for high-visitation units, compare the safety conditions and maintenance costs between roadways with and without transit (shuttle buses).

2.3 WELCOME AND ORIENTATION

The LRTP welcome and orientation of visitors goal is, "**Develop and maintain a transportation network that enhances the welcoming and orienting experience of visitors**." This goal will be met through the collaboration of transportation and visitor services professionals at the unit, regional and national level. The following objectives and strategies serve to provide a framework for the goal.

Objective 1

Provide public information to enable visitors to easily get to refuges and hatcheries and to use its sites. Strategies for this objective are:

- Identify appropriate locations in the transportation system to place entrance, directional, and boundary signs to improve visitor way-finding to and within refuges and hatcheries.
- Increase use of traveler information systems, such as 511 and variable message signs, to transmit safety, interpretive and special events management information.

Objective 2

Engage the visitor with compelling information to better understand the National Wildlife Refuge System and Fisheries Program purpose of wildlife conservation and to enjoy natural resources. The strategies for this objective are:

- Develop signage with positively worded regulations and information to create a relaxed and welcoming atmosphere.

Figure 13. Visitor Information kiosk at Necedah National Wildlife Refuge.

Objective 3

Integrate interpretation, education, and stewardship into the transportation experience.

- Provide interpretation – recorded or in person – on self-guided or guided tours or shuttle rides.

Objective 4

Create a consistent and recognizable identity throughout all Service units through the use of standard materials for readily observed physical elements associated with the transportation system. Strategies for this objective are:

- Replace substandard entrance, regulatory, and interpretive signs to adhere to Service wide standards when located adjacent to a transportation improvement project.
- Develop and apply standards for landscape treatments to create a recognizable appearance to Service-owned parking lots, tour routes, pull-offs that serve as trailheads or boat launches.

2.3.1 Welcome and Orientation Data

Welcoming and orientation to visitors' data is analyzed with the assumption that opportunities for enhancing this goal are greatest in places that receive the highest number of visitors. Visitation and population data is used to identify appropriate opportunities. Population estimates and forecasts are derived from the U.S. Census while visitation data is reported by the Service.

Wildlife observation and bird watching specifically, are the primary visitor activities at most units. Historically, hunting and fishing were extremely popular in the region, and while they remain significant activities at many units, hunters have decreased in recent years. Visitors are seeking more active recreation on NWRs in the region. Reports of hiking and bicycling on refuges have increased in the past few years; many residents of adjacent communities visit refuges regularly for walking, jogging, cycling, and other exercise. The increased active recreation use may be due to urban development approaching refuge boundaries, which puts refuges in closer proximity to people's homes or workplaces.

As illustrated on Table 13, visitation to refuges and hatcheries in Region 3 varies greatly, from less than 100 average annual visits at several units, to 1.5 million average annual visits at the McGregor District of Upper Mississippi National Fish and Wildlife Refuge. Table 5 also summarizes visitation trends to Region 3 Service lands based on a comparison of changes in observed visitation from 2005 to 2010. Units that experience higher levels of visitation are generally located near more populous urban locations, as shown in Table 15**.** Figure 16 shows visitation data by unit and U.S. Census county level population estimates for 2010.

Figure 14. Overlook at Upper Mississippi River National Wildlife and Fish Refuge.

Table 13 indicates 2010 annual visitation levels as well as relative change in visitation from 2005 to 2010. Change in visitation is generally positive throughout the region. While data indicate that the number of visits to Service lands for the entire region had an average annual increase in visitation of six percent, from 2005 to 2010, some units had observed visitation increases over this time period of approximately 10, 15 and 20 percent, at the Seney NWR, Minnesota Valley WMD and Muscatatuck NWR, respectively, among others.

Region 3 has built six new visitor centers between 2006 and 2011, with three visitor centers under construction and one additional interpretive center planned and funded. The units with new visitor centers expect to receive significant increases in visitation, especially from school groups, which will have implications for unit management and staff capacity to run educational programs. Several of these units that may not have had high visitation in the past may need to consider high visitation, and associated transportation challenges, in the near future.

Population changes in the counties overlapping Service units have increased five percent, on average, from 2000 to 2010. A change in population is typically a good indicator of changes in refuge visitation. According to U.S. Census forecasts, population is expected to increase an average of four percent by 2030 in counties overlapping Service lands in Region 3. Table 121 in Appendix C summarizes the observed population increases from 2000 to 2010 in relevant counties as well as U.S. Census 2030 population forecasts, interpolated to the county level from state level Census projections.

Figure 15. Visitor Center at Necedah National Wildlife Refuge.

Besides serving as a contextual tool, population projections serve as a cross check when considering the need to undertake visitor facility enhancement projects.

Currently, 28 units were identified as needing additional capacity to accommodate existing and future visitors for re-occurring event throughout the year. Approximately 21 of those units are already using overflow lots on-site to handle parking during big events and seven of them handle heavy visitation through partnerships' off-site parking use. Table 14 shows all identified event occurring on a regular basis throughout the year in the refuges and fisheries in Region 3. Appendix J- Alternative Transportation and Strategies, provides more insight on the relationship between visitation and transit and multimodal considerations.

The assumptions discussed below for identifying visitor facility improvement areas assume that relative differences in visitation levels between Region 3 units remain the same for future years. Population forecasts are used to confirm that population change is similar for Region 3 units. That is, some declines are expected in places that could potentially receive transportation improvements. According to Appendix C, Table 121, four counties with Service units are anticipated to experience notable negative growth into the future based on recently observed trends, while seven counties are projected to show more than 15 percent positive growth.

For the purposes of this LRTP development process, "transportation hubs" are defined as populous areas serving as the nearest major metropolitan area to the wildlife refuges and hatcheries within Region 3. These hubs likely generate the majority of visitor traffic to a refuge or hatchery. Gateway communities are identified as the small towns or communities near a refuge or hatchery that channel most traffic into a refuge or hatchery. Locations within five miles of a gateway community may have high potential for non-motorized connections for many users groups. Locations within 10-15 miles may have potential for non-motorized connections for more serious cyclists. When visitation to a unit is high, these gateway communities experience higher traffic volumes and may reap the economic benefits of increased visitation. High visitation units (those experiencing more than 100,000 average annual visits) are highlighted in red in Table 13. These units are most likely to benefit the greatest number of visitors through improvements. Transportation hubs and gateway communities are summarized in Table 15. Distance and population variables are weighed against each other so that communities identified are not always the closest or the most populated, but are rather a combination of the two. Gateway communities of the greatest interest are those associated with units receiving high levels of visitation. Transportation hubs are more likely to include public transportation systems that offer transit service to or near units. Gateway communities often have residential neighborhoods, schools, and/or businesses in close proximity to units, allowing pedestrian or bicycle access to units as well. Both transportation hubs and gateway communities may include non-motorized trail networks that currently or could potentially accommodate non-motorized access to units.

1 Based on units that have data for all six years. Eighty-one percent of units have visitation for all years.

Table 13 . 2010 Visitation by Unit

State	Units	2010	Relative Change
IOWA	Boyer Chute NWR	15,000	-
	DeSoto NWR	175,445	-
	Driftless Area NWR	3,700	NA
	Iowa WMD	65,318	+
	McGregor District	1,500,000	+
	Neal Smith NWR	132,629	-
	Port Louisa NWR	25,000	-
	Union Slough NWR	6,370	+
ILLINOIS	Chautauqua NWR	8,200	NA
	Crab Orchard NWR	716,916	+
	Cypress Creek NWR	28,000	+
	Emiquon NWR	5,780	NA
	Meredosia NWR	7,200	+
	Savanna District	367,073	-
	Two Rivers NWR	7,519	-
	Upper Mississippi River NWR	0	NA
	Middle Mississippi River NWR	135,000	-

State	Units	2010	Relative Change
MINNESOTA	Agassiz NWR	22,950	+
	Big Stone NWR	20,000	+
	Big Stone WMD	1,850	+
	Crane Meadows NWR	9,669	+
	Detroit Lakes WMD	30,000	NA
	Fergus Falls WMD	123,000	+
	Glacial Ridge NWR	1,842	+
	Hamden Slough NWR	6,000	NA
	Litchfield WMD	58,000	NA
	Mille Lacs NWR	0	NA
	Minnesota Valley NWR	300,000	+
	Minnesota Valley WMD	35,000	+
	Morris WMD	73,602	-
	Northern Tallgrass Prairie NWR	1,925	-
	Rice Lake NWR	23,100	-
	Rydell NWR	6,940	+
	Sherburne NWR	75,633	+
	Tamarac NWR	65,000	+
	Windom WMD	28,097	+
	Winona District	796,000	+

Source: FWS Staff, 2010

State	Units	2010	Relative Change
MICHIGAN	Detroit River International Wildlife Refuge	3,724	-
	Harbor Island NWR	250	+
	Huron NWR	100	NA
	Kirtlands Warbler WMA	200	NA
	Michigan WMD	456	+
	Seney NWR	70,829	+
	Shiawassee NWR	53,270	-
OHIO	Cedar Point NWR	600	NA
	Ottawa NWR	182,538	+
MISSOURI	Big Muddy National Fish and Wildlife Refuge	26,268	-
	Clarence Cannon NWR	22,000	NA
	Great River NWR	12,500	+
	Mingo NWR	104,777	-
	Pilot Knob NWR	165	+
	Squaw Creek NWR	221,021	-
	Swan Lake NWR	29,000	-

State	Units	2010	Relative Change
INDIANA	Big Oaks NWR	7,500	+
	Muscatatuck NWR	173,000	+
	Patoka River NWR	23,900	+
WISCONSIN	Fox River NWR	650	-
	Horicon NWR	428,000	+
	LaCrosse District	675,000	+
	Leopold WMD	36,000	+
	Necedah NWR	103,813	-
	St. Croix WMD	11,000	NA
	Trempealeau NWR	54,250	NA
	Whittlesey Creek NWR	127,011	+

Source: FWS staff, 2010

Table 14 . Special Events throughout the year in Refuges and Fisheries

FWS UNIT	SPECIAL EVENT	DATE	VISITATION (approximate)
Agassiz NWR	Public Duck Banding	Mid-September	150
	Occasional Open House	Spring & Fall	50 to 75
Big Muddy NF & WF	Wings of Spring	May	Several thousand
	Missouri River Cleanup	Varies from unit to unit	1,000 for all cleanup events combined
	Race For The River	September	Several thousand
Big Oaks NWR	Deer hunts	October & November	400/day
	Take a Kid Fishing	July	200
	Outdoor Women at Big Oaks NWR	June	150
Big Stone NWR/WMD	Youth Fishing Day	3rd Saturday in May	300
Clarence Cannon NWR	Youth Fishing Day	N/A	50
	Mobility / Visually Impaired Hunt	N/A	10 hunters, 10 guides
Crab Orchard NWR	Southern Illinois Hunting and Fishing Days	Mid-September	80000
	International Migratory Bird Day	Mid-May	500
Cypress Creek NWR	Cache River Nature Fest	May	1000
	Refuge Week	October	200
Detroit Lakes WMD	Prairie Fun Day	2nd Saturday in August	100-150
	Youth Waterfowl Hunt	N/A	25
Fergus Falls WMD	Return to the Prairie	August	300
	Christmas on the Prairie	December	275
	Marsh Madness	March	265
Genoa National Fish Hatchery	Open Houses, Fishing days	February & May	300
	Disabled Fishing Events	December	Varies
Horicon NWR	Horicon Marsh Bird Festival	2nd week of May	11000
	Horicon Marsh 5k Run/walk	October	655
	National Wildlife Refuge Celebration	October	10000
Illinois River NWFR	Lake Festival	Varies	500
	International Migratory Bird Day	Varies	100
Iron River NFH	Annual Open House	September	300
Jordan River NFH	Annual Open House	July & August	500
	Fall Festival	October	700

FWS UNIT	SPECIAL EVENT	DATE	VISITATION (approximate)
	Winter Bean Pot	February	400
Litchfield WMD	Habitat Day	April on a Saturday	300
McGregor District/Driftless Area	River Fest,	Spring & Summer	750
	Mississippi River Adventure Days (Pools 9 and 10)	Spring & Summer	280
	Volunteer banquet	Varies	150
Middle Mississippi River NWR	Annual Partnership Events		200-1000
Mingo NWR	Eagle Days	February	1000 - 2000
Minnesota Valley NWR & WMD	Kids Birding Day,	Early May	400
	Fishing Day	Early May	300
	Public Lands Day	September	300
Morris WMD	Prairie Pioneer Days	2nd Saturday in July	300
	2nd Grade Field Day	October	125
Muscatatuck NWR	Wings Over Muscatatuck Bird Festival	Second Saturday in May	1,000 (weather related)
	Wetland Day	Mid-March	400-500
	Log Cabin Day	Saturday of National Wildlife Refuge Week	800
Neosho NFH	Kids fishing derby, Elderly/Physically disabled fishing outing, Open house	April & June	ALL OVER 5,000
	Friends Picnic	October	200
	Cunty Fair Participation	July	5000
Pendills Creek/Sullivan Creek NFH's	Children's Fishing Event	June	300 to 400
	Open House Events	Varies	120 -150
Port Louisa NWR	Running Wild	August	100
	Migratory Bird day	May	30
Rice Lake NWR	Family Fun Day	2nd Friday in June	200
	Disabled access deer hunt	2nd weekend in October	60
Rydell NWR	Wolves and their habitat	N/A	150
	Live Animals - Interesting Facts	N/A	150
	Star lab	N/A	125
Savanna District	Mig Bird Day; Kids Fishing Day; GeoCaching;	May; Sept; March	50; 25; 50
	Bird tours	Monthly	20

FWS UNIT	SPECIAL EVENT	DATE	VISITATION (approximate)
	Golf cart tours	Bi-monthly	10
Seney NWR	Kids Fishing Day	2nd week of June	100
	Scout Day	September	100
Sherburne NWR	Wildlife Festival and	September	500 to 1800
	Winter Fest	February	500 to 1800
	Birding, butterfly and wildflower tours	Varies	5 to 50
Shiawassee NWR	Open house	September	600
	Kids Free Fishing Day	June	400
	Wild Goose Chase 5K run	September	150
Squaw Creek NWR	Eagle Days	1st weekend in December	7500
	National Wildlife Refuge Week	2nd week in October	250 to 300
Squaw Creek NWR	Eagle days	December	5000-6000
	Family Day	October	250
	Migratory Bird Day	May	120
St. Croix WMD	Boy Scout Invasive Species Event	October	500
	Nature walks	Summer & Winter	N/A
	Plant a Prairie Plug	May	60
Swan Lake NWR	First Fridays	Spring & Summer	150-350
	Green Wing Day	August	150-300
	Swing the Gates Open	March	200
Tamarac NWR and WMD	Fall Festival	October	300
	Birding Festival	May	250
	School Groups	Varies	100-200
Trempealeau NWR	River Education Days	Mid-May	1000
	International Migratory Bird Day	Mid-May	500
	Hunt for People with Disabilities	October	50
Two Rivers NWR	two rivers family fishing fair	Early June	4500
McGregor District	Mississippi River Adventures Day	Spring	350
La Crosse District	Waterfowl Observation Day	November	400
	IMBD	May	250
	Living Lands and Waters	June	50
Whittlesey Creek	Birding & Nature Festival	Mid-May	2500

FWS UNIT	SPECIAL EVENT	DATE	VISITATION (approximate)
NWR	Kid's Fishing Day	June	600
	Northwoods Adventure Series	June, July and August	300
Windom WMD	Wings on the Prairie	May	400

Table 15 . Transportation Hubs and Gateway Communities

State	Service Unit	2010 Visitation	Transportation Hub			Gateway Community		
			Location	Distance From Unit (miles)	Population	Location	Distance From Unit (miles)	Population
IOWA	Boyer Chute NWR	15,000	Omaha, NE	21	837,925	Fort Calhoun, NE	4	856
	DeSoto NWR	175,445	Omaha, NE	28	837,925	Missouri Valley, IA	8	2,992
	Driftless Area NWR	3,700	La Crosse, WI	62	51,818	McGregor, IA	1	871
	Iowa WMD	65,318	Mason City, IA	56	29,172	Bancroft, IA	6	808
	McGregor District	1,500,000	La Crosse, WI	62	51,818	McGregor, IA	1	871
	Neal Smith NWR	132,629	Des Moines, IA	20	506,902	Prairie City, IA	4	1,365
	Port Louisa NWR	25,000	Muscatine, IA	18	22,697	Wapello, IA	6	2,124
	Union Slough NWR	6,370	Mason City, IA	56	29,172	Bancroft, IA	6	808
ILLINOIS	Chautauqua NWR	8,200	Peoria, IL	54	112,936	Havana, IL	9	3,577
	Crab Orchard NWR	716,916	Marion, IL	6	17,388	Marion, IL	6	17,388
	Cypress Creek NWR	28,000	Marion, IL	35	17,388	Ullin, IL	9	779
	Emiquon NWR	5,780	Peoria, IL	54	112,936	Havana, IL	9	3,577
	Meredosia NWR	7,200	Jacksonville, IL	21	18,940	Meredosia, IL	1	1,041
	Savanna District	367,073	Clinton, IA	16	26,447	Savanna, IL	6	3,542
	Two Rivers NWR	7,519	St. Louis, MO	39	2,892,874	Brussels, IL	4	141
	Middle Mississippi River NWR	135,000	Carbondale, IL	32	26,235	Chester, IL	7	8,400

State	Service Unit	2010 Visitation	Transportation Hub			Gateway Community		
			Location	Distance From Unit (miles)	Population	Location	Distance From Unit (miles)	Population
INDIANA	Big Oaks NWR	7,500	Louisville, KY	61	721,594	Madison, IN	9	12,004
	Muscatatuck NWR	173,000	Louisville, KY	55	721,594	Seymour, IN	6	18,101
	Patoka River NWR	23,900	Evansville, IN	34	121,582	Oakland City, IN	1	2,588
MICHIGAN	Detroit River International Wildlife Refuge	3,724	Detroit, MI	43	910,920	Grosse Ile, MI	3	10,894
	Harbor Island NWR	250	Sault Ste. Marie, MI	n/a	16,542	Drummond, MI	n/a	992
	Huron NWR	100	Houghton, MI	n/a	7,010	Skanee Township, MI	12	482
	Jordan River NFH	21,053	Gaylord, MI	17	3,681	Alba, MI	4	350
	Kirtlands Warbler WMA	200	Traverse City, MI	n/a	14,532	Grayling, MI	n/a	1,952
	Michigan WMD	456	Lansing, MI	6	113,802	East Lansing, MI	3	46,420
	Pendills Creek NFH	1,000	Sault Ste. Marie, MI	35	16,542	Bay Mills Township, MI	1	1,214
	Sullivan Creek NFH	-	Sault Ste. Marie, MI	25	16,542	Superior Township, MI	1	1,329
	Seney NWR	70,829	Manistique, MI	36	3,583	Seney, MI	6	108
	Shiawassee NWR	53,270	Saginaw, MI	8	69,512	Saginaw, MI	8	69,512
	Whitefish Point NWR		Sault Ste. Marie, MI	73	16,542	Paradise, MI/ Whitefish Townhsip, MI	11	588
OHIO	Cedar Point NWR	600	Toledo, OH	17	313,619	Oregon, OH	12	19,355
	Ottawa NWR	182,538	Toledo, OH	22	313,619	Oregon, OH	17	19,355

State	Service Unit	2010 Visitation	Transportation Hub			Gateway Community		
			Location	Distance From Unit (miles)	Population	Location	Distance From Unit (miles)	Population
MINNESOTA	Agassiz NWR	22,950	Thief River Falls, MN	23	8,410	Holt, MN	11	89
	Big Stone NWR	20,000	Ortonville, MN	7	2,158	Odessa, MN	1	113
	Big Stone WMD	1,850	Ortonville, MN	7	2,158	Odessa, MN	1	113
	Crane Meadows NWR	9,669	St. Cloud, MN	32	189,148	Little Falls, MN	9	7,719
	Detroit Lakes WMD	30,000	Detroit Lakes, MN	3	8,268	Detroit Lakes, MN	3	8,268
	Fergus Falls WMD	123,000	Fergus Falls, MN	4	13,471	Fergus Falls, MN	4	13,471
	Glacial Ridge NWR	1,842	Crookston, MN	30	7,869	Erskine, MN	6	437
	Hamden Slough NWR	6,000	Detroit Lakes, MN	8	8,268	Audubon, MN	2	445
	Litchfield WMD	58,000	Litchfield, MN	4	6,562	Litchfield, MN	4	6,562
	Minnesota Valley NWR	300,000	Bloomington, MN	6	3,500,000	Bloomington, MN	6	85,172
	Minnesota Valley WMD	35,000	Bloomington, MN	6	3,500,000	Bloomington, MN	6	85,172
	Morris WMD	73,602	Morris, MN	5	5,068	Morris, MN	5	5,068
	Northern Tallgrass Prairie NWR	1,925	Ortonville, MN	7	2,158	Odessa, MN	1	113
	Rice Lake NWR	23,100	Brainerd, MN	57	82,249	McGregor, MN	6	404
	Rydell NWR	6,940	Crookston, MN	30	7,869	Erskine, MN	8	437
	Sherburne NWR	75,633	St. Cloud, MN	31	189,148	Zimmerman, MN	10	2,851
	Tamarac NWR	65,000	Detroit Lakes, MN	18	8,268	Detroit Lakes, MN	18	8,268
	Windom WMD	28,097	Windom, MN	2	4,490	Windom, MN	2	4,490
	Winona District	796,000	Winona, MN	0	27,069	Winona, MN	0	27,069

State	Service Unit	2010 Visitation	Transportation Hub			Gateway Community		
			Location	Distance From Unit (miles)	Population	Location	Distance From Unit (miles)	Population
MISSOURI	Big Muddy National Fish and Wildlife Refuge	26,268	Columbia, MO	6	145,666	Columbia, MO	6	145,666
	Clarence Cannon NWR	22,000	St. Louis, MO	66	2,892,874	Annada, MO	1	48
	Great River NWR	12,500	St. Louis, MO	66	2,892,874	Annada, MO	1	48
	Mingo NWR	104,777	Poplar Bluff, MO	27	17,096	Puxico, MO	2	1,145
	Neosho NFH	45,000	Joplin, MO	22	49,775	Neosho, MO	0	10,505
	Squaw Creek NWR	221,021	St. Joseph, MO	37	76,222	Mound City, MO	5	1,193
	Swan Lake NWR	29,000	Kansas City, MO	115	475,830	Sumner, MO	3	142
WISCONSIN	Fox River NWR	650	Madison, WI	51	235,626	Portage, WI	12	9,728
	Genoa NFH	21,600	LaCrosse, WI	21	51,818	Genoa, WI	4	263
	Green Bay NWR		Green Bay, WI	90	102,313	Washington Island, WI	3	660
	Horicon NWR	428,000	Oshkosh, WI	40	62,916	Mayville, WI	8	4,902
	Iron River NFH	1,492	Duluth, MN	43	86,918	Iron River, WI	8	1,059
	LaCrosse District	675,000	LaCrosse, WI	6	51,818	LaCrosse, WI	6	51,818
	Leopold WMD	36,000	Madison, WI	36	235,626	Portage, WI	5	9,728
	Necedah NWR	103,813	Tomah, WI	21	8,419	Necedah, WI	6	888
	St. Croix WMD	11,000	St. Paul, MN	35	3,500,000	New Richmond, WI	5	6,310
	Trempealeau NWR	54,250	Winona, MN	10	27,069	Trempealeau, WI	10	1,319
	Whittlesey Creek NWR	127,011	Duluth, MN	68	86,918	Ashland, WI	3	8,620

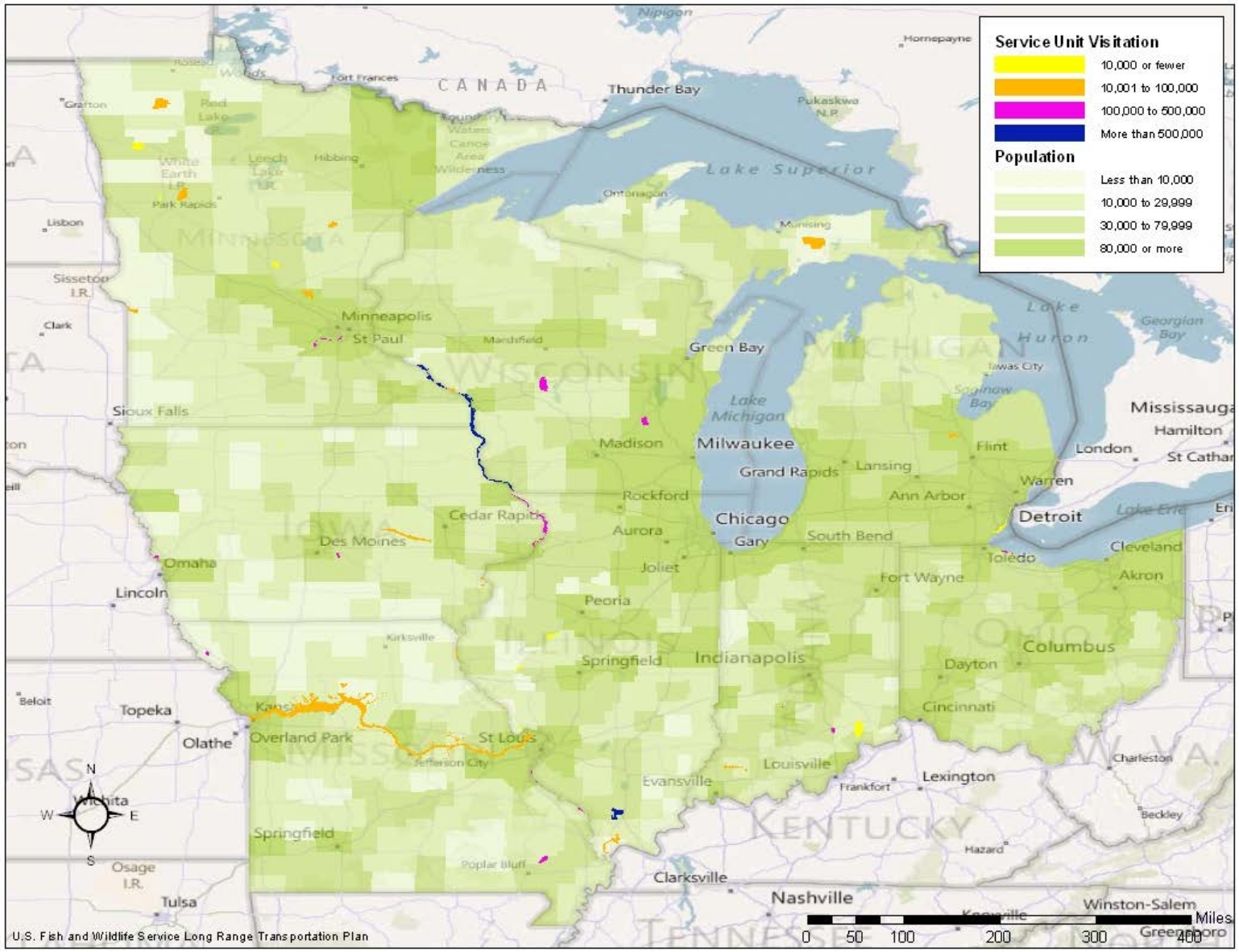


Figure 16. FWS Service units visitation

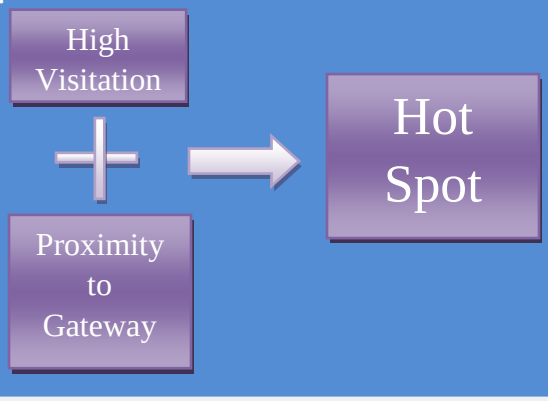
2.3.2 Identifying Visitor Enhancement Improvement Areas

Generally, visitor enhancement related improvements such as signage, way-finding, interpretation and transit/Shuttle buses are most appropriate for units that have, and will continue to have, consistently high levels of visitation – where the greatest number of visitors possible can benefit from the improvements.

Gateway communities are also potential locations for visitor enhancements, particularly as they relate to way-finding, and transit/shuttle buses thereby directing people to the refuge or hatchery. These enhancements can improve ease of travel to and through units, thus improving visitor experience.

To ensure the greatest enhancement value for Region 3, potential improvements decisions should be focused on high visitation units, which are identified as those units having over 100,000 average annual visits. Within this subset, larger gateway communities have the added benefit of potentially tying into existing non-Service traveler information systems (such as 511 services and variable message signs). Gateway communities that serve multiple Service lands may also offer added value and opportunities to address multiple needs though in one improvement. For refuges with lower visitation (less than 100,000) and in close proximity to gateway communities, low cost trail and signage improvements may be also a good opportunity to enhance the visitor experience.

Baseline condition analysis helps identify areas, or hotspots, that could potentially benefit the most from visitor enhancement improvements. As discussed in the previous section, these improvement hot-spots are tied primarily to visitation, as well as proximity to populated areas. Hot-spots are places that have high values for all of these variables. In the baseline condition summary, these are assumed to be places with over 100,000 visits in Table 13 and the communities identified in Table 15. An example of a hot spot for visitor enhancement improvements is Minnesota Valley National Wildlife Refuge. The refuge receives a high level of visitation (300,000 average annual visits) and is located in an area expecting future population growth (22 percent by 2030). The refuge is located within five of the seven counties part of the Twin Cities Metropolitan Area (with a population of 2,850,000 in 2010_1). These indicators suggests that visitor enhancement improvements would reach a large number of people, and that improvements at gateway communities may potentially tie into existing traveler information systems.



2.3.3 Recommendations for Future Analysis

Several datasets are necessary to better evaluate opportunities for visitor experience related transportation improvements, including:

- Identify where state way-finding and variable message sign are located to assist in identifying areas of possible partnership.
- Develop and implement a regional or national sign inventory that includes sign location, condition, and adherence to Service sign standards and the FHWA developed Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) to help identify where additional or improved signage is needed.
- Identify units in which shuttle/transit systems access would enhance the visitor's experience.
- Identify where signage on regional trails may allow more streamlined non-motorized access to units.

2.4 PLANNING

The LRTP planning goal is "**integrate transportation planning into Service plans and processes**." The following objectives and strategies serve to further the sentiment expressed by the goal.

Objective 1

Ensure consistency and coordination between the project, unit, regional, and national levels of planning. The strategy for this objective is:

- Develop and apply transportation planning templates for comprehensive conservation plans (CCP) and comprehensive hatchery management plan (CHMP) or unit development plans.

Objective 2

Define need for infrastructure improvements and prioritize projects using a scientific and objective process.

Strategies for this objective are:

- Use condition assessments and/or road safety audits to identify road system deficiencies.
- Use established goals and objectives in the project selection process.
- Use transportation asset management principles to preserve important infrastructure at an acceptable condition level.

Objective 3

Provide a financially sustainable transportation system to satisfy current and future management needs in the face of a changing climate.

- Use acceptable asset management principles to preserve important infrastructure at an appropriate condition level.

- Examine operational and maintenance financial sustainability when considering new assets.

2.4.1 Planning Data

The Service uses plans at all levels within the organization, from the project and unit levels to national level. Plans are used to express guiding principles and/or specific deficiencies or needs from the project to the policy level. A wide range of planning tools is therefore available for all Service levels. Figure 17 illustrates the types of plans that are used at different levels within the Service. For example, project level operations use road safety audits to document safety issues. The outcome of the studies is used to help resolve documented safety issues by identifying need, possible solutions, and serving as leverage for future project funding.

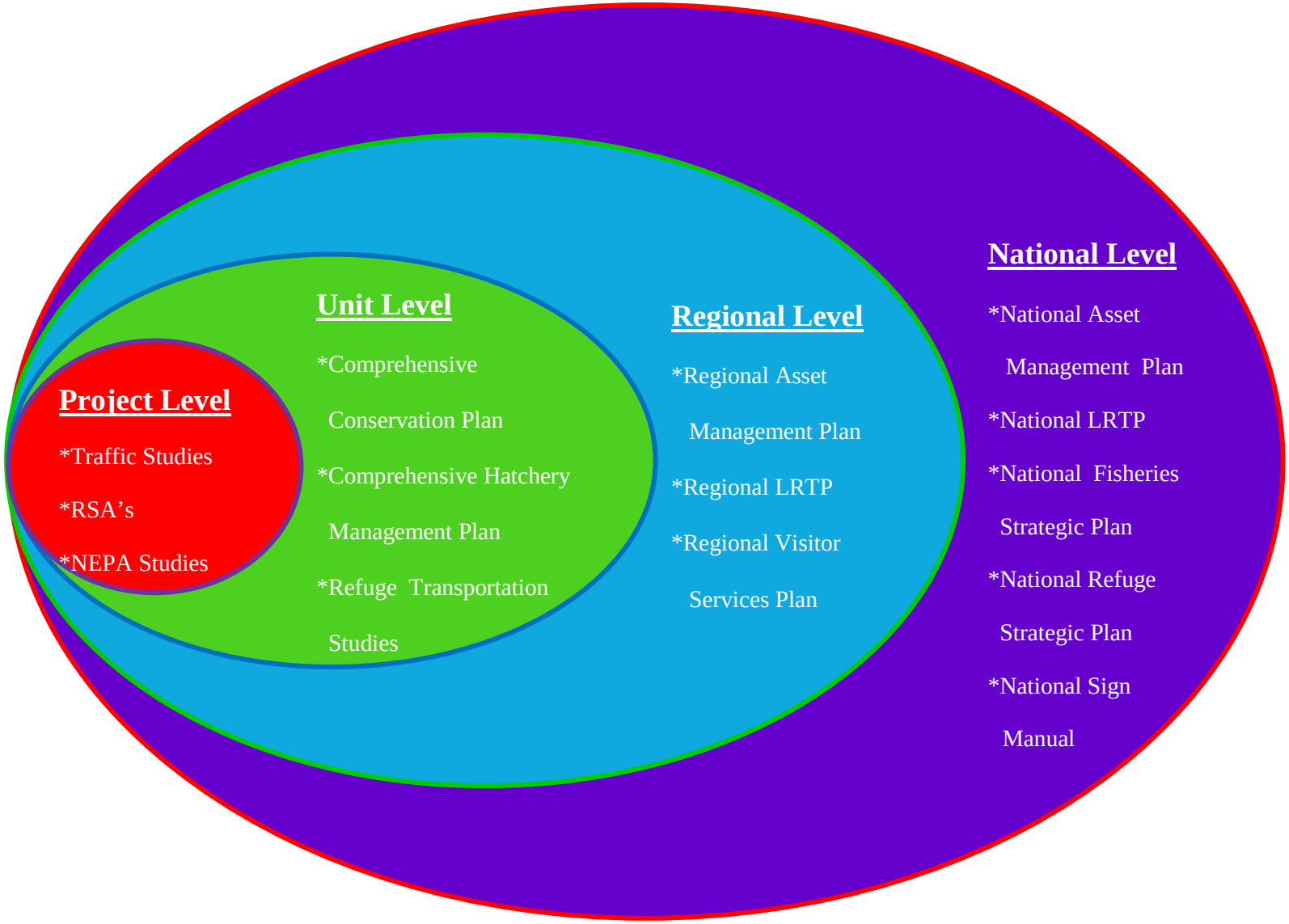


Figure 17. Service Plans

Data used to establish a baseline for the planning goal includes the current state of the Service's resource management planning and the planning activities of potential partners. Service resource management plans include Comprehensive Conservation Plans (CCPs) and Comprehensive Hatchery Management Plans (CHMPs). CCPs are planning documents developed for individual refuges to provide a description of the desired future conditions and long-range guidance with regard to resource management at the refuge unit level. CCPs establish management direction to achieve defined refuge goals. See Appendix G for more information.

CHMPs are operational management plans specific to fish hatcheries. These plans outline policies and objectives relevant to the overall management of a specific fish hatchery. CHMPs are used as planning reference tools, to help integrate Service objectives and priorities with those of other agencies; fulfill obligations under the Endangered Species Act and other management programs; identify and define specific hatchery reforms to implement; and provide a foundation for future program and budget development.

Currently, 53 CCP documents within Region 3 have been completed, 16 are in progress, and one is scheduled to begin in the near future. One CHMP is in progress for a National Fish Hatchery. In addition, one multimodal transportation study for Crab Orchard NWR was completed in 1999. Several units are also located within non-Service transportation planning districts. Eighteen units are within the boundary of a state metropolitan planning organization (MPO). There are six units closed to the public. Table 17 summarizes the completeness of Service planning and identifies non-Service transportation planning occurring in the same area.

Additionally, project leaders have identified units that demonstrate the need for additional transportation planning studies based on their knowledge of issues facing individual refuges and hatcheries. Additional plans fall into three categories including large scale and comprehensive plans, issue driven plans, and small scale plans and studies. These categories are used to describe the different types of plans and studies, as shown in Table 16. The conclusions of project leaders regarding additional planning is summarized in Table 17 in the "planning need" columns.

The Service recently underwent an 18 month process to establish a vision that will guide the management of the Refuge System during the next decade and beyond. *Conserving the Future* is built on the foundation and inspiration of *Fulfilling the Promise*. This new vision seeks to not only further the System's mission, but also to raise the Service's profile in the broader national conservation effort. As initiatives and objectives, that impact transportation, from this Visioning process are implemented it will influence approaches to partnering, public involvement and priority setting.

Table 16 . Planning Need and Plan Types

Planning Need	Corresponding Plan Types
Comprehensive / Large Scale	• CCP Step-down plan • Complex Issue Analysis • Regional Transportation Analysis (i.e. big picture look at connectivity, visitor use analysis
Issue Driven	• Engineering /Traffic Safety Analysis • Access Analysis
Small Scale	• Road Safety Audit

Table 17 Transportation Related Planning Efforts

State	Service Unit	Planning Studies					Planning Need			Non-Service Planning Jurisdictions		
		CCP	CHMP	RSA	Traffic Studies	Transp. Studies	Comprehensive/Large Scale	Issue Driven	Small Scale	MPO**	Regional Planning District	DOT regions
IOWA	Boyer Chute NWR	In Progress								Omaha - Council Bluffs Metropolitan Planning Agency		District 4
	DeSoto NWR	2001								Omaha - Council Bluffs Metropolitan Planning Agency		District 4
	Driftless Area NWR	2006					X		X			District 2
	Iowa WMD	In Progress								Ames Area MPO		District 2
	McGregor District	2006						X	X	East Central Intergovernmental Association		District 2
	Neal Smith NWR	In Progress						X	X			District 1
	Port Louisa NWR	2004						X	X			District 5
	Union Slough NWR	1996										District 2
ILLINOIS	Chautauqua NWR	2004										District 6
	Crab Orchard NWR	2006				1999	X	X				District 9
	Cypress Creek NWR	1997						X				District 9
	Emiquon NWR	2004										District 4
	Meredosia NWR	2004										District 6
	Savanna District	2006								East Central Intergovernmental Association (IA)		District 2
	Two Rivers NWR	2004						X		East-West Gateway Council of Government		District 8
	Upper Mississippi River NWR	2006										District 6/8
	Middle Mississippi River NWR	2004						X	X	East-West Gateway Council of Government		District 8/9

State	Service Unit	Planning Studies					Planning Need			Non-Service Planning Jurisdictions		
		CCP	CHMP	RSA	Traffic Studies	Transp. Studies	Comprehensive/Large Scale	Issue Driven	Small Scale or None	MPO**	Regional Planning District	DOT regions
INDIANA	Big Oaks NWR	In Progress						X				Seymour
	Muscatatuck NWR	2009						X				Seymour
	Patoka River NWR	2008										Vincennes
MICHIGAN	Detroit River International Wildlife Refuge	2005								Southeast Michigan COG (SEMCOG)		Metro / University
	Harbor Island NWR	In Progress										Superior
	Huron NWR	In Progress										Superior
	Jordan River NFH		In Progress					X				North
	Kirtlands Warbler WMA	2009										North / Bay
	Michigan WMD	2001										University / Southwest
	Michigan Islands NWR	In Progress										North / Superior
	Pendills Creek/Sullivan Creek NFH								X			Superior
	Seney NWR	2009						X				Superior
	Shiawassee NWR	2001						X		Saginaw Metropolitan Area Transportation Study		Bay
OHIO	Cedar Point NWR	2000								Toledo Metropolitan Area COG (TMACOG)		District 2
	Ottawa NWR	2000								Toledo Metropolitan Area COG (TMACOG)		District 2
	West Sister Island	2000										District 2

State	Service Unit	Planning Studies					Planning Need			Non-Service Planning Jurisdictions		
		CCP	CHMP	RSA	Traffic Studies	Transp. Studies	Comprehensive/Large Scale	Issue Driven	Small Scale or None	MPO**	Regional Planning District	DOT regions
MINNESOTA	Agassiz NWR	2005										District 2
	Big Stone NWR	In Progress						X				District 4 / 8
	Big Stone WMD	2003						X				District 8
	Crane Meadows NWR	2010										District 3
	Detroit Lakes WMD	2003										District 4
	Fergus Falls WMD	2003										District 4
	Glacial Ridge NWR	In Progress										District 2
	Hamden Slough NWR	In Progress										District 4
	Litchfield WMD	2003						X		St. Cloud Area Planning Organization (APO) *		District 3/ 8
	Mille Lacs NWR	2007										District 3
	Minnesota Valley NWR	2004						X		Metropolitan Council		Metro
	Minnesota Valley WMD	2004						X		Metropolitan Council		Metro / District 6 & 7
	Morris WMD	2003						X	X			District 4
	Northern Tallgrass Prairie NWR	In Progress										District 4
	Rice Lake NWR	2007						X				District 3
	Rydell NWR	2001						X				District 2
	Sherburne NWR	2005						X				District 3
	Tamarac NWR	2010										District 4
	Windom WMD	2003					X					District 7 / 8
	Winona District	2003						X				District 6

State	Service Unit	Planning Studies					Planning Need			Non-Service Planning Jurisdictions		
		CCP	CHMP	RSA	Traffic Studies	Transp. Studies	Comprehensive /Large Scale	Issue Driven	Small Scale or None	MPO**	Regional Planning District	DOT regions
MISSOURI	Big Muddy National Fish and Wildlife Refuge	In Progress						X		Columbia Area Transportation Study Organization, East-West Gateway Council of Government, Mid-America Regional Council		Kansas City, North Central, Central, Northeast, St. Louis
	Clarence Cannon NWR	2004						X				Northeast
	Great River NWR	2004										Northeast
	Mingo NWR	2007						X				Southeast
	Neosho NFH								X			Southwest
	Ozark Cavefish NWR											Southwest
	Pilot Knob NWR	2007										South Central
	Squaw Creek NWR	2005							X			Northwest
	Swan Lake NWR	In Progress						X				North Central
WISCONSIN	Fox River NWR	2007										North Central Region
	Genoa NFH	2007						X	X	Vernon County Transp. Coord. Committee		Southwest Region
	Gravel Island NWR	In Progress										Northeast Region
	Green Bay NWR	In Progress										Northeast Region
	Horicon NWR	2007						X	X			N.E. and S.E.Regions
	Iron River NFH							X				Northwest Region
	LaCrosse District	2006					X			La Crosse Area Planning Committee		Southwest Region
	Leopold WMD	2008						X		Madison Area Transportation Planning Board		North Central, N.E, S.E., and S.W. Regions
	Necedah NWR	2004						X				Southwest Region
	St. Croix WMD	2009						X				Northwest Region
	Trempealeau NWR	2008						X				Northwest Region
	Whittlesey Creek NWR	In Progress							X			Northwest Region

Source: FWS, 2010

2.4.2 Identifying Planning Areas

Units that have not yet adopted a CCP or CHMP should reach out to non-Service transportation planning agencies when developing a plan. Early identification of partnership opportunities improves the likelihood of successful cooperation. As such, Table 8 identifies non-Service planning organizations that should be considered when developing the transportation component of a CCP or CHMP. Contact information for non-Service planning organizations identified in Table H-8 is available in Appendix H.

As stated in the overall planning goal discussion, the Service strives for objective processes to guide transportation funding decisions. This LRTP is an initial step towards meeting this goal. Each LRTP goal area establishes a framework in which data can be used to objectively locate opportunities and need for transportation projects.

Planning is critical to the success of the Refuge Transportation System. It identifies needs, set priorities and outlines strategic approaches to meet those needs. Planning incorporates the missions and goals of the organization into actionable activities at the project, unit, regional and national levels.

2.4.3 Recommendations for Future Analysis

An opportunity to having a more comprehensive planning areas section include:

- Identify and prioritize units that need to adopt and/or develop a CCP or CHMP.

2.5 PARTNERSHIPS

The partnership goal of the LRTP is to "**develop and seek partnerships to leverage resources and develop integrated transportation solutions that provide mutual benefits to the Service and its external partners**." The following objectives and strategies serve to further the sentiment expressed by the goal.

Objective 1

Maximize leveraging opportunities for both funding and resources. Strategies for this objective are:

- Participate in transportation partnering meetings in each state.
- Identify and pursue projects of mutual interest and benefit to partners.

Objective 2

Work with partners to address shared transportation issues that impact Service goals.

Strategies for this objective are:

- Ensure that all Service transportation needs and contributing resources are accounted for in local and state partner transportation plans.
- Inform appropriate Service staff and potential transportation partners about Service transportation plans.
- Work with partners to reduce wildlife-vehicle collisions.
- Improve fish passage at roads adjacent to Service lands.
- Identify and increase key potential internal and external partnerships at the national, regional, and unit levels.

Objective 3

Coordinate within Service programs, including Refuges, Ecological Services, Fisheries, and Migratory Birds during the development of regional long range and project level planning.

2.5.1 Partnerships Data

To help identify potential partnerships, it is important to know if a unit is intersected by non-Service transportation assets and/or is within the boundaries of a non-Service transportation planning organization such as a metropolitan planning organization (MPO) or public agency. This can indicate mutual interests and shared priorities. Partnership data therefore includes an inventory of non-Service agencies that routinely participate in transportation planning and intersect unit boundaries, as shown in Table 18. Non- Service transportation assets that intersect service boundaries such as major public roads are also included as partnership data, as summarized in Appendix C (Table 122). Non-Service routes that are Scenic Byways and intersect or are co-located with Service routes are identified for their potential for partnering, as identified in Table 18.

2.5.2 Identifying Partnership Opportunities

There may exist a number of opportunities for partnership where Service mission and needs overlap with those of a non-Service organization, as they pertain to a transportation asset or project of common interest. In these situations, potential Service provided funding and resources could be leveraged with those available from other partners to accomplish mutually beneficial work. Not only does partnering offer such practical benefits, but it further advances the integrated regional and planning goals of President Obama's October 2009 executive order, Federal Leadership in Environmental Energy, and Economic Performance. The executive order promotes, "participating in regional transportation planning and recognizing existing community transportation infrastructure."

Identifying opportunities for partnership may be complex and highly unique between units. As such, unit managers are encouraged to gain an understanding of surrounding communities and local resources and develop relationships with these entities when seeking partnerships. In addition, there are several high-level opportunities for transportation related partnerships – including state DOTs, MPOs, and regional planning organizations. Opportunities for partnership with these organizations may exist if a unit is intersected by a state DOT asset such as a rural primary highway and/or a transportation planning organization's boundary. Table 18 and Appendix C (Table 122) identify these locations within Region 3.

While several units are successfully partnering with gateway communities to leverage funding for new trail connections or to use buses for special events, additional partnership opportunities may exist where non-Service assets are of special significance – such as a state highway route formally designated as a Scenic Byway and/or is regionally significant. These routes are typically high value assets and may be eligible for supplemental discretionary funding sources. Table 18 identifies Service routes that intersect or share a route designation with designated Scenic Byways. Table 19 identifies bicycle and pedestrian trails of regional significance. Those trails are approximately 50 miles in total length and could potentially be a good partnership opportunity with state and local governments to support livability efforts.

Figure 18. Genoa National Fish Hatchery.

Table 18 . Service Routes and Scenic Byways

State	Service Unit	Byway Designation	Byway Name	National Route ID	Service Route Name	Relationship to Byway
IL	Chautauqua NWR	National Scenic Byway	Illinois River Road	FWS-CHAU-0010	Headquarters Entrance Road	Intersects
		National Scenic Byway	Illinois River Road	FWS-CHAU-0011	Eagle Buff Access	Intersects
	Cypress Creek NWR	National Scenic Byway	Great River Road	FWS-CYCR-408	Ice Grain Access Road	Intersects
	Two Rivers NWR	National Scenic Byway and Illinois State Scenic Byway	Meeting of the Great River Scenic Route	FHWA-TWRI-410	Access to Sit Basin Road	Intersects
		National Scenic Byway and Illinois State Scenic Byway	Meeting of the Great River Scenic Route	FWS-TRWI-104	Gilbert Lake Overlook Road	Intersects
		National Scenic Byway and Illinois State Scenic Byway	Meeting of the Great River Scenic Route	FWS-TWRI-011	Gilbert Lake Road	Intersects
	Upper Mississippi River NWR - Savannah District	National Scenic Byway	Great River Road	FHWA-UPSA-100	Frog Pond Access Road	Intersects
		National Scenic Byway	Great River Road	FHWA-UPSA-424	Spring Lake Service Access Road	Intersects
IN	Muscatatuck NWR	Indiana State Scenic Byway, National Scenic Byway	Indiana's Historic Pathways	FWS-MUSC-301	Residence Access Road	Intersects
		Indiana State Scenic Byway, National Scenic Byway	Indiana's Historic Pathways	FWS-MUSC-010	County Line Road	Intersects
IOWA	Port Louisa NWR	National Scenic Byway	Great River Road	FWS-POLO-0010	N/A	Intersects
		National Scenic Byway	Great River Road	FWS-POLO-0102	N/A	Intersects
OHIO	Ottawa NWR	Ohio State Scenic Byway and National Scenic Byway	Lake Erie Coastal Ohio Trail	FWS-OTTA-0010	Ottawa Entrance Road	Intersects
		Ohio State Scenic Byway and National Scenic Byway	Lake Erie Coastal Ohio Trail	FWS-OTTA-433	Diefenthaler Service Road	Intersects
WI	Trempealeau NWR	National Scenic Byway	Great River Road	FWS-TREM-0100	Marshland Road	Intersects
		National Scenic Byway	Great River Road	FWS-TREM-405	River Bottoms Access Road	Intersects

Source: FHWA Byways (2011), FHWA, Road Inventory Program, Cycle 4

Besides a unit having a geographic connection with non-Service transportation assets and/or planning boundaries, other factors may provide leverage for establishing partnerships. Conditions discussed in sections pertaining to other goal areas may help identify areas where joint projects could serve the goals of multiple agencies, and provide a stage or partnership.

These conditions include:

- Locations where there are deficiencies (such as poor road condition or high occurrence of accidents) in both Service and non-Service transportation systems within a common area. Section 2.2, Conditions and Safety, identifies areas of deficiency of Service and non-Service assets (where possible).
- Regions with documented air quality issues and/or existing transit service. These locations are identified in Section 2.6, Sustainability.
- Units that have not completed CCPs or CHMPs. These locations are identified in this section.
- Visitor enhancement hot-spots as discussed in Section 2.3, Welcome and orientation.

As partnerships require not only a shared geography, but shared interests as well, successful partnership hinges on finding topics of common ground. There are several paths to finding this common ground. First, units can learn about an organization's future transportation projects by reviewing documented plans such as a metropolitan level transportation improvement program (TIP), the statewide transportation improvement program (STIP) as prepared by a state DOT, or an LRTP prepared at the local community, metropolitan or statewide levels. Second, the transportation interests of a particular unit should be made available to relevant planning organizations through the sharing of Service developed CCP or CHMP documents. Third, in-person collaboration is necessary.

If a project is programmed for construction in the next one or two years in a TIP or STIP, the project may be too far along to develop a partnership that fully suits both parties. Early collaboration by both Service and non-Service agencies in their respective planning activities ensures that projects of mutual interest develop with partnership in-mind from inception. It is recommended that units involve non-Service transportation planning agencies in relevant planning activities, and proactively seek opportunities for collaboration in the planning activities of relevant non-Service agencies. Units that regularly incorporate their projects into the Transportation Improvement Program (TIP) are better able to coordinate their needs into planned future regional improvements.

Regionally significant trails can accommodate non-motorized access to the units, in some cases, reducing the number of vehicles unit roads and parking lots. Units can take simple steps to partner with groups that own and maintain some trails to improve and/or extend access to visitor centers and amenities or add signage to direct trail users to units.

Table 19 . Regionally Significant Trails

State	Service Unit	Name	Trail miles
IOWA	DeSoto NWR	Bertrand Excavation Site Trail	0.42
	Neal Smith NWR	Prairie Overlook Trail	0.36
ILLINOIS	Savanna District - Upper Mississippi	Thomson Sand Prairie Trail - Great River Bike Trail	1.78
MICHIGAN	Seney NWR	Pine Ridge Nature Trail	1.36
	Detroit River IWR	Humbug Marsh Trails	1.60
	Shiawassee NWR	Ferguson Bayou Nature Trail	4.93
MINNESOTA	Big Stone NWR	Sidewalk to DNR Trail	0.01
	Fergus Falls WMD	Prairie Wetland Learning Center Trails	4.21
	Minnesota Valley NWR	Bluff Trail	3.80
		Black Dog Trail	2.05
	Morris WMD	Froland WPA Interpretative Trail	1.7
	Rydell NWR	Tamarac Lake Trail	0.75
		Rice Lake	0.57
		Round Lake Trail	1.01
		Church Lake Trail	1.05
		Golden Pond Trail	1.19
	Sherburne NWR	Blue Hill Trail	5.21
		Mahomen Trail	3.13
MISSOURI	Big Muddy National Fish and Wildlife Refuge	Lewis and Clark Trail of Discovery	0.76
		Boone's Crossing Trail	1.10
	Mingo NWR	Boardwalk Nature Trail	0.60
NEBRASKA	Boyer Chute NWR	Meadowlark Trail	6.00
OHIO	Ottawa NWR	Wildlife Trail	7.14
WISCONSIN	Horicon NWR	Connection to Wild Goose State Park	0.25

Source: FWS Staff, 2011

2.5.3 Recommendation for Future Analysis

- Identify partnership opportunities with non-Service transportation agencies by identifying route jurisdiction for the roads listed in this chapter and Appendix C (Table 122). Additional data acquisition is needed in order to have a complete inventory of road jurisdictions.

- Identify organizations that manage regional trail networks near high-visitation units within 5-10 miles of gateway communities to build potential partnerships and connect trails between units and communities.

- Identify local transit agencies organizations or schools that own transit vehicles, as a means to increase ATS access to the site or use transit for special events.

- Identify any additional regionally significant trails or state designated trails that pass within 5 miles of high-visitation refuges.

2.6 SUSTAINABILITY

The LRTP sustainability goal is to "**adopt and promote sustainable environmental, equitable and economical transportation practices**."

The following objectives and strategies serve to further the environmental sentiment expressed by the goal.

Objective 1

Address climate change and other environmental factors at all levels of transportation planning, design, project delivery, operations, and maintenance. Strategies for the achievement of this objective are:

- Identify transportation resources that are at-risk of climate change impacts by using a comprehensive risk assessment.
- Develop adaptive management strategies, such as relocating, strengthening, or downgrading assets, to prepare for both short term (25 to 40 years) and long term (40 to 100 years) impacts of climate change on the transportation infrastructure.
- Encourage transportation practices and design that responds to climate change impacts.

Objective 2

To reduce the Service's carbon footprint, improve access to and within Service lands by transit and non-motorized transportation and information systems. Strategies for this objective are:

- Identify the need for unit level alternative transportation projects through the Service planning process.
- Encourage refuges and hatcheries to consider applying for partner funding for the provision of alternative transportation projects involving Service lands.
- Increase availability of information in public outreach and education programs to encourage transit, car-pooling, bicycling, and walking to and within Service lands.

Objective 3

Reduce fossil fuel energy consumption by refuge staff and visiting public. The strategy for this objective is:

- Increase number of alternatively fueled vehicles and promote the use of bicycle fleets by refuge staff, on-refuge visitor tours and transit access to and within Service lands.
- Encourage visitors to use a wide range of transportation modes and provide clear directional information.

When it comes to equity transportation practices, a targeted outreach towards underserved areas can help promote refuge resources among the underserved populations and provide enjoyable recreational and cultural experiences to those who may typically lack the means to visit. Promotion of ATS connections within these communities (as well as throughout the surrounding regions of all refuges) can serve to increase visitation among those without access to a personal vehicle. This can be carried out through marketing campaigns or partnering with local transportation or recreational advocacy groups. One method of targeted outreach that has been employed by the Minnesota Valley NWR is partnering with schools in underserved communities. Students visit the refuge on field trips, and refuge staff visits the schools to conduct related lessons. Positive experiences among school groups may convince families to visit refuges at a later time.

Figure 19. Bicycle rack at Necedah National Wildlife Refuge.

For an economic standpoint, there is a need to ensure that the transportation system to and within refuges are not overbuilt and need to be maintained in perpetuity.

Some strategies are as follows:

- Provision of new or improved pedestrian and bicycle infrastructure, facilities, and connections: The construction or provision of non-motorized paths, trails, sidewalks, and bicycle lanes are necessary to connect units with gateway towns, existing non-motorized trail networks, and local and regional amenities. In some cases, existing connections only need minor maintenance improvements or updates to increase their usability. These types of facilities can be added or enhanced/improved in units to allow for non-motorized travel on or adjacent to auto tour or unit roadways, where appropriate. Signage for non-motorized users, particularly bicyclists, can be added or improved in units to help improve site access for existing and new bicyclists.

- Partnerships: Transit agencies, local governments, other state and federal agencies, and friends groups can help to enhance or add new transit service, fundraise for new or improved non-motorized infrastructure or bus/shuttle rentals, promote existing connections, and provide transit for special events. Partnerships with transit agencies are the first step to connect urban and suburban units within transit service areas to local bus routes. Partnerships may also help unit staff expand their capacity for the maintenance of trails within and leading to the unit.

- Promotion: Units can advertise existing and underutilized ATS connections through the unit website, brochures, local media, unit staff, and its partners' promotional materials. Promotional partnerships and materials can emphasize refuge access via non-motorized trails or transit, and they can also advertise the use of transit at special events. Signage along trails may be another means to promote non-motorized refuge access.

- Use of transit for special events and peak weekends: Refuge staff can use transit vehicles, such as buses and vans, during festivals, special events, or peak weekends when visitation is much higher than normal. During these events, refuges can use transit for wildlife observation tours, shuttles to on- or off-site parking, or transportation to public transit units. Having a large van or small shuttle bus on-site or shared between units would also enable unit staff to accommodate school groups that are not able to use their school bus to access and/or tour the unit.

- Consideration of ATS at early planning stages of new visitor facilities: Several units are planning for or have recently completed construction on new visitor centers. These new centers will draw more visitors from nearby schools and communities. Units slated for new visitor facilities in coming years should anticipate higher visitation and the potential for ATS service to address new transportation issues. Unit staff can plan for parking lots that can accommodate shuttles and buses and kiosks and entrances to their facilities that are proximate to drop-off areas for ATS passengers.

- Utilize water-based access: Many of the units in Region 3 include or area adjacent to major rivers and lakes in the region. Accordingly, units have the potential to utilize water-based access to bring visitors to and transport visitors within their lands. In some cases, private water-based tours and access exist; units could potentially partner with these companies to explore more public operations.

- Alternative Transportation System Analysis: The Transit and Trails to National Wildlife Refuge report and the U.S. Fish and Wildlife Service Regional Alternative Transportation Evaluation Report- Region 3 (Appendix J) can be used by region and unit level staff.

2.6.1 Data

Sustainable transportation practices and climate change are addressed in two ways. First, the potential risks to existing transportation assets due to changes in climate are examined. Second, the Service supports programs and projects that would result in lower greenhouse gas emissions through increased use of alternative transportation systems (ATS), such as transit, cycling, or walking to, within, and through Service lands. See Appendix J for more information on ATS opportunities.

Risks to Transportation Assets

Identifying specific units and related transportation assets that are at risk due to climate change requires comprehensive risk analysis. This type of risk analysis would include factors such as sea level rise (rising water levels, increased coastal and estuarine flooding), changing precipitation levels (more precipitation, higher water tables in lakes and wetlands, greater flooding potentials along streams and rivers, higher soil moisture), temperature changes (rising maximum temperatures, lower minimum temperatures) and storm surges (larger and more frequent storm surges). Data on all of these factors are not widely available, and requires additional research, data collection, and analysis. Some factors, however, are examined in this LRTP that could be used as part of a larger scale risk analysis at a future date when additional information on this topic is more readily available.

Factors such as precipitation levels, flooding and soil moisture can be identified for their potential to impact Service transportation assets. In Region 3 there are 37 units located near rivers and lake areas that may be at risk of environmental change due to rises in water levels. Table 20 identifies all units located near rivers and lakes. Such areas include:

- 11 units along the Mississippi River, including Clarence Cannon NWR, Genoa National Fish Hatchery, Great River NWR, La Crosse District Upper Mississippi National Wildlife and Fish Refuge, McGregor District, Upper Miss National Wildlife and Fish Refuge, Middle Mississippi River NWR, Trempealeau NWR, Two Rivers NWR, Upper Mississippi National Wildlife and Fish Refuge Headquarters, Upper Mississippi River National Wildlife and Fish Refuge - Savanna District, and the Winona District of the Upper Mississippi River NWR.
- Four units located along the Illinois River, including Chautauqua NWR, Emiquon NWR, Meredosia NWR and Two Rivers NWR;

- Three units along the Missouri River, Big Muddy NWR, Boyer Chute NWR and DeSoto NWR.

There are several Region 3 units that contain multiple lakes within and/or at located along multiple rivers. These include: Chautauqua NWR, Crab Orchard NWR, Crane Meadows NWR, Minnesota Valley NWR, Sherburne NWR, Shiawassee NWR, Swan Lake NWR, Tamarac NWR and Two Rivers NWR.

Table 20 . Units located near Major Rivers and Lakes

Service Unit	River	Lake
Agassiz NWR	-	Mud Lake
Big Muddy NWR	Missouri River	-
Big Stone NWR	Yellow Bank River	-
Boyer Chute NWR	Missouri River	-
Chautauqua NWR	Illinois River	Billsbach Lake
		Weis Lake
		Lake Chautauqua
Clarence Cannon NWR	Mississippi River	-
Crab Orchard NWR	-	Little Grassy Lake
		Devils Kitchen Lake
		Crab Orchard Lake
Crane Meadows NWR	-	Skunk Lake
		Rice Lake
DeSoto NWR	Missouri River	Desoto Lake
Detroit River International Wildlife Refuge	-	Lake Erie
Emiquon NWR	Illinois river	Quiver Lake
Genoa National Fish Hatchery	Mississippi River	-
Great River NWR	Mississippi River	-
Horicon NWR	West Branch Rock River	-
La Crosse District Upper Mississippi National Wildlife and Fish Refuge	Mississippi River	-
McGregor District, Upper Miss National Wildlife and Fish Refuge	Mississippi River	-
Meredosia NWR	Illinois river	Meredosia Lake
Middle Mississippi River NWR	Mississippi River	-
Mille Lacs NWR	-	Mille Lacs Lake
Minnesota Valley NWR	Minnesota River	Black Dog Lake
		Long Lake
		Rapids Lake
		Long Meadow Lake
		Horseshoe Lake
		Rice Lake
		Blue Lake
		Fisher Lake
		Chaska Lake
		Grass Lake

Service Unit	River	Lake
Ohio River Islands NWR	Ohio River	-
Ottawa NWR	Toussaint River	Lake Erie
Pendills Creek National Fish Hatchery	-	Lake Superior
Port Louisa NWR	Iowa River	-
Rice Lake NWR	-	Rice Lake
Rydell NWR	-	Maple Lake
Sherburne NWR	-	Rice Lake
		Big Mud Lake
		Elk Lake
Shiawassee NWR	Tittabawassee River	-
	Cass River	
	Shiawassee River	
Swan Lake NWR	-	Swan Lake
		Silver Lake
Tamarac NWR	-	Many Point Lake
		Bemidji Lake
		Ice Cracking Lake
		Waboose Lake
		Upper Egg Lake
		Lower Egg Lake
		Island Lake
		Rice Lake
		Blackbird Lake
		Chippewa Lake
		Little Flat Lake
		Tamarack Lake
		Height of Land Lake
		Flat Lake
Trempealeau NWR	Mississippi River	-
Two Rivers NWR	Mississippi River	Swan Lake
	Illinois River	Gilbert Lake
		Fuller Lake
Upper Mississippi National Wildlife and Fish Refuge HQ	Mississippi River	-
Savanna District	Mississippi River	-
Whittlesey Creek NWR	-	Lake Superior
Winona District of the Upper Mississippi River NWFR	Mississippi River	-

Source: FHWA, 2011

Sustainable Policies and Alternative Transportation Systems

The Service seeks opportunities to reduce greenhouse gas emissions generated from the use of fossil fuels to power transportation equipment through programs that focus on the use of alternative transportation modes for travel to and through Service lands. This desire to reduce the NWR and NFH greenhouse gas emissions responds to the Service-wide commitment to responsible and sustainable practices as well as President Obama's October 5, 2009 executive order, Federal Leadership in Environmental, Energy, and Economic Performance, which calls for a reduction of greenhouse gas emissions from direct and indirect Federal agency activities. Furthermore, Goal 4 of the USFWS *Strategic Plan for Responding to Accelerating Climate Change in the 21st Century* calls for the Service to achieve carbon neutrality by 2020 by reducing the carbon footprint of the Service's facilities, vehicles, and work force.

The Service has launched a pilot initiative, *Climate Friendly Refuges* that seeks to assist refuges in responding to climate change. This pilot includes a component, Climate Leadership in Refuges (CLIR) Tool, that is being developed in collaboration with Office of Federal Lands Highway. The CLIR Tool is a beta version of a USFWS greenhouse gas (GHG) management tool. This tool estimates GHG emissions that result from refuge energy consumption in buildings, fleet vehicles, and equipment as well as GHG emissions that result from visitor travel to and within the refuge. Four workshops, (in Region 3, Horicon NWR hosted a workshop) were conducted to familiarize Service staff and stakeholders with the CLIR tool and encourage dialogue among participants on climate change adaptation, mitigation, and engagement strategies.

Programs that reduce the number of vehicle miles traveled have the potential to substantially reduce GHG emissions and the Service's carbon footprint. The Service believes that ATS are an important tool in achieving this end. To identify candidate locations for ATS, the following planning factors should be considered on a regular and continuing basis:

- Adopted unit and national level planning documents that identify Service lands as having potential or need for ATS.
- Areas where non-Service entities may have an interest in creating or expanding external ATS programs into or through Service lands. This consideration should particularly include neighboring metropolitan areas where there is existing public mass-transit services and/or poor air quality. The Service has a desire to develop access for growing metropolitan areas and traditionally underserved urban populations.

ATS addresses LRTP goals in several ways, including:

- The use of transit, non-motorized, and water-based modes supports natural resource protection. By reducing the use of personal automobiles, FWS can also reduce the impacts that these vehicles have upon natural resources. Vehicular resource impacts include wildlife collisions, invasive species, noise pollution, particulate emissions, erosion, and pollutants that can enter the soil or water.

- Over the long term, increasing ATS for units with increasing visitation can minimize the need for new roads or parking, thus preserving more area for wildlife habitat.

- ATS can be a critical visitor management tool for unit staff facing increasing visitor demands and limited resources.

- The use of transit can enhance visitors' understanding of the unit's natural resources by facilitating interpretive tours or directing visitors for special events.

- Signage and orientation information directed at non-automobile modes can also help integrate these modes effectively into unit transportation.

- ATS can reduce the Service's carbon footprint, reduce the use of carbon-based fuels, enhance accessibility, and reduce air pollutants emitted from vehicles.

- Increasing availability of ATS can allow more access to lower income groups and those that do not use private motor vehicles.

The Service is committed to reducing green house emissions. One example of the Service's commitment to meeting this end, is the Climate Change Mitigation Project currently underway. The project entails developing a beta version of a greenhouse gas management tool that would be capable of estimating emissions for energy consumption within, and visitor transportation to and within, National Wildlife Refuges.

The beta version tool will be populated by data provided by Service headquarters and used by refuge and regional staff to plan greenhouse gas mitigation and climate change education and outreach strategies. The tool will be completed in cooperation with the Service, USGS, and FLH.

While many units are located far from population centers, most expressed the need or desire for improved non-motorized infrastructure for access to and within units. The inclusion of sidewalks, bicycle lanes, separated non-motorized paths, and similar infrastructure can enhance the visitor experience and reduce the number of vehicles at units.

As expressed by the sustainability goal, the Service wishes to reduce greenhouse gas emissions through the use of multimodal transportation systems that reduce the use of privately owned and operated motor vehicles. In some cases, unit and national level planning activities have identified locations that are in need of ATS. Other opportunities may exist where non-Service entities have a vested interest in creating or expanding alternative transportation programs.

Opportunities for partnership may exist in places where units are in or near transit districts, especially in locations where air quality fails to meet national standards – where there is added incentive for local municipalities to reduce emissions.

Although no currently adopted CCP for any Region 3 unit identify specific ATS initiatives, CCP planning efforts underway should increasingly consider ATS. These planning efforts are discussed further in Section 2.4, Planning and Section 2.6, Partnerships.

Greater opportunities to work with partners on programs that reduce greenhouse gas emissions are likely in larger metropolitan areas that have existing mass-transit programs and/or where air quality is an issue. Adopting strategies or policies of GHG besides reducing VMT will play a significant role to accomplish the sustainability the service is looking for.

Units that overlap air quality non-attainment or maintenance areas or existing transit districts are considered places where there may be partnership opportunities for Service oriented alternative transportation programs. Table 21 identifies units within EPA designated air quality non-attainment area. Units intersected by transit districts are summarized in Table 22.

The use of transit may be a feasible solution for units with high visitation (or seasonal high visitation) or at units that attract high visitation during special events.

Table 21 . Air Quality Non-Attainment

State	City	Service Unit	Unit Visitation (2010)	Non-attainment
ILLINOIS	Brussels, IL	Two Rivers NWR	7,519	PM-2.5.1997
	Chester, IL	Middle Mississippi River NWR	135,000	PM-2.5.1997
INDIANA	Seymour, IN	Muscatatuck NWR	173,000	PM-2.5.1997
MICHIGAN	Grosse Ile, MI	Detroit River International WR	3,724	PM-2.5.2006
MISSOURI	Columbia, MO	Big Muddy National Fish and Wildlife Refuge	26,268	PM-2.5.1997
OHIO	Oregon, OH	Cedar Point NWR	600	PM-2.5.2006
	Oregon, OH	Ottawa NWR	182,538	PM-2.5.2006
	Steubenville-Weirton, OH & WV	Ohio River Islands NWR	Data not available	PM-2.5.2006
WISCONSIN	Washington Island, WI	Green Bay NWR	Closed to the public	PM-2.5.2006

Source: RITA/BTS, 2008

Non-motorized ATS connections, however, may be instituted more easily and accommodate lower visitation levels. This may be a more appropriate strategy for units within 5 miles of gateway communities.

Table 22 . Service Units Intersected by Transit Districts

State	Transit District (city)	Service Unit
Michigan	Saginaw Stars (Saginaw)	Shiawassee NWR
Minnesota	Metro Transit (Bloomington)	Minnesota Valley NWR
	Metro Transit - Northstar Commuter Rail (Big Lake, MN)	Sherburne NWR

State	Amtrak Service	Service Unit
Illinois	Alton, IL	Two Rivers NWR
	Carbondale, IL	Crab Orchard NWR
Iowa	Burlington, IA	Port Louisa NWR
Michigan	Dearborn, MI	Detroit River IWR
	East Lansing, MI	Michigan WMD
Minnesota	Detroit Lakes, MN	Detroit Lakes WMD, Hamden Slough NWR, Tamarac NWR
	St. Cloud, MN	Sherburne NWR, Crane Meadows NWR
	Winona, MN	Winona District/Upper Miss NWR's
Missouri	Jefferson City, MO	Big Muddy NWR
	Marceline, MO	Swan Lake NWR
	Poplar Bluff, MO	Mingo NWR
Nebraska	Omaha, NE	Desoto NWR, Boyer Chute NWR
Ohio	Toledo, OH	Ottawa NWR, Cedar Point NWR
Wisconsin	Columbus, WI	Horicon NWR
	La Crosse, WI	La Crosse District NWR, Genoa NFH
	Portage, WI	Leopold WMD, Fox River NWR
	Tomah, WI	Necedah NWR

Sources: Amtrak, FWS, Federal Railroad Administration, Google

Units that fall within existing transit areas may offer opportunities to extend transit service to better accommodate unit visitors. This may include small-scale service shifts, such as extra routes during seasonal weekends or agreements for use of transit vehicles for special educational programs or one-time special events.

2.6.2 Identifying Sustainability Improvement Areas

Baseline condition data helps identify areas that should receive special consideration for topics of sustainability. As discussed previously, sustainability considerations occur on two fronts: (1) consideration of assets that could be at risk due to climate change and (2) consideration of transportation projects that could potentially reduce greenhouse gas emissions.

Service lands that may have assets at risk due to climate change if they:

- Are located in a coastal area
- Are likely to experience more frequent flooding events
- Will experience greater temperature fluctuations
- Are likely to experience more frequent storm surges

Service lands that are best suited to reduce greenhouse gas emissions through ATS are those that fall in one or more of the following categories:

- A unit is identified in a national-level planning document as having the potential or need for ATS
- A unit's CCP documents a need for alternative transportation system
- A unit is located in or adjacent to an existing mass-transit district
- A unit is located in an Environmental Protection Agency (EPA) designated air quality non-attainment area

2.6.3 Recommendations for Future Analysis

Several actions are necessary to better evaluate the sustainability goal, including the performance of a comprehensive risk analysis of climate change. Factors that should be included in a comprehensive risk analysis are:

- Precipitation levels, including associated impacts on water tables, flooding, and soil moisture
- Temperature changes
- River Flooding potentials and projected changes in 100-year flood elevation
- Historical water level changes due to climate change could be better quantified if data were available for units along rivers, lakes, and wetland areas,
- Provide boilerplate transportation language for CCPs and CHMPs to improve the quality of transportation material in these plans.

2.7 PERFORMANCE MEASURES

In order to determine if the goals and objectives are being met, it is necessary reference baseline conditions and measure their performance and evaluate if improvement is needed. While a complete scope of an organization can never really be obtained, as generally some parameters cannot be measured directly but must be estimated, examples of some of the ones that can be measured are:

- Total of projects that improve ingress/egress issues at refuges and hatcheries.
- Number of safety audits completed and proposed improvements implemented.
- Number of transportation projects on or accessing Service units using multiple funding Sources.
- Increased percentage of road and trail miles in good/excellent condition.
- Number of transportation funds spent to reduce fish/wildlife conflicts with the transportation system; and results from monitoring systems set up to measure wildlife-vehicle crashes or use of wildlife passages under or over roads.
- Percentage of units accessible through alternative modes (i.e. bike, transit, walking, waterway).
- Percentage of units with good/better satisfaction rating for transportation system.
- Number of agreements for partnerships
- Number of projects or percentage of refuge road funds that address more than one of the goals.
- Implementation of the National Safety Management System in the Region.
- Number or percentage of refuges with completed plans that address climate variability and incorporate action plans.
- Percentage of units that have increased multimodal connections.
- Percentage of units with adequate wayfinding systems.

It is fundamental to have the appropriate feedback loop to determine if performance measures described above are adequate and/or need to be revised at changing times and priorities of the Fish and Wildlife Service.

CHAPTER 3: FUNDING AND PROJECT SELECTION

INTRODUCTION

Maintaining funding levels and access to various types of funding is important to management of the U.S. Fish and Wildlife Service's (Service) transportation program. Developing a Project Selection process that acknowledges a limited funding environment while prioritizing projects that incorporate goals of the Service transportation is a challenge. This chapter indicates current funding levels, summarizes funding sources and gives a description of the project selection process. This 2012 LRTP may be used as a tool to demonstrate need for increased funding levels and identify partnering or cost share opportunities.

3.1 CURRENT AND PROJECTED FUNDING

The magnitude of the future funding levels to support the U.S. Fish and Wildlife Service's (Service) transportation program (including activities at both wildlife refuges and fish hatcheries) may change significantly with the reauthorization of the current federal surface transportation bill (SAFETEA-LU). These changes may cause a different trajectory for funding over the next 20 years. Current drafts of reauthorization language submitted to the Congress by the U.S. Department of Transportation that is reflective of input received from the Service envision a slight increase in funding for FY2012 compared to current levels and an 8-12% increase each year from FY2012 through FY2016.

Separate SAFETEA-LU reauthorization proposals have been developed by the respective committees of the U.S. Senate and the U.S. House of Representatives with primary responsibility for the nation's surface transportation programs. These reauthorization proposals all contain substantial differences from each other, and envision differing future funding levels, from modest increases to an essentially stable funding level to some reductions in future years.

Regardless of the final form or contents of the reauthorization legislation, there is a need to develop and implement improved evaluation criteria and a data driven based approach for the programming of new projects in the new era of transportation funding. A well defined investment strategy can provide a basis by which to do this.

Between FY2007 and fiscal year 2011, Region 3 of the Service received an average of approximately $3.28 million annually through the Refuge Road Program.

Table 23 shows the annual funding levels that were *previously* allocated for Region 3 under the Refuge Road Program over the period of FY2007 – FY2011. This table also illustrates the anticipated *future* funding levels of the region between FY2012 and FY2015 assuming that annual future funding levels are maintained at the recently observed historical average of approximately $3.28 million annually.

Table 23 . Previous and Anticipated Annual Funding Levels for Refuge Road Program 2007-2015

Fiscal Year	Funding
2007	$2,812,130
2008	$3,350,000
2009	$4,175,183
2010	$2,834,735
2011	$3,216,467
2012	$3,196,934
2013	$3,177,401
2014	$3,156,868
2015	$3,147,335

As of the date of this document, the new multi-year transportation authorization legislation has not been enacted; therefore, the projected funding levels for FY2012 and beyond through the 2030 horizon year for the LRTP are uncertain at this time. In the subsequent update cycle (many LRTPs are updated every 5 years) of the Region 3 LRTP, a more definitive projection of future available transportation funding can be provided that is reflective of the adopted reauthorization proposal's funding levels.

The majority of the Service's transportation system consists of asphalt, gravel, and native roads. FHWA identifies route segments and assigns route numbers and functional classifications for each route. All segments (roads and parking lots) are mapped using GPS and visually assessed for condition. Roadways are given a rating of excellent, good, fair, poor or failed based on evaluation of a series of characteristics such as cracking, roughness and rutting. Then an estimate is provided to upgrade each route to excellent condition.

Table 24 shows calculations of the amount of money that would be required to bring all the FWS maintained roadways in each state of Region 3 to an excellent condition rating. The Road Inventory Program (RIP) Cycle 4 data compiled by the FLH was utilized to develop this analysis.

Other transportation improvements such as parking lots, trails, culverts and bridges and enhancements for non-motorized transportation are also needed. Thus, the estimate shown should be viewed as a minimum estimate of the costs required to maintain the existing service roadway system in Region 3 at an acceptable level.

Table 24 . Estimated Funding Required to Improve Region 3 roads

State	Miles of Roadway	Current Condition				Total Cost to Improve
		E	G	F	P	
Iowa	52.4	12%	59%	28%	1%	$1,425,104
Illinois	267.8	17%	50%	23%	10%	$2,177,645
Indiana	102.9	42%	45%	13%	0%	$147,400
Michigan	131.4	35%	45%	17%	3%	$1,650,400
Minnesota	351.5	28%	51%	17%	1%	$2,213,000
Missouri	131.0	42%	42%	15%	1%	$1,512,200
Ohio	58.2	24%	61%	15%	0%	$267,400
Wisconsin	102.6	27%	50%	23%	1%	$1,278,500
Total						$10,671,649

E-Excellent, G-Good, F-Fair, P-Poor. Minnesota has 5.9 miles of failed roadway segments.

Table 24 shows a total cost of approximately $10.7 million (in year 2008 dollars) required to maintain the existing Region 3 Service maintained public road system to desirable conditions. These estimates are based upon the currently available field inventory data on condition and take into account the location factors and unit cost information contained in the 2008 RS Means "Heavy Construction Cost Data" report (22nd Annual Edition). Location factors can greatly influence the cost of labor, equipment and material. These unit cost values are based on the published location factor (indicates the cost of commercial construction for major commercial centers); the remoteness factor (calculated by factoring in the distance and difficulty of accessing a specific construction site from the nearest urban area); and the prevailing federal wage rate factor for the specific area of the country.

A comparison of transportation needs and funding level expectations must be established for the Service to achieve stated goals of providing a safe and reliable transportation network that enhances visitor experience. Although "worst-first " strategies that prioritize worst condition roads for funding have been used in the past this will not be the case as we move toward more data-driven and/or performance-based decision making. This document aims to implement a process that analyzes transportation needs throughout the region and funds needs that are in alignment with stated goals and objectives.

3.1.1 Refuge Roads Program

The Refuge Roads Program (RRP) has been in existence since 1998. Between 2006 and 2011, approximately $3 million (11 percent of the national program) has been allocated to Region 3. These funds can be used for planning, programming, construction, reconstruction, and improvement of existing public roads in the National Wildlife Refuge System, including bridges and appurtenances, in connection with the administration of the National Wildlife Refuge System. In addition, up to five percent can be used for the improvement of public use trails within refuges. Through the RRP, the Service is working to improve public access to refuges and provide a better overall visitor experience. Eligible project types under this program include improvements to existing public use roads, bridges, parking lots, transit and trails, including those needed to correct identified safety problems at high accident locations within National Wildlife Refuges. Additional information on project eligibility can be found in the FWS publication *Guidance on the Federal Lands Highway Refuge Roads Program* (September 2005). This document can be viewed online: http://www.fws.gov/refuges/roads/guidance/priorities.html

The funds available for refuge roads are to be disbursed based on the relative needs of the various refuges. Funds are allocated to the RRP from the Federal Highway Administration (FHWA) according to Title 23 United States Code (USC), Chapter 2 Section 202(e). In keeping with its decentralized decision making structure, the Service has chosen to allocate the majority of its funds to its eight regional offices using an internally developed formula based on the National Park Service's Park Roads and Parkways Program fund allocation formula. The Washington Office is currently developing a process to integrate an allocation of funding for trails. A small percentage of the national program amount, which varies with the RRP actual allocation from the Highway Trust Fund, is used to fund the on-going Inventory and Assessment Program and national level research, technical assistance training, partnership development, and coordination of legislative affairs with the Service's Congressional and Legislative Affairs Division.

The Service's allocation formula has three components:

1) Size of a region's combined adjusted road/bridge/parking inventory

2) Amount of the region's road/bridge/parking assets in fair/good/excellent conditions

3) Public use (annual visitation) of the region's refuges, wetland management districts and hatcheries

The formula for regional funding allocation is broken down to the following percentages:

- 55% of a region's allocation is based on the miles of roads and their type (paved, improved gravel, improved native and native surfaces); square footage of bridges; square footage of parking lots and their type (paved, improved gravel, improved native, native surfaces and mowed). This data is gathered by the ongoing public use roads inventory conducted by Federal Lands Highway Division offices (FLH) of FHWA.

- 30% of the allocation is based on asset condition determined to be in fair/good or excellent condition.

- 15% of the formula is based on the amount of public visitation per region as reported in the Refuge Annual Performance Plan each year.

In Region 3, the Refuge Roads Program is establishing a more quantitatively based project selection process. The process outlined in the LRTP will improve project selection by creating a more transparent evaluation procedure that integrates defensibility and justification into identification of certain projects for advancement and implementation. Beyond project selection, the LRTP will also help to identify opportunities for the Service to make better use of refuge road funding by promoting partnerships with other agencies. Partnering will support reaching the Service's goal of facilitating cooperation with other federal, state, and local agencies and identifying opportunities to work together to conserve wildlife habitats.

3.1.2 Fish Hatchery Deferred Maintenance

The Region 3 Fisheries program is largely funded by resource management and reimbursable funds. Transportation plays a key role in mission critical activities for the fisheries program. Activities include transportation for fish release, fish transfer to acclimation ponds, and transfer for specific research purposes. Transportation activities assist in effort to promote sustainable fish populations in waterways in the Midwest.

Throughout the history of the fisheries program, deferred maintenance and resource management funds have been used to fund transportation activities and projects in the region. Transportation specific funding as part of the current Surface Transportation Act is not yet available for the fisheries program; however, this may change. Currently, the Service has proposed that the Refuge Roads Program be broadened to become the Fish and Wildlife Service Transportation Program, which will include fish production facilities in the region in addition to just wildlife refuges. If approved under new transportation legislation, funds will improve public use transportation assets on all Service lands, including National Fish Hatcheries. This Long Range Transportation Plan (LRTP) will help project prioritization for the program by influencing policy and planning level decisions.

3.2 ADDITIONAL SOURCES OF FUNDING FOR REFUGE TRANSPORTATION PROJECTS

Other funding sources are available for transportation improvements in addition to the funding provided through the RRP. The following programs and funding sources are examples of those have been used on past Service transportation projects.

Transportation enhancements include:

- Recreational trails program
- Scenic byways
- Rivers, trails, and conservation assistance program
- Public lands highway – discretionary program
- High priority projects program
- Emergency relief for federally owned roads (ERFO)
- Paul S. Sarbanes Transit in Parks

These programs and funds are available at the state and local level, which is why partnering is critical to addressing the recognized funding gap. A description of each funding program is in the following section.

3.2.1 Transportation Enhancements

Transportation enhancement (TE) activities offer funding to help expand transportation choices and enhance the built and natural environment. To be eligible for funding, a TE project must fit into one or more of the 12 eligible transportation enhancement activities related to surface transportation, including pedestrian and bicycle infrastructure and safety programs, scenic and historic highway programs, landscaping and scenic beautification, historic preservation, and environmental mitigation (23 USC 104). Every project must demonstrate a relationship to the surface transportation system. Overall, bicycle and pedestrian projects have been the most commonly funded project type since the TE program began (55%).

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorized approximately $800 million annually for 2005 to 2009. Funds are distributed through state departments of transportation (DOT) and each has its own process to solicit and select projects. This program is an 80 percent federal share. The Service could provide the 20 percent match with other federal funds to which it has access, or through partnerships with other federal, state, or local agencies. Profiles for each state's transportation enhancement program can be found online: http://www.enhancements.org/Stateprofile.asp.

TE funded projects in Region 3:

Desoto NWR - Steamboat Bertrand Metals Conservation Project

Project was $325,000 to preserve, document and catalogue metal artifacts from the Steamboat Bertrand collection at the Desoto NWR. This collection is located in the visitor center and is a significant historical and archaeological transportation enhancement. (This collection has been temporarily relocated, but will reopen during 2012).

Figure 20. Desoto NWR Project

Big Stone NWR - "No Bridge" Fishing Pier, Parking Lot, Access Trail Project.

This project has allowed access to viewing of water fowl and shore birds as well as access to recreation hiking and fishing.

Figure 21. Big Stone NWR Project – The before picture

Figure 22. Big Stone NWR Project – The after picture

Figure 23. Big Stone NWR – Access to viewing of water fowl

Figure 24. Big Stone NWR – Observation deck

3.2.2 Recreational Trails Program

The Recreational Trails Program (RTP) provides funds to the states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail use (23 USC 206). SAFETEA-LU authorized $370 million annually in funding nationwide. Examples of trail uses include hiking, bicycling, equestrian use, all-terrain vehicle riding, and four-wheel driving. Eligible activities include trail maintenance and restoration and new trail construction. Funds are distributed through the states, and each has its own process to solicit and select projects. This program is an 80 percent federal share. The Service could provide the 20 percent match with other federal funds to which it has access, or through partnerships with other federal, state, or local agencies. There are currently no RTP funded projects associated with the FWS wildlife refuges in Region 3

In the summer of 2011, a Regional Alternative Transportation Evaluation (RATE) for Region 3 was completed. The RATE report details information on trails that pass near or through refuges. Specifically the report includes a table with alternative transportation opportunities including locations of connections with major regional recreation trails. The Region 3 RATE report can be found in Appendix J.

3.2.3 Rivers, Trails, and Conservation Assistance Program

The Rivers, Trails, and Conservation Assistance (RTCA) Program provides assistance with planning, project development, and construction related to natural resource conservation and outdoor recreation. While not a funding program, this community assistance branch of the National Park Service offers valuable staff assistance for local project planning for communities, state and Federal agencies. The RTCA Program in the Midwest Region is managed from RTCA regional offices in Omaha, Nebraska. The following RTCA project is associated with the FWS in Region 3:

Hackmatack NWR- Preservation of over 5,000 acres of land in NE Illinois and SE Wisconsin

The RTCA guides the Friends of Hackmatack through the process of defining the acres to be protected, partnership building and public involvement opportunities while building a sustainable non-profit organization.

3.2.4 Scenic Byways

The National Scenic Byways Program is funded through FHWA to help recognize, preserve, and enhance designated roads throughout the United States. Designation is awarded to certain roads based on one or more archeological, cultural, historic, natural, recreational, and scenic qualities (23 USC 162). Eligible activities include, but are not limited to, planning, non-motorized trail enhancements, interpretive facilities and signage, pedestrian access, and roadway improvements. SAFETEA-LU allocated $175 million in funding over six years for byways related projects, with $43.5 million allocated in 2009. FHWA awards funds competitively each year covering 80 percent of project cost, with the requirement that the remaining 20 percent be matched by local, state, other federal or in-kind means.

Grant applications are submitted annually. The Service submits applications for National Scenic Byways funding through the state DOT, in cooperation with or through a Byway Organization. Because many of the National Wildlife Refuge and National Fish Hatcheries units in Region 3 are located along or near National Scenic Byways, partnering with the local scenic byway organizations is important to gain access to this funding for potential projects. The following scenic byways projects are in Region 3:

Upper Mississippi - Browns Marsh Observation Deck Halfway Creek area

In 2006, this project funded the construction of an Architectural Barriers Act (BA), and American Disabilities Act (ADA) compliant, accessible observation deck overlooking Browns Marsh. This deck is located on the Great River State Bike Trail, WI.

Figure 25. Browns Marsh Project

Upper Mississippi - Shady Maple Overlook (Upper Mississippi River National Wildlife and Fish Refuge)

This existing pull-off is just below Goose Island (south of La Crosse, WI) along Hwy 35. Improvements were made to the pull-off including aesthetics, parking area, and interpretation. This area overlooks the Refuge's Goose Island No Hunting/No Motors Zone, which makes it a quieter backwater area near the Great River Road (GRR). Byway travelers will get to see migrating waterfowl close-up. The Service is working with Wisconsin Department of Transportation (WisDOT) on this project.

Figure 26. Shady Maple Project

Trempealeau NWR - Bike Trail Enhancement

This project will provide safety enhancements for the Great River State Trail on the Trempealeau NWR, as well as shorten the trail for southbound trail travelers. The plan is to widen a one-way portion of the Refuge's auto tour route to accommodate the road and a two-way bike trail. This involves widening about 1 mile of road. This project would also include a pull-off along the widened trail with interpretation for a CCC building remnant. The Service is working with Wisconsin Department of Natural Resources on this project.

Genoa National Fish Hatchery- Design and Construction of an Education and Interpretive Facility

This facility is located adjacent to the Upper Mississippi National Fish and Wildlife Refuge and three miles south of the river town of Genoa, Wisconsin. FHWA awarded a $1.69 million grant. The new education and interpretive center will showcase the unique natural, historical and cultural resources of the Upper Mississippi River basin.

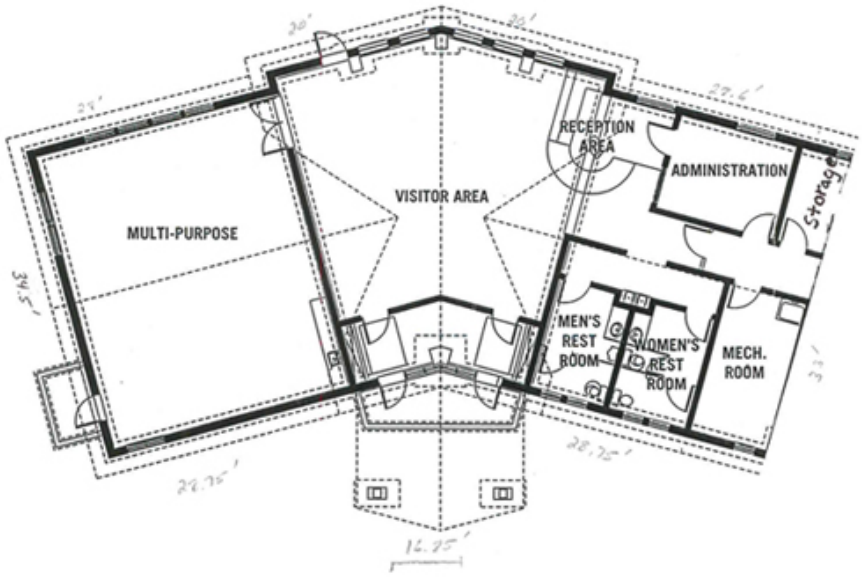


Figure 27. Genoa NFH Project

3.2.5 Public Lands Highway – Discretionary Program

Public Lands Highway – Discretionary Program (PLHD) funds are available for transportation planning, research, engineering, and construction of highways, roads, parkways, and transit facilities within federal public lands. These funds are also available for operation and maintenance of transit facilities located on federal public lands. Funding is provided for projects designated by Congress. Certain projects not designated by Congress may also be eligible. Because only state departments of transportation can submit candidate projects for this program, it is critical that the Service coordinates with the respective state Departments of Transportation to align common project priorities to become eligible for these funds. Eligible projects may include:

- Transportation planning for tourism and recreational travel, including National Forest Scenic Byways, Bureau of Land Management Back Country Byways, National Trail System, and similar federal programs
- Adjacent vehicle parking areas
- Interpretive signs
- Acquisition of scenic easements and scenic or historic sites
- Provision for pedestrians and bicycles

There are currently no PLHD funded projects associated with Region 3 FWS units.

3.2.6 High Priority Projects Program

The High Priority Project (HPP) program provides designated funding for specific projects identified in SAFETEA-LU. High priority projects are funded by contract authority and are available until expended. This program is an 80 percent federal share. The 20 percent match may come from other FLH Program or Service appropriated funds. All eligible projects must be listed in section 1702 of SAFETEA-LU. Region 3 received HPP funds for the following project:

Detroit River International Wildlife Refuge (Michigan)- Humbug Marsh Unit Linked Greenways System

The High Priority Projects Program awarded $880,000 for the construction of roads and trails. This project constructed a 2 mile paved bike trail along the Humbug Marsh unit .This trail will eventually connect all Detroit downriver communities.

Figure 28. Detroit River Project

Detroit River International Wildlife Refuge - Land Acquisition Adjacent to I-75Parcels are beginning to be purchased with the $1.7 million that was granted to the Service. Land purchased will be restored to native wetlands for mitigation purposes.

3.2.7 Emergency Relief for Federally Owned Roads

The Emergency Relief for Federally Owned Roads (ERFO) program was established in July 1977 and is authorized under Title 23, United States Code (USC) Section 125(e). The ERFO program provides assistance for the repair and reconstruction of federal roads that have been damaged by a natural disaster over a wide area or by a catastrophic failure from any external cause to pre-disaster conditions. This program is meant to supplement the commitment of resources from other federal sources to help pay unusually high expenses resulting from extreme conditions. Funds are provided from the Highway Trust Fund. No match is required; federal share is 100 percent.

In 2008, Region 3 requested ERFO Funding for repair of road damages at several refuges in Illinois as a result of extreme weather and significant storm flooding events that occurred the last two weeks of February and between March 18 and 29. Squaw Creek NWR received funding to restore the gravel surface auto tour route. The damages included a muddy, impassible surface due to a washout of gravel from the driving surface due to high water levels. Approximately half of the 10 mile tour loop experienced damage, 3.5 miles were heavily damaged. Approximately $120,000 was awarded to repair the most heavily damaged segment.
Figure 29 shows Squaw Creek NWR Auto Tour Route - February 2008 damage from severe snow and ice storm. Figure 30 shows the same route after being repaired.

Figure 29. Squaw Creek NWR Project – The before

Figure 30. Squaw Creek NWR Project – The after

3.2.8 Paul S. Sarbanes Transit in Parks Program

The Sarbanes Transit in Parks program is administered by the Federal Transit Administration in conjunction with the Department of the Interior and U.S. Forest Service. It is a competitive grant program open to the Service, the National Park Service, Bureau of Land Management, Bureau of Reclamation, and the U.S. Forest Service. The program funds capital and planning expenses for alternative transportation systems such as shuttle bus, rail, or any other publicly available means of transportation and includes sightseeing service. It also includes non-motorized transportation systems such as pedestrian and bicycle trails that result in a reduction of vehicle miles traveled. The goals of the program are to conserve natural, historical, and cultural resources; reduce congestion and pollution; improve visitor mobility and accessibility; enhance visitor experience; and ensure access to all, including persons with disabilities. In addition, 10 percent of the annual allocation is available for technical assistance in alternative transportation planning where project proposals are not already well-developed. Allocation for this program is approximately $27 million each year.

Neal Smith NWR - Planning/Engineering for a Bike Trail along the entrance road

This project engineering will begin in 2011 and will lead to the construction of a paved shoulder and 2 bike bridges along the Neal Smith NWR entrance road.

Figure 31. Neal Smith NWR project

3.3 PROJECT SELECTION PROCESS

Currently, transportation projects in Region 3 are generated through work orders developed in the Service Asset Maintenance Management System (SAMMS). The Service uses SAMMS to identify, plan, prioritize and implement capital improvements and maintenance projects under the RRP and fisheries deferred maintenance funding at both the regional and field unit level. Because of differences in the funding sources between the refuge and fisheries programs, the RRP relies on a five-year work plan, while the fisheries program relies on a five-year maintenance plan for prioritized projects, both under the direction of the regional transportation coordinator. However, SAMMS work orders do not account for projects within the fisheries reimbursable program or other funding sources. Therefore, when in view of regional transportation priorities as a whole, it is important to consider multiple funding sources across all Service programs.

This LRTP seeks to create a framework for a project selection process based on established goals and available funding that clearly identify Regional and National Service priorities for the Transportation system. This process will serve as a guide to programming future projects. The core team (Brandon Jutz, Maggie O'Connell, David Radloff, and Jared Bowman from FWS; and Lewis Grimm, Christoph Jaeschke, and Norah Ocel from FHWA-EFLHD) met in December 2010 to discuss the regional FWS priorities and a methodology for ranking projects. These projects can be proposed by Unit level Service staff, Regional Leadership and interested parties or generated by SAMMS work orders. Once proposed projects are submitted to the Regional Transportation Coordinator they can undergo review and evaluation by the Regional Refuge Transportation System Committee. The members of the committee will consist of 3-5 persons one of which will be the Regional Transportation Coordinator.

3.3.1 Evaluation Criteria

The following criteria for project selection were chosen during the December 2010 core team meeting as a combination of the agencies' goals and top priorities:

- Resource Protection 30% - avoid, minimize and mitigate potential impacts to natural resources and wildlife
- Visitor Experience 20% - relates to wayfinding, visitor safety, and access
- System Performance 25% - improves safety and condition of transportation assets

- Partnering 10% - collaboration with other groups/agencies, multiple funding sources
- Sustainability 10% - extending use of facilities and incorporating sustainable practices into construction, operations, and maintenance
- Planning 5% - coordination with other transportation or management plans

3.3.1. 1 Process

Through a quantitative screening using the "Project Evaluation Criteria Sheet" shown in Table 25, a value and a weight is assigned to each potential project by an Evaluation Committee. After the proposals are evaluated and prioritized, the Regional Refuge Transportation System Committee will select and program projects, considering additional qualitative factors such as availability of funds, project development delivery schedules, and time constraints for right-of-way and environmental work.

It is expected for the Project Selection Process Criteria to be implemented in the summer of 2012.

Table 25 . Project Evaluation Criteria Score Sheet

Evaluation Criteria	Value (Raw score)	Weight (%)	Rating (Score x Weight)
1. Resource Protection			
Mitigating impact on critical habitat and fragmentation? (YES=10; NO=0)		3%	
Mitigating impact on hydrology? (YES=10; NO=0)		3%	
Restoring connectivity? (YES=10; NO=0)		3%	
Enhancing wildlife crossings? (YES=10; NO=0)		3%	
Minimizing impact on stream buffers and water quality? (YES=10; NO=0)		3%	
Minimizing impact on water movement and rights? (YES=10; NO=0)		3%	
Minimizing impact on Wetlands? (YES=10; NO=0)		3%	
Minimizing impact on endangered species/in priority species list?(YES=10;NO=0)		3%	
Minimizing impact on federally and state threatened species? (YES=10; NO=0)		3%	
Complying with wildlife action plan? (YES=10; NO=0)		3%	
Subtotal		**30%**	
2. Visitor Experience			
Enhancing/providing wayfinding signage? (YES=10; NO=0)		4%	
Identifying critical network points? (YES=10; NO=0)		2%	
Closing connectivity gaps? (YES=10; NO=0)		2%	
Avoiding levy or marsh? (YES=10; NO=0)		2%	
Enhancing/providing a traveler information system? (YES=10; NO=0)		2%	
Providing a safe experience? (YES=10; NO=0)		2%	
Consistent visual experience? (YES=10; NO=0)		2%	
Following good principles of design? (YES=10; NO=0)		2%	
Integrating interpretation into project? (YES=10; NO=0)		2%	
Subtotal		**20%**	
3. System Performance			
Enhancing/providing safety? (YES=10; NO=0)		10%	
Improving infrastructure conditions? (YES=10; NO=0)		5%	
Improving road inventory rating? (YES=10; NO=0)		5%	
Preserving good road surface? (YES=10; NO=0)		5%	
Subtotal		**25%**	
4. Partnering			
Using outside funding source availability? (YES=10; NO=0)		2%	
Involvement of other federal, state and local agencies and private sector? (YES=10; NO=0)		2%	
Leveraging of other funding sources? (YES=10; NO=0)		2%	
On Scenic Byway? (YES=10; NO=0)		1%	
Trail Partnering? (YES=10; NO=0)		2%	
Partnering with County road? (YES=10; NO=0)		1%	
Subtotal		**10%**	
5. Sustainability			
Road abandonment? (YES=10; NO=0)		1%	
Increasing remaining service life of facility? (YES=10; NO=0)		2%	
Reinvestment quality? (YES=10; NO=0)		1%	
Promoting walking and biking/reducing green house gas emissions? (YES=10; NO=0)		2%	
Usage of raw materials for project? (YES=10; NO=0)		1%	
Usage of local materials for project? (YES=10; NO=0)		1%	
Seeking to limit annual operations and maintenance costs? (YES=10; NO=0)		1%	
Is project environmentally friendly? (YES=10; NO=0)		1%	
Subtotal		**10%**	
6. Planning			
Existing Road Safety Audit (RSA)? (YES=10; NO=0)		2%	
Filling data gaps? (YES=10; NO=0)		2%	
Project included in CCP, TIP, STIP or other plan? ((YES=10 per plan; NO=0)		1%	
Subtotal		**5%**	
Proposed Project Score Total :		**100%**	

CHAPTER 4: OUTREACH AND COMMUNICATION PLAN

An outreach plan for long-range transportation planning is designed to solicit input from interested parties and inform stakeholders for whom the LRTP may be of interest. Outreach helps stakeholders understand and influence how LRTP strategies could eventually translate into specific projects. Outreach methods are used to communicate the intent of the plan, garner agreement of the plan's approach and assumptions, and solicit input that furthers the intent and/or effectiveness of the plan, and provide opportunities to comment on a draft plan. Although the level of outreach conducted on behalf of this LRTP does not meet the levels required of NEPA projects, it can be used as a springboard for subsequent NEPA efforts as projects undergo preliminary engineering phases.

During the development of the LRTP, agency senior management was briefed on LRTP purpose, goals and objectives, and status to ensure concurrence with the plan and its outcome. Buy-in from senior management is exceedingly important for this LRTP as the plan reflects elements the agency's national transportation policy goals.

External outreach helped to ensure that the LRTP would in fact promote policies that are mutually beneficial to non-Federal lands and Federal lands interests. The intent is to further the interests of regional and local communities while also fulfilling the mission of FWS wherever possible.

The goals of the LRTP for Region 3 outreach effort include:

- Inform and educate external stakeholders about the FWS transportation program and the process used for transportation planning for FWS
- Provide opportunities for stakeholders to identify their concerns, values, ideas, and interests
- Allow agency management and external stakeholders the opportunity to provide input to the LRTP
- Build support for the transportation planning process
- Strengthen existing partnerships while forging new ones

4.1 OUTREACH LEVELS

Outreach activities occur throughout the transportation planning process. This LRTP builds upon, and is integrated with, other planning efforts for consistency among the partner agencies' planning and outreach activities, thereby providing multiple opportunities for entities internal and external to the agencies to become aware and/or involved in the planning process.

Transportation planning-related outreach is categorized by policy-level, plan-level, and project-level opportunities. Policy-level outreach occurs during the development of a LRTP and other regional transportation plans. Such long-range policy plans provide guidance and direction for a transportation program. In short, they address "the big picture." Plan-level outreach occurs during development of shorter-term plans like agency specific TIPs, which list specific desired improvements and often include prioritized lists of projects to be implemented over the plan's timeframe. Project-level outreach occurs when specific projects are being developed through the process used to evaluate and assess projects under NEPA.

The public will have further opportunity to provide input on specific proposed projects through the process used to evaluate and assess projects under NEPA. All projects that include Federal funding must comply with the NEPA process. The NEPA process requires public outreach at several stages: project scoping (to present the proposed project and identify potential issues), public review of the draft environmental document (environmental assessment or environmental impact statement), and public review of the final environmental document. Categorical exclusions have less public outreach. Additional public involvement opportunities are often provided, such as public meetings at various stages of project development.

Recognizing that not all potential stakeholders are interested in participating in every outreach activity, different stakeholders were identified, as shown in Appendix F. Outreach content is tailored to the interests of specific audiences. Tables in Appendix F show the most involved stakeholders, with involvement intensity and level of information detail regarding the LRTP.

Appendix F shows the public involvement plan for this LRTP, as well as the list of all internal and external stakeholders contact information in Region 3.

4.2 OUTREACH DELIVERY TOOLS

Numerous outreach tools are used during the development of a LRTP. Outreach tools range from passive informational resources such as newsletters and websites, to more formal briefings and presentations. Participation is achieved by using the following methods:

Briefings

Briefings are comprised of a summary and status of work to date and future planned activities. They are used most extensively for participants that are actively involved in the development of the plan (core and extended teams, as well as other internal staff). These briefings also provide senior and other agency leaders LRTP progress updates and findings. They contain question and answer periods as well as an opportunity for feedback. Participants are engaged throughout the planning process and provided concise information in-person or by phone discussion by Core Team representative(s).

Presentations

In-person presentations provide a comprehensive basis for understanding the LRTP effort through direct face-to-face interaction. Presentations are tailored specifically to audience interests.

4.3 CAPTURING COMMENTS

During development of the LRTP, comments were collected through various means. Comments received during in-person outreach events such as meetings and workshops were documented in meeting notes. Comments were also collected through the monthly conference calls from the core team members. Comments received from agency senior management were collected in meeting notes, memorandums, and emails. Entities were given either written or verbal confirmation that their comments were received. All comments were evaluated and many were incorporated into the LRTP.

CHAPTER 5: RECOMMENDATIONS FOR FUTURE PLAN ACTIVITIES

While the most accurate and latest/most recent data and concepts are incorporated in this plan, the always changing and evolving transportation needs of the region should be reflected as comprehensively as possible for the next plan update. Through the development of this plan document and the transportation planning process the Core Team and relevant staff have identified recommendations for future planning efforts.

Several items will be addressed during the next update and plan activities.

- *Initiate LRTP update in 5 years of this document.* Based on the need for additional analysis described in the following action items, this plan should be revised within 5 years. If there are significant changes to legislation and the Refuge Roads program, the update may occur sooner.

- *Use the most latest available version of FWS Cadastral GIS data* to do analysis and to depict unit maps in the refuge and fish hatchery fact sheets. The Cadastral GIS data can be found at http://www.fws.gov/GIS/data/CadastralDB/index.htm. Use: FWS approved and FWS interest layers to show the approved boundaries and FWS owned managed lands.

- *Develop a better cross-compatibility between data sources* to eliminate data gaps and increase the reliability and usefulness of identified needs and hotspot analyses.
    - Develop a better cross-compatibility between SAMMS and RIP data for roads, parking lots, and trails
        - Data will need to be reconciled and fully converted into a GIS format by both agencies for accuracy.
        - Create a master data management system that uses the same identifier code/number for assets.
    - Update refuge unit GIS shapefiles at EFLHD with the most recent version of FWS cadastral GIS layers.
    - Coordinate GIS interagency data/maps by creating a Federal Lands Management Agency transportation GIS database and keep it in a central location as well as sharing all and most updated information.

- *Improve resource protection analysis.* Use a systematic method to quantify the significance of the conflict between fish and wildlife and transportation facilities to better demonstrate a need for improvements.

    - Obtain wildlife habitat locations and fish passage corridors at a regional and local level to help identify potential animal-transportation conflict areas as well as the type of potentially impacted wildlife.

    - Identify the locations of access conflicts between resources (fish and wildlife habitat) and transportation facilities to help decision makers develop appropriate solutions.

    - Obtain fish passage data to help identify potential fish-transportation conflict areas and potentially impacted species.

    - Obtain non-fatal vehicle-animal collision data to provide a more complete understanding of historic vehicle-animal conflict hot-spots.

- *Improve safety and condition analysis*

    - Obtain AADT for all Service roads to help quantify use and add to the meaningfulness of need determinations.

    - Collect crash data for all Service roads to help identify areas in need of safety improvements within service lands.

    - Use a detailed crash rate analysis to determine hotspots.

    - Obtain complete current replacement value, asset priority index, facility condition index, and deferred maintenance for all refuge and hatchery roads, parking lots, and trails to eliminate data gaps and improve the reliability of need determinations.

    - Use a complete dataset of non-Service road use, condition, and crashes to eliminate data gaps in the determinations of improvement need and partnership opportunity.

- Full implementation of the National Safety Management System (SMS) at the regional level to monitor and identify where resources are needed when it comes to addressing safety.

- *Improve welcome and orientation analysis.*

  - Identify where State way-finding and variable message signs are located to assist in identifying areas of possible partnership. Use a Service sign inventory that includes sign location, condition, and adherence to Service sign standards (those specifically related to way-finding and interpretation) to help identify locations of need.

  - Quantify access points and create a geo-referenced mapped inventory

  - Identify existing visitor counters and or propose a counting system to provide data to the regional offices.

  - Utilize USFWS Visitor Use survey results where applicable or create and complete an OMB-approved user survey on transportation.

  - Identify which trails are eligible for transportation funding. Identify visitor's preferences related to type of trails (asphalt, concrete, gravel, native) and consider with other factors such as traffic (pedestrian and multi-modal) volumes and context of trail.

  - Identify new and under construction major visitor amenities (visitor centers or major trails). This may indicate potential for future growth in the transportation network.

- *Showcase planning efforts put into practice*

  - Incorporate examples of how the project selection criteria specified in this plan has been built-in into the programming of projects.

- *Improve partnership analysis*

  - Identify any and all other partnership opportunities with non-Service transportation agencies by identifying route jurisdiction for the roads that are within at least one mile from any refuge and hatchery unit in the region.

  - Identify and geo-reference refuge units that can be considered urban refuges (proximity to a metro area and/or within a Metropolitan Planning Organization (MPO) to leverage better funding opportunities.

- *Improve sustainability analysis and section*

    - Perform comprehensive risk analysis to determine risks to transportation resources from climate change. Factors that should be included in a comprehensive risk analysis are: Precipitation levels, including associated impacts on water tables, flooding and soil moisture; and temperature changes.

    - Create a transportation action plan for climate change and share the information.

    - Provide boilerplate transportation language for CCPs and CHMPs to improve the quality of transportation material in these plans.

- *Improve the outreach and communication plan*

    - With the publication of the draft LRTP, comments received are reviewed and used to improve the quality and usefulness of the final LRTP. Comments received regarding the draft LRTP should be answered as to how the comment will be addressed.

    - The use of more outreach tools:

        - Newsletters. Use newsletters to introduce the LRTP effort, and to build ongoing interest. Newsletter content should be concise and suitable for all levels of outreach participants.

        - Website. A website is to be intended for all outreach participants as a source for general project information, updates, and forum for input.

        - E-blast. It combines advantages of printed and electronic resources through the use of an email list serve. The e-blast is to be intended for all interested outreach participants.

        - Document all ad hoc comments received through the project website and e-mail in digital form.

As the LRTP is updated, there will be additional refinements of the Vision and Goals. As transportation funding for Refuges transitions toward a Performance- Based Program, performance measures and monitoring components will be incorporated as well. It is important that the LRTP reflects the direction of the transportation systems in Region 3 and it serves as a tool to coordinate and interface with partners.

APPENDIX A

Plan Contributors

LRTP Contributors

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APPENDIX B

National Wildlife Refuges

and

Fish Hatcheries in Region 3

National Wildlife Refuges and Fish Hatcheries by State

State	Station	Headquarters/Complex
IA	Boyer Chute NWR	-
IA	DeSoto NWR	-
IA	Driftless Area NWR	-
IA	McGregor District, Upper Miss National Wildlife and Fish Refuge	-
IA	Neal Smith NWR	-
IA	Port Louisa NWR	Mark Twain NWR Complex
IA	Union Slough NWR	-
IL	Chautauqua NWR	Illinois River NWR Complex
IL	Crab Orchard NWR	-
IL	Cypress Creek NWR	-
IL	Emiquon NWR	Illinois River NWR Complex
IL	Illinois River National Wildlife and Fish Refuge	-
IL	Mark Twain NWR Complex	-
IL	Meredosia NWR	Illinois River NWR Complex
IL	Middle Mississippi River NWR	Mark Twain NWR Complex
IL	Two Rivers NWR	Mark Twain NWR Complex
IL	Upper Mississippi River National Wildlife and Fish Refuge - Savanna District	-
IN	Big Oaks NWR	-
IN	Muscatatuck NWR	-
IN	Patoka River NWR	-
MI	Detroit River International Wildlife Refuge	-
MI	Grassy Island NWR	-
MI	Gravel Island NWR	-
MI	Harbor Island NWR	Seney NWR
MI	Huron NWR	Seney NWR
MI	Jordan River National Fish Hatchery	-
MI	Kirtland's Warbler Wildlife Management Area	Seney NWR

State	Station	Headquarters/Complex
MI	Michigan Islands NWR	Seney NWR
MI	Pendills Creek National Fish Hatchery	-
MI	Seney NWR	-
MI	Shiawassee NWR	-
MI	Sullivan Creek National Fish Hatchery	-
MN	Agassiz NWR	-
MN	Big Stone NWR	-
MN	Crane Meadows NWR	-
MN	Glacial Ridge NWR	-
MN	Hamden Slough NWR	-
MN	Mille Lacs NWR	-
MN	Minnesota Valley NWR	-
MN	Northern Tallgrass Prairie NWR	-
MN	Rice Lake NWR	-
MN	Rydell NWR	-
MN	Sherburne NWR	-
MN	Tamarac NWR	-
MN	Upper Mississippi National Wildlife and Fish Refuge Headquarters	-
MN	Winona District of the Upper Mississippi River NWFR	-
MO	Big Muddy NWR	-
MO	Clarence Cannon NWR	Mark Twain NWR Complex
MO	Great River NWR	Mark Twain NWR Complex
MO	Middle Mississippi River NWR	Mark Twain NWR Complex
MO	Mingo NWR	-
MO	Neosho National Fish Hatchery	-
MO	Ozark Cavefish NWR	-
MO	Pilot Knob NWR	-
MO	Squaw Creek NWR	-

State	Station	Headquarters/Complex
MO	Swan Lake NWR	-
OH	Cedar Point NWR	Ottawa National Wildlife Refuge Complex
OH	Ottawa NWR	Ottawa National Wildlife Refuge Complex
OH	West Sister Island NWR	Ottawa National Wildlife Refuge Complex
WI	Fox River NWR	-
WI	Genoa National Fish Hatchery	-
WI	Gravel Island NWR	-
WI	Green Bay NWR	-
WI	Horicon NWR	-
WI	Iron River National Fish Hatchery	-
WI	La Crosse District Upper Mississippi National Wildlife and Fish Refuge	-
WI	Necedah NWR	-
WI	Trempealeau NWR	-
WI	Whittlesey Creek NWR	-

Sources: FWS, http://www.fws.gov/midwest/Fisheries/library/R3-Fishlines/current-edition.pdf

WMD = Wetland Management District

NWR = National Wildlife Refuge

APPENDIX C

Data Sources

C. DATA SOURCES AND ANALYSIS

Baseline conditions are established for a number of factors including physical characteristics as condition and asset type as well as external factors such as value, visitation, population, sensitivity to/from climate change, safety, and non-service partnership opportunities.
Understanding of these factors is achieved by synthesizing various datasets and establishing a baseline condition. The *Data Sources and Analysis* appendix documents the data and processes used to synthesize information used in the baseline condition analysis.

Data Sources Overview

Information used to establish baseline conditions is mined from regularly updated Service data sources like the Service Asset Maintenance Management System (SAMMS) and the Road Inventory Program (RIP). SAMMS provides information on facility and equipment deficiencies, justifies budget requests for maintenance needs, and provides a sound basis for management decision-making. RIP data contains a condition assessment of all Service roads, parking lots, and trails. The dataset is updated in regular five year periods.
Supplemental information from non-Service sources is also used to establish baseline conditions. These sources include the US Census, Federal Highway Administration (FHWA), Federal Transit Administration (FTA), US Geological Survey (USGS), Federal Emergency Management Agency (FEMA), Environmental Systems Research Institute (ESRI), Bureau of Transportation Statistics (BTS), and state departments of transportation (DOT). Table 1 indicates commonly used datasets for determining baseline conditions in each goal area.

Table 1 . Data Sources

Goal Area	Dataset	Source
1. Resource Protection	Fatal Accidents	NHTSA and State DOTs
2. Conditions and Safety	Asset Conditions (RIP)	FWS
	API Rankings (SAMMS)	FWS
	Facility condition index (SAMMS)	FWS
	Crashes	DOT
	Road Pavement Condition	DOT
	Annual Average Daily Traffic (AADT)	DOT
3. Welcome and Orient	Visitation	FWS
	Population	US Census
	Populated Places	US Census
4. Planning	Service planning status	FWS
	State Planning boundaries	DOT, FWS
5. Partnerships	N/A	N/A
6. Sustainability	FWS Plans	FWS
	Seismic Risk	USGS
	Air quality non-attainment areas	Bureau of Transportation Statistics (BTS)
	Transit Districts	FTA, BTS, State DOTs, Google

C.1 Resource Protection

At this time, region-wide, resource protection data consists of fatal accident locations caused by animal vehicle collisions. This data was derived from NHTSA vehicle fatality tables, for 2006 through 2009. Filtering for animal collision deaths (using "HARM_EV" = 11), latitude and longitude values were used to plot, and select based on proximity to FWS boundaries. A spatial join was used to identify the accidents that were located in or near a particular unit.

Table 2 . Regional Animal/Vehicle Collision Fatalities

Year	Fatalities related to Animal / Vehicle Collisions	Locations of AV Collision fatalities within one mile of FWS unit	Near FWS unit	On Route/Road
2006	59	1	Big Muddy NF and WR	US Hwy 435
2007	66	1*	Upper Mississippi River NWR and Fish Refuge – Savanna District *	US Hwy 67*
2008	65	1	Neal Smith NWR	CR 117
2009	47	-	-	-

Source: NHTSA, July 2011, *Data from State Files, see C.2 Non-Service Road Condition, Use, and Safety.

C.2 Safety and Conditions

The Service is committed to providing safe and reliable access to and within its lands and facilities. As such, baseline condition analyses have been established for issues related to access and safety.

Priority, Condition Index, Value, and Condition

Transportation asset conditions, value, priority, and deferred maintenance summaries combine SAMMS, RIP, and GIS data provided by FHWA (Federal Lands Highway (FLH) and FWS. This information is summarized in Table 3 through Table 109. Current asset priority index (API), and facility condition index (FCI) data is aggregated to the unit level. In order to decrease data gaps between RIP and SAMMS databases and get better tabular summaries, the RIP and SAMMS data was reconciliated and joined by "asset id" manually. For trails, the same labor intensive procedure of joining "asset-id" fields was performed.

To verify the completeness or coverage of the SAMMS information, the recorded trail lengths were compared against measured trail lengths generated through the GIS dataset. The outcome of this exercise is represented in the "% Coverage" columns in the final outcome table.
Deferred maintenance (DM) could not be summarized using the process described above because the table containing DM values does not list trail lengths. As a result, information could not be weighed/averaged or verified for completeness. Instead, and despite the gap in asset IDs, the SAMMS asset number was used to perform a table relate with the GIS dataset. The measured lengths generated through the GIS dataset were then used to weighed/average DM information.

Road, Parking, and Trail Conditions

To better understand the composition of roads, parking, and trail condition rankings, it was necessary to aggregate surface type from condition ranking. This information is summarized in Table 111 through Table 120 in addition to the condition summary tables in the Goals and Conditions chapter, *Safety and Condition* section. The result is a table that breaks out the lengths of surface type contained within a condition ranking. For context, this information is supplemented with: percentages of surface type within a particular condition category, percent of a particular condition and surface type that make up the total of Service trails, and total percent condition category of all trail miles – regardless of surface type. The summaries were produced using Access queries of RIP data.

FWS Trail Deficiencies

Trail deficiencies are identified in baseline conditions in tabular form by state, unit, and deficiency classification. Access queries of RIP trail deficiencies data show the number and type of deficiencies found in each unit, by state. This data is shown in Table 110.

Non-Service Road Condition, Use, and Safety

The LRTP uses non-service road condition, use, and safety improvement information to help identify areas in need of improvement and possible partnership support. To accomplish this, data is required from each Region 3 state's department of transportation.

To determine fatalities where the main cause was an animal, selection by attributes was done. For table zcta_year, the attribute used was firstharm=25(animal) and for table zsev, attribute used was csev=1(fatal). There were five fatalities related to animals as the main cause, between 2006 and 2010, from those, only one occurred within one mile of the Upper Mississippi River NFWR – Savanna District on US Hwy 67.

For Iowa, crash data was provided as a GIS layer and as tables for years 2006 to 2010. Tables were spatially joined by field "CRASH KEY". The crashes shown in table "hotspots" are crashes in general, not only fatalities. There were two hot spots identified based on a combination of the number of crashes and the Annual Average Daily Traffic (AADT) on that segment of road ((Crashes/AADT)*1000>=5.00).
AADT data was also provided however not all routes had AADT values. Roadways within one mile from a refuge that had more than 20,000 AADT, were I-29/680 near Boyer Chute NWR and US Hwy 20 near Upper Mississippi River NWR and Fish Refuge – Savanna District.
Pavement data was provided for main roadways around refuges as a GIS layer for principal and secondary roadways.

For Illinois, crash data was provided as a GIS layer for years 2006 to 2010 with collision type information. AADT data was also provided in a GIS format however the years of data varied.

Pavement condition data was not provided. There were only two animal related fatalities in non-service roads in Illinois in the last five years; however they were not within a mile of a FWS unit.

For Indiana, crash data was not provided by the state, however general crash data from the NHTSA files was analyzed. AADT data was provided in GIS format for the year 2007. Pavement condition was provided as an excel table, which had latitude and longitude data and was used to create a GIS shapefile. Pavement data was spatially joined to those roads within one mile of the refuge. The main hotspots were for pavement poor conditions on US Hwy 250, US Hwy 50 and State Rd 61 in Big Oaks, Muscatatuck and Patoka respectively. There was only one hotspot regarding AADT, it was on US Hwy 50 near Muscatatuck NWR.

For Michigan, only AADT data was provided for 2009 by the state DOT. Similar to Indiana, crash data from the NHTSA files was analyzed for Michigan.

For Minnesota, crash data was provided as a GIS layer for the years 2006 to 2010.
Pavement condition data was also provided and AADT data for years 1992 to 2009, from which only current volumes were used for the hot spot analysis. For pavement conditions, the data was collected in 2010. There was only one hotspot for poor pavement conditions on road segments within one mile of a unit. All the data can be found in Chapter 2 (table 4)**.**

For Ohio, no data was provided by the state DOT, however looking at crash data from NHTSA, it is visible that no more than five crashes in average a year have occurred between 2006 and 2009. For AADT data, NHPN routes layer was used. Roads within one mile of Cedar Point NWR and Ottawa NWR appear to have less than 20,000 AADT. Based on this information, Ohio was not incorporated in the hotspot table.

For Wisconsin, Crash, AADT and Pavement condition data was provided by the State DOT. Crash data covered 2005 to 2009.

For Missouri, Crash data was provided for years 2006 and 2010 by the state DOT, as well as Pavement condition data and AADT in GIS shapefiles.
Refer to Table 4 in Chapter 2 for the output summary referenced above, and figures.

As a general note, crash data was processed as follows: A buffer of 0.05 mile was created for the GIS layer of road segments identified within one mile of the refuge unit to capture crashes on both directions of the roadway. A spatial join (one to one) was done between the buffer road layer and crashes for the different years to identify crashes that occurred on that segment of road. The average of crashes per year in that specific segment of primary and /or secondary road is the number shown in the hotspot table.

Table 3 . Combined SAMMS and RIP Road Data - IOWA

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Boyer Chute NWR	Auto Tour Route	10032912	010	Asphalt	Fair	1.66	-	-
	Auto Tour Route North	10032912	011	Asphalt	Fair	0.72	-	-
	River Tree Road	10032935	100	Gravel	Good	0.67	100	0.21
	Island Service Road-Section	10032908	400	Gravel	Good	0.79	100	0.26
	Island Service Road-Section	10032908	400	Native	Good	0.93	100	0.26
	Island Service Road-Section	10032908	400	Native	Fair	2.26	100	0.26
	Nathan Service Access Road	10060388	401	Native	Good	0.25	-	-
	North River Lane	10060404	402	Gravel	Fair	1.17	-	-
DeSoto NWR	Main Refuge Road	10012812	010	Asphalt	Excellent	3.13	-	-
	Main Refuge Road	10012812	010	Asphalt	Fair	2.69	-	-
	Visitor Center Entrance Rd	10043074	011	Asphalt	Excellent	0.06	80	0.05
	Visitor Center Entrance Rd	10043074	011	Asphalt	Fair	0.22	80	0.05
	Refuge Headquarters Road	10043075	100	Asphalt	Fair	0.05	-	-
	Bertrand Turnoff Road	10012791	101	Asphalt	Excellent	2.58	-	-
	Excavation Site Road	10043081	102	Asphalt	Excellent	0.12	65	0.09
	Wildlife Overlook Road	10012790	103	Gravel	Excellent	3.14	65	0.11
	Wildlife Overlook Road	10012790	103	Gravel	Good	0.99	65	0.11
	Lakeview Drive	10012872	104	Gravel	Excellent	0.71	65	0.37
	Prairie Lane	10012874	105	Gravel	Excellent	0.42	65	0.39
	Whitetail Drive	10012876	106	Gravel	Excellent	0.99	65	0.41
	Southgate Recreation Area	10012797	107	Asphalt	Poor	0.45	65	0.08
	Southgate Recreation Area	10012797	107	Gravel	Excellent	0.10	65	0.08
	West Side South Archery Access Road	-	108	Gravel	Good	0.50	-	-
	East Dike Access Road	10012801	400	Gravel	Excellent	1.57	30	0.76
	East Dike Access Road	10012801	400	Native	Good	1.82	30	0.76
	East Dike Access Road	10012801	400	Native	Fair	1.06	30	0.76
	Marquardt Pond Road	10054008	401	Gravel	Good	0.12	65	0.5
	Center Island Access Road	-	402	Gravel	Good	2.60	-	-
	Center Island Access Road	-	402	Primitive	Good	0.66	-	-
	West Dike Access Road	-	403	Gravel	Excellent	0.56	-	-
	West Dike Access Road	-	403	Native	Good	1.68	-	-
	Red Barn Road	10060637	404	Gravel	Fair	0.10	-	-
	Residence Road	-	405	Asphalt	Fair	0.16	-	-
	Residence Road	-	405	Gravel	Good	0.19	-	-
	V.C. Well Road	10060638	406	Gravel	Good	0.25	-	-

Table 4 . Combined SAMMS and RIP Road Data – IOWA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Driftless Area NWR	Howard Creek Shop Road	10050837	300	Gravel	Excellent	0.16	-	-
	Dave Smith Tract	-	400	Native	Fair	0.53	-	-
	Howard Creek Road	10050837	401	Native	Good	0.07	-	-
Iowa WMD	Dugout Creek Road	-	100	Gravel	Excellent	1.00	-	-
	Harrier Marsh Road	-	101	Gravel	Excellent	0.60	-	-
McGregor District	Bagley Bottoms Road	10043767	103	Gravel	Fair	0.36	65	0.35
	Ballard Tract Access Road	-	107	Gravel	Excellent	0.03	-	-
	Ballard Tract Road	-	400	Primitive	Good	0.98	-	-
	New Albin Road	10043764	101	Gravel	Good	1.21	65	0.97
	Lynn Hollow Road	10043768	104	Gravel	Good	0.05	65	0.23
	Casseville Maintenance Shop Road	-	300	Gravel	Excellent	0.14	-	-
	Turkey River Road	10043765	105	Gravel	Good	0.81	65	0.11
	Turkey River Road	10043765	105	Gravel	Excellent	0.51	65	0.11
	Winneshiek Road	10043766	100	Asphalt	Poor	0.22	65	0.8
	Visgers Road	10043769	102	Gravel	Good	0.08	65	0.62
	Potosi Point Access Road	-	106	Gravel	Fair	0.54	-	-
Neal Smith NWR	Refuge Entrance Road	10014077	010	Asphalt	Fair	4.75	65	0.13
	Auto Tour Route	10043682	100	Gravel	Excellent	0.75	-	-
	Waste Water Wetland Road	10055407	400	Gravel	Good	0.14	65	0.06
	Weather Station Access Road	10055407	401	Primitive	Good	0.07	65	0.06
	Bison Handling Facility Road	10055407	402	Native	Fair	0.30	65	0.06
	Hillltop Barn Access Road	10055407	403	Gravel	Good	0.47	65	0.06
	Dogleg Access Road	10055407	404	Gravel	Fair	0.52	65	0.06
	Argyle Access Road	10055407	405	Native	Good	0.51	65	0.06
	North Middle Access Road	10055407	406	Primitive	Good	0.08	65	0.06
	Interim Road	10055407	407	Native	Fair	0.45	65	0.06

Table 5 . Combined SAMMS and RIP Road Data – IOWA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Port Louisa NWR	Headquarters Entrance Road	10013840	010	Asphalt	Poor	0.05	-	-
	Auto Tour Route	10013830	011	Gravel	Good	4.96	-	-
	Auto Tour Route	10013830	011	Gravel	Excellent	0.47	-	-
	Port Louisa Road	10013819	100	Gravel	Good	0.79	65	0.14
	Big Timber Boat Landing Access Road	10013901	102	Gravel	Good	0.07	-	-
	Spring Slough Road	-	103	Gravel	Fair	0.10	-	-
	Keithsburg Boat Ramp Access Ramp	10013864	104	Gravel	Excellent	0.03	-	-
	X61 Maintenance Shop Road	-	300	Gravel	Excellent	0.04	-	-
	Keithsburg Levee Road	10013861	400	Native	Good	2.94	-	-
	Kiethsburg North Levee Road	10013861	401	Native	Good	0.42	-	-
	Kiethsburg Access Road	10013861	402	Native	Fair	1.17	-	-
	Rush Lake Service Road	10013862	403	Gravel	Excellent	0.25	-	-
	Rush Lake Service Road	10013862	403	Native	Good	0.28	-	-
	Rocky Road	10013862	404	Gravel	Good	1.26	-	-
	Rocky Road	10013862	404	Native	Good	0.76	-	-
	Muscatine Slough Service Road	10013863	405	Gravel	Fair	0.68	-	-
	Port Road	10013863	406	Native	Good	0.55	-	-
	Port Road	10013863	406	Native	Fair	0.32	-	-
	Goose Pond Service Road	10013863	407	Gravel	Excellent	0.10	-	-
	Goose Pond Service Road	10013863	407	Gravel	Good	1.32	-	-
	Goose Pond Service Road	10013863	407	Native	Good	0.61	-	-
	Goose Pond Service Road	10013863	407	Native	Fair	0.16	-	-
	21 Service Road	10013863	408	Native	Excellent	0.43	-	-
	20 Service Road	10013863	409	Native	Good	0.59	-	-
	Beebe Service Road	10013863	410	Native	Fair	0.55	-	-
Union Slough NWR	East Auto Tour	10013252	010	Gravel	Good	4.41	70	0.17
	Office Access Road	10054532	400	Gravel	Excellent	0.19	-	-
	Middle Dike Access Road	10054532	401	Native	Good	0.22	-	-
	South Dike Access Road	10054532	402	Native	Good	1.01	-	-

Table 6 . Combined SAMMS and RIP Road Data – ILLINOIS

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Chautauqua NWR	Headquarters Entrance Road	10013968	010	Asphalt	Fair	0.47	65	0.11
	Eagle Bluff Access Road	10013973	011	Gravel	Good	0.23	65	0.16
	Cameron Billsbach Unit Access	-	400	Native	Good	0.19	-	-
	South Lake Chautauqua Lake Wildlife Drive	10013961	401	Concrete	Good	0.14	100	0.18
	South Lake Chautauqua Lake Wildlife Drive	10013961	401	Concrete	Fair	0.13	100	0.18
	South Lake Chautauqua Lake Wildlife Drive	10013961	401	Gravel	Excellent	1.05	100	0.18
	South Lake Chautauqua Lake Wildlife Drive	10013961	401	Gravel	Good	8.45	100	0.18
	Cross Dike Road	10013969	402	Gravel	Good	0.85	65	0.14
Crab Orchard NWR	A-12 Field Lane	10060750	455	Primitive	Fair	0.05	-	-
	A-24a Field Lane	10060752	474	Native	Good	0.13	-	-
	A-26 Field Lane	10060753	477	Native	Fair	0.36	-	-
	A-32 East Lane	10060757	488	Primitive	Good	0.29	-	-
	A-5 Road East	10049431	428	Asphalt	Fair	0.68	65	0.09
	A-27-E Field Access Road	10060754	469	Gravel	Excellent	0.17	-	-
	A-41 Pond Dam Road	10060760	440	Gravel	Good	0.55	-	-
	A-41 Pond Dam Road	10060760	440	Native	Good	0.47	-	-
	Area 10 Access Road	10060765	478	Gravel	Fair	0.23	-	-
	Area 11 Access Road	10060766	486	Asphalt	Poor	1.06	-	-
	Area 11 Access Road	10060766	486	Asphalt	Fair	0.76	-	-
	Area 11 Access Road	10060766	486	Concrete	Fair	1.06	-	-
	Area 11 Access Road	10060766	486	Gravel	Fair	0.57	-	-
	Area 11 Access Road	10060766	486	Native	Good	0.22	-	-
	Area 11 Access Road	10060766	486	Native	Fair	0.67	-	-
	Area 11 West Access Road	10049458	451	Native	Good	0.21	65	0.06
	Area 11 West Access Road	10049458	451	Native	Fair	0.25	65	0.06
	Area 13 Roads	10013514	449	Gravel	Excellent	0.58	65	0.37
	Area 13 Roads	10013514	449	Gravel	Good	10.32	65	0.37
	Area 14 Lane	10060769	414	Native	Good	0.05	-	-
	Area 2 Road	10013516	422	Gravel	Poor	0.51	-	-
	Area 2 Waterline Trail Road	10060770	421	Gravel	Fair	0.15	-	-
	Area 2-B Access Road	10013516	430	Asphalt	Fair	1.01	-	-
	Area 2-B Access Road A	10013516	218	Asphalt	Poor	0.47	-	-
	Area 2-B Access Road B	10013516	219	Asphalt	Fair	0.17	-	-
	Area 2-B Access Road C	10013516	220	Asphalt	Fair	0.61	-	-
	Area 2-B Access Road D	10013516	221	Gravel	Good	0.08	-	-

Table 7 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Crab Orchard NWR	Area 2-B Access Road E	10013516	222	Gravel	Good	0.18	-	-
	Area 2-B Access Road G	10013516	223	Gravel	Good	0.07	-	-
	Area 2-B Access Road H	10013516	224	Gravel	Good	0.12	-	-
	Area 2-B Access Road I	10013516	225	Gravel	Excellent	0.05	-	-
	Area 2-B Access Road J	10013516	226	Gravel	Excellent	0.12	-	-
	Area 2-P Access Road	10013516	217	Asphalt	Fair	0.61	-	-
	Area 2-P North Access Road	10013516	228	Asphalt	Fair	0.19	-	-
	Area 6 Bunker Road	10049445	433	Gravel	Good	7.77	65	0.13
	Area 6 Bunker Road	10049445	433	Primitive	Good	0.14	65	0.13
	Area 6 Road	10036260	431	Gravel	Good	3.96	65	0.09
	Area 8 Access Road	-	472	Gravel	Good	1.24	-	-
	Area 8 Access Road	-	472	Native	Good	0.66	-	-
	Area 8 Cut-Across Road	-	471	Gravel	Good	0.17	-	-
	Area 8 West Access Road	-	473	Native	Good	0.14	-	-
	Area 9 Central Access Road	10049433	215	Asphalt	Excellent	0.75	65	0.08
	Area 9 Cut-Across Road	10049433	214	Asphalt	Poor	0.09	65	0.08
	Area 9 Jim Price Road	10049433	212	Asphalt	Good	0.90	65	0.08
	Area 9 North Access Road	-	216	Gravel	Good	0.23	-	-
	Area 9 PCB Trail Road	-	464	Gravel	Fair	1.04	-	-
	Area 9 South Access Road	10049433	213	Asphalt	Fair	0.05	65	0.08
	Bald Eagle Lane	10036149	112	Gravel	Excellent	0.88	-	-
	Bass Pond Levee Road	10060774	481	Gravel	Good	0.36	-	-
	Blue Heron Pond Road	10060776	463	Gravel	Fair	0.58	-	-
	Big Grass RNA Lane	10060775	484	Gravel	Good	0.25	-	-
	Boy Scout Camp Service Road	10049700	203	Gravel	Good	1.30	50	0.37
	Camp Carew Road	-	206	Asphalt	Fair	0.22	-	-
	Broken Handle Road	10036248	111	Gravel	Good	0.32	65	0.81
	Camp Carew Service Road	10060778	442	Gravel	Excellent	0.15	-	-
	Carterville Beach Lane	10055753	405	Asphalt	Fair	0.73	65	0.32
	Cedar Point Youth Camp Road	10036253	202	Asphalt	Good	0.08	65	0.15
	Cedar Point Youth Camp Road	10036253	202	Asphalt	Fair	0.92	65	0.15
	Cedar Point Youth Camp Road	10036253	202	Asphalt	Poor	0.20	65	0.15
	Cedar Point Youth Camp Road	10036253	202	Gravel	Excellent	0.52	65	0.15
	Central Tripp Access Trail Road	10049454	438	Native	Fair	0.45	65	0.13
	CO & E Yard Road	10060783	423	Gravel	Good	0.34	-	-
	Crab Orchard Boat & Yacht Club Acc	10036238	204	Asphalt	Fair	0.48	65	0.15
	Crab Orchard Campground Access	10013585	200	Asphalt	Excellent	0.09	65	0
	Crab Orchard Campground Access	10013585	200	Asphalt	Good	0.30	65	0

Table 8 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Crab Orchard NWR	Crab Orchard Campground Access Road	10013585	200	Asphalt	Fair	0.59	65	0
	Crab Orchard Campground Roads Unit A	10013585	229	Asphalt	Fair	0.34	65	0
	Crab Orchard Campground Roads Unit A	10013585	229	Asphalt	Poor	0.37	65	0
	Crab Orchard Campground Roads Unit B	10013585	230	Concrete	Fair	0.09	65	0
	Crab Orchard Campground Roads Unit B	10013585	230	Asphalt	Fair	0.36	65	0
	Crab Orchard Campground Roads Unit C	10013585	231	Asphalt	Poor	0.14	65	0
	Crab Orchard Campground Roads Unit C	10013585	231	Gravel	Good	0.11	65	0
	Crab Orchard Campground Roads Unit D	10013585	232	Asphalt	Fair	0.22	65	0
	Crab Orchard Campground Roads Unit D	10013585	232	Asphalt	Poor	0.45	65	0
	Crab Orchard Campground Roads Unit E	10013585	233	Asphalt	Poor	0.23	65	0
	Crab Orchard Campground Roads Unit E	10013585	233	Asphalt	Fair	0.10	65	0
	Crab Orchard Campground Service Road	10060743	406	Gravel	Good	0.04	-	-
	Crab Orchard Dam Road	10060784	489	Gravel	Good	0.69	-	-
	Devil's Kitchen Boat Ramp Access Road	10036251	114	Asphalt	Fair	0.14	65	0.75
	Devil's Kitchen Campground Road	10036244	113	Asphalt	Poor	0.21	65	0.07
	Devil's Kitchen Line 11 Road	10013517	115	Gravel	Excellent	0.71	65	0.31
	Devil's Kitchen Line 12 Road	10036252	116	Asphalt	Poor	0.39	65	0.7
	Devil's Kitchen Line 13 Road	10036252	117	Asphalt	Poor	0.68	65	0.7
	Devil's Kitchen Line 13 Road	10036252	117	Asphalt	Excellent	0.24	65	0.7
	Devil's Kitchen Line 13 Spur Road	10036252	103	Asphalt	Poor	0.06	65	0.7
	Devil's Kitchen Line 16 Road	10036252	118	Asphalt	Poor	0.73	65	0.7
	Devil's Kitchen Line 16 Spur Road	-	119	Asphalt	Poor	0.10	-	-
	Devil's Kitchen Line 3 Road	10036252	121	Asphalt	Poor	0.36	65	0.7
	Devil's Kitchen Line 4 Road	10060790	436	Gravel	Fair	1.05	-	-
	Devil's Kitchen Line 5 Road	10036252	122	Asphalt	Poor	1.28	65	0.7
	Devil's Kitchen Line 5 Spur Road	10036252	123	Asphalt	Poor	0.11	65	0.7

Table 9 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Crab Orchard NWR	Devil's Kitchen Line 6 Loop Road	10013517	125	Gravel	Good	0.66	65	0.31
	Devil's Kitchen Line 6 Road	10036252	124	Asphalt	Fair	0.74	65	0.7
	Devil's Kitchen Line 6 Spur Road	10013517	126	Gravel	Good	0.14	65	0.31
	Devil's Kitchen Line 9 Road	10036252	120	Asphalt	Fair	0.23	65	0.7
	Devil's Kitchen Road	10036232	017	Asphalt	Fair	3.17	65	0.22
	Diagraph Corporation Access Road	10036259	470	Asphalt	Poor	0.46	65	0.06
	Diagraph Corporation Access Road	10036259	470	Gravel	Good	0.41	65	0.06
	Dispatch Lane South	10060788	427	Primitive	Good	0.06	-	-
	Dispatch Lane South	10060788	427	Gravel	Good	0.16	-	-
	DK Dam Service Access Road	10060744	301	Gravel	Fair	0.15	-	-
	Doerr Road	10060791	461	Asphalt	Fair	0.33	-	-
	East Tripp Trail Access Road	10049454	475	Gravel	Excellent	0.64	65	0.13
	East Tripp Trail Access Road	10049454	475	Native	Good	0.14	65	0.13
	ECO Bay Lane	10060792	465	Native	Good	0.60	-	-
	EMA Access Road	10036257	105	Asphalt	Poor	0.59	65	0.69
	Flatts School Road	10049448	468	Asphalt	Fair	0.48	65	0.07
	Flatts School Road	10049448	468	Native	Fair	0.78	65	0.07
	Fowler Cemetary Road	10060797	432	Primitive	Poor	0.08	-	-
	Girl Scout Camp Service Road	-	418	Native	Good	0.31	-	-
	Goose Banding Lane	10060802	435	Primitive	Fair	0.60	-	-
	Grassy Creek Trail Road	-	408	Asphalt	Poor	2.29	-	-
	Greenbriar Road	10036239	102	Concrete	Fair	0.48	65	0.19
	Greenbriar Road	10036239	102	Asphalt	Fair	0.97	65	0.19
	Hampton Cemetary Lane	10060800	416	Gravel	Good	0.19	-	-
	Hampton Road	10060801	415	Gravel	Excellent	1.03	-	-
	Haven Access Loop	10036242	201	Asphalt	Excellent	0.10	65	0.75
	Haven Access Loop	10036242	201	Gravel	Excellent	0.11	65	0.75
	Headquarters Road	10013636	011	Asphalt	Fair	0.53	65	0
	Heron Flats North Access Road	10060802	426	Gravel	Good	0.44	-	-
	Heron Flats North Access Road	10060802	426	Native	Good	0.75	-	-
	Hogan's Point Lane	10049429	401	Asphalt	Poor	0.34	65	0.22
	Isaac Chamness Road	10060815	425	Gravel	Good	0.14	-	-
	Job Corps Pond Lane	10060806	413	Native	Good	0.06	-	-

Table 10 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Crab Orchard NWR	Lagoon Access Road	-	407	Primitive	Fair	0.11	-	-
	Lift Station Road	10049449	462	Gravel	Good	1.53	65	0.99
	Lift Station Spur Road	10049449	466	Native	Good	0.18	65	0.99
	Little Grassy Dam Lane	10060809	444	Gravel	Good	0.25	-	-
	Little Grassy Lake Campground Road	10036255	205	Asphalt	Excellent	0.86	65	0.12
	Little Grassy Lake Campground Road	10036255	205	Gravel	Excellent	0.57	65	0.12
	Lookout Point Lane	10049428	402	Asphalt	Fair	0.61	-	-
	Lookout Point Spur Road	10049428	403	Asphalt	Poor	0.21	-	-
	Little Grassy Pumphouse Road	10060808	446	Gravel	Excellent	0.10	-	-
	Marshall Road	10060812	460	Asphalt	Fair	0.33	-	-
	Lost Branch North Trail Road	10060811	411	Primitive	Fair	0.57	-	-
	Methodist Youth Camp Entrance Road	10036256	207	Asphalt	Excellent	0.22	65	0.08
	Methodist Youth Camp South Spur Road	10036256	208	Gravel	Excellent	0.16	65	0.08
	Methodist Youth Camp Spur Road	10036256	209	Asphalt	Fair	0.09	65	0.08
	Methodist Youth Camp North-West Access Road	10049695	211	Gravel	Good	0.25	50	0.05
	Methodist Youth Camp North Access Road	10036256	210	Asphalt	Fair	0.31	65	0.08
	Methodist Youth Camp North Access Road	10049695	210	Gravel	Fair	0.15	50	0.05
	Methodist Youth Camp North Access Road	10049695	210	Gravel	Excellent	0.14	50	0.05
	North Prairie Lane	10060816	404	Primitive	Good	0.45	-	-
	North Boundary Trail Road	10049443	429	Native	Good	0.38	65	0.37
	North McGeesville Road	10060814	447	Native	Fair	0.55	-	-
	Mousertown Road	10060813	459	Asphalt	Fair	0.85	-	-
	North McGeesville Road	10060814	447	Native	Fair	0.55	-	-
	North Trail Road East	10049443	453	Native	Good	0.78	65	0.37
	North Trail Road East 2	10049443	454	Native	Good	0.63	65	0.37
	North Trail Road East 3	10049443	456	Gravel	Good	0.39	65	0.37
	North Trail Road East 3	10049443	456	Primitive	Fair	0.74	65	0.37
	Ogden Road East	10036233	018	Asphalt	Fair	0.98	65	0.39
	Ogden Road Service East	10036233	457	Asphalt	Fair	0.82	65	0.39
	Ogden Road Service East	10036233	457	Gravel	Good	0.24	65	0.39

Table 11 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Crab Orchard NWR	Ogden Road West	10036234	476	Gravel	Excellent	1.59	65	0.2
	Ogden Road West	10036234	476	Asphalt	Good	0.32	65	0.2
	Ogden Watertower Road	10049447	467	Gravel	Excellent	0.25	65	0.15
	Old Carterville Road	10060817	417	Gravel	Excellent	1.07	-	-
	Old Carterville Road	10060817	417	Gravel	Good	0.33	-	-
	Old Carterville Road	10060817	417	Native	Fair	0.06	-	-
	Old Chamnestown Road	10049434	434	Concrete	Poor	1.42	65	0.37
	Old Chamnestown Road	10049434	434	Gravel	Good	0.87	65	0.37
	Old Chanmesstown Road South	10036258	458	Gravel	Fair	0.47	65	0.14
	Old Chanmesstown Road South	10036258	458	Asphalt	Fair	0.50	65	0.14
	Old Highway 13	10036236	100	Asphalt	Poor	0.06	100	0.33
	Old Highway 13	10036236	100	Concrete	Fair	0.38	100	0.33
	Pigeon Creek MSU Lane	10019442	419	Gravel	Good	0.64	-	-
	Pigeon Creek MSU Lane	10019442	419	Native	Good	0.33	-	-
	Pigeon Creek Road	10013510	010	Asphalt	Fair	0.23	65	0.09
	Pine Ridge Scout Camp Access Road	10036254	106	Gravel	Good	0.67	80	0.12
	Playport North Access Road	10036244	108	Asphalt	Fair	0.25	65	0.07
	Playport Road	10036243	107	Concrete	Fair	0.24	65	0.68
	Post Oak Road	10036229	013	Asphalt	Fair	0.76	65	0.21
	Prarie Creek Marina Road	10036240	104	Gravel	Good	0.48	65	0.71
	Propeller Road	10036247	110	Gravel	Good	0.64	65	0.81
	Propeller Point Service Road	10060821	409	Primitive	Fair	0.07	-	-
	Red Shale Road	10049461	483	Native	Good	0.87	65	0.13
	Research Road	10036230	014	Asphalt	Fair	0.53	65	0.23
	Stringtown Road	10036228	012	Asphalt	Fair	1.78	65	0.45
	Sandpiper Slough Road	10060823	452	Gravel	Good	1.01	-	-
	Sewage Treatment Plant Road	10049440	420	Gravel	Good	0.59	65	0.13

Table 12 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Crab Orchard NWR	Shop Access Road	10049432	300	Gravel	Excellent	0.16	65	0.22
	Shop Access Road	10049432	300	Asphalt	Fair	0.14	65	0.22
	Smith Cemetery Lane	10060824	410	Gravel	Good	0.18	-	-
	South Bald Eagle Lane	10049462	412	Gravel	Good	0.02	65	0.09
	South Wolf Creek Service Road	10060822	445	Gravel	Excellent	0.80	-	-
	Spillway Landing Road	10036246	109	Gravel	Good	0.23	65	0.81
	Suger Creek Lane	10049465	441	Primitive	Fair	0.04	65	0.14
	Tacoma Lake Road	10013586	016	Asphalt	Fair	4.18	65	0.22
	Take Pride Point Road	10049429	400	Asphalt	Poor	0.80	65	0.22
	Tacoma Lake Road	10013586	016	Concrete	Good	0.10	65	0.22
	Tall Timbers Lane	10060826	437	Native	Good	0.21	-	-
	Trypsaculm Road	10060745	101	Gravel	Good	0.28	-	-
	Turtle Pond Levee Road	10060827	479	Native	Good	1.08	-	-
	Turtle Pond Levee Road	10060827	479	Native	Fair	0.16	-	-
	Unit 3 Access Roads	10049441	227	Gravel	Excellent	0.85	65	0.37
	Unit 3 Access Roads	10049441	227	Gravel	Good	3.19	65	0.37
	Unit 3 Access Roads=	10049441	227	Gravel	Good	1.08	65	0.37
	US Powder Road	10049458	487	Gravel	Good	0.96	65	0.06
	US Powder Road	-	443	Native	Good	0.19	-	-
	US Power Pond Lane	-	450	Gravel	Fair	0.52	-	-
	West A-5 Road	-	424	Native	Good	0.48	-	-
	West Gate Road	10049460	482	Gravel	Good	2.61	65	0.83
	West Tripp Access Trail Road	10049454	439	Gravel	Good	0.89	65	0.13
	Wild Turkey Trail Road	10060829	448	Native	Good	0.82	-	-
	Wolf Creek Bay Lane	10049459	480	Gravel	Good	0.78	65	0.13
	Wolf Creek Road	10013513	015	Asphalt	Fair	3.03	65	0.2
	Wolf Creek Road	10013513	015	Gravel	Good	1.00	65	0.2
	Wolf Creek Service Road	10013513	485	Gravel	Good	1.12	65	0.2

Table 13 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Cypress Creek NWR	Baldwin Tract Access Road	-	402	Native	Good	0.23	-	-
	Bellrose Levee Road	10012677	415	Gravel	Excellent	2.37	-	-
	Bellrose Levee Road	10012677	415	Gravel	Good	0.81	-	-
	Bellrose Levee Road	10012677	415	Native	Good	3.84	-	-
	Bellrose Levee Road	10012677	415	Native	Fair	1.55	-	-
	Boyd North Access Road	-	405	Native	Good	0.49	-	-
	Boyd South Public Access Road	10060256	104	Native	Good	0.12	-	-
	Boyd South Service Access Rd	-	427	Native	Good	0.36	-	-
	Boyd Tree Farm Road	10060255	103	Gravel	Good	0.23	-	-
	Boyd Tree Farm Road	10060255	103	Gravel	Excellent	0.06	-	-
	Brushy Levee Access Road	10060678	412	Native	Good	3.49	-	-
	Brushy Levee Access Road	10060678	108	Gravel	Fair	0.29	-	-
	Century Access Road	10059848	430	Native	Fair	0.64	-	-
	Churchill Road	-	416	Gravel	Fair	0.59	-	-
	Cypress Pond Road	-	428	Native	Good	0.20	-	-
	Delta Lands East Access Road	10060676	410	Gravel	Excellent	0.36	-	-
	Delta Lands East Access Road	10060676	410	Native	Excellent	0.27	-	-
	Delta Lands North Access Road	10060676	107	Native	Good	0.32	-	-
	Delta Lands West Access Road	10060676	409	Native	Excellent	0.83	-	-
	Easter Slough Access Road	-	431	Native	Good	0.85	-	-
	Eggner Road	10054792	419	Native	Good	1.96	-	-
	Goings Barn Access Road	-	411	Native	Good	0.13	-	-
	Greenberg Hunter Access Road	10060257	105	Gravel	Good	0.05	-	-
	Greenberg Service Access Road	-	406	Native	Good	0.10	-	-
	Harris Road	-	429	Gravel	Good	0.08	-	-
	Hickory Bottomas Service Acc	-	425	Native	Good	1.05	-	-
	Hickory Bottoms Access Road	10012635	100	Gravel	Good	0.32	100	0.4
	Hilmanns 70 Road	-	414	Native	Good	0.40	-	-
	Hodge Park Cemetery Road	-	106	Gravel	Excellent	0.11	-	-
	Ice Grain Access Road	10059854	408	Primitive	Good	0.79	-	-
	Johnsons Road	-	432	Native	Good	0.24	-	-
	Junkers Road	10060675	422	Native	Good	0.75	-	-
	Kerley Road	-	420	Native	Good	5.16	-	-
	Maintenance Shop Road	10012625	300	Asphalt	Fair	0.59	-	-
	Mount Olive Service Road	-	426	Native	Good	0.69	-	-
	Needham Road	-	400	Gravel	Good	0.22	-	-
	North Kerley Wetlands Road	-	423	Native	Poor	0.07	-	-
	Old Channel Access Road	10060254	102	Gravel	Good	0.12	-	-

Table 14 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Cypress Creek NWR	Owens Access Road	10045676	424	Gravel	Good	0.54	-	-
	Pools Road	-	413	Primitive	Good	0.18	-	-
	Richardson Tract Access Road	-	404	Native	Fair	0.65	-	-
	Richardson Tract North Access Road	-	403	Native	Good	0.08	-	-
	Schierbaum Road	-	418	Native	Good	0.40	-	-
	Stringer Tract Access Road	-	401	Native	Fair	0.88	-	-
	Stubblefield Road	-	417	Native	Good	0.20	-	-
	Unity North Field Access Road	-	407	Native	Good	0.26	-	-
	Wood Duck Slough Access Road	10055968	101	Gravel	Excellent	0.26	-	-
	Wood Duck Slough Service Access Road	10055968	421	Native	Good	0.31	-	-
Emiquon NWR	Glode District Service Road	-	402	Native	Excellent	3.56	-	-
	Minter Access Road	-	401	Gravel	Good	0.39	-	-
	Minter Access Road	-	401	Native	Excellent	1.39	-	-
	North Glode District Service Road	-	403	Native	Excellent	0.66	-	-
	Old Oxbow Access Road	10052374	400	Primitive	Fair	0.32	65	0.28
Meredosia NWR	Nature Trail Entrance Road	10014040	010	Gravel	Good	0.11	65	0.08
	Shearl/Skinner Wetlands Road	10014047	101	Gravel	Good	0.11	65	0.44
	Kloker Entrance Road	10043497	100	Gravel	Failed	0.10	65	0.01
	Shop Road	-	300	Native	-	0.07	-	-
	Skinner Levee Road	-	400	Native	-	1.05	-	-
	Willow Creek Levee Road	-	401	Native	-	1.98	-	-
	Shearl Levee Road	-	402	Native	-	1.07	-	-
	Meredosa Levee Road	-	403	Native	-	0.87	-	-
Savanna District	B Area Road	10052704	413	Asphalt	Fair	0.91	-	-
	B Area Road	10052704	413	Gravel	Excellent	1.74	-	-
	B Area Road	10052704	413	Gravel	Good	1.26	-	-
	Barge Lake Landing Road (Esmay Slough)	-	102	Gravel	Good	0.07	-	-
	Beacheather Loop	10052704	412	Asphalt	Poor	0.94	-	-
	Beacheather Loop	10052704	412	Asphalt	Fair	0.37	-	-
	Beacheather Loop	10052704	412	Gravel	Excellent	0.45	-	-
	Coast Guard Boat Launch Road	10052704	401	Gravel	Excellent	0.33	-	-

Table 15 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Savanna District	E 400 Area Service Road	10052704	407	Gravel	Excellent	1.39	-	-
	E 1700 Service Road	10052704	409	Asphalt	Poor	1.02	-	-
	E Area Service Road	10052704	408	Gravel	Excellent	0.91	-	-
	E Area Service Road	10052704	408	Asphalt	Fair	0.17	-	-
	E Service Road	10052704	410	Gravel	Excellent	1.44	-	-
	E Road	10052704	411	Gravel	Excellent	1.09	-	-
	E Road	10052704	411	Asphalt	Poor	0.58	-	-
	Frog Pond Access Road	10011848	100	Gravel	Excellent	0.10	-	-
	F 700 Service Road	10052704	406	Gravel	Good	1.16	-	-
	F Area Service Road	10052704	405	Gravel	Excellent	4.65	-	-
	Ingersoll Wetlands Learning Center Access	10011821	010	Asphalt	Good	0.08	-	-
	K Service Road	10052704	403	Asphalt	Poor	5.69	-	-
	North Service Road	10052704	402	Gravel	Excellent	1.08	-	-
	North Service Road	10052704	402	Native	Good	1.59	-	-
	Pleasant Creek Moist Soil Unit Road	10052704	415	Native	Good	0.95	-	-
	Pleasant Creek Service Road	10052704	414	Native	Good	2.57	-	-
	Pleasant Creek Service Road	10052704	414	Native	Fair	2.05	-	-
	Potter's Marsh Access Road	10011826	416	Gravel	Good	0.80	-	-
	Potter's Marsh Dike Road	10011818	417	Gravel	Good	1.13	-	-
	River Road	10052704	101	Asphalt	Excellent	1.02	-	-
	River Road	10052704	101	Asphalt	Poor	1.49	-	-
	River Service Road	10052704	400	Asphalt	Fair	2.17	-	-
	River Service Road	10052704	400	Asphalt	Poor	4.86	-	-
	Sloane Marsh Levee Road	10011838	418	Native	Fair	1.31	-	-
	Sloane Marsh Levee Road	10011838	418	Gravel	Good	0.19	-	-
	Shinske Service Road	10052704	404	Asphalt	Fair	3.35	-	-
	Spring Lake Cross Dike Road	10011802	420	Gravel	Excellent	1.42	-	-
	Spring Lake Exterior Levee Road	10011846	419	Gravel	Excellent	4.28	-	-
	Spring Lake Exterior Levee Road	10011846	419	Native	Excellent	1.08	-	-
	Spring Lake Exterior Levee Road	10011846	419	Native	Good	1.72	-	-
	Spring Lake Interior Dike A	10011845	422	Gravel	Good	0.37	-	-
	Spring Lake Interior Dike C	10011845	421	Gravel	Fair	0.72	-	-
	Spring Lake Interior Dike B	10052552	423	Gravel	Excellent	0.69	-	-
	Spring Lake Service Access	10011808	424	Native	Good	0.29	-	-

Table 16 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Two Rivers NWR	Access To Silt Basin Road	-	410	Primitive	Good	0.27	-	-
	Batchtown Entrance Road	10013788	102	Gravel	Good	0.20	-	-
	Batchtown Middlle Pool Road	10013786	401	Gravel	Good	1.11	-	-
	Batchtown Middlle Pool Road	10013786	401	Gravel	Fair	0.57	-	-
	Batchtown MSU Dike Road	10013789	402	Native	Good	0.94	-	-
	Blooms Landing Access Road	10013764	106	Gravel	Good	0.23	80	0.94
	Calhoun Wetlands Pump Station Road	10013740	101	Gravel	Excellent	0.95	-	-
	Calhoun Msu Road	10013756	406	Gravel	Good	0.79	-	-
	Calhoun Savanna Road	-	412	Native	Good	0.29	-	-
	County Road MSU	10013757	417	Native	Good	0.13	-	-
	Duck Club MSU Road	10013756	405	Gravel	Fair	0.35	-	-
	Duck Pocket Access Road	-	411	Primitive	Good	0.12	-	-
	Employee Entrance Road	10013749	300	Gravel	Excellent	0.18	80	0.34
	Gilbert Lake Overlook Road	10013781	104	Gravel	Good	0.39	80	0.42
	Gilead Entrance Road	10013795	103	Gravel	Good	0.15	-	-
	Gilbert Lake Road	-	011	Gravel	Good	0.06	-	-
	Gilbert Lake Leeve Road	10013780	409	Gravel	Good	2.95	-	-
	Headquarters Entrance Road	10013765	010	Asphalt	Fair	0.09	-	-
	Little Swan MSU Road	10013773	407	Gravel	Good	0.62	-	-
	Little Swan Savanna Road	-	408	Native	Good	0.50	-	-
	Lower Swan Lake Pump Station Road	10013767	105	Gravel	Good	0.51	100	0.31
	Lower Swan Lake Access Road	10013741	100	Asphalt	Fair	0.58	-	-
	Maintenance to Office MSU Road	10013769	403	Gravel	Good	0.28	80	0.68

Table 17 . Combined SAMMS and RIP Road Data – ILLINOIS (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Two Rivers NWR	Office MSU Road	10013737	404	Native	Good	0.27	-	-
	Pump Station MSU Road	10013744	414	Native	Good	0.92	-	-
	Swan Lake Levee Road	10013766	400	Gravel	Excellent	3.14	-	-
	Swan Lake Levee Road	10013766	400	Gravel	Good	3.04	-	-
	Upper Calhoun MSU Dike Road	10013751	415	Native	Good	0.55	-	-
	Upper Calhoun Boundary Road	-	416	Native	Good	0.88	-	-
	Well #2 and 3 Road	10057579	413	Gravel	Good	0.49	-	-
Middle Mississippi River NWR	Middle Harlow Island Access Road	10043505	100	Native	Fair	0.16	100	0.25
	Rockwood Island Service Road	10061186	400	Primitive	Good	0.05	-	-
	Wilkinson Island North Road	10061160	401	Primitive	Good	1.12	-	-
	Wilkinson Island Dike Road	10061162	402	Native	Fair	0.85	-	-
	Wilkinson Island Center Access Road	10043500	403	Native	Fair	1.27	100	0.23
	Middle Wilkinson Island Access Connector Road	10061152	404	Primitive	Good	0.25	-	-
	Middle Wilkinson Island Access Spur Road	10061157	405	Primitive	Good	0.08	-	-
	Wilkinson Island Southern Access Road	10061162	406	Gravel	Good	0.07	-	-
	Meissner Island Service Road	10061184	407	Primitive	Good	0.24	-	-
	Middle Harlow Island Service Road	10061180	408	Primitive	Good	0.02	-	-
	Shop Road	10055415	409	Gravel	Good	0.06	50	0.73

Table 18 . Combined SAMMS and RIP Road Data – INDIANA

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Big Oaks NWR	A Road East	10010709	424	Gravel	Good	0.21	65	0.07
	Big Tree Point	10010734	106	Gravel	Good	0.55	65	0.13
	B Road West	10010710	405	Gravel	Good	0.43	65	0.1
	A Road West	10010709	406	Gravel	Good	1.33	65	0.07
	A Road West	10010709	406	Gravel	Excellent	1.33	65	0.07
	Avco Alley Road	10010725	425	Gravel	Excellent	1.93	65	0.03
	Avco Alley Road	10010725	425	Gravel	Good	1.93	65	0.03
	B Road East	10010710	426	Gravel	Good	0.39	65	0.1
	Bombfield Road	10010728	408	Gravel	Good	0.92	65	0.17
	C Road	10010711	404	Gravel	Good	3.04	65	0.03
	Center Recovery A Road	10010726	431	Gravel	Good	1.12	65	0.03
	Center Recovery A Road	10010726	431	Gravel	Good	0.90	65	0.03
	Center Recovery A Road	10010726	432	Gravel	Excellent	1.01	65	0.03
	Center Recovery A Road	10010726	432	Gravel	Good	0.53	65	0.03
	Center Recovery B North Road	10010727	407	Gravel	Excellent	1.32	65	0.02
	Center Recovery B South Road	10010727	413	Gravel	Good	1.17	65	0.02
	Cottrell Road A South	10010717	423	Gravel	Good	1.06	100	0.03
	Cottrell Road A South	10010717	423	Gravel	Excellent	0.57	100	0.03
	Cottrell Road B	10010718	410	Gravel	Excellent	5.83	65	0.03
	Cottrell Road B	10010718	410	Gravel	Good	0.97	65	0.03
	Cottrell Road B	10010718	410	Gravel	Fair	3.34	65	0.03
	D Road Central	10010712	401	Gravel	Good	2.46	65	0.03
	D Road West	10010712	402	Gravel	Good	0.63	65	0.03
	D Road West	10010712	419	Gravel	Good	0.87	65	0.03
	D Road East	10010712	420	Gravel	Good	0.73	65	0.03
	E Road West	10010713	416	Gravel	Good	2.55	65	0.03
	E Road West	10010713	416	Gravel	Fair	0.50	65	0.03
	E Road East	10010713	421	Gravel	Excellent	0.80	65	0.03
	East Outlet Road	10010731	100	Gravel	Excellent	1.65	65	0.06
	East Outlet Road	10010731	100	Gravel	Good	1.65	65	0.06
	Emergency Landing Field Road	10010733	409	Gravel	Excellent	2.13	100	0.04
	Emergency Landing Field Road	10010733	409	Gravel	Good	0.35	100	0.04
	F Road East	10010714	428	Gravel	Good	0.43	65	0.03
	F Road East	10010714	428	Gravel	Excellent	0.47	65	0.03

Table 19 . Combined SAMMS and RIP Road Data – INDIANA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Big Oaks NWR	F Road West	10010714	415	Gravel	Good	1.61	65	0.03
	Heron Inlet Road	10010735	105	Gravel	Excellent	0.35	65	0.14
	I Road East	10010715	411	Gravel	Good	1.09	65	0.1
	I Road East	10010715	411	Gravel	Fair	0.67	65	0.1
	I Road West	10010727	414	Gravel	Fair	0.64	65	0.02
	Jinestown Road	10010723	400	Gravel	Excellent	4.07	100	0.05
	L Road	10010716	101	Gravel	Excellent	1.06	65	0.32
	L Road	10010716	101	Gravel	Good	0.94	65	0.32
	Machine Gun Road	10010732	011	Gravel	Excellent	2.81	100	0.14
	Middle Fork North Road	10061611	403	Gravel	Excellent	0.78	-	-
	Middle Fork South Road	10061611	417	Gravel	Excellent	0.14	-	-
	Morgan Road A North	10010721	429	Gravel	Good	1.89	100	0.03
	Morgan Road A South	10010721	430	Gravel	Excellent	1.06	100	0.03
	Morgan Road A South	10010721	430	Gravel	Good	2.23	100	0.03
	Morgan Road B	10010722	427	Gravel	Good	2.01	65	0.03
	Northeast Exit Road	10010730	010	Gravel	Fair	1.03	65	0.1
	Northeast Exit Road	10010730	010	Gravel	Excellent	1.49	65	0.1
	Northeast Exit Road North	10010730	107	Gravel	Excellent	0.99	65	0.1
	Serano Brett Road	10010724	102	Gravel	Excellent	1.96	65	0.14
	Old Chimney Point Road	10010736	104	Gravel	Excellent	0.61	65	0.14
	Shaped Charge Road	10010729	012	Gravel	Excellent	2.06	65	0.24
	Shaped Charge Road	10010729	012	Gravel	Good	1.68	65	0.24
	Snag Hole Point Road	10010737	103	Gravel	Excellent	0.51	65	0.14
	Wonju Road A	10010719	418	Gravel	Excellent	2.36	-	-
	Wonju Road A	10010719	418	Gravel	Good	1.07	-	-
	Wonju Road B North	10010720	412	Gravel	Good	1.01	65	0.04
Muscatatuck NWR	1225E Road	10043678	103	Gravel	Good	1.00	65	0.08
	400N Road	10043676	011	Gravel	Good	1.03	100	0.13
	400N Road	10043676	011	Gravel	Excellent	1.02	100	0.13
	500N Road	10043677	102	Gravel	Excellent	0.68	65	0.1
	County Line Road	10010608	010	Asphalt	Excellent	0.59	65	0.09
	County Line Road	10010611	010	Gravel	Good	0.68	65	0.19
	County Line Road	10010611	010	Gravel	Excellent	2.69	65	0.19
	East 400N Road	10049632	415	Native	Good	0.35	65	0.1
	East Linda Lake Road	10049633	416	Native	Good	0.63	65	0.13
	Endicott Dike Access Road	10010626	407	Native	Fair	0.30	-	-

Table 20 . Combined SAMMS and RIP Road Data – INDIANA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Muscatatuck NWR	G1 Dike Access Road	10010618	418	Gravel	Excellent	0.83	-	-
	G2 Access Road	10010621	422	Native	Fair	0.52	-	-
	Judy Pond Access Road	10010624	414	Native	Good	0.35	-	-
	Linda Lake Dike Road	10010593	417	Native	Excellent	0.15	-	-
	M5 Dike Access Road	10010633	408	Native	Good	0.43	-	-
	M3 Dike Access Road	10010579	410	Native	Fair	0.28	-	-
	M7 Access Road	10010617	420	Gravel	Excellent	0.67	-	-
	M9 Access Road	10010641	423	Native	Good	0.47	-	-
	M8 Access Road	10010619	424	Native	Fair	0.65	-	-
	M10 Access Road	10010622	421	Native	Good	0.46	-	-
	McDonald South Dike Road	10010682	402	Native	Good	0.29	-	-
	McDonald North Dike Road	10010679	403	Native	Fair	0.20	-	-
	Moss Lake Dam Access Road	10010616	419	Gravel	Good	0.98	-	-
	MS 1 Dike Road	10010632	401	Native	Fair	0.75	-	-
	MSU 4 Dike Access Road	10010589	409	Native	Fair	0.56	-	-
	MSU 2 Dike Access Road	10010590	411	Native	Fair	0.48	-	-
	Myers Cabin/Lake Linda Road	10043679	104	Gravel	Excellent	0.71	65	0.13
	North 1225 East Road	10049637	404	Native	Good	0.21	65	0.13
	North 500E Road	10049631	405	Gravel	Good	0.82	65	0.13
	North 500E Road	10049631	405	Concrete	Fair	0.15	65	0.13
	Office Pond Road	10010604	400	Primitive	Good	0.18	-	-
	Q40 Road	10010591	406	Native	Good	0.58	-	-
	Residence Access Road	10049635	301	Asphalt	Fair	0.09	65	0.13
	Shop Access Road	10049635	300	Gravel	Excellent	0.61	65	0.13
	Sioux Pond Dike Road	10010625	412	Native	Good	0.30	-	-
	Visitor Center Road	10010610	101	Asphalt	Good	0.20	-	-
	West Wagner Farm Field Access Road	10010629	413	Primitive	Good	0.32	-	-
Patoka River NWR	Bel Ox-Bow Access Road	-	404	Primitive	Excellent	0.03	-	-
	Cane Ridge Dike Road	10056486	409	Native	Fair	0.82	-	-
	Cane Ridge Dike Road South	10056486	412	Native	Fair	0.42	-	-
	Dillin Service Access Road	10055519	400	Gravel	Good	0.78	-	-
	Dillin Spur Access Road	10055519	401	Native	Excellent	0.05	-	-
	DU Lane	-	408	Primitive	Fair	0.60	-	-

Table 21 . Combined SAMMS and RIP Road Data – INDIANA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Patoka River NWR	DuPont Service Access Road	10061191	403	Primitive	Fair	0.59	-	-
	East Graulich Field Road	10036059	405	Primitive	Good	0.25	65	0.1
	Fromme Access Road	10054429	402	Native	Fair	0.49	55	0.72
	Monty Lane	-	413	Native	Good	0.16	-	-
	Oil Well Road	10061188	407	Gravel	Fair	0.57	-	-
	Ray's Island Access Road	10055523	411	Gravel	Excellent	0.09	-	-
	Tern Island Access Road	10054300	410	Gravel	Excellent	0.09	-	-
	West Graulich Field Road A	10036058	406	Primitive	Good	0.48	65	0.11

Table 22 . Combined SAMMS and RIP Road Data – MICHIGAN

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Detroit Lakes WMD	Anderson Access Road	10058643	400	Gravel	Good	0.37	80	0.23
	Arneson Access road	-	408	Gravel	Excellent	0.37	-	-
	Beaulieu Lake Access Road	10058639	409	Gravel	Fair	0.41	80	0.22
	Christensen Access Road	10058644	405	Native	Good	0.04	80	0.23
	Jenkins Access Road	-	403	Native	Excellent	0.13	-	-
	Kruger Access Road	-	407	Gravel	Good	0.31	-	-
	Melvin Slough Access Road	-	402	Gravel	Good	0.49	-	-
	North Shop Access Loop	-	300	Gravel	Good	0.09	-	-
	Paul Sr. Access Road	-	401	Primitive	Good	0.02	-	-
	Rushfeldt Access Road	10058636	404	Gravel	Good	0.44	80	0.23
	Seilt Access Road	10058636	406	Primitive	Good	0.13	80	0.23
Detroit River International Wildlife Refuge	Humbug Marsh Access Road	10058589	400	Gravel	Excellent	0.10	-	-
	Humbug Marsh Access Road	10058589	400	Native	Good	0.14	-	-
	Humbug Pumphouse Easement Road	10058589	401	Gravel	Good	0.40	-	-
Michigan WMD	Kinney WPA Access Road	10060050	100	Gravel	Good	0.27	-	-
Seney NWR	A-2 to Pine Creek Road	10010489	423	Gravel	Good	1.10	65	0.21
	A-2 to Pine Creek Road	10010489	423	Native	Good	1.04	65	0.21
	A-2 to Pine Creek Road	10010489	423	Native	Fair	0.41	65	0.21
	C-2 Dike Top Road	10010485	424	Gravel	Good	3.37	65	0.08
	C-3 Pool Road	10010488	102	Gravel	Excellent	0.35	65	0.15
	C-3 Pool Service Road	10010486	402	Gravel	Excellent	2.93	-	-
	Chicago Farm Loop	10010442	410	Primitive	Good	1.52	-	-
	Chicago Farm Road	10010475	407	Gravel	Excellent	3.55	65	0.03
	Chicago Farm Road	10010475	407	Gravel	Good	0.96	65	0.03
	Delta Creek Road	10010482	406	Gravel	Excellent	1.48	-	-
	Doubtful Road	10010467	422	Gravel	Good	1.13	65	0.02
	Doubtful to UGP Road	10010472	419	Gravel	Good	3.21	65	0.36
	Driggs River Road	10010462	101	Gravel	Excellent	2.15	65	0.26
	Driggs River Service Road	10010485	405	Gravel	Excellent	11.55	65	0.08
	Driggs River Service Road	10010485	405	Gravel	Good	4.12	65	0.08
	Driggs River Service Road	10010485	405	Native	Good	1.90	65	0.08
	Fishing Access Road	10010465	100	Gravel	Excellent	1.95	65	0.35
	Fishing Access Road	10010465	100	Gravel	Good	1.83	65	0.35

Table 23 . Combined SAMMS and RIP Road Data – MICHIGAN (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Seney NWR	Fishing Loop Back Road	10010471	415	Gravel	Good	1.21	-	-
	Greys Creek Bypass Road	10010466	418	Gravel	Excellent	0.48	65	0.34
	Log Cabin Road	10010463	302	Gravel	Excellent	0.06	-	-
	I Spur Road	10010469	416	Gravel	Good	0.24	-	-
	I Spur Road	10010469	416	Native	Fair	0.39	-	-
	H Spur Road	10010468	417	Gravel	Fair	0.34	65	0.39
	Lower Goose Pen Road	10010473	420	Gravel	Fair	1.08	-	-
	Lower Goose Pen Road	10010473	420	Gravel	Good	1.21	-	-
	M-2 Service Road	10010477	408	Gravel	Good	2.08	-	-
	M-2 Service Road	10010477	408	Gravel	Excellent	2.09	-	-
	Maintanence Road	10010463	300	Gravel	Excellent	0.77	-	-
	Maintanence Road	10010463	300	Gravel	Good	0.09	-	-
	Marshland Wildlife Drive	10010464	011	Asphalt	Fair	0.03	-	-
	Marshland Wildlife Drive	10010464	011	Gravel	Excellent	4.26	-	-
	Marshland Wildlife Drive	10010464	011	Gravel	Good	2.99	-	-
	North Show Pool Road	-	413	Native	Good	0.08	-	-
	Northern Hardwoods Cross-Country Ski Area Access Road	10010473	105	Gravel	Good	0.04	-	-
	Pine Creek Road	10010474	421	Gravel	Excellent	2.06	-	-
	Pine Creek Road	10010474	421	Gravel	Good	2.66	-	-
	Pine Creek Road	10010474	421	Native	Good	1.39	-	-
	Pine Creek Road	10010474	421	Native	Fair	2.07	-	-
	Quarters 2 Road	-	304	Asphalt	Fair	0.10	-	-
	Railroad Road	10010470	401	Primitive	Excellent	0.14	-	-
	Quarters Road	10058628	303	Asphalt	Poor	0.16	-	-
	Refuge Main Entrance Road	10010461	010	Asphalt	Fair	0.03	65	0.22
	Refuge Main Entrance Road	10010461	010	Asphalt	Poor	1.03	65	0.22
	River Road Residence Access Road	10010463	305	Gravel	Excellent	0.08	-	-
	Riverside Dike Road	10010483	425	Native	Good	4.77	65	0.03
	Riverside Dike Road	10010483	425	Native	Fair	8.39	65	0.03
	Riverside Dike Road	10010484	425	Native	Poor	1.07	-	-
	Sand Diverson Ditch Road	10010480	404	Native	Good	1.52	65	0.13
	South Show Pool Road	-	414	Native	Good	0.10	-	-
	Shop Access Road	10058628	301	Asphalt	Fair	0.07	-	-

Table 24 . Combined SAMMS and RIP Road Data – MICHIGAN (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Seney NWR	T-2 East Road	10059888	411	Gravel	Good	1.01	-	-
	T-2 East Road	10059888	411	Native	Fair	0.97	-	-
	T-2 Pool Dam Road	10059888	412	Gravel	Excellent	0.07	-	-
	T-2 West Road	10059889	409	Primitive	Good	0.16	-	-
	T-2 West Road	10059889	409	Primitive	Fair	2.23	-	-
	Walsh Creek Hunter Access Road	10010431	400	Native	Good	1.47	65	0.12
	Walsh Road	10010487	103	Gravel	Excellent	0.26	65	0.1
	Walsh Creek WCS Access Road	10010486	403	Gravel	Excellent	0.39	-	-
	Wigwam Picnic Road	-	104	Gravel	Excellent	0.08	-	-
Shiawassee NWR	Auto Tour Route	10035955	010	Gravel	Excellent	4.71	-	-
	Auto Tour Route	10035955	010	Native	Excellent	0.50	-	-
	Bartel Dike Road	10010512	406	Gravel	Excellent	1.51	-	-
	Bremer Road	10010499	407	Gravel	Good	0.64	80	0.12
	Bremer Road	10010499	407	Primitive	Good	0.50	80	0.12
	Cass River Boat Launch Road	10056480	100	Gravel	Excellent	0.07	-	-
	Evon Service Road	10010516	404	Gravel	Excellent	1.15	80	0.07
	Farm Unit 1 Road	10010514	410	Gravel	Good	2.78	80	0.02
	Ferguson Bayou Dike Road	10010527	412	Native	Good	2.26	-	-
	Ferguson Bayou Dike Road	10010527	412	Gravel	Excellent	1.71	-	-
	Flint River Road	10010562	418	Native	Fair	2.61	-	-
	Gossen Road	10010544	411	Gravel	Good	0.59	-	-
	Hart Access Road	10010522	419	Primitive	Good	0.10	-	-
	Houlihan Service Road	10036097	401	Gravel	Good	0.51	80	0.13
	Houlihan/Evon Connector Road	10036098	402	Native	Good	0.50	65	0.14
	MSU 2 South Dike Road	10060581	414	Native	Fair	0.57	-	-
	MSU 1 South Dike Road	10060581	415	Native	Good	0.38	-	-
	MSU 3/4 Dike Road	10010500	403	Native	Good	1.10	-	-
	MSU 3/4 Dike Road	10010500	403	Native	Fair	0.99	-	-
	MSU 3/4 Dike Road	10010500	403	Primitive	Good	1.38	-	-
	Pool 1a/1b Access Road	10010498	408	Gravel	Good	0.49	-	-
	Pool 1a/1b Access Road	10010498	408	Native	Good	1.77	-	-

Table 25 . Combined SAMMS and RIP Road Data – MICHIGAN (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Shiawassee NWR	Pool 1a/1b Cross Dike Road	10010510	409	Native	Good	0.70	-	-
	Pool 2 South Dike Road	10010496	416	Gravel	Excellent	0.64	-	-
	Pool 2 Low Level Dike Road	10010562	417	Native	Fair	1.02	-	-
	Pool 3/5 Access Road	10010529	413	Gravel	Good	0.91	-	-
	Schramke Road	10036096	400	Gravel	Good	0.28	80	0.07
	Schramke Road	10036096	400	Native	Good	0.94	80	0.07
	Schramke Road	10036096	400	Primitive	Good	0.43	80	0.07
	Stroebel Access Road	10010528	420	Native	Fair	0.31	80	0.12
	Turner Service Road	10010515	405	Primitive	Fair	0.50	65	0.13
	Warner Road	10060580	101	Gravel	Excellent	0.09	-	-

Table 26 . Combined SAMMS and RIP Road Data – MINNESOTA

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Agassiz NWR	Goose Pen Road	10011125	411	Native	Fair	1.12	-	-
	Maakstad Trail Access Road	10042455	114	Gravel	Good	0.13	-	-
	Maintenance Center Road	10011167	117	Gravel	Excellent	0.96	-	-
	Madsen Road	10011121	425	Native	Fair	3.09	-	-
	Maintenance Road	10011167	113	Gravel	Good	0.43	-	-
	Middle Berg Road	10042689	427	Native	Fair	0.98	-	-
	Mud River Angle-Dike Road	10011184	419	Native	Poor	1.17	-	-
	Mud River Angle-Dike Road	10011184	419	Native	Fair	0.27	-	-
	Nelson Triangle Road	10058394	421	Native	Good	0.78	-	-
	North Boundary Road	10011058	111	Gravel	Excellent	5.06	100	0.05
	Northgate Road	10011078	105	Gravel	Excellent	1.50	-	-
	Northgate Road	10011078	105	Gravel	Fair	2.34	-	-
	Northgate Road	10011078	105	Gravel	Good	4.57	-	-
	Northwest Pool Road	10011059	103	Gravel	Excellent	1.52	-	-
	Pool 21 Road	10011104	109	Gravel	Excellent	2.23	100	0.38
	Preachers Groove Road	10052397	404	Native	Poor	1.59	100	0.32
	Rodahl Trail	10060920	401	Gravel	Excellent	0.58	-	-
	Rodahl Cutaccross Road	10060921	402	Native	Good	1.79	-	-
	Secondary Road	10052400	417	Native	Good	0.38	100	0.32
	Tamarac Road	10011054	104	Gravel	Excellent	1.73	100	0.28
	Tamarac Road	10011054	104	Gravel	Fair	0.24	100	0.28
	South Boundary Road	10060916	406	Native	Fair	1.06	-	-
	South Boundary Road	10060916	406	Native	Good	0.82	-	-
	South Pool Road	10060918	403	Native	Fair	1.46	-	-
	Thief Bay Road	10011050	429	Native	Good	2.14	-	-
	Thief Bay Road	10011050	429	Native	Fair	2.20	-	-
	Thief Bay Bridge Road	10011067	430	Native	Fair	0.89	100	0.03
	Thief River Road	10011093	102	Gravel	Good	3.32	100	0.13
	Thief River Road	10011093	102	Gravel	Excellent	0.97	100	0.13
	Thief River Road-Service Use	10011093	426	Native	Good	2.62	100	0.13
	Tower Road	10011094	432	Native	Good	1.05	-	-
	Unit 41-42 Road	-	407	Native	Good	0.48	-	-
	Webster Road	10011074	110	Gravel	Good	1.41	100	0.04
	West Parker Dike Road	-	422	Native	Fair	0.07	-	-
	West Parker Road	10011138	100	Gravel	Excellent	1.15	100	0.26
	Westgate Road	10011119	101	Gravel	Excellent	4.83	-	-
	Wier Road	10011102	420	Native	Good	2.14	-	-
	Wier Road	10011104	420	Native	Fair	1.58	100	0.38

Table 27 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Big Stone NWR	Autotour Route	10012681	010	Asphalt	Excellent	4.15	-	-
	Autotour Route	10012681	010	Asphalt	Good	1.02	-	-
	Banding Site Road	10012690	411	Gravel	Excellent	1.37	-	-
	Gravel Pit Island Road	10012716	404	Gravel	Good	0.74	100	0.46
	Klepel Road	10012692	401	Gravel	Excellent	0.74	65	0.12
	Koch Road	10012693	402	Gravel	Good	1.07	65	0.14
	Koch Road	10012693	402	Gravel	Excellent	0.60	65	0.14
	Low Flow Parking Access Road	10055153	103	Asphalt	Excellent	0.09	100	0.24
	Low Flow Road	10055153	101	Asphalt	Poor	0.69	100	0.24
	Low Road	10012694	405	Gravel	Good	0.75	-	-
	Low Road	10012715	405	Gravel	Excellent	1.16	-	-
	No Bridge Access Road	10043068	100	Asphalt	Excellent	0.17	-	-
	Pool 5 Dike Road	10012724	412	Gravel	Excellent	0.37	-	-
	Pool 4A Dike Road	10012706	408	Native	Good	0.68	-	-
	Ruby Red Road	10012726	406	Native	Good	1.23	65	0.12
	Sellin Trail Access Road	10012718	102	Asphalt	Excellent	0.07	-	-
	Sellin Trail Road	10012718	400	Gravel	Excellent	2.83	-	-
	Shop Loop	-	300	Gravel	Excellent	0.10	-	-
	Syndicate Road	10012691	403	Gravel	Excellent	0.65	65	0.12
	West/East Between Road	10012705	407	Gravel	Good	0.97	-	-
	Yellowbank Road	10055155	410	Native	Fair	0.45	65	0.17
	Arends/Swedzinski WPA Dike Road	10054431	400	Gravel	Good	0.59	-	-
Crane Meadows NWR	Entrance Road	10038249	010	Gravel	Excellent	0.48	100	0.18
	Platte River Trail Road	10038266	100	Gravel	Excellent	0.14	-	-
	Girtz Road	10038263	400	Gravel	Good	0.14	80	0.28
Fergus Falls WMD	Backstorm Service Road	10044439	427	Primitive	Fair	0.18	-	-
	Bah Lakes Service Road	10060729	411	Primitive	Good	0.14	-	-
	Banke Slough Access Road	10059828	129	Gravel	Good	0.31	-	-
	Bellmore WPA Access Road	10052533	127	Gravel	Fair	0.65	65	0.2
	Benson Service Road	10044439	410	Primitive	Good	0.11	-	-
	Blakesley Service Road	10044454	415	Native	Good	0.32	-	-
	Cheney Access Road	10043101	114	Native	Good	0.50	65	0.78
	Dahler West Access Road	10043109	106	Native	Fair	0.25	65	0.65

Table 28 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Fergus Falls WMD	Ellis Access Road	10043099	121	Native	Fair	0.12	65	0.79
	End Lake Service Road	10044439	406	Primitive	Good	0.03	-	-
	Equipment Loop	10012123	302	Native	Fair	0.09	65	0.05
	Frigaard-Nelson Service Road	10044439	421	Primitive	Good	0.13	-	-
	Grandokken North Access Road	10043097	108	Gravel	Excellent	0.19	65	0.71
	Grandokken South Access Road	10043098	109	Gravel	Excellent	0.37	65	0.72
	Grenna Lake Access Road	10043105	102	Native	Fair	0.31	65	0.78
	Haugrud-Sillerud WPA Access Road	10059825	128	Native	Fair	0.08	-	-
	Headquarters Entrance Road	10056211	010	Asphalt	Excellent	0.03	-	-
	Headquarters Rear Garage Road	10044439	428	Gravel	Excellent	0.10	-	-
	Hoffman Access Road	10043100	113	Native	Fair	0.08	65	0.61
	J.I. Case Service Road	10044439	405	Primitive	Good	0.10	-	-
	Julsrud Public Road	10052534	123	Gravel	Good	0.38	-	-
	Klein Service Road	10044439	401	Primitive	Fair	0.22	-	-
	Knollwood WPA Access Road	-	125	Gravel	Excellent	0.06	-	-
	Kube North Access Road	10043114	118	Native	Failed	0.12	65	0.46
	Kunz Access Road	10043113	117	Native	Failed	0.10	65	0.79
	Lightning Lake Access Road	10043108	105	Gravel	Good	0.17	65	0.64
	Langos Service Road	10044439	404	Primitive	Fair	0.36	-	-
	Mickelson Service Road	10044439	423	Primitive	Fair	0.09	-	-
	Mud Lake Service Road	10044454	419	Primitive	Fair	0.14	-	-
	Nicholson Access Road	10012120	111	Gravel	Good	0.21	65	0.23
	Nicholson Hunting Road	10060727	424	Primitive	Fair	0.50	-	-
	Nicholson Service Road	10044439	425	Gravel	Good	0.43	-	-
	Odens West Service Road	10044440	412	Primitive	Fair	0.22	-	-
	Orange Service Road	10044440	400	Primitive	Good	0.03	-	-
	PCA Access Road	10043111	112	Gravel	Excellent	0.15	65	0.59
	Pelican Creek Service Road	10044454	420	Primitive	Good	0.11	-	-
	Pelican River Road	10043107	104	Native	Good	0.02	-	-
	Peter Lien Access Road	10043110	110	Native	Fair	0.20	65	0.77
	Prairie Wetlands Learning Center Service Drive	-	300	Asphalt	Good	0.09	-	-
	Reger Service Road	10044439	402	Primitive	Fair	0.59	-	-
	Redhead Slough Service Road	10044454	414	Primitive	Good	0.23	-	-

Table 29 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Fergus Falls WMD	Ridgeway Service Road	10052543	426	Primitive	Good	0.09	-	-
	Rolling Acres Service Road	10044439	408	Primitive	Excellent	0.20	-	-
	Runestone Service Road	10044439	407	Primitive	Good	0.03	-	-
	Schultz Lake Access Road	10054826	120	Gravel	Good	0.12	-	-
	Sellevold Service Road	10044439	409	Primitive	Good	0.09	-	-
	Sethrye Access Road	10043104	101	Gravel	Good	0.33	65	0.34
	Shop Road	10012123	301	Gravel	Good	0.89	65	0.05
	Spink Access Road	10052280	115	Native	Failed	0.23	-	-
	Spink Service Road East	10044454	417	Primitive	Good	0.11	-	-
	Spink Service Road West	10044454	418	Primitive	Fair	0.32	-	-
	Spink North Public Access Road	10052539	124	Gravel	Good	0.49	-	-
	Steinlicht Service Road	10044454	416	Primitive	Good	0.18	-	-
	Stowe Lake Service Road	10044439	403	Primitive	Good	0.29	-	-
	Sumstad Access Road	10012137	107	Native	Fair	0.25	65	0.75
	Ten Mile Service Road	10044439	422	Primitive	Good	0.03	-	-
	Tomhave Access Road	10043112	116	Gravel	Good	0.07	65	0.53
	Tweeton WPA Access Road	10043103	126	Native	Fair	0.24	65	0.79
	Wagner Public Road	10059827	122	Gravel	Excellent	0.08	-	-
	Zickur Access Road	10012092	119	Native	Failed	0.16	65	0.6
	Zickur Service Road	10044440	413	Primitive	Excellent	0.02	-	-
Glacial Ridge NWR	North Herman Ridge Road	-	401	Primitive	Good	0.96	-	-
	Old Pembina Trail	10056932	400	Primitive	Good	0.65	-	-
	Old Pembina Trail	10056932	400	Native	Good	1.13	-	-
	South Herman Ridge Road	-	402	Primitive	Good	2.39	-	-
Hamden Slough NWR	Bisson Lake Access Road	10058645	402	Gravel	Good	0.26	-	-
	Eagle Lake Access Road	10052403	401	Primitive	Fair	0.96	-	-
	Eagle Lake Access Road	10052403	401	Gravel	Good	0.37	-	-
	Frog Pond Access Road	10060873	403	Primitive	Good	0.33	-	-
	Homestad Lake Access Road	10052403	400	Gravel	Good	0.39	-	-
	Homestad Lake Access Road	10052403	400	Primitive	Fair	0.32	-	-

Table 30 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Litchfield WMD	Barta-Oliva WPA South Parking Access Road	-	113	Gravel	Good	0.22	-	-
	Henjum Lake WPA Access Road	10046315	111	Gravel	Excellent	0.25	65	0.05
	Padua East Access Road	10012238	102	Native	Failed	0.25	65	0.73
	Krain Service Access Road	10058786	401	Primitive	Good	0.19	-	-
	Litchfield Headquarters Road	10046066	010	Asphalt	Excellent	0.11	-	-
	Pelican Lake West Access Rd	10043496	107	Gravel	Excellent	0.09	65	0.04
	Prairie Storm WPA Access Rd	-	110	Gravel	Excellent	0.04	-	-
	Pelican Lake East Service Parking	10052177	404	Native	Excellent	0.34	65	0.12
	Shakopee Creek Access Road	10043494	105	Native	Fair	0.10	-	-
	Sogge Access Road	10012232	100	Native	Failed	0.08	65	0.58
	Silver Creek Access Road	10012223	106	Gravel	Failed	0.12	65	0.98
	Swan Lake Access Road	10012252	104	Gravel	Good	0.08	65	0.73
	Stone Lake Service Road	10012303	400	Gravel	Good	0.14	-	-
	Stone Lake Public Access Road	-	108	Gravel	Excellent	0.10	-	-
	Summit Lake Access Road	-	112	Native	Good	0.24	-	-
	Twin Lakes Access Road	10012244	101	Native	Fair	0.22	65	0.8
	Trisko Access Road	10043495	103	Native	Fair	0.13	65	0.06
	Twin Lakes North Service Access Road	-	402	Native	Good	0.44	-	-
	Zehrer Hunting Access Road	10052161	109	Native	Good	0.22	-	-
	Zwemke WPA Service Road	-	403	Primitive	Good	0.04	-	-
Minnesota Valley NWR	Bass Ponds Access Road	10012375	101	Asphalt	Excellent	0.10	-	-
	Bass Pond Lower Parking Access Road	10012334	104	Asphalt	Excellent	0.18	-	-
	Bloomington Ferry Unit Road	10049371	400	Gravel	Excellent	0.64	65	0.2
	Black Dog Observ Access Rd	-	427	Gravel	Excellent	0.08	-	-
	Chaska Moist Soil Unit Acc. Rd	10012482	411	Native	Good	0.59	65	0.22
	Chaska Unit Service Access Rd	10012482	410	Gravel	Good	1.09	65	0.22
	Chaska Unit Service Access Rd	10012482	410	Native	Good	0.69	65	0.22
	Con Grain Dike/Levee Road	10012536	408	Native	Good	0.75	-	-
	Corridor Trail Service Road	10012513	415	Native	Good	1.91	65	0.12
	County Road 50 Extension	10043518	103	Asphalt	Excellent	0.49	65	0.2
	County Road 50 Extension	10043518	103	Gravel	Good	0.26	65	0.2
	Duck Lane Hunter Access Road	-	421	Native	Good	0.40	-	-

Table 31 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Minnesota Valley NWR	Field Offices Access Road	10012310	100	Asphalt	Fair	0.07	-	-
	Fisher Lake Road	10012451	407	Native	Good	1.24	65	0.21
	Floods Road	10012512	425	Native	Good	0.52	-	-
	Hillside Access Loop	10012379	423	Gravel	Good	0.44	-	-
	Hogback Marsh Access Road	10012379	422	Gravel	Good	0.53	-	-
	Hogback Marsh Access Road	10012379	422	Gravel	Excellent	0.07	-	-
	Hogback Pond Access Road	10012380	424	Gravel	Good	0.75	-	-
	Hogback Pond Access Road	10012379	424	Gravel	Excellent	0.06	-	-
	Jabs Trail Service Road	10012512	416	Gravel	Good	2.33	-	-
	Kelley Trail Access Road	10012365	426	Gravel	Excellent	3.58	-	-
	Kelley Trail Access Road	10012365	426	Gravel	Good	0.23	-	-
	Kelley Trail Access Road	10012365	426	Native	Good	0.73	-	-
	Kelley Trail Access Road	10012365	426	Primitive	Excellent	0.72	-	-
	Louisville North Service Acc Rd	10012492	414	Gravel	Good	1.16	65	0.14
	Middle Road	10012503	417	Gravel	Excellent	1.45	-	-
	North Mazomani Trail Road	10012517	419	Native	Good	1.86	65	0.19
	Old County Road 18	10049979	102	Asphalt	Fair	0.90	65	0.11
	Old County Road 18 Service Trail	10049977	401	Asphalt	Fair	0.82	65	0.16
	Picnic Access Road	10012503	418	Gravel	Good	0.46	-	-
	Rapids Lake Central Service Access Rd	10049978	413	Asphalt	Excellent	0.27	-	-
	Rapids Lake Central Service Access Rd	10049978	413	Native	Good	1.71	-	-
	Rapids Lake Central Service Access Rd	10049978	413	Native	Fair	2.36	-	-
	Rapids Lake Central Service Access Rd	10049978	413	Gravel	Good	0.66	-	-
	Rapids Lake Shop Access Rd	-	301	Gravel	Excellent	0.18	-	-
	Rapids Lake West Service Rd	-	412	Native	Good	1.08	-	-
	Rice Lake Access Road	10012477	409	Native	Good	0.14	65	0.14
	Rice Lake Levee/Dike Serv Rd	10012537	402	Native	Good	1.06	-	-
	Rice Lake Wayside Service Rd	10012537	403	Gravel	Good	0.77	-	-
	Rice Lake Wayside Service Rd	10012537	403	Native	Good	0.24	-	-
	Shakopee Shop Access Road	10036046	300	Gravel	Excellent	0.39	65	0.77
	South Mazomani Trail Road	10012523	420	Native	Good	1.65	65	0.16
	Wikie Unit Moist Soil Levee/Dike Rd	10012470	406	Native	Good	0.40	-	-

Table 32 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Minnesota Valley NWR	Wilkie Blue Lake Trail Service Road	10012448	405	Native	Good	0.95	65	0.13
	Wilkie Central Access Road	10012537	404	Gravel	Good	0.74	-	-
	Soberg WPA Service Road	10052119	400	Native	Good	0.60	-	-
	Hurley WPA Service Road	10052080	401	Native	Good	0.14	-	-
	Felber WPA Access Road	10059776	100	Gravel	Excellent	0.08	-	-
	Cobb River WPA Service Road	-	402	Native	Good	0.45	-	-
	MN Pheasants WPA Service Road	-	403	Gravel	Excellent	0.33	-	-
	Howard Farm WPA Access Road	10052075	101	Gravel	Excellent	0.13	-	-
	Mud Lake WPA Service Road	10052093	404	Primitive	Excellent	0.22	-	-
	Mud Lake WPA Access Road	10052091	102	Gravel	Excellent	0.05	-	-
	Perbix WPA Service Road	10052100	405	Gravel	Good	0.24	-	-
Morris WMD	Anderson Entrance Road	10043664	105	Native	Failed	0.12	65	0.39
	Artichoke Food Plot Road	10060662	402	Primitive	Good	0.20	-	-
	Bengston WCS Road	10060664	409	Primitive	Failed	0.12	-	-
	Clinton Entrance Road	10043665	106	Gravel	Good	0.49	65	0.73
	Clinton Entrance Road	10043665	106	Primitive	Fair	0.10	65	0.73
	Dakota Crossing Road	10060670	401	Primitive	Good	0.37	-	-
	Fish Lake #1 Entrance Road	10060230	412	Native	Good	0.22	-	-
	Fish Lake #2 Entrance Road	10060230	127	Gravel	Good	0.23	-	-
	Hillman #2 Entrance Road	-	108	Gravel	Good	0.99	-	-
	Heidebrink Entrance Road	10011954	113	Primitive	Good	0.15	65	0.13
	Huebner Access Road	10048528	136	Primitive	Fair	0.33	-	-
	HQ Predator Fence Road	10060621	300	Native	Fair	0.28	-	-
	Johnson WPA East Access Road	10011956	135	Gravel	Good	0.27	65	0.37
	Klevenburg Entrance Road	10043667	114	Gravel	Good	0.24	65	0.63
	Lake Johanna Entrance Road	10043668	116	Native	Failed	0.13	65	0.43
	Loen Access Road	10060658	137	Gravel	Good	0.10	-	-
	Lynch Lake Entrance	10043642	103	Native	Failed	0.30	65	0.33

Table 33 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Morris WMD	Loen Food Plot Road	10060658	407	Native	Good	0.29	-	-
	Loen WCS Road	10060659	408	Primitive	Fair	0.51	-	-
	Mattson Entrance Road	10043669	117	Native	Fair	0.12	65	0.88
	Miller Food Plot Road	10060663	404	Primitive	Good	0.05	-	-
	Mau WCS Road	10060665	405	Primitive	Fair	0.31	-	-
	Nelson Lake #1 Entrance Road	10011957	118	Native	Failed	0.46	65	0.25
	Nelson Lake #2 Entrance Road	10011957	119	Gravel	Good	0.12	65	0.25
	Ostenberg Entrance Road	10043670	120	Native	Failed	0.33	65	0.82
	Robinhood Entrance Road	10043673	101	Native	Fair	0.16	65	0.12
	Paul Entrance Road	10043672	100	Native	Failed	0.09	65	0.13
	Solvie Entrance Road	10060231	133	Native	Failed	0.16	-	-
	Staack Entrance Road	10043671	121	Native	Failed	0.11	65	0.82
	Sherstad Slough Entrance Rd	-	132	Native	Fair	0.02	-	-
	Schultz Food Plot Road	10060661	403	Primitive	Good	0.18	-	-
	Stenerson #3 Entrance Road	-	410	Gravel	Good	0.22	-	-
	Swede Home Food Plot Road	10060660	400	Native	Good	0.17	-	-
	Tangen Entrance Road	10043666	112	Native	Failed	0.12	65	0.39
	Welfare Entrance	10060232	134	Gravel	Good	0.30	-	-
	Walden Service Road	10060667	406	Gravel	Good	0.13	-	-
	Westport Crossing Road	10060671	411	Primitive	Fair	0.29	-	-
	Wildlife Trail	10011995	010	Gravel	Good	2.56	65	0.4
Rice Lake NWR	Auto Tour Road	10011485	011	Gravel	Excellent	5.51	65	0.14
	Davidson Road	10011497	403	Gravel	Excellent	0.93	65	0.11
	Magnason Road	10058227	405	Native	Fair	0.82	80	0.34
	Magnason Road	10058227	406	Gravel	Good	0.52	80	0.34
	Main Entrance Road	10011473	010	Asphalt	Excellent	0.13	65	0.38
	Main Entrance Road	10011473	010	Gravel	Excellent	1.84	65	0.38
	Main Entrance Road	10011473	010	Gravel	Good	2.13	65	0.38
	Maintenance Site Road	10011476	300	Gravel	Good	0.47	65	0.27
	Mandy Lake Access Loop	10011496	101	Gravel	Excellent	0.25	65	0.47
	North Bog Access Road	10011487	407	Gravel	Good	0.38	65	0.12
	North Bog Access Road	10011487	407	Native	Fair	1.03	65	0.12
	North Bog Road	10011487	102	Gravel	Excellent	1.85	65	0.12
	Rice Lake Pool Road	10060631	400	Native	Good	0.21	-	-
	Service Loop Shortcut Road	10058298	402	Gravel	Good	0.21	80	0.34
	South Landing Road	10058301	404	Native	Good	0.31	50	0.17
	South Trail Access Road	10011486	408	Gravel	Good	2.60	65	0.12

Table 34 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Rice Lake NWR	South Trail Road	10011486	100	Gravel	Excellent	0.60	65	0.12
	Storage Yard Access Road	10011495	301	Gravel	Good	0.14	-	-
	Twin Lakes Picnic Road	10011488	103	Gravel	Excellent	0.13	-	-
	West Fields Loop Road	10060582	401	Native	Good	1.93	-	-
Rydell NWR	Aasnes Field Road	10053164	402	Native	Good	0.27	65	0.31
	Auto Tour Road	10043695	013	Asphalt	Fair	0.04	65	0.12
	Auto Tour Road	10043695	013	Gravel	Excellent	0.91	65	0.12
	Bluebird Field Road	10053164	403	Primitive	Excellent	0.04	65	0.31
	Buness Field Access Road	10053164	407	Primitive	Good	0.29	65	0.31
	Church Lake Access Road	10053164	400	Gravel	Excellent	0.10	65	0.31
	Church Lake Road	10043694	012	Gravel	Good	1.70	65	0.12
	Church Lake Road	10043694	012	Gravel	Excellent	0.61	65	0.12
	Clifford Lake Road	10043697	101	Gravel	Excellent	0.86	65	0.12
	Ditch 73 Access Road	10043695	404	Gravel	Fair	0.08	65	0.12
	Fern Gully Field Access Road	10053164	409	Primitive	Good	0.07	65	0.31
	Golden Pond Road	10043693	011	Gravel	Good	0.47	65	0.12
	High Lake Field Access Road	10053164	408	Primitive	Fair	0.14	65	0.31
	Little Otter Field Access Road	10053164	410	Primitive	Good	0.22	65	0.31
	Old County 10 Road	10043696	100	Gravel	Excellent	1.46	65	0.12
	Partridge Field Road	10053164	405	Native	Good	0.35	65	0.31
	Rance Lake Field Road	-	412	Gravel	Excellent	0.36	-	-
	Refuge Entrance Road	10012040	010	Asphalt	Excellent	0.02	65	0.4
	Refuge Entrance Road	10012040	010	Gravel	Excellent	0.15	65	0.4
	Shop Access Road	-	300	Gravel	Excellent	0.26	-	-
	Rodres Field Road	10053164	401	Native	Good	0.07	65	0.31
	Tamarac Trail Road	10043695	014	Gravel	Excellent	0.47	65	0.12
	Tamarac Trail Road	10043695	014	Asphalt	Fair	0.08	65	0.12
	Solie Field Access Road	10053164	406	Primitive	Good	0.15	65	0.31
	Sunset Lake Outlet Road	10053164	411	Gravel		0.08	65	0.31
	Sunset Lake Outlet Road	10053164	411	Primitive	Good	0.28	65	0.31

Table 35 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Sherburne NWR	Auto Tour Road	10011568	011	Gravel	Excellent	5.42	65	0.07
	Auto Tour Road	10011568	011	Gravel	Good	0.91	65	0.07
	Bohm Break Road	10058340	425	Native	Fair	0.44	100	0.33
	Bohm Break Road	10058340	425	Native	Good	0.92	100	0.33
	Bohm East Break Road	10058340	426	Native	Fair	0.83	100	0.33
	Brande Break Road	10058340	406	Native	Fair	0.65	100	0.33
	Brande Road	10043708	100	Gravel	Excellent	0.77	65	0.38
	Brande Road	10043708	100	Gravel	Good	1.77	65	0.38
	Burgerson Road Josephine Diversion	10011566	417	Primitive	Good	0.14	65	0.09
	Cty 42 Break Road	10058340	403	Primitive	Good	0.69	100	0.33
	Carpenter Road	10011552	430	Gravel	Excellent	1.48	80	0.12
	Deer Pond Road	10058340	412	Primitive	Good	0.31	100	0.33
	Durgin Road	10011566	431	Gravel	Excellent	2.17	65	0.09
	Durgin Road	10011566	431	Gravel	Good	0.70	65	0.09
	East Bergerman Pool Road	10011566	418	Primitive	Excellent	0.11	65	0.09
	East Break Road	10058351	433	Native	Fair	0.45	-	-
	East Carpenter Road	10011566	437	Gravel	Excellent	0.65	65	0.09
	East Carpenter Road	10011566	437	Native	Good	0.47	65	0.09
	Edson Break Road	10058340	400	Native	Fair	1.90	100	0.33
	Enchanted Break Road	10058340	411	Native	Good	0.60	100	0.33
	Fox Pool Road	10058351	441	Gravel	Excellent	0.82	-	-
	Headquarters Road	10036211	010	Asphalt	Fair	0.10	-	-
	Josephine Overlook Loop	10011566	416	Gravel	Good	0.49	65	0.09
	Long Pool Launch Access	10036217	101	Gravel	Good	0.40	80	0.09
	Lacey Break Road	10058340	401	Native	Fair	0.49	100	0.33
	Long Lake Access Road	10011566	409	Gravel	Good	1.01	65	0.09
	Maintenance Shop Road	10011554	300	Gravel	Excellent	0.65	65	0.1
	Nagorski Break Road	10058340	427	Primitive	Fair	0.68	100	0.33
	Nikko Road	10058340	423	Gravel	Excellent	1.48	100	0.33
	Nikko Road	10058340	423	Native	Fair	0.83	100	0.33
	North Break Road	10058340	404	Native	Good	0.99	100	0.33
	North Blue Hill Road	10058340	408	Native	Good	2.53	100	0.33

Table 36 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Sherburne NWR	North Josaphine Pool Road	10011566	419	Primitive	Excellent	0.09	65	0.09
	North Muskrat Road	10058340	435	Native	Fair	1.02	100	0.33
	Oak Savanna Road	10011553	438	Gravel	Excellent	0.36	65	0.06
	Oak Savanna Road	10011553	438	Native	Good	0.89	65	0.06
	Oak Savanna Road	10011553	438	Primitive	Good	0.71	65	0.06
	Orrock Lake Road	10058340	429	Native	Good	1.20	100	0.33
	Oak Savanna Two Track Road	10011566	439	Primitive	Good	0.34	65	0.09
	Papike Road	10058340	405	Primitive	Good	0.32	100	0.33
	Rumbley Bridge Road	10058340	402	Native	Good	0.33	100	0.33
	Rumbly Bridge West Road	10011566	407	Native	Good	0.51	65	0.09
	School House Pond Road	10011566	414	Native	Excellent	0.26	65	0.09
	School House Pool Spur Road	10011566	415	Primitive	Good	0.26	65	0.09
	School House Pool Dike South Road	10011566	421	Native	Good	0.25	65	0.09
	School House Road	10011551	413	Gravel	Excellent	1.34	65	0.08
	School House Road	10011551	413	Gravel	Good	1.07	65	0.08
	Severson Road	10011549	420	Gravel	Excellent	0.61	65	0.03
	Severson Road	10011549	420	Gravel	Good	1.44	65	0.03
	South Josaphine Pool Road	10011566	424	Native	Good	0.44	65	0.09
	South Muskrat Pool Road	10011566	436	Native	Good	0.38	65	0.09
	St. Francis Dike Road	10011566	434	Gravel	Good	1.08	65	0.09
	Storlie Road	10043709	103	Gravel	Fair	0.49	65	0.1
	Storlie Service Road	10058351	440	Gravel	Excellent	0.38	-	-
	Talllakson Road	10011566	432	Primitive	Fair	0.96	65	0.09
	Teal Break Road	10058340	428	Gravel	Excellent	0.57	100	0.33
	West Blue Hill Road	10058340	410	Native	Good	0.98	100	0.33
	White Pine Break Road	10058340	422	Native	Fair	0.85	100	0.33
Tamarac NWR	Banding House Road	10011622	303	Primitive	Good	0.11	80	0.53
	Beaver Valley Trail	10057900	417	Primitive	Fair	1.33	-	-
	Big Egg Lake Access Trail	10011616	409	Gravel	Fair	0.39	80	0.71
	Blackbird Auto Tour Road	10011643	012	Gravel	Excellent	5.42	100	0.31
	Boneyard/Equipment Road	10060506	302	Gravel	Good	0.60	-	-
	Booth Lake Trails	10057898	427	Native	Good	1.06	-	-

Table 37 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Tamarac NWR	Booth Lake Trails	10057898	427	Primitive	Fair	0.57	-	-
	Bruce Boulevard	10011614	011	Gravel	Excellent	0.85	-	-
	Bruce Boulevard	10011614	011	Gravel	Good	4.01	-	-
	Bunkhouse Access Road	10060506	301	Gravel	Good	0.09	-	-
	Cabin Point Trail	10057927	403	Primitive	Good	0.33	-	-
	Carmen Lake Access Road	10055189	413	Gravel	Good	0.11	80	0.16
	Chippewa Trail	10011624	418	Gravel	Excellent	1.08	80	0.06
	Chippewa Trail	10011624	418	Native	Good	1.06	80	0.06
	Chippewa Trail	10011624	418	Gravel	Good	0.50	80	0.06
	Dike Road	10057895	400	Gravel	Excellent	0.47	100	0.62
	Dike Road	10057895	400	Native	Good	1.84	100	0.62
	Dry Lake Trail	10011617	407	Gravel	Fair	1.14	80	0.07
	East Boundary Road	-	416	Primitive	Fair	0.41	-	-
	East Height of Land Lake Access Road	10057902	430	Gravel	Good	0.09	65	0.4
	Egg Lake Trail	10011615	408	Gravel	Good	1.06	80	0.41
	Egg Lake Trail	10011616	408	Gravel	Fair	0.42	80	0.71
	Egg Lake Trail	10011616	408	Native	Good	4.05	80	0.71
	Flat Lake Trail	10011626	401	Gravel	Good	3.42	80	0.46
	Food Plot Road	-	428	Primitive	Fair	0.54	-	-
	Herfendahl Road	10011641	421	Gravel	Excellent	0.88	80	0.33
	Herfendahl Landing Access Road	10055184	422	Gravel	Excellent	0.62	80	0.26
	Job Corp Road	10057906	420	Native	Good	0.50	100	0.48
	Job Corp Road	10057906	420	Asphalt	Poor	0.09	100	0.48
	Job Corp Road	10057906	420	Gravel	Excellent	0.20	100	0.48
	Johnson Lake Road	10055188	425	Native	Good	1.05	80	0.36
	Johnson Lake Road	10055188	425	Native	Fair	0.33	80	0.36
	Long Fields Trail	10011622	424	Gravel	Fair	0.46	80	0.53
	Lost Lake Trail	10011620	405	Primitive	Good	0.17	80	0.44
	Lost Lake Trail	10011620	103	Gravel	Good	1.20	80	0.44
	Lost Lake Trail	10011620	103	Gravel	Fair	0.65	80	0.44
	Lost Lake Trail	10011620	405	Native	Good	0.81	80	0.44
	Lower Egg Lake Access Trail	10055192	410	Gravel	Good	0.14	80	0.9
	Maintenance Access Road	10057912	300	Gravel	Good	0.16	100	0.34
	Mallard Lake Trail	10056574	406	Gravel	Good	0.20	-	-

Table 38 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Tamarac NWR	Mallard Lake Trail	10056574	406	Native	Fair	0.51	-	-
	Mallard Lake Trail	10056574	406	Primitive	Fair	0.96	-	-
	North Flat Lake Trail	10057926	402	Native	Good	1.22	-	-
	Ogemash Trail	10011630	404	Gravel	Good	1.12	80	0.4
	Ogemash Trail	10011630	404	Native	Excellent	0.38	80	0.4
	Ogemash Trail	10011630	404	Native	Good	3.17	80	0.4
	Pine Lake Access Road	10055185	429	Gravel	Good	0.21	80	0.74
	River Road	10011621	414	Gravel	Good	1.72	80	0.38
	River Road	10011621	414	Native	Good	2.05	80	0.38
	South Tamarac Lake Access Road	10043748	102	Gravel	Excellent	0.27	-	-
	Sugarbush Trail Landing Access Road	10011625	101	Gravel	Excellent	0.52	80	0.67
	South Chppewa Trail Service Road	10011623	426	Gravel	Good	1.14	80	0.66
	Spruce Doll	-	423	Primitive	Good	0.11	-	-
	Tower Road	-	411	Primitive	Fair	0.17	-	-
	Two Island Lake Access Road	10011619	412	Native	Good	0.04	80	0.71
	Teacracker Road	10036757	415	Gravel	Good	1.12	80	0.28
	Teacracker Road	10036757	415	Native	Good	4.07	80	0.28
	Tower Road	-	411	Primitive	Fair	0.17	-	-
	Two Island Lake Access Road	10011619	412	Native	Good	0.04	80	0.71
	Visitor Center Entrance Road	10011647	010	Asphalt	Poor	0.23	-	-
	Wauboose Lake Access Road	10011618	100	Gravel	Excellent	0.40	80	0.49
	West Rice Lake Access Road	-	419	Gravel	Fair	0.98	-	-
	West Height of Land Lake Access Road	10057905	431	Native	Good	0.08	65	0.97
Windom WMD	Dutch Creek Access Road	10043746	100	Gravel	Good	0.47	65	0.73
	Cottonwood Lake Access Road	-	408	Native	Good	0.20	-	-
	Goose Lake Access Road	10012204	409	Gravel	Good	0.46	65	0.73
	Halls Lake South Parking Access Road	10060685	108	Gravel	Fair	0.07	-	-
	Headquarters Road	10012047	104	Asphalt	Fair	0.27	-	-
	Lost Lake WPA Access Road	10060691	110	Gravel	Good	0.26	-	-
	Pierce Lake WPA Access Road	10060680	410	Primitive	Good	0.39	-	-
	Iowa, Chicago & Eastern Access Road	10060693	109	Primitive	Good	0.20	-	-
	Pletz Marsh Access Road	10043791	101	Native	Good	0.58	65	0.32

Table 39 . Combined SAMMS and RIP Road Data – MINNESOTA (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Windom WMD	Pipestone WPA Access Road	-	401	Native	Fair	0.31	-	-
	Pilot Grove Lake WPA Access Road	-	411	Native	Good	0.20	-	-
	Rush Lake Access Road	10060695	403	Primitive	Fair	0.32	-	-
	Slaughter Slough WPA Access Road	-	402	Native	Good	0.76	-	-
	Sioux Forks Access Road	10012188	103	Gravel	Fair	0.19	65	0.73
	Souix Forks WPA Access Road	-	404	Gravel	Fair	0.29	-	-
	Swan Lake Access Road	10060689	412	Native	Good	0.38	-	-
	Timber Lake Access Road	-	400	Gravel	Good	0.26	-	-
	Wolf Lake West Access Road	10043779	405	Gravel	Good	0.24	65	0.14
	Wolf Lake West Access Road	10043779	405	Primitive	Good	0.18	65	0.14
	Wolf Lake East Access Road	10012182	406	Native	Good	0.12	65	0.36
	Wolf Lake Food Plot Access Road	-	407	Native	Good	0.34	-	-
Winona District	McNally Landing Road	10011739	100	Asphalt	Good	0.19	-	-
	Half Moon Canoe Landing Road	10011725	101	Asphalt	Excellent	0.14	-	-
	Half Moon Boat Landing Road	10011725	102	Asphalt	Excellent	0.08	-	-
	Peterson Lake Boat Launch Access Road	10043773	103	Asphalt	Excellent	0.06	-	-
	McNally Landing Service Road	10060942	400	Gravel	Excellent	0.21	-	-

Table 40 . Combined SAMMS and RIP Road Data – MISSOURI

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Big Muddy National Fish and Wildlife Refuge	Baltimore Bottom East Access Road	10042849	106	Gravel	Excellent	0.89	65	0.07
	Baltimore Bottom Service Road	10060713	408	Native	Good	0.86	-	-
	Bluff View Road	10060719	404	Gravel	Fair	1.07	-	-
	Bluff View Road	10060719	404	Native	Fair	0.35	-	-
	Boone's Crossing Levee Road	10051881	411	Native	Good	0.20	-	-
	Boone's Crossing Road	10060721	400	Native	Good	0.90	-	-
	Bryant Cabin Road	10060716	402	Gravel	Good	0.63	-	-
	Cranberry Bend Access Road	10042853	100	Gravel	Excellent	0.57	65	0.04
	Cranberry Bend Levee Road	10051879	406	Gravel	Good	3.23	-	-
	Cranberry Bend Levee Road	10051879	406	Native	Good	2.56	-	-
	Cranberry Bend West Levee Road	10060714	407	Native	Good	0.20	-	-
	Cranberry Bend West Levee Road	10060714	407	Native	Fair	0.28	-	-
	Jackass Bend Access Road	10042845	104	Gravel	Good	1.06	-	-
	Jackass Bend Rock Road	10042847	409	Gravel	Good	0.22	-	-
	Jackass Bend Rock Road	10042847	409	Primitive	Good	0.52	-	-
	Jameson Chute Service Road	10060712	405	Native	Good	0.31	-	-
	Jameson Island Access Road	10042854	102	Gravel	Good	0.13	-	-
	Lisbon Bottoms Access Road	10042843	101	Gravel	Excellent	0.03	-	-
	Loesing Road	10051880	107	Gravel	Good	0.20	65	0.09
	Lone Tree Scour Road	10060718	403	Gravel	Fair	0.57	-	-
	Overton Bottoms Access Road	10042839	103	Gravel	Good	0.95	-	-
	Rock Sill River Road	10060710	410	Native	Excellent	0.08	-	-
	St. Aubert Upland Access Road	10042852	401	Gravel	Good	0.24	-	-

Table 41 . Combined SAMMS and RIP Road Data – MISSOURI (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Clarence Cannon NWR	Big Pond Road	10043092	100	Gravel	Excellent	0.99	-	-
	Hemphill Road	10013948	401	Gravel	Good	0.59	100	0.06
	Main Access Road	10013940	010	Gravel	Excellent	3.39	-	-
	Maintenance Road	10013948	300	Gravel	Excellent	0.10	100	0.06
	Pond Structure Road	10013948	403	Gravel	Good	0.36	100	0.06
	Pumphouse Road	10013948	402	Gravel	Good	1.07	100	0.06
	Rabbit Ears Road	10043093	400	Gravel	Good	0.95	100	0.37
	Unit 5 Road	10013948	404	Native	Good	0.88	100	0.06
	Unit 7 Road	10013948	405	Gravel	Good	0.77	100	0.06
Great River NWR	Cattail Marsh Road	10013922	402	Gravel	Excellent	0.87	-	-
	Levee Road	10013922	405	Gravel	Good	2.88	-	-
	Shed Road	10013922	404	Gravel	Excellent	0.63	-	-
	Shoveler Marsh Road	10013922	401	Gravel	Good	0.82	-	-
	Sny Outlet Road	10013922	403	Gravel	Good	0.53	-	-
	Upper Swan Road	10013922	400	Gravel	Good	1.13	-	-
Mingo NWR	Auto Tour Route Cut Off Road	10057305	107	Asphalt	Fair	0.17	-	-
	Bluff Road	10012964	102	Asphalt	Excellent	0.79	65	0.18
	Bluff Road	10012964	102	Asphalt	Fair	4.37	65	0.18
	Disabled Hunter Blind Access Road	10057309	400	Gravel	Excellent	0.10	100	0.91
	Bow Hunter Road	-	110	Gravel	Excellent	0.10	-	-
	Ditch 10 Road	10012950	402	Gravel	Good	0.25	65	0.36
	Ditch 1 Radial Gate Access Road	10057286	408	Gravel	Fair	0.32	100	0.9
	Ditch 11 Access/Sewage Lagoon Road	10057239	417	Gravel	Good	0.09	100	0.87
	Ditch 11 Road	10057252	415	Primitive	Good	0.51	-	-
	Ditch 2 & 3 Lateral Road	10037634	406	Gravel	Good	0.97	65	0.31
	Ditch 2 Levee Road	10037631	410	Gravel	Good	1.38	55	0.33
	Ditch 2 Levee Road	10037631	410	Primitive	Good	1.55	55	0.33
	Ditch 4 Road	10012952	109	Gravel	Good	1.08	65	0.24
	Ditch 4 Road	10012952	109	Gravel	Fair	1.24	65	0.24
	DItch 5/11 Road	10057253	112	Gravel	Good	0.22	100	0.9
	Ditch 6 Auto Tour Route	10012967	12	Gravel	Excellent	3.04	-	-
	Ditch 6 Auto Tour Route	10012967	012	Gravel	Good	0.61	-	-
	Employee Entrance Road	10012968	300	Asphalt	Poor	0.04	80	0.09

Table 42 . Combined SAMMS and RIP Road Data – MISSOURI (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Mingo NWR	Flat Banks Road	10012963	105	Gravel	Excellent	0.54	-	-
	Flat Banks Road	10012963	105	Gravel	Good	0.70	-	-
	Fox Pond Road	10057294	108	Gravel	Excellent	0.10	65	0.9
	Goose Pen Road	10057257	414	Primitive	Good	0.22	100	0.88
	Job Corps Entrance Road	10012962	104	Asphalt	Fair	1.09	65	0.22
	Job Corps Entrance Road	10012962	104	Gravel	Excellent	0.43	65	0.22
	May Pond Entrance Road	10049354	200	Gravel	Good	0.08	-	-
	Mingo Creek Picnic Road	-	401	Gravel	Good	0.13	-	-
	McGee Entrance Road	10012982	411	Gravel	Good	1.27	65	0.23
	Moist Soil Unit 4 Road	10012979	409	Native	Fair	1.09	-	-
	Moist Soil Unit 4 Road	10012979	409	Native	Good	0.94	-	-
	Moist Soil Units 2 & 3 Road	10012978	412	Gravel	Good	0.42	-	-
	Moist Soil Units 2 & 3 Road	10012978	412	Native	Fair	1.34	-	-
	Moist Soil Units 5 & 6 Road	10012976	413	Primitive	Good	0.13	-	-
	Moist Soil Units 5 & 6 Road	10012976	413	Native	Good	0.58	-	-
	Moist Soil Units 8 & 9 Acc Rd	10057247	404	Gravel	Fair	0.27	100	0.9
	Moist Soil Units 8 & 9 Dike Rd	10012981	405	Native	Fair	1.45	-	-
	Moist Soil Units 8 & 9 Dike Rd	10012981	405	Native	Good	1.19	-	-
	Pierman Road	10057242	111	Gravel	Good	0.08	100	0.87
	Red Mill Entrance Road	10012965	100	Gravel	Good	0.99	65	0.25
	Red Mill Drive	10012969	101	Gravel	Excellent	4.16	65	0.37
	Refuge Auto Tour Route	10037240	011	Asphalt	Poor	1.01	-	-
	Refuge Auto Tour Route	10037240	011	Asphalt	Good	0.15	-	-
	Refuge Auto Tour Route	10037240	011	Asphalt	Excellent	0.11	-	-
	Refuge Auto Tour Route	10037240	011	Asphalt	Fair	0.19	-	-
	Refuge Auto Tour Route	10037240	011	Gravel	Excellent	12.44	-	-
	Refuge Auto Tour Route	10037240	011	Gravel	Good	1.34	-	-
	Residence Road	10037242	301	Asphalt	Fair	0.23	65	0.07
	Rockhouse Culvert Storage Rd	10057241	418	Gravel	Good	0.18	100	0.87
	Sandblow Ridge Road	10037630	106	Gravel	Good	1.01	-	-
	Sandblow Ridge Road	10037630	106	Gravel	Excellent	1.28	-	-
	Sandblow Ridge Service Road	10057311	407	Primitive	Good	0.33	80	0.76
	Sifford Field Road	10057310	403	Primitive	Good	0.35	80	0.9
	Visitor Center Entrance Road	10012968	010	Asphalt	Fair	0.29	80	0.09
	Visitor Center/Sewage Lagoon Road	10057215	416	Gravel	Good	0.24	80	0.9

Table 43 . Combined SAMMS and RIP Road Data – MISSOURI (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Squaw Creek NWR	Auto Tour Route	10050579	011	Asphalt	Good	0.52	65	0.1
	Auto Tour Route	10013096	011	Gravel	Excellent	7.82	100	0.1
	Auto Tour Route	10013096	011	Gravel	Good	2.00	100	0.1
	Bird House Road	10053186	408	Native	Excellent	0.22	65	0.01
	Boneyard Road	10053190	302	Gravel	Excellent	0.10	-	-
	Davis Creek Ditch Road	10053186	405	Native	Good	3.83	65	0.01
	Davis Creek Ditch Road	10053186	405	Native	Fair	1.07	65	0.01
	Farm Field Road	10053186	404	Native	Fair	0.75	65	0.01
	Farm Field Road	10053186	404	Gravel	Excellent	0.61	65	0.01
	Golden 40 Hunt Club Road	10053186	406	Native	Good	0.25	65	0.01
	Headquarters Entrance Road	10050583	010	Asphalt	Fair	0.20	-	-
	Loess Hill Road	10053186	407	Primitive	Good	0.37	65	0.01
	Mallard Marsh Trail Road	10043721	012	Gravel	Excellent	1.25	65	0.11
	Mallard Marsh Trail Road	10043721	012	Gravel	Good	1.01	65	0.11
	Pelican Pool Levee Road	10053186	400	Native	Good	1.18	65	0.01
	Residence Road	10053186	301	Gravel	Good	0.13	65	0.01
	Snow Goose Access Road	10053186	402	Native	Good	2.46	65	0.01
	Split Levee Road	10053186	401	Native	Fair	2.19	65	0.01
	Squaw Creek Ditch Road	10053186	403	Gravel	Excellent	0.21	65	0.01
	Squaw Creek Ditch Road	10053186	403	Native	Good	3.69	65	0.01
	Upper Shop Road	10053190	300	Gravel	Excellent	0.14	-	-
Swan Lake NWR	Levee 1 Road	10036773	014	Gravel	Excellent	2.39	65	0.02
	Levee 1 Road	10036773	014	Gravel	Good	1.00	65	0.39
	Levee 2 Road	10036770	011	Gravel	Excellent	1.09	65	0.14
	Levee 3 Road	10036772	013	Gravel	Excellent	2.96	65	0.14
	Levee 5 Road	10036771	012	Gravel	Excellent	3.16	65	0.14
	Maintenance Road	10013218	300	Gravel	Excellent	0.19	65	0.13
	North Hunter Road	10036774	102	Gravel	Good	0.37	65	0.39
	North Swan Lake Agric Serv Rd	10060129	400	Gravel	Excellent	0.60	-	-
	Old Nature Trail Road	10013220	101	Gravel	Excellent	0.53	65	0.12
	Parking Area P Access Road	10036774	401	Primitive	Good	0.24	65	0.39
	Service Patrol Road	10013181	404	Gravel	Excellent	1.58	-	-
	Service Patrol Road	10013181	404	Gravel	Good	1.24	-	-
	Service Patrol Road	10013181	404	Gravel	Fair	1.07	-	-
	Silver Lake Overlook Road	-	103	Gravel	Excellent	0.24	-	-
	South Pool Levee Road	10060132	402	Gravel	Good	3.36	-	-
	Taylor Point Fishing Access	10013219	100	Gravel	Good	0.77	65	0.13
	Training Levee Road	10060131	403	Gravel	Good	0.85	-	-
	Visitor Center Access Road	10013217	010	Gravel	Excellent	1.96	65	0.13
	West Swan Lake Levee Road	10060130	405	Gravel	Excellent	1.07	-	-

Table 44 . Combined SAMMS and RIP Road Data – OHIO

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Cedar Point NWR	Cedar Point Loop Road	10010923	401	Gravel	Excellent	1.05	100	0.09
	Cedar Point Loop Road	10010923	401	Gravel	Good	4.89	100	0.09
	Cedar Point Loop Road	10010923	401	Native	Good	1.56	100	0.09
	Pheasant Farm Dike Road	10010923	402	Gravel	Fair	1.10	100	0.09
	Pheasant Farm Dike Road	10010923	402	Gravel	Good	0.27	100	0.09
	Pheasant Farm East Dike Road	10010930	403	Native	Fair	0.75	-	-
	Potters Pond Access Road	10010923	400	Gravel	Excellent	1.17	100	0.09
	Yondota Road Fishing Access	10043088	100	Gravel	Good	0.26	65	0.34
Ottawa NWR	Blausey Service Road	10042925	447	Asphalt	Fair	0.11	-	-
	Blausey Service Road	10042925	447	Gravel	Good	0.21	-	-
	Darby East Entrance Road	10010801	451	Gravel	Good	0.42	65	0.09
	Darby Entrance Road	10010802	448	Gravel	Good	0.52	65	0.09
	Darby Entrance Road	10010802	448	Gravel	Good	0.52	65	0.09
	Darby Pool 1 South Dike Road	10010864	454	Gravel	Good	0.48	-	-
	Darby Pool 3 Dike Road	10010886	457	Native	Good	0.47	-	-
	Darby Pool 3 Dike Road	10010886	457	Native	Fair	0.47	-	-
	Darby Pool 2 Dike Road	10010862	458	Native	Good	0.24	-	-
	Darby Pool 3/4 Dike Road	10010863	456	Gravel	Good	0.53	-	-
	Darby Pool 4 Cross Dike Road	10010863	455	Gravel	Excellent	0.48	-	-
	Darby Pool 4 Road	10010861	452	Gravel	Excellent	1.05	-	-
	Darby Pool 4 Road	10010861	452	Gravel	Good	0.49	-	-
	Darby South Boundary Dike Road	10010884	453	Native	Fair	0.28	-	-
	Darby Unit Lake Erie Entrance Road	10010865	449	Gravel	Good	1.25	-	-
	Diefenthaler Service Road	-	433	Gravel	Excellent	0.40	-	-
	Entrance Pool Dike Road	10042937	437	Native	Good	1.07	-	-
	Gaeth-Kurdy West Dike Road	10042927	444	Native	Good	0.20	-	-
	Gaeth-Kurdy Center Service Road	-	443	Native	Fair	0.41	-	-
	Gaeth-Kurdy Center Service Road	-	445	Gravel	Good	0.18	-	-
	Gaeth-Kurday Access Road	10010921	446	Gravel	Good	0.47	65	0
	Linsey-Limestone MS Unit Road	10010883	407	Gravel	Good	0.39	-	-
	Lodge Road	10010799	430	Gravel	Good	0.24	65	0.1
	Linsey Dike Road	10010767	431	Native	Good	0.47	-	-
	Metzger's Marsh Road	10010902	412	Gravel	Good	0.96	-	-

Table 45 . Combined SAMMS and RIP Road Data – OHIO (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Ottawa NWR	MS 6 East Road	10010837	424	Native	Fair	0.24	-	-
	Mini Marsh Road	10010823	432	Native	Good	0.32	-	-
	MS 6 South Road	10010881	425	Native	Good	0.35	-	-
	MS 6 West Road	10010882	426	Native	Fair	0.36	-	-
	MS 6 North Dikes Road	10042934	427	Native	Fair	0.30	-	-
	MS 8b Loop Road	-	404	Gravel	Good	0.26	-	-
	MS 8b West Road	10050813	405	Gravel	Excellent	0.37	-	-
	MS LL Woods Road	-	406	Gravel	Good	0.48	-	-
	MS 7 North Road	10010770	428	Gravel	Good	0.57	-	-
	MS Unit 3 North Side Road	10010774	419	Gravel	Fair	1.09	-	-
	MS Unit 2 Road	10059903	420	Native	Good	1.60	-	-
	MS Unit 3 West Dike Road	10010869	421	Native	Fair	0.57	-	-
	MS Unit 4/5 North Road	10010871	416	Gravel	Fair	1.01	-	-
	MS Unit 5 South & East Dike Rd	10010841	417	Gravel	Good	1.24	-	-
	MS Unit 3/4 Common Dike Rd	10010870	418	Gravel	Good	0.57	-	-
	MS Unit 3/4 South Dike Road	10010872	423	Native	Good	0.61	-	-
	MS Unit 6 North Side Road	10010797	422	Gravel	Good	0.70	65	0.09
	North Lodge Road	10010767	429	Gravel	Good	0.35	-	-
	North Entrance Pool Access Rd	10010853	434	Gravel	Excellent	0.49	-	-
	Ottawa Entrance Road	10010782	010	Asphalt	Fair	0.52	-	-
	Ottawa Entrance Road	10010782	010	Asphalt	Excellent	0.06	-	-
	Ottawa Auto Tour Route	10010796	011	Gravel	Excellent	2.13	100	0.17
	Ottawa Auto Tour Route	10010796	011	Gravel	Good	3.05	100	0.17
	Pool 1 West Road	10010866	438	Gravel	Good	1.41	-	-
	Pool 1 Northeast Road	10010850	439	Gravel	Excellent	1.58	-	-
	Pool 1 South Road	10010851	440	Gravel	Good	0.39	-	-
	Pool 2 Dike Road	10010854	401	Gravel	Good	2.04	-	-
	Pool 2a/8a Dike Road	10010856	402	Gravel	Excellent	0.52	-	-
	Pool 2c West & South Dike Rd	10010855	403	Gravel	Good	0.73	-	-
	Pool 2b South & West Dike Rd	10010857	408	Gravel	Excellent	0.77	-	-
	Pool 3 Lakefront Road	10057059	411	Gravel	Excellent	1.02	-	-
	Pool 3 South Dike Road	10010873	414	Gravel	Excellent	1.15	-	-
	Pool 3/9 Common Dike Road	10042932	415	Gravel	Excellent	0.28	-	-
	Pool 4 Lakefront Dike Road	10010867	413	Gravel	Good	1.01	-	-

Table 46 . Combined SAMMS and RIP Road Data – OHIO (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Ottawa NWR	Pool 9 West Dike Road	10052311	409	Gravel	Good	0.38	-	-
	Pool 9 North Side Road	10057050	410	Gravel	Good	0.45	-	-
	Price Unit Access Road	-	459	Primitive	Fair	0.57	-	-
	Schneider Access Road	10057047	442	Native	Good	0.22	-	-
	Show Pool Road	10010852	441	Gravel	Good	0.27	-	-
	Show Pool Road	10010852	441	Native	Good	0.19	-	-
	South Woods Service Road	-	400	Native	Good	0.56	-	-
	South Woods Service Road	-	400	Native	Fair	0.27	-	-
	South Woods Service Road	-	400	Primitive	Excellent	0.07	-	-
	South Woods Service Road	-	400	Primitive	Good	0.30	-	-
	Stange Road	10060237	100	Asphalt	Poor	0.15	-	-
	Visitor Center Access Road	10051717	012	Asphalt	Excellent	0.57	-	-
	VC Auto Tour Access Road	-	101	Gravel	Excellent	0.27	-	-
	West Darby Dike Road	10010865	450	Gravel	Good	1.06	-	-
	West Darby Dike Road	10010865	450	Gravel	Excellent	0.35	-	-
	Woodie's Roost North Access Road	10010859	435	Native	Good	0.99	-	-
	Woodie's Roost West Access Road	10010858	436	Native	Fair	1.10	-	-

Table 47 . Combined SAMMS and RIP Road Data – WISCONSIN

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Fox River NWR	Fox River Entrance Road	10043094	100	Gravel	Good	0.07	-	-
	Fox River Service Road	10040415	400	Gravel	Good	0.30	-	-
	Fox River Service Road	10040415	400	Primitive	Fair	1.08	-	-
Horicon NWR	Auto Tour Access Road	10011223	013	Asphalt	Fair	0.27	-	-
	Auto Tour Road	10011222	014	Asphalt	Fair	2.80	-	-
	Babbit Road	10041729	102	Primitive	Fair	0.14	-	-
	Boat Ramp Access Road	10040651	409	Gravel	Good	0.18	-	-
	Dike I-4/I-5 Service Road	10041737	401	Gravel	Fair	0.46	-	-
	Dike I-5/Redhead Lake Service Road	10011238	402	Gravel	Good	0.31	-	-
	Dike I-7 Road	10011240	410	Primitive	Good	0.20	-	-
	Explosive Shed Road	-	300	Gravel	Good	0.06	-	-
	Frankfurth Road	10011293	103	Gravel	Fair	1.07	-	-
	Frankfurth Road	10011293	103	Gravel	Good	0.75	-	-
	I-5 Service Road	10011234	404	Gravel	Good	0.25	-	-
	I-8 Dike Road	10011235	412	Primitive	Fair	0.59	-	-
	Ledge Road	-	101	Gravel	Excellent	0.78	-	-
	Little Stoney Island Road	10011257	400	Gravel	Excellent	0.10	-	-
	Luebke Service Road	10041725	411	Gravel	Excellent	0.58	-	-
	Luehring Dike Road	10011256	407	Primitive	Fair	1.12	-	-
	Main Dike Administrative Road	10041582	413	Gravel	Excellent	3.12	65	0.4
	Main Dike Road	10041582	011	Gravel	Good	1.47	65	0.4
	Main Dike Road	10041582	011	Gravel	Excellent	3.89	65	0.4
	Maintenance Area Access Road	10040490	408	Asphalt	Excellent	0.11	65	0.49
	Maintenance Area Road	10040490	301	Asphalt	Fair	0.20	65	0.49
	Old Marsh Road	10011224	012	Gravel	Excellent	2.77	65	0.41
	Old Marsh Road	10011224	012	Asphalt	Poor	0.31	65	0.41
	Potato Dike Road	10011224	405	Native	Fair	1.58	65	0.41
	Redhead/Teal Dike Road	10011262	406	Gravel	Excellent	0.09	-	-
	Redhead/Teal Dike Road	10011262	406	Primitive	Good	1.53	-	-
	Sterr Road	10011237	415	Gravel	Good	1.79	65	0.27
	Stoney/Redhead Lake Service Road	10011286	403	Gravel	Fair	0.94	-	-
	Visitor Center Access Road	10011221	010	Asphalt	Fair	0.45	-	-
	Visitor Center Kiosk Road	10055768	015	Asphalt	Fair	0.05	-	-
	WUI Project Road	10045895	414	Primitive	Fair	0.52	-	-

Table 48 . Combined SAMMS and RIP Road Data – WISCONSIN (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
LaCrosse District	Lone Tree Road	10011663	100	Gravel	Good	0.81	65	0.37
Leopold WMD	Bulgrien Road	10060596	400	Gravel	Good	0.38	-	-
	Eckstein WPA Parking Access Road	10011396	100	Gravel	Excellent	0.03	-	-
	Harvey's Marsh Road	10011353	202	Gravel	Good	0.06	65	0.37
	Harvey's Parking Access Road	10043305	201	Native	Failed	0.19	65	0.31
	Uihlein WPA Service Road	10011388	401	Gravel	Excellent	0.81	-	-
	Vangen WPA Access Road	10011344	402	Native	Good	0.12	-	-
Necedah NWR	Annex Road	10058872	410	Gravel	Excellent	0.12	80	0.44
	Becker Road	10058848	442	Native	Fair	0.71	-	-
	Bewick Dike Road	10058813	428	Gravel	Good	1.34	-	-
	Bewick South Road	10058813	429	Gravel	Good	1.06	-	-
	Bewick North Road	10058874	430	Gravel	Good	1.94	80	0.21
	Canfield East Road	10058878	420	Gravel	Good	0.70	80	0.2
	Camp Road	10058877	431	Gravel	Good	1.69	80	0.2
	Coaver East Road	10011442	417	Gravel	Good	1.34	80	0.86
	Coaver Middle Road	10058880	418	Gravel	Good	0.90	80	0.15
	Coaver West Road	10058881	419	Native	Good	1.03	80	0.14
	Dam Access #1 Road	10058882	411	Gravel	Excellent	1.39	80	0.17
	Dike DU Cell 3 Road	10058819	403	Native	Good	0.41	-	-
	Dike DU Cell 1 Road	10058818	405	Native	Good	0.67	-	-
	Dike DU Cell 4 Road	10058822	402	Native	Good	0.67	-	-
	Dike DU Cell 6 Road	10058824	404	Native	Good	0.16	-	-
	Dike Pool 1E North Road	10058900	416	Gravel	Excellent	0.70	80	0.22
	Dike Pool 2 Spillway Road	10058861	408	Gravel	Excellent	0.54	-	-
	Dike Pool 2 Access Road	10058883	407	Native	Good	0.21	80	0.14
	Dike Pool 1E Road	10058848	415	Gravel	Good	2.16	-	-
	Dike Pool 29 Road	10058863	435	Gravel	Excellent	0.70	-	-
	Dike Sprague Pool Middle Road	10058867	437	Gravel	Fair	1.09	-	-
	Dike West Sprague Pool Road	10058871	438	Gravel	Excellent	1.07	-	-
	East Sprague Dike Road	10058827	436	Gravel	Good	1.07	-	-
	Goose Pool Dike Road	10058837	439	Gravel	Good	1.95	-	-

Table 49 . Combined SAMMS and RIP Road Data – WISCONSIN (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Necedah NWR	Goose Pool Road	10058884	440	Gravel	Good	1.07	80	0.16
	Goose Pool Road	10058884	440	Native	Good	0.30	80	0.16
	Harvey Pond Road	-	409	Primitive	Fair	0.45	-	-
	Hansen East Road	10058885	426	Primitive	Excellent	0.86	80	0.15
	Hansen West Road	10058886	427	Primitive	Good	1.13	80	0.19
	Lupine Loop	10011441	100	Gravel	Excellent	0.14	65	0.42
	Laske East Road	10058887	413	Gravel	Excellent	0.33	80	0.13
	Laske West Road	10058888	414	Gravel	Good	0.91	80	0.13
	Observation Tower Access Road	10043687	104	Gravel	Good	0.29	-	-
	OSR 5/6 Road	10058896	412	Gravel	Excellent	0.71	80	0.19
	Old Barrens Road	10058889	425	Native	Good	1.31	80	0.16
	Pair Ponds Road	10043684	101	Gravel	Excellent	0.27	-	-
	Photo Blind Road	10058897	424	Native	Excellent	0.10	80	0.06
	Pool 19 Road	10058902	432	Gravel	Good	1.52	80	0.99
	Shop Road	-	300	Gravel	Excellent	0.17	-	-
	Storage Yard Road	10058876	301	Gravel	Excellent	0.22	80	0.04
	Secondary Headquarters Road	10058904	441	Primitive	Good	0.16	80	0.17
	Suk Cerney Flowage	10043686	103	Gravel	Excellent	0.33	-	-
	Suk Cerney Road	10043685	102	Gravel	Good	1.81	65	0.82
	Suk Cerney Dike Road	10058868	406	Native	Good	0.28	-	-
	Turkey Tracks East Road	10058964	105	Gravel	Fair	0.21	-	-
	Turkey Tracks East Service Road	10058905	434	Gravel	Fair	2.22	80	0.19
	Turkey Tracks East Service Road	10058905	434	Gravel	Good	0.46	80	0.19
	Turkey Tracks West Service Road	10058906	433	Gravel	Fair	1.36	80	0.58
	Visitor Center Entrance Road	10059662	010	Gravel	Excellent	0.31	-	-
	Williams North Road	10011428	421	Gravel	Good	0.99	-	-
	Williams Levee Road	10011413	422	Gravel	Good	1.26	-	-
	Williams South Road	10011428	423	Gravel	Excellent	0.44	-	-
St. Croix WMD	St. Croix Prairie Entrance Road	10011864	010	Gravel	Excellent	0.12	65	0.38
	Bass Lake South Service Road	10011864	400	Primitive	Good	0.11	65	0.38
	Bettery Nursery Trail Road	10060592	401	Primitive	Fair	0.50	-	-
	Bettery Service Road	10011880	402	Gravel	Good	0.33	65	0.23
	Steffens Access Road	10043726	100	Primitive	Fair	0.18	65	0.69
	Maintenance Road	10059332	300	Asphalt	Poor	0.12	-	-

Table 50 . Combined SAMMS and RIP Road Data – WISCONSIN (continuation)

FWS Unit	Route Name	Asset Number	Route Number	Surface	Condition	Miles	API	FCI
Trempealeau NWR	Delta Dike Road	10011920	403	Gravel	Excellent	0.88	-	-
	Delta Point Trail	10011890	404	Native	Good	0.46	-	-
	Dike Road	10043750	101	Gravel	Excellent	0.37	-	-
	East End Ox Bow Dike Road	10011892	407	Native	Good	0.60	65	0.16
	Entrance Road	10011914	010	Asphalt	Fair	1.03	-	-
	Entrance Road	10011914	010	Gravel	Good	0.17	-	-
	Fire Break Road	10059069	400	Primitive	Good	1.04	80	0.28
	Keips Island Dike Road	10011917	401	Gravel	Excellent	1.19	-	-
	Keips Island Road	10011896	102	Gravel	Excellent	0.13	65	0.69
	Lower Diversion Dike Road	10059062	402	Gravel	Good	2.33	65	0.16
	Marshland Road	10011891	100	Gravel	Excellent	2.54	65	0.34
	Ox Bow Dike Road	10011922	406	Gravel	Good	0.65	-	-
	River Bottoms Access Road	10044399	405	Gravel	Good	0.34	65	0.12
	River Bottoms Access Road	10044399	405	Native	Good	0.60	65	0.12
	Wildlife Drive	10011887	011	Gravel	Excellent	1.05	65	0.26
	Wildlife Drive	10011887	011	Gravel	Good	3.01	65	0.26
Whittlesey Creek NWR	No road sections to report	-	400	Primitive	Excellent	0.00	-	-

RIP - Cycle 4, SAMMS Report December 2010.
http://cflgis1.cflhd.gov/egis/ds/ReportSearch.aspx
GIS files - CFLHD - November 22, 2010

Table 51 . RIP and SAMMS Parking Lot Data by Unit

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Agassiz NWR	East Kiosk Parking	10042461	Gravel	5,908	65	0.42	27200	Good
	Maintenance Yard Parking	10042458	Gravel	30,459	65	0.37	140100	Good
	East Boundary Road Parking	10042459	Native	12,597	-	-	25000	Good
	Maakstad Trail Parking	10042456	Gravel	5,069	65	0.37	23300	Fair
	Headquarters Parking	10011204	Asphalt	34,288	-	-	289000	Good
	West Kiosk Parking	10011148	Gravel	7,808	65	0.37	35900	Fair
	Hunter Access Parking	10042462	Native	13,071	-	-	25900	Poor
	Rodahl Trail Parking	10056691	Gravel	9,117	65	0.42	41900	Excellent
	Observation Tower Parking	10042457	Gravel	4,262	65	0.37	19600	Good
	Maintenance Yard North Parking	10042458	Gravel	6,770	-	-	31100	Good
	Shop Parking	10042685	Gravel	8,231	65	0.37	37900	Good
	West Shop Parking	10042685	Gravel	2,668	65	0.37	12300	Good
	Equipment Parking	10042685	Native	3,126	65	0.37	6200	Good
	Bunkhouse Parking	10042685	Concrete	2,212	65	0.37	22600	Good
Big Muddy NWR	Overton Bottoms Parking Area "A"	10042842	Gravel	5,573	-	-	28800	Good
	Overton Bottoms Parking Area "B"	10042840	Gravel	8,911	-	-	46000	Good
	Boone's Crossing Parking Area	10054223	Gravel	3,041	-	-	15700	Good
	Overton Bottoms Parking Area "C"	10042841	Gravel	10,857	-	-	56000	Good
	Overton Bottoms Loesing Parking	10058403	Gravel	4,662	-	-	24100	Good
	Bryant Cabin Parking	10060717	Gravel	4,789	-	-	24700	Good
	Lisbon Bottoms Parking Area	10042844	Gravel	7,877	-	-	40700	Good
	Jameson Island Parking Area	10042855	Gravel	5,352	-	-	27600	Good
	Cranberry Bend East Parking	10056896	Gravel	1,999	-	-	10300	Good
	Baltimore Bottom East Parking Area	10042851	Gravel	5,217	-	-	26900	Good
	Baltimore Bottom Hodge Parking Area	10042850	Primitive	1,209	-	-	0	Fair
	Jackass Bend Parking Area	10042846	Gravel	3,477	65	0.80	17900	Excellent
	Jackass Bend Egypt Road Parking	10060711	Primitive	5,385	-	-	0	Fair

Table 52 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Big Oaks NWR	Snag Hole Point Picnic Parking	-	Gravel	1945	-	-	9800	Good
	Old Chimney Point Parking	-	Gravel	2498	-	-	12600	Fair
	Heron Inlet Boat Launch	10010751	Gravel	6038	-	-	30500	Good
	Big Tree Point Parking	-	Gravel	1570	-	-	7900	Poor
	Machine Gun Road A Parking	10010706	Gravel	10706	65	0.00	54100	Good
	Machine Gun Road B Parking	10010706	Gravel	3521	-	-	17800	Fair
	L Road Little Otter Creek Parking	10010707	Gravel	926	-	-	4700	Fair
	Shaped Charge Road A Parking	-	Gravel	3684	-	-	18600	Poor
	Maintenance Shop East Perimeter Parking	10059419	Gravel	12739	-	-	64300	Good
	L Road Little Otter Creek Parking	10010707	Gravel	7748	-	-	39100	Good
	Machine Gun Road A Overflow Parking	10010706	Gravel	7038	-	-	35500	Fair
	Michigan Road Kiosk After Hours Parking	10056492	Asphalt	3513	-	-	32500	Good
Big Stone NWR	Headquarters Parking Area	10012695	Asphalt	37328	65	0.42	299300	Fair
	Parking Area # 5	10043070	Native	6757	-	-	12800	Good
	Parking Area # 6	10043070	Native	9712	-	-	18300	Good
	Parking Area # 8	10043070	Native	3589	-	-	6800	Fair
	Parking Area # 9	10043070	Native	8947	-	-	16900	Fair
	Parking Area # 10	10043070	Native	3828	-	-	7200	Fair
	South Spillway Parking Area	-	Asphalt	32486	-	-	260500	Fair
	North Spillway Parking Area	-	Asphalt	16222	-	-	130100	Fair
	Parking Area # 14	10043070	Native	5067	-	-	9600	Fair
	Parking Area # 13	10043070	Native	9553	-	-	18000	Good
	Parking Area # 4	10043070	Native	4242	-	-	8000	Good
	Parking Area #7	10036180	Gravel	7581	65	0.30	33200	Poor
	Parking Area #17	10043070	Native	13934	-	-	26300	Good
	Parking Area # 16	10043070	Native	8390	-	-	15800	Good
	Parking Area # 15	10043070	Native	7975	-	-	15100	Good
	Parking Area # 2	10043070	Native	12526	-	-	23600	Good
	Parking Area # 3	10043070	Native	10936	-	-	20600	Good
	Minnesota River Boat Access Parking #2	10012680	Asphalt	6428	-	-	51500	Poor
	Parking Area #18	10036180	Gravel	2933	-	-	12800	Poor
	Auto Tour Entrance Parking	10036179	Asphalt	5822	-	-	46700	Excellent

Table 53 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Big Stone NWR	Sellin Trail Parking Area	10043069	Asphalt	6198	-	-	49700	Excellent
	Overlook Parking Area	10012688	Asphalt	1438	-	-	11500	Excellent
	Hiking Trail Parking Area	10012689	Asphalt	15832	-	-	126900	Excellent
	Shop Parking Area	10036180	Gravel	10798	-	-	47200	Good
	Equipment Parking Area	-	Primitive	15335	-	-	0	Good
	Employee Parking Area	-	Primitive	4623	-	-	0	Good
	No Bridge Access Parking	10012702	Asphalt	1207	-	-	9700	Excellent
	Low Flow Parking Area	10043073	Asphalt	1076	-	-	8600	Excellent
	Low Flow RV/Bus Parking	10043073	Asphalt	1428	-	-	11500	Excellent
	Anderson WPA Parking	10055794	Native	3606	-	-	7900	Good
	Agribank WPA Parking	10060701	Primitive	5907	-	-	0	Poor
	Shaokatan WPA Parking	10060702	Primitive	1600	-	-	0	Fair
	Fox WPA Parking	10060705	Gravel	5774	-	-	29200	Fair
	Weber WPA Parking	10060704	Native	5936	-	-	12900	Fair
	Alleckson WPA Parking	10060709	Native	3809	-	-	8300	Fair
	Coon Creek WPA Parking	10060706	Native	10982	-	-	23900	Fair
	Sherman WPA Parking	10055796	Native	5599	-	-	12200	Fair
	Black Rush Lake WPA North Parking	10036181	Primitive	5489	65	0.89	0	Poor
	Black Rush Lake WPA Southeast Parking	10055797	Gravel	5051	-	-	25500	Fair
	Black Rush Lake WPA Southwest Parking	10055798	Gravel	5381	-	-	27200	Fair
	Yellow Medicine River WPA Parking	10060707	Primitive	5207	-	-	0	Fair
	Arends WPA South Parking	10055795	Native	6838	-	-	14900	Good
	Arends WPA North Parking	10060703	Native	6759	-	-	14700	Fair
Cedar Point NWR	Fishing Access Parking	10043089	Gravel	1910	-	-	10600	Good
Clarence Cannon NWR	Visitor Center Parking	10013939	Gravel	7169	-	-	36200	Good
	Nature Trail Parking	10060578	Gravel	2490	-	-	12600	Good
	Big Pond Parking	10060577	Gravel	2231	-	-	11300	Good
	Rabbit Ears Parking	10060579	Gravel	3485	-	-	17600	Fair
	Pumphouse Road Parking	-	Gravel	3748	-	-	18900	Good
	Shop Parking	10057583	Gravel	8697	65	0.69	43900	Good
	Maintenance Parking	10057583	Gravel	12960	65	0.69	65400	Good

Table 54 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Crab Orchard NWR	Crab Orchard Marina North Parking	10036283	Asphalt	26928	65	0.08	260200	Good
	West End Landing Parking	10036284	Asphalt	77901	-	-	752800	Good
	Devil's Kitchen Boat North Ramp Parking	10036287	Asphalt	21977	65	0.56	212400	Poor
	Pine Ridge Landing Parking	10036288	Asphalt	27012	65	0.28	261000	Good
	Pine Ridge Camp Parking	10036288	Gravel	33320	65	0.28	175700	Fair
	Camp Carew Parking	10036288	Asphalt	3207	65	0.28	31000	Excellent
	North Fisheries Office Parking	10036292	Gravel	27356	65	0.22	144300	Poor
	SR 148 Observation Deck Parking	10036298	Asphalt	15819	-	-	152900	Good
	Crab Orchard Marina Parking	10036282	Asphalt	97953	-	-	946500	Good
	Crab Orchard Spillway Parking	10036285	Gravel	5307	65	0.36	28000	Good
	Bald Eagle Lane Parking	10036286	Gravel	9174	65	0.36	48400	Good
	Devil's Kitchen Campground Overflow Parking	10036287	Asphalt	21299	-	-	205800	Fair
	Methodist Youth Camp Parking	10036288	Asphalt	11371	65	0.28	109900	Good
	Little Grassy Marina Parking	10036288	Gravel	13952	65	0.28	73600	Good
	Spillway Pond Parking	10036302	Gravel	6544	65	0.36	34500	Good
	Crab Orchard Campground Beach Parking	10056788	Gravel	11023	-	-	58100	Fair
	Crab Orchard Campground Loop E Boat Ramp Parking	10036291	Asphalt	6742	65	0.09	65100	Poor
	Community Cemetary Parking	10060253	Gravel	3469	-	-	18300	Fair
	Carterville Boat Ramp Parking	10036290	Asphalt	12290	65	0.73	118800	Poor
	Crab Orchard Boat & Yacht Club Dock Parking	10060252	Gravel	9781	-	-	51600	Fair
	Chamesstown School Trail Parking	10013623	Gravel	32085	65	0.73	169200	Good
	Prarie Creek Rec Area Parking	10036279	Gravel	64575	65	0.46	340500	Good
	SR 13 Boat Landing Parking	10036280	Gravel	26640	65	0.12	140500	Fair
	SR 148 Observation Blind Parking	10013719	Asphalt	13186	-	-	127400	Good
	SR 148 Boat Landing Parking	10036297	Gravel	26014	65	0.36	137200	Good
	FEMA Office Parking	10036294	Gravel	13085	65	0.36	69000	Good
	Illinois Inter Agency Dispatch Center Parking	10036295	Gravel	56139	65	0.73	296000	Fair
	Area 4 Warehouse Parking	10036293	Gravel	76021	65	0.36	400900	Good
	Visitor Center Parking	10036274	Asphalt	37959	-	-	366800	Good

Table 55 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Crab Orchard NWR	Devil's Kitchen Dam Overlook Parking	10036287	Gravel	12490	-	-	65900	Good
	Devil's Kitchen Line 13 Road Parking	10036287	Asphalt	12805	-	-	123700	Excellent
	Tamarac Lake Road Parking	10036287	Asphalt	13987	-	-	135200	Poor
	Devil's Kitchen Line 16 Parking	10036287	Asphalt	17291	-	-	167100	Good
	Devil's Kitchen Line 6 Landing Parking	10036287	Gravel	4882	-	-	25700	Fair
	East Greenbriar Landing Parking	10036278	Asphalt	6594	-	-	63700	Good
	Managers Fishing Pond Parking	-	Gravel	2022	-	-	10700	Excellent
	Crab Orchard Boat & Yacht Club East Parking	10060252	Asphalt	3435	-	-	33200	Good
	Crab Orchard Campground Parking	10036291	Asphalt	5386	65	0.09	52000	Good
	Bald Eagle Lane at Spillway Road Parking	10060734	Gravel	2216	-	-	11700	Fair
	Wolf Creek Fishing Access East Parking	10036289	Gravel	17142	65	0.37	90400	Good
	Wolf Creek Road Viewing Parking	10060730	Gravel	9946	-	-	52400	Good
	South Fisheries Office Parking	10036292	Asphalt	5389	65	0.22	52100	Good
	Area 9 Parking 1	10049422	Asphalt	3099	-	-	29900	Fair
	Area 9 Parking 2	10049422	Asphalt	72860	-	-	704100	Good
	Area 9 Parking 3	10049422	Asphalt	5278	-	-	51000	Good
	Area 9 Parking 4	10049422	Gravel	12129	-	-	64000	Excellent
	Area 9 Parking 5	10049422	Gravel	12031	-	-	63400	Excellent
	Area 9 Parking 6	10049422	Asphalt	98839	-	-	955100	Good
	Area 9 Parking 7	10049422	Gravel	8339	-	-	44000	Good
	Area 9 Parking 8	10049422	Asphalt	4938	-	-	47700	Good
	Area 2-P Service Parking	-	Asphalt	6443	-	-	62300	Good
	Area 2-B Parking 1	-	Gravel	3592	-	-	18900	Good
	Area 2-B Parking 2	-	Gravel	6316	-	-	33300	Good
	Area 2-B Parking 3	-	Gravel	3340	-	-	17600	Good
	Area 2-B Parking 4	-	Gravel	10216	-	-	53900	Fair
	Area 2-B Parking 5	-	Gravel	2965	-	-	15600	Good
	Area 2-B Main Parking	-	Gravel	14822	-	-	78200	Good
	Area 2-B Main Public Parking	-	Asphalt	5138	-	-	49600	Good
	North Headquarters Parking	10036275	Asphalt	2119	65	0.73	20500	Good
	Shop North Parking	-	Asphalt	24381	-	-	235600	Good

Table 56 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Crab Orchard NWR	Route 148 Causeway South Parking	10060731	Gravel	8289	-	-	43700	Fair
	Shop South Parking	-	Gravel	109462	-	-	577200	Good
	A-41 and Bluegill Fishing Pond Parking	10060732	Gravel	5998	-	-	31600	Good
	Devil's Kitchen Campground Parking	10036287	Gravel	5630	-	-	29700	Excellent
	Devil's Kitchen Line 16 Spur Parking	10060737	Gravel	2305	-	-	12200	Good
	United Methodist Youth Camp Spur Parking	10060736	Asphalt	1894	-	-	18300	Good
	Grassy Road Landing Parking	10036288	Asphalt	25038	65	0.28	241900	Excellent
	Camp Carew East Parking	-	Gravel	6600	-	-	34800	Good
	Headquarters Parking	10036275	Asphalt	25455	65	0.73	246000	Good
	Primex Stringtown Parking	10036277	Gravel	19150	65	0.73	101000	Fair
	West Greenbriar Landing Parking	10036278	Asphalt	72025	-	-	696000	Good
	Wolf Creek Fishing Access West Parking	10036289	Gravel	25050	65	0.37	132100	Fair
	Crab Orchard Boat & Yacht Club West Parking	10060252	Asphalt	3516	-	-	34000	Good
	Crab Orchard Campground North Parking	10036291	Asphalt	7815	65	0.09	75500	Good
Crane Meadows NWR	Platte River Trail Parking	10038266	Gravel	14169	65	0.27	84300	Excellent
	Visitor Parking	10038266	Gravel	14250	65	0.27	84700	Good
	Stumpf House Parking	10060848	Gravel	8109	-	-	48200	Good
	Stumpf Garage Parking	10060848	Concrete	502	-	-	6600	Good
	Rear Headquarters Parking	10059113	Gravel	16287	-	-	96900	Good
	Maintenance Parking	10059113	Gravel	37628	-	-	223800	Good
	Entrance Pad	-	Concrete	800	-	-	10600	Good
Cypress Creek NWR	Bellrose Reserve Viewing Parking	10045680	Asphalt	14069	-	-	136000	Excellent
	Old Channel Fishing Access Parking	10012660	Gravel	16071	-	-	84700	Good
	Delta Lands Parking	10012650	Gravel	12293	-	-	64800	Good
	Mount Olive Road Parking	10012641	Gravel	4817	65	0.91	25400	Fair
	Cypress Road Parking	10043041	Gravel	6560	-	-	34600	Fair
	Hileman Parking	10012641	Gravel	9171	65	0.91	48400	Good
	Friendship Church Parking	10012641	Gravel	2794	65	0.91	14700	Fair
	Hickory Bottoms Parking	10012667	Gravel	5107	-	-	26900	Good

Table 57 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Cypress Creek NWR	Brushy Parking	10012641	Gravel	4777	65	0.91	25200	Fair
	Thomure Parking	10012641	Gravel	2524	65	0.91	13300	Fair
	Pumphouse Slough Parking	10012640	Gravel	6469	-	-	34100	Fair
	Cache Bend Parking	10012659	Gravel	4053	-	-	21400	Good
	Greenberg Hunter Parking	10012641	Primitive	1940	65	0.91	0	Fair
	Delta Lands North Parking	10012650	Native	2209	-	-	5000	Fair
	Dodd Parking	10012641	Native	5204	65	0.91	11800	Fair
	Goings Barn Parking	10012641	Gravel	3157	65	0.91	16600	Good
	Limekiln East Parking	10060672	Gravel	2206	-	-	11600	Good
	Eastern Slough Parking	10012641	Gravel	2802	65	0.91	14800	Fair
	Limekiln Springs Parking	10060672	Gravel	5194	-	-	27400	Good
	Maintenance Shop Parking	10060674	Gravel	36816	-	-	194100	Good
	Mud Pond	10012641	Gravel	2788	65	0.91	14700	Good
	Eggner Parking	10012641	Gravel	1900	65	0.91	10000	Good
	Wood Duck Slough Parking	10060673	Gravel	3125	-	-	16500	Good
Detroit Lakes	Kenyon Parking	10012174	Native	1740	65	0.73	4100	Poor
	Syverson Parking	10012147	Native	4636	65	0.82	11000	Poor
	Fuglie North Parking	10012163	Native	3208	-	-	7600	Fair
	Fuglie South Parking	10012163	Native	4139	65	0.82	9800	Fair
	Davis Parking	10012147	Native	7964	65	0.82	18900	Fair
	Lee Marshes West Parking	10012147	Native	6376	65	0.82	15100	Good
	Lee Marshes East Parking	10012147	Native	5281	65	0.82	12500	Fair
	Borgrud Parking	10012168	Native	14853	65	0.94	35200	Poor
	Kent Parking	10012147	Native	2675	65	0.82	6300	Poor
	Tillman East Parking	10012147	Native	8790	65	0.82	20800	Good
	Tillman West Parking	10012147	Native	818	65	0.82	1900	Fair
	Jacobsen Parking	10012174	Native	6166	65	0.73	14600	Fair
	Bay Lake Parking	10012147	Native	6402	65	0.82	15200	Good
	Matter Parking	10012147	Native	5115	65	0.82	12100	Fair
	Helliksen Prairie North Parkng	10012147	Native	4748	65	0.82	11300	Poor

Table 58 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Detroit Lakes	Hatcher Lake Parking	10012163	Native	8307	65	0.82	19700	Fair
	Hoykens Parking	10012163	Gravel	8567	65	0.82	47100	Good
	Lake Park Parking	10012147	Native	7140	65	0.82	16900	Fair
	Haugrud Parking	10012147	Native	3429	65	0.82	8100	Fair
	Kasin Parking	10012163	Native	10588	65	0.82	25100	Good
	Doran Lake Parking	10012163	Native	4190	65	0.82	9900	Good
	Kenyon Parking	10012163	Native	3205	65	0.82	7600	Good
	Christainson Parking	10012163	Native	8559	65	0.82	20300	Good
	Rushfeldt East Parking	10012163	Native	6240	65	0.82	14800	Fair
	Rushfeldt West Parking	10012163	Native	4889	65	0.82	11600	Fair
	Lee Lake Parking	10012163	Native	4399	65	0.82	10400	Fair
	Strangeland Parking	10012163	Native	8856	65	0.82	21000	Good
	Dunham Parking	10012147	Native	8831	65	0.82	20900	Fair
	Bakken Parking	10012147	Native	8627	65	0.82	20500	Fair
	Audobon West Parking	10012147	Native	3806	65	0.82	9000	Fair
	Audobon East Parking	10012147	Gravel	9281	65	0.82	51000	Good
	Flickertail Parking	10012163	Gravel	3535	65	0.82	19400	Good
	Headquarters Parking	10012159	Asphalt	35270	65	0.60	355300	Good
	Maintenance Parking	10012160	Gravel	24897	65	0.39	136900	Good
	Lengby Parking	10012174	Native	3036	65	0.73	7200	Poor
	Gustafson Parking	10012174	Native	7714	65	0.73	18300	Poor
	Lepier Parking	10012174	Native	3432	65	0.73	8100	Fair
	Halverson Parking	10012174	Native	3969	65	0.73	9400	Fair
	Vaa Parking	10012174	Native	3134	65	0.73	7400	Fair
	Salvkus Parking	10012174	Native	3316	65	0.73	7900	Fair
	Espeseth Parking	10012174	Native	7228	65	0.73	17100	Fair
	Winger South Parking	10012174	Native	7947	65	0.73	18800	Fair
	Winger North Parking	10012174	Gravel	7894	65	0.73	43400	Fair
	Nelson North Parking	10012168	Gravel	7859	65	0.94	43200	Poor
	Nelson South Parking	10012168	Native	8757	65	0.94	20800	Good
	Nelson East Parking	10012168	Native	8025	65	0.94	19000	Fair

Table 59 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Detroit Lakes	Paul Sr Parking	10012168	Native	5597	65	0.94	13300	Fair
	Salboerger Parking	10012168	Native	5660	65	0.94	13400	Fair
	Moose Lake Parking	10012168	Native	5012	65	0.94	11900	Fair
	Stumbo Parking	10012147	Native	3688	65	0.82	8700	Poor
	Rothschadl Parking	10012168	Native	3195	65	0.94	7600	Failed
	North Maintenance Parking	10012160	Gravel	6505	65	0.39	35800	Good
	Hellickson Prairie Parking	10012147	Gravel	1865	65	0.82	10300	Fair
	Melvin Slough Hunter Access Parking	10012174	Gravel	6460	65	0.73	35500	Fair
	Haugtvedt Parking	10012163	Gravel	6132	65	0.82	33700	Excellent
Detroit River International Wildlife Refuge	Humbug Marsh Parking	10058586	Gravel	30998	-	-	180900	Fair
Emiquon NWR	South Spoon River Parking	10014053	Gravel	4315	65	0.13	24200	Good
	North Spoon River Parking	10014054	Gravel	11346	65	0.05	63700	Good
	Old Oxbow Hunter Access Parking	10060632	Primitive	8681	-	-	0	Poor
	South Globe Parking	10052378	Native	14078	65	0.13	34100	Fair
	Wilder Parking	10060633	Native	2690	-	-	6500	Fair
	Forgotten Road Parking	10060634	Native	5604	-	-	13600	Fair
Fergus Falls	Oscar Parking	10043200	Native	7001	-	-	14400	Fair
	Monson Parking	10043201	Native	10151	65	0.04	20900	Fair
	Pelican Valley South Parking	10043202	Native	8827	-	-	18200	Fair
	Pelican Valley North Parking	10044478	Native	3970	65	0.11	8200	Good
	Erhard North Parking	10043203	Native	10353	-	-	21300	Good
	Knobel Lake Parking	10043204	Native	7442	65	0.06	15300	Poor
	Erhard South Parking	10044479	Native	11219	-	-	23100	Fair
	Aaberg Parking	10043205	Native	6191	65	0.07	12700	Good
	Scribner North Parking	10043206	Native	5847	-	-	12000	Fair
	Scribner South Parking	10044481	Native	7936	65	0.06	16300	Fair
	Redhead Slough South Parking	10044508	Native	7933	-	-	16300	Fair

Table 60 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Fergus Falls	Williams Parking	10043188	Native	5078	65	0.09	10400	Fair
	Blakesley Parking	10043189	Native	4256	-	-	8800	Fair
	Belleview Parking	10043190	Native	3998	-	-	8200	Good
	Historical Society Parking	10043191	Native	10936	65	0.04	22500	Fair
	Island Lake Parking	10043192	Native	5453	-	-	11200	Good
	Hoffman Parking	10043193	Native	3571	-	-	7300	Good
	Uphoff Parking	10043194	Native	5585	65	0.08	11500	Good
	Bates Parking	10043186	Native	4764	-	-	9800	Fair
	Cheney Trust Parking	10043182	Native	8609	-	-	17700	Good
	Braukmann Parking	10043250	Native	5697	65	0.08	11700	Poor
	Hintsala Parking	10043249	Native	5761	-	-	11900	Fair
	Heinola Northwest Parking	10043248	Native	5330	-	-	11000	Fair
	Spink South Parking	10052280	Native	4304	65	0.10	8900	Fair
	Bailey Slough Parking	10052538	Native	5026	-	-	10300	Good
	Green South Parking	10052287	Native	5536	-	-	11400	Good
	Wirth Parking	10043251	Native	3825	-	-	7900	Fair
	Prairie Wetlands Learning Center Parking	10012115	Asphalt	63491	-	-	554800	Good
	Grewe Parking	10054776	Native	5284	-	-	10900	Fair
	Rokes Parking	10052283	Native	3961	-	-	8100	Good
	Reidel Parking	10052278	Native	4565	-	-	9400	Fair
	Lien Parking	10043243	Native	5701	-	-	11700	Fair
	Iverson Parking	10043241	Native	2158	-	-	4400	Poor
	Mortenson Parking	10043240	Native	2806	65	0.16	5800	Fair
	PCA Parking	10043239	Native	8218	65	0.06	16900	Fair
	Wasvick Parking	10043238	Native	5292	65	0.08	10900	Fair
	Mondt North Parking	-	Native	9086	-	-	18700	Fair
	Mondt South Parking	10043245	Native	2832	65	0.15	5800	Fair
	Anderson Parking	10052283	Native	4727	-	-	9700	Fair
	Stang Lake Parking	10043243	Gravel	6061	-	-	28900	Fair
	Klein North Parking	10043174	Native	7393	65	0.06	15200	Fair
	Reger Parking	10043173	Native	11130	65	0.08	22900	Fair
	Ernest Olson North Parking	10044472	Native	4884	-	-	10000	Fair
	Ernest Olson South Parking	10043172	Native	5277	-	-	10900	Poor

Table 61 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Fergus Falls	Odens Parking	-	Native	7151	-	-	14700	Fair
	Bah Lakes Parking	10054767	Native	3800	65	0.10	7800	Fair
	Rachel Parking	10043169	Native	4420	65	0.20	9100	Fair
	Mickelson South Parking	10043215	Native	4886	-	-	10100	Good
	Mickelson North Parking	10044493	Native	11973	65	0.04	24600	Fair
	Duenow Parking	10043216	Native	4325	65	0.11	8900	Poor
	Old Headquarters Asphalt Parking	10012105	Asphalt	2499	-	-	21800	Fair
	Haugen Parking	10043217	Native	9667	-	-	19900	Good
	Baumann Parking	10043247	Native	5202	-	-	10700	Fair
	Staff 390th Street Parking	-	Native	4994	-	-	10300	Fair
	Staff County 41 Parking	-	Native	3387	-	-	7000	Fair
	Agassiz Parking	10043207	Native	6729	-	-	13800	Good
	Gerlach Parking	10043208	Native	6081	-	-	12500	Fair
	Scott-Crays Parking	10043209	Native	8754	65	0.05	18000	Good
	Rush Lake North Parking	10043210	Native	10979	-	-	22600	Fair
	Rush Lake South Parking	10044487	Native	25290	-	-	52000	Good
	Jorgenson North Parking	10043211	Native	5473	-	-	11300	Fair
	Rabbit River North Parking	10043212	Native	5867	-	-	12100	Good
	Rabbit River South Parking	-	Native	4443	-	-	9100	Fair
	Dahler Slough North Parking	10043213	Native	5683	65	0.08	11700	Fair
	Lightning Lake West Parking	10042314	Native	6778	-	-	13900	Fair
	Dahler Slough East Parking	10044490	Native	5769	-	-	11900	Good
	Lightning Lake East Parking	10044492	Native	6145	-	-	12600	Fair
	Stoney Brook Parking	10012084	Native	7432	-	-	15300	Fair
	Lillemoen Parking	10043175	Native	8448	65	0.74	17400	Poor
	Germanson Parking	10043177	Native	6452	-	-	13300	Good
	Demaree Parking	10043178	Native	6548	65	0.14	13500	Good
	Pruess Parking	10043179	Native	6959	65	0.07	14300	Good
	Neuman Southeast Parking	10055173	Native	7095	-	-	14600	Good
	Neuman North Parking	10043227	Native	5345	65	0.06	11000	Good
	Rossow Parking	10043228	Native	4410	-	-	9100	Good
	Wildung Parking	10043230	Native	5146	-	-	10600	Good
	Kunz Parking	10043231	Native	1963	-	-	4000	Fair

Table 62 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Fergus Falls	Tomhave Parking	10043232	Native	4315	65	0.10	8900	Fair
	Berning House Parking	10043168	Native	4196	-	-	8600	Fair
	Ash Parking	10043166	Native	7049	65	0.13	14500	Fair
	Finkelson Parking	10043237	Native	2604	65	0.17	5400	Fair
	Morrison Parking	10043236	Native	11320	-	-	23300	Fair
	Blacken Lake Parking	10043235	Native	5576	65	0.08	11500	Fair
	Klein South Parking	10044474	Native	5277	-	-	10900	Fair
	Orange Parking	10043165	Native	2234	65	1.88	4600	Fair
	Pocket Lake Parking	10012089	Native	21747	-	-	44700	Fair
	McDowell Parking	10043164	Native	6956	65	0.06	14300	Fair
	Sabolic Parking	10043163	Native	4859	65	0.18	10000	Fair
	Kensington Parking	10043162	Native	4802	-	-	9900	Fair
	Runestone Parking	10043161	Native	6953	-	-	14300	Fair
	Eng Lake Parking	10043160	Native	4821	-	-	9900	Fair
	Rolling Acres Parking	10043159	Native	5622	-	-	11600	Fair
	Sellevald South Parking	10044471	Native	5076	-	-	10400	Fair
	Sellevald North Parking	10043158	Native	6318	-	-	13000	Fair
	Benson Parking	10043157	Native	5709	65	0.08	11700	Fair
	J.I. Case North Parking	10044470	Native	9278	-	-	19100	Fair
	J.I. Case South Parking	10043156	Native	6676	-	-	13700	Fair
	Banke Slough North Parking	10044456	Native	4384	-	-	9000	Fair
	Banke Slough South Parking	10043156	Native	7393	-	-	15200	Fair
	Lobster Lake Parking	10043154	Native	5352	-	-	11000	Fair
	Fedje Parking	10043153	Native	9027	-	-	18600	Fair
	Seifert Parking	10043195	Native	7667	65	0.06	15800	Fair
	Tweeton Parking	10043196	Native	3874	65	0.11	8000	Fair
	Gardner Parking	10043197	Native	4496	65	0.10	9200	Fair
	Haiby West Parking	10043198	Native	4945	65	0.18	10200	Fair
	Julsrud Parking	10043199	Native	16408	-	-	33800	Fair
	Julsrud North Parking	10044477	Native	16499	-	-	33900	Fair
	Bellmore Parking	10012056	Native	5707	-	-	11700	Fair
	Meadows North Parking	10043253	Native	4174	-	-	8600	Good
	Meadows South Parking	10044462	Native	8164	65	0.06	16800	Fair

Table 63 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Fergus Falls	Brown North Parking	10043254	Native	4730	-	-	9700	Good
	Brown South Parking	10044463	Native	8687	-	-	17900	Fair
	Hintermeister Parking	10043218	Native	16078	65	1.39	33100	Poor
	C & M Ranch Parking	10043219	Native	6054	65	0.07	12500	Fair
	Wagner Parking	10052285	Native	3444	-	-	7100	Fair
	Stowe Lake East Parking	10044438	Native	4325	-	-	8900	Fair
	Stowe Lake West Parking	10054769	Native	4094	-	-	8400	Good
	Odens East Parking	10044437	Native	3961	-	-	8100	Fair
	Schultz Lake Parking	10052541	Native	2711	-	-	5600	Poor
	Tenhoff Parking	10044432	Native	4459	-	-	9200	Good
	Forada Parking	10044433	Native	6800	-	-	14000	Good
	Yonda-Paulzine Parking	10052271	Native	3529	-	-	7300	Good
	Mittlestat Parking	10044434	Native	4595	-	-	9500	Good
	Haseman Parking	10044435	Native	3827	-	-	7900	Fair
	Delong Parking	10054775	Native	4927	65	0.10	10100	Poor
	Nachbor Parking	10052540	Native	4213	-	-	8700	Fair
	Spink North Parking	10054773	Native	7073	-	-	14500	Good
	Elbow Lake Parking	10054774	Native	8583	65	0.09	17700	Good
	Pomme De Terre South Parking	10044510	Native	1348	65	0.10	2800	Good
	Ridgeway South Parking	10054777	Native	5651	-	-	11600	Fair
	Ridgeway Central Parking	10044436	Native	11841	-	-	24400	Good
	Hanneman Parking	10054771	Native	3864	-	-	7900	Good
	Peter Lien North Parking	10043221	Native	7606	65	0.06	15600	Fair
	Peter Lien South Parking	10044498	Native	12959	-	-	26700	Fair
	Nicholson South Parking	10043222	Native	5323	65	0.09	10900	Good
	Nicholson North Parking	10044499	Native	11388	65	0.04	23400	Fair
	Sumstad Parking	10043180	Native	3383	-	-	7000	Good
	Grandokken North Parking	10043152	Native	3962	65	0.11	8100	Fair
	Bakke South Parking	10043223	Native	5134	65	0.09	10600	Good
	Hoff-Fronning Parking	10043224	Native	11805	65	0.04	24300	Good
	Bakke North Parking	10044500	Native	11394	65	0.04	23400	Good
	Kube South Parking	10043225	Native	10540	-	-	21700	Fair
	Busko East Parking	10043226	Native	5665	65	0.08	11700	Good

Table 64 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Fergus Falls	Busko North Parking	10044503	Native	5152	-	-	10600	Good
	Kube North Parking	10044502	Native	5848	65	0.16	12000	Good
	Redhead Slough North Parking	10043181	Native	8020	-	-	16500	Good
	Pomme de Terre Parking	10043183	Native	4910	-	-	10100	Poor
	Ten Mile South Parking	10043220	Native	1868	65	0.23	3800	Poor
	Ten Mile Central Parking	10044495	Native	10494	65	0.04	21600	Fair
	Ten Mile North Parking	10044496	Native	3728	-	-	7700	Good
	Heinola South Parking	10052544	Native	3559	-	-	7300	Fair
	Bjerketvedt Parking	10055170	Native	5254	-	-	10800	Poor
	Millerville Center Parking	10054768	Native	3913	-	-	8000	Fair
	Millerville Southwest Parking	10055169	Native	6331	-	-	13000	Fair
	Grandokken South Parking	10044468	Gravel	1151	-	-	5500	Good
	Bah Lakes West Parking	-	Native	3789	-	-	7800	Good
	Bah Lakes North Parking	-	Native	4038	-	-	8300	Good
	Jenny Larson Parking	-	Native	3983	-	-	8200	Poor
	DeLong East Parking	10054775	Native	4308	65	0.10	8900	Fair
	Spink East Parking	-	Native	3949	-	-	8100	Fair
	Barley Slough Parking	10054774	Native	4292	65	0.09	8800	Good
	Mud Lake Parking	10052537	Native	3083	-	-	6300	Fair
	Demaree East Parking	-	Native	3468	-	-	7100	Good
	Old Headquarters Native Parking	-	Native	1827	-	-	3800	Good
	Equipment Parking	10042982	Gravel	4658	-	-	22200	Good
	Maintenance Parking	10042982	Gravel	15136	-	-	72200	Good
	Tractor Trailer Parking	10042982	Gravel	4591	-	-	21900	Good
	Shop Employee Parking	10042982	Asphalt	3707	-	-	32400	Excellent
	Headquarters Parking	10012105	Asphalt	12780	-	-	111700	Excellent
	Headquarters Admin Parking	-	Asphalt	20807	-	-	181800	Excellent
	Headquarters Garage Parking	-	Gravel	18460	-	-	88000	Fair
	Headquarters Employee Park.	10056209	Gravel	11343	-	-	54100	Good
	Knollwood WPA Parking	-	Gravel	4212	-	-	20100	Good
	Julsrud Central Parking	10043199	Native	3394	-	-	7000	Fair
	Scribner East Parking	10044484	Native	3123	-	-	6400	Good
	Ridgeway East Parking	10044436	Native	3219	-	-	6600	Good
	Jorgenson South Parking	-	Native	3841	-	-	7900	Fair
	Rose City Parking	10055168	Native	3799	-	-	7800	Fair

Table 65 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Fox River NWR	Fox River North Parking	10040412	Gravel	9674	-	-	53700	Fair
	Fox River South Parking	10055766	Gravel	3277	-	-	18200	Good
Glacial Ridge NWR	160th Avenue Parking	10056959	Native	7336	-	-	14600	Good
	US Highway 2 Parking	10056912	Native	5305	-	-	10500	Fair
	Central Parking	10056944	Native	7704	-	-	15300	Fair
	West County Road 45 Parking	10056957	Native	2894	-	-	5700	Good
	Central County Road 45 Parking	10056955	Native	7704	-	-	15300	Good
	East County Road 45 Parking	10056954	Native	7216	-	-	14300	Good
	138th Avenue Parking	10056941	Native	4978	-	-	9900	Good
Great River NWR	Upper Swan Parking	10060573	Gravel	2299	-	-	11600	Fair
	Upper Swan North Parking	10060574	Gravel	7861	-	-	39700	Fair
	Sny Outlet Parking	10060575	Native	3788	-	-	8300	Fair
	Shop Parking	-	Gravel	2251	-	-	11400	Good
	Levee Parking	10060576	Gravel	3640	-	-	18400	Fair
Hamden Slough NWR	County 14 Parking	10012603	Gravel	7720	-	-	36800	Good
	Old Headquarters Parking	10043034	Gravel	10417	-	-	49700	Good
	Hesby Memorial Parking	10012619	Gravel	7726	-	-	36800	Good
	Hesby Memorial Handicapped Parking	-	Concrete	504	-	-	5300	Good
	Shop Parking	10042988	Gravel	19392	-	-	92500	Good
	County Highway 12 Parking	-	Native	7005	-	-	14400	Fair
Horicon NWR	Lehners Ditch Parking	10011244	Gravel	2480	-	-	14300	Fair
	Rockvale Parking	10041723	Gravel	2315	-	-	13400	Good
	Point Road Parking	10041724	Native	8173	-	-	20400	Poor
	Visitor Center Parking	10011334	Asphalt	23625	-	-	250200	Good
	EE Barn Parking	10043096	Native	14643	-	-	36500	Good
	Old Marsh Parking	10011242	Asphalt	5497	-	-	58200	Fair
	Viewing Area Parking	10011239	Asphalt	72300	65	0.23	765500	Excellent

Table 66 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Horicon NWR	Reiser Road Parking	10011330	Gravel	3172	-	-	18300	Poor
	Auto Tour Road Midway Parking	10011248	Asphalt	13853	-	-	146700	Good
	Peachy Road Parking	10011251	Gravel	8100	-	-	46800	Good
	Milligan Road Parking	10011333	Gravel	6915	-	-	40000	Poor
	Neitzel Road Parking	10011331	Gravel	6285	-	-	36300	Good
	Auto Tour Parking	10011246	Asphalt	45245	-	-	479100	Good
	Bud Cook Hiking Area Parking	10011299	Gravel	4156	-	-	24000	Good
	Carp Trap Parking	10041730	Gravel	4498	-	-	26000	Fair
	5-Way Pump Station Parking	10011247	Gravel	1089	-	-	6300	Fair
	Employee Parking	10060747	Asphalt	5261	-	-	55700	Good
	Maintenance Shop Parking	-	Gravel	19221	-	-	111100	Good
	Front of Shop Parking	-	Asphalt	4975	-	-	52700	Fair
	Gas Pump Parking	-	Asphalt	3596	-	-	38100	Fair
	Main Dike Road Parking	10060746	Gravel	3088	-	-	17800	Good
Leopold WMD	Duffys WPA Parking	10043323	Native	14134	65	0.30	33900	Fair
	New Chester Ember Avenue Park	10043287	Native	1508	65	0.30	3600	Fair
	New Chester 2nd Drive Park.	10043286	Native	2621	65	0.25	6300	Fair
	Eckstein WPA Parking	10043310	Native	8178	65	0.30	19600	Fair
	Sime WPA Parking	10043308	Gravel	5684	65	0.36	31600	Good
	Northrup King WPA Parking	10043311	Gravel	5817	65	0.25	32300	Excellent
	Uihlein Osborne Road Asphalt Parking	10043337	Asphalt	8039	65	0.23	81800	Fair
	Uihlein Osborne Road Gravel Parking	10011392	Gravel	13049	65	0.25	72500	Good
	Uihlein County M Gravel Park.	10011393	Gravel	22803	65	0.36	126600	Good
	Trenton Oakwood Road East Parking	10043317	Gravel	4009	65	0.36	22300	Fair
	Trenton Cottonwood Road Parking	10043319	Gravel	3836	65	0.36	21300	Good
	Trenton Oakwood Road West Parking	10043320	Gravel	8918	65	0.73	49500	Fair
	Pieper WPA Parking	10043321	Native	5520	65	0.73	13200	Poor
	Red Cedar Lake WPA Parking	10043327	Gravel	2720	65	0.36	15100	Excellent
	Johnstown WPA Parking	10043331	Gravel	3935	65	0.12	21900	Good
	Sheepskin WPA Parking	10043332	Native	1219	65	0.30	2900	Fair
	Lund WPA Parking	10043334	Native	2901	65	0.71	7000	Poor

Table 67 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Leopold WMD	Harvey's Marsh East Parking	10043310	Native	6431	65	0.30	15400	Fair
	Harvey's Marsh West Parking	10011354	Concrete	7872	65	0.35	97300	Poor
	Uihlein Elm Drive Parking	10043338	Gravel	6811	65	0.50	37800	Fair
	Kettle Moraine WPA Parking	10011340	Gravel	3075	65	0.23	17100	Excellent
	Cedar Grove WPA Parking	10043324	Native	1595	65	0.56	3800	Poor
	Six Mile North Parking	10043330	Native	1472	65	0.65	3500	Poor
	ULAO Lake Shore Road Parking	10011371	Gravel	4843	65	0.36	26900	Good
	Severson WPA Parking	10043290	Gravel	3780	65	0.66	21000	Good
	Schoenberg Priem Road Parking	10011345	Gravel	3808	65	0.67	21100	Fair
	Schoenberg Harvey Road Parking	10011347	Native	3917	65	0.22	9400	Fair
	Schoenberg Mielke Rd South Parking	10011348	Gravel	10713	65	0.10	59500	Excellent
	Schoenberg Hall Road West Parking	10043288	Gravel	4509	65	0.25	25000	Excellent
	Schoenberg Hall Road East Park.	10043289	Native	502	65	0.59	1200	Poor
	Rowe WPA West Parking	10011346	Gravel	3721	65	0.25	20700	Excellent
	Rowe WPA East Parking	10043291	Native	2414	65	0.73	5800	Poor
	Manthey Erdman Road South Parking	10043292	Native	511	65	0.30	1200	Fair
	Manthey Erdman Road North Parking	10043293	Native	1540	65	0.30	3700	Fair
	Manthey Erdman Road Middle Parking	10043294	Native	4231	65	0.30	10100	Fair
	Doylestown WPA Parking	10043296	Native	3144	65	0.30	7500	Fair
	Oakfield WPA Central Parking	10043322	Native	13812	65	0.30	33100	Fair
	Swan Pond County D Parking	10043312	Native	1439	65	0.30	3400	Fair
	Swan Pond County M Parking	10043314	Gravel	3854	65	0.25	21400	Excellent
	Shoveler County S Parking	10011361	Gravel	9319	65	0.14	51800	Good
	Becker SR 22 Parking	10043298	Gravel	5669	65	0.25	31500	Excellent
	Becker Haynes Road East Parking	10043312	Native	3152	65	0.30	7600	Fair
	Becker Haynes Parking 2 Drive Parking	10043299	Native	5736	65	0.30	13700	Fair
	Baraboo River Parking	10042907	Gravel	11770	65	0.14	65400	Excellent
	Uihlein Waukau 91 Parking	10043335	Gravel	2447	65	0.73	13600	Fair
	Headquarters Parking	10060597	Asphalt	5921	-	-	60300	Good
	Jackson WPA Parking	10060603	Gravel	1937	-	-	10800	Good
	Shoveler Timber Lane Parking	10043315	Gravel	1648	65	0.25	9200	Good
	Robinsons Shorebird WPA Park.	10060604	Gravel	1229	-	-	6800	Fair

Table 68 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Leopold WMD	Oakfield West WPA Parking	10043322	Gravel	1835	65	0.30	10200	Good
	Oakfield East WPA Parking	10043322	Gravel	1774	65	0.30	9900	Good
	Breakneck Oak Center Parking	10060606	Gravel	2403	-	-	13300	Good
	Breakneck WPA Cemetary Parking	10060605	Gravel	1218	-	-	6800	Good
	Breakneck WPA Highway B Parking	10060607	Gravel	2137	-	-	11900	Good
	Lamartine WPA Parking	10060608	Gravel	1447	-	-	8000	Good
	Uihlein Bradley Avenue Parking	10060618	Gravel	2673	-	-	14800	Good
	Strauss WPA Parking	10060620	Native	1360	-	-	3300	Fair
	Pietroske WPA Parking	10060612	Native	3846	-	-	9200	Excellent
	Cedar Grove WPA Highway K West Parking	10060613	Gravel	1435	-	-	8000	Excellent
	Schwengel WPA Jay Road Parking	10060614	Gravel	8556	-	-	47500	Good
	Six Mile South Parking	10043329	Gravel	1555	65	0.47	8600	Excellent
	Batavia WPA Trout Spring Parking	10060615	Gravel	1783	-	-	9900	Excellent
	Batavia WPA Highway A Parking	10060616	Gravel	2205	-	-	12200	Excellent
	Boltonville WPA Parking	10060617	Gravel	1639	-	-	9100	Excellent
	Manthey Gravel Parking	10060600	Gravel	1668	-	-	9300	Excellent
	Anderson WPA Parking	10060595	Gravel	1713	-	-	9500	Good
	Hinkson Creek WPA Parking	10060599	Gravel	1435	-	-	8000	Excellent
	Employee Parking	10060597	Gravel	4832	-	-	26800	Good
	Shop Parking	-	Gravel	19714	-	-	109500	Good
	Becker WPA Wendlick Road Parking	10060598	Gravel	1523	-	-	8500	Good
	Becker Lake WPA Parking	10060601	Gravel	1537	-	-	8500	Excellent
	Uihlein Orchid Parking	-	Gravel	2387	-	-	13300	Fair
	Lund WPA Union Dane Road Parking	-	Gravel	1311	-	-	7300	Excellent
	Gadwall Swamp WPA Parking	10060602	Gravel	2030	-	-	11300	Excellent
	Red Cedar Lake WPA East Asphalt Parking	10043327	Asphalt	966	65	0.36	9800	Fair
	Red Cedar Lake WPA East Gravel Parking	10043327	Gravel	951	65	0.36	5300	Good

Table 69 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Litchfield	Crosier Parking	10043454	Native	4704	-	-	10200	Poor
	Whitney East Parking	10043455	Native	7940	65	0.65	17300	Poor
	Whitney West Parking	10043456	Native	7827	-	-	17000	Fair
	Ashley North Parking	10043457	Native	8265	65	0.73	18000	Poor
	Ashley South Parking	10012234	Gravel	5254	65	0.74	26500	Poor
	Padua Northwest Parking	10043458	Native	6061	-	-	13200	Fair
	Olson Lake 90th St Parking	10043426	Native	11274	-	-	24600	Fair
	Meeker Parking	10043419	Native	7942	-	-	17300	Fair
	Ella Lake North Parking	10046058	Native	7814	-	-	17000	Fair
	Robinson County 7 Parking	10043487	Native	8494	-	-	18500	Fair
	Marysville 30th St Parking	10043486	Native	4132	65	0.54	9000	Fair
	Victor West Parking	10043484	Native	3187	-	-	6900	Fair
	Victor East Parking	10043483	Native	10298	-	-	22400	Fair
	Temperance Parking	10043482	Native	6366	-	-	13900	Fair
	Hanson Parking	10043430	Native	9135	-	-	19900	Fair
	Olson Lake County 3 West Parking	10043429	Native	7291	-	-	15900	Fair
	Olson Lake County 3 East Parking	10043428	Native	8101	65	0.74	17600	Poor
	Olson Lake County 116 Parking	10043427	Native	7608	-	-	16600	Fair
	Padua Southwest Parking	10043460	Native	5574	-	-	12100	Fair
	Johnson Parking	10043425	Native	7234	-	-	15800	Poor
	Big Kandiyohi Parking	10043424	Native	6593	-	-	14400	Fair
	Lake Grandotte Parking	-	Native	6057	-	-	13200	Fair
	Parmon County 132 Parking	-	Native	8393	-	-	18300	Fair
	Parmon County 8 Parking	-	Native	9721	-	-	21200	Fair
	Padua West Parking	10043459	Native	5185	-	-	11300	Fair
	Ella Lake South Parking	10043418	Native	8018	-	-	17500	Fair
	Summit Lake Parking	10043417	Native	6656	-	-	14500	Poor
	Uncle Matts East Parking	10043416	Native	5523	-	-	12000	Poor
	Sperry Lake Parking	10043415	Native	3674	-	-	8000	Fair
	Uncle Matts West Parking	10043414	Native	8281	-	-	18000	Fair
	Bur Oak Lake Parking	10043413	Gravel	5326	-	-	26900	Good

Table 70 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Litchfield	Swanson Parking	10043412	Native	8257	-	-	18000	Fair
	Sweep Parking	10043411	Native	9711	-	-	21200	Fair
	Carlson Lake Parking	10043410	Native	5066	-	-	11000	Fair
	Allen Parking	10043409	Native	5307	-	-	11600	Fair
	New London Parking	10043408	Native	4571	65	0.33	10000	Fair
	Roscoe Parking	10043478	Native	10200	-	-	22200	Poor
	Rice Lake Parking	-	Native	4645	-	-	10100	Fair
	Mud Lake North Parking	10043476	Native	9614	-	-	20900	Fair
	Mud Lake South Parking	10043475	Native	7938	-	-	17300	Fair
	Tyrone Flats Parking	10052164	Native	8296	-	-	18100	Fair
	Clear Lake Parking	10043444	Native	9796	-	-	21300	Fair
	Peifer School Parking	10043442	Native	7132	-	-	15500	Fair
	Geroy Parking	10012226	Native	8787	-	-	19100	Poor
	Faber Parking	10043479	Native	8976	-	-	19500	Poor
	Sogge Parking	10043480	Native	8607	-	-	18700	Poor
	Twin Lakes Parking	10043450	Native	4333	-	-	9400	Good
	Costello Parking	10043451	Native	8642	-	-	18800	Fair
	McCormic Lake Parking #2	10043452	Native	3072	-	-	6700	Poor
	McCormic Lake Parking #1	10043453	Native	1813	-	-	3900	Poor
	Swan Lake Parking	10043400	Native	15799	65	0.73	34400	Good
	Shakopee Creek Parking	10043401	Native	1081	65	0.84	2400	Fair
	Pennock Parking	10043402	Native	5297	-	-	11500	Poor
	Linden Lake East Parking	10043403	Native	15023	-	-	32700	Fair
	Linden Lake West Parking	10043404	Native	7480	-	-	16300	Poor
	Weber North Parking	10058787	Gravel	8900	65	0.73	44900	Good
	Everson Parking	10043407	Native	6148	-	-	13400	Poor
	Barber Lake Parking	10012307	Native	7735	-	-	16800	Fair
	Boon Lake Parking	10043445	Native	13346	-	-	29100	Fair
	Brookfield Parking	10043446	Native	10660	-	-	23200	Good
	Cosmos Parking	10043421	Native	8870	-	-	19300	Good
	Pelican Lake East South Parking	-	Gravel	11709	-	-	59100	Excellent
	Pelican Lake East North Parking	-	Gravel	9914	-	-	50100	Excellent
	Angus Lake Parking	10043491	Gravel	4161	65	0.91	21000	Good
	Silver Lake Parking	10012218	Gravel	6820	-	-	34400	Fair

Table 71 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Litchfield	Corrina Parking	10043490	Native	11222	-	-	24400	Fair
	Albion Parking	10043489	Native	7401	-	-	16100	Fair
	Padua East Parking	10012238	Native	9296	-	-	20200	Fair
	Behnen Parking	10043462	Native	5387	-	-	11700	Poor
	Trisko South Parking	10043447	Native	5302	-	-	11500	Fair
	Trisko Central Parking	10043463	Native	4920	-	-	10700	Poor
	Trisko North Parking	10043464	Native	4912	-	-	10700	Poor
	Kenna North Parking	10043465	Native	7768	-	-	16900	Fair
	Kenna South Parking	10043448	Native	9352	-	-	20400	Fair
	Greenwald Parking	10043466	Native	9610	-	-	20900	Good
	Spring Hill Parking	10043467	Native	3289	-	-	7200	Fair
	Lake Henry Parking	10043468	Native	9650	-	-	21000	Poor
	Burbank North Parking	10043387	Native	8331	-	-	18100	Good
	Burbank Southwest Parking	10043388	Native	7692	-	-	16800	Good
	Burbank East Parking	10043389	Native	7845	-	-	17100	Good
	Crow Lake Parking	10043449	Gravel	9508	65	0.69	48000	Poor
	Miller Hills Parking	10012247	Gravel	4994	65	0.36	25200	Good
	Frease Parking	10043390	Native	5008	-	-	10900	Poor
	Sunberg Parking	10043391	Native	9513	65	0.73	20700	Poor
	Colfax Parking	10043386	Gravel	7637	65	0.73	38600	Fair
	Arctander South Parking	10043392	Native	4765	-	-	10400	Fair
	Arctander Northeast Parking	10043393	Native	8036	65	0.64	17500	Poor
	Arctander Northwest Parking	10043394	Native	3488	-	-	7600	Fair
	Henjum Parking	10043395	Native	1659	-	-	3600	Poor
	Dengerud North Parking	10043396	Native	6208	-	-	13500	Good
	Dengerud South Parking	10043396	Gravel	12857	-	-	64900	Good
	Florida Slough Parking	10043397	Native	10071	-	-	21900	Good
	Rosendale East Parking	10043431	Native	8700	-	-	18900	Good
	Rosendale West Parking	10043432	Native	7627	-	-	16600	Good
	Greenleaf Parking	10043433	Native	8212	-	-	17900	Good
	Lake Hardin Parking	10043434	Native	8755	-	-	19100	Fair
	Litchfield South Parking	10043477	Native	8513	-	-	18500	Good
	Casey Lake West Parking	10043437	Native	8229	-	-	17900	Good

Table 72 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Litchfield	Casey Lake East Parking	10043438	Native	8662	-	-	18900	Good
	Hanson Lake East Parking	10043439	Native	9231	-	-	20100	Good
	Hanson Lake West Parking	10043440	Native	3565	-	-	7800	Poor
	Harvey Parking	10043441	Native	8512	-	-	18500	Good
	Stone Lake Parking	10012277	Gravel	11811	-	-	59600	Fair
	Big Fish Lake Parking	10043469	Native	10463	-	-	22800	Fair
	Sand Lake Parking	10043470	Native	5693	-	-	12400	Fair
	Farming Parking	10043471	Native	5871	-	-	12800	Fair
	St. Martin Parking	10043472	Native	5028	-	-	11000	Poor
	Lovell Lake East Parking	10043473	Native	7832	-	-	17100	Fair
	Lovell Lake West Parking	10043474	Native	8109	-	-	17700	Fair
	Forest City Parking	10043443	Native	9986	-	-	21700	Fair
	Robinson 35th St Parking	10043488	Native	14592	-	-	31800	Fair
	Forest City Parking	10043443	Native	7943	-	-	17300	Poor
	Eden Valley East Parking	-	Native	4237	-	-	9200	Poor
	Eden Valley North Parking	10052173	Gravel	3304	-	-	16700	Good
	Lake Henry North Parking	10046048	Native	7295	-	-	15900	Fair
	St. Martin East Parking	10046049	Native	3491	-	-	7600	Poor
	Lake Lillian Parking	10052185	Gravel	11191	-	-	56500	Fair
	Bomsta Parking	10052183	Native	7842	-	-	17100	Fair
	Cedar Mills Southwest Parking	10046072	Native	9791	-	-	21300	Fair
	Cedar Mills Southeast Parking	10046071	Native	9157	-	-	19900	Fair
	Weber South Parking	10058787	Gravel	6665	65	0.73	33700	Excellent
	Stone Lake Service Parking Lot	-	Native	18950	-	-	41300	Good
	Tyrone Flats Hunter Access Park	10052164	Native	2917	-	-	6400	Fair
	Collegeville Hunter Access Parking Loop	10046055	Gravel	7881	-	-	39800	Fair
	Krain Hunter Access Parking	10058786	Primitive	1292	65	0.73	0	Poor
	Crosier Hunter Access Parking	10043454	Native	9009	-	-	19600	Fair
	Terfehr Hunting Access Rd	-	Native	1161	-	-	2500	Poor
	West Union Hunting Access Rd	-	Native	563	-	-	1200	Poor
	Weiner Parking	10058777	Native	562	65	0.32	1200	Poor
	Ashley WPA Parking	10052181	Native	5590	-	-	12200	Fair
	Prairie Storm WPA East Parking	10058778	Primitive	716	65	0.32	0	Poor
	Prairie Storm WPA South Parking	10058779	Native	2078	65	0.10	4500	Poor
	Bauman WPA Northwest Parking	10058774	Native	507	65	0.73	1100	Poor

Table 73 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Litchfield	Bauman WPA East Parking	10058773	Native	610	65	0.73	1300	Poor
	Colfax WPA West Parking	10051198	Native	1523	-	-	3300	Poor
	Randall WPA South Parking	10058781	Gravel	7751	65	0.73	39100	Excellent
	Randall WPA North Parking	10058780	Gravel	7109	65	0.12	35900	Excellent
	Brenner Lake WPA Parking	10058782	Gravel	5154	65	0.32	26000	Excellent
	Henjum Lake WPA North Parking	10043611	Native	3982	-	-	8700	Fair
	Henjum Lake WPA Central Parking	10046312	Gravel	6369	-	-	32200	Fair
	Century WPA Parking	10058783	Gravel	8893	65	0.32	44900	Fair
	New London WPA SW Parking	10058784	Gravel	9543	65	0.32	48200	Good
	Allen WPA East Parking	10046057	Native	2424	-	-	5300	Fair
	Weber South Parking	10058787	Gravel	9421	65	0.73	47600	Good
	Ella Lake WPA Central Road	10058789	Primitive	517	65	0.32	0	Poor
	Rosendale WPA North Parking	10046069	Gravel	3105	-	-	15700	Fair
	Cream City WPA Parking	-	Primitive	404	-	-	0	Poor
	Sacred Heart WPA Northeast Parking	10058792	Native	827	65	0.32	1800	Fair
	Sacred Heart WPA West Parking	10058791	Primitive	399	65	0.32	0	Fair
	Barber Lake WPA Parking	10012307	Primitive	428	-	-	0	Fair
	Last One West Parking	10058793	Primitive	417	65	0.32	0	Fair
	Last One East Parking	10058794	Primitive	647	65	0.32	0	Fair
	Barta-Oliva WPA South Parking	10046063	Primitive	870	65	0.73	0	Poor
	Barta-Oliva WPA West Parking	10046060	Native	8230	65	0.32	17900	Fair
	Lake Harden WPA EastParking	-	Primitive	654	-	-	0	Fair
	Lake Harden WPA North Parking	-	Primitive	706	-	-	0	Fair
	Litchfield Headquarters Parking	-	Asphalt	17401	-	-	161000	Excellent
	Litchfield Main Shop Parking	10043435	Gravel	39043	-	-	197100	Excellent
	Litchfield North Parking	10043436	Gravel	1174	-	-	5900	Poor
	Harvey East Parking	10043436	Native	1530	-	-	3300	Poor
	Goose Lake Parking	10043436	Primitive	3415	-	-	0	Fair
	Pelican Lake West Parking 2	10043492	Native	29124	-	-	63400	Good
	Pelican Lake West Parking 1	10043492	Native	23870	-	-	52000	Good
	Pelican Lake West Parking 3	10043492	Gravel	5483	-	-	27700	Good
	Pelican Lake North Parking 1	10058796	Gravel	8391	65	0.21	42400	Good
	Pelican Lake North Parking 2	10058796	Gravel	10319	65	0.21	52100	Excellent
	Pelican Lake South 45th and Ibarra Intersection Parking	10043481	Gravel	9815	65	0.21	49600	Excellent

Table 74 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Meredosia NWR	Shearl/Skinner Wetlands Parking	10043498	Gravel	3094	65	0.11	0	Poor
	Nature Trail Parking	10014048	Gravel	7070	65	0.10	0	Good
	Boat Ramp Parking	10043499	Gravel	8467	65	0.09	0	Fair
	Shop Parking	-	Native	13822	-	-		Fair
Michigan Islands NWR	Malan WPA Parking	10060046	Gravel	3085	-	-	16400	Excellent
	Schlee WPA Parking	10060044	Gravel	8814	-	-	47000	Good
	Kinney WPA Parking	10060048	Gravel	3650	-	-	19500	Fair
	Edgar WPA Parking	10060052	Gravel	2161	-	-	11500	Good
Middle Mississippi River NWR	North Wilkinson Island Access Parking	10043501	Native	8236	65	0.35	17900	Fair
	South Central Wilkinson Island Access Parking	10043503	Native	5235	65	0.30	11400	Fair
	Middle Harlow Island Access Parking	10043507	Primitive	5890	65	0.73	0	Poor
	South Harlow Island/Truman Boat Ramp Access Parking	10043506	Asphalt	873	65	0.73	8100	Good
	Central Wilkinson Island Parking	10061163	Gravel	3235	-	-	16300	Fair
	Southern Wilkinson Island Parking	10061165	Primitive	17113	-	-	0	Poor
	Meissner Island Parking	10061183	Native	6341	-	-	13800	Fair
	South Harlow Island/Truman Boat Ramp Handicapped Access Parking	10043506	Asphalt	379	65	0.73	3500	Good
	Shop Parking	10055415	Gravel	1787	-	-	9000	Fair
	Headquarters Parking	10055417	Gravel	3809	-	-	19300	Good
Mingo NWR	Bow Hunters Parking Area	10013000	Gravel	3748	65	0.37	18700	Fair
	Schoolhouse Parking	10012999	Asphalt	2895	65	0.24	26500	Good
	Red Mill Parking Area	10013001	Gravel	9810	65	0.37	49000	Good
	Boardwalk Parking Area	10037637	Gravel	1849	65	0.22	9200	Good
	Bluff Tower Parking Area	10037638	Asphalt	14966	-	-	136900	Fair
	Headquarters Employee Parking	10037646	Asphalt	5891	-	-	53900	Fair
	Boat Ramp Parking Area	10037647	Gravel	623	65	0.99	3100	Fair
	Flat Banks Parking Lot	10013002	Gravel	2504	65	0.37	12500	Fair
	Boardwalk Nature Trail South Parking	-	Asphalt	8560	-	-	78300	Good
	Maintenance Parking	10013004	Asphalt	32704	65	0.38	299200	Good

Table 75 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Mingo NWR	Trailer Parking	10013003	Asphalt	8352	65	0.38	76400	Poor
	Covered Shop Parking	10013003	Gravel	3178	65	0.38	15900	Fair
	Maintenance Employee Parking	10013004	Asphalt	17839	65	0.38	163200	Good
	Maintenance Equipment Parking	10013004	Asphalt	33063	65	0.38	302500	Fair
	Spillway Parking Area	10037648	Gravel	4242	-	-	21200	Good
	Refuge Auto Tour Route Lookout Parking	10037240	Gravel	1768	-	-	8800	Good
	Mingo River Boat Launch Parking	10057249	Gravel	4743	-	-	23700	Good
	Monopoly Marsh Parking	10057297	Gravel	1996	-	-	10000	Fair
	Highway 51 Overlook Parking	10057284	Gravel	7803	65	0.46	39000	Good
	Schoolhouse Overflow Parking	10012999	Gravel	3293	65	0.24	16400	Good
	Hunt Area Parking	-	Gravel	1346	-	-	6700	Excellent
	Rockhouse Overlook Parking	10057222	Asphalt	1006	-	-	9200	Excellent
	Pierman Parking	10057242	Gravel	3099	-	-	15500	Fair
	DItch 5/11 Parking	10057253	Asphalt	2201	-	-	20100	Excellent
Minnesota Valley NWR	County Road 50 Parking	10043519	Gravel	23147	65	0.14	144100	Good
	County Road 45 Parking	10043521	Gravel	6292	65	0.17	39200	Good
	Louisville Swamp Parking	10012495	Gravel	26915	65	0.37	167600	Good
	Upgrala West Parking	10012478	Asphalt	25920	65	0.09	295800	Good
	Wilkie Parking	10012458	Gravel	10781	65	0.37	67100	Poor
	Visitor Center Parking	10012332	Asphalt	65842	-	-	751300	
	Field Offices Parking	10012315	Asphalt	17466	-	-	199300	Fair
	Bass Ponds Parking	10012376	Asphalt	2030	-	-	23200	Excellent
	Cedar Avenue Parking	10012400	Asphalt	26427	65	0.10	301600	Good
	Lyndale Avenue Parking	10012425	Asphalt	43709	65	0.09	498800	Good
	Bloomington Ferry Parking	10012542	Asphalt	14032	65	0.09	160100	Fair
	Old County Road 18 Parking	10012541	Asphalt	30017	65	0.04	342500	Good
	Duck Lane Parking	10060225	Gravel	4699			29300	Good
	Rapids Lake Parking	10043521	Gravel	20335	65	0.17	126600	Good
	Visitor Center Employee Parking	10012330	Asphalt	12873	65	0.11	146900	Good
	Wilkie Boat Launch Parking	10012540	Gravel	7139	65	0.14	44500	Good
	Shakopee Shop Parking	10012451	Native	11233	-	-	30200	Excellent

Table 76 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Minnesota Valley NWR	Educational Center Visitor Parking 1	-	Asphalt	2771	-	-	31600	Excellent
	Educational Center Visitor Parking 2	-	Asphalt	4958	-	-	56600	Excellent
	Rapids Lake Shop Parking	-	Gravel	51381	-	-	320000	Excellent
	Rapids Lake Residence Parking	-	Gravel	1217	-	-	7600	Excellent
	Rapids Lake Residence Handicap Parking	-	Asphalt	309	-	-	3500	Excellent
	Rapids Lake Unit South Hunter Parking Lot	-	Gravel	6079	-	-	37900	Good
	Duck Lane Hunter/Seasonal Parking	-	Native	2733	-	-	7300	Good
	Black Dog Observation Parking	10059901	Gravel	5051	-	-	31500	Excellent
	Bass Pond Lower Parking	10012377	Asphalt	16694	65	0.97	190500	Good
	Rice Lake Launch and Parking	10012539	Gravel	25838	65	0.36	160900	Fair
	Louisville Swamp Hunter Parking	10012505	Gravel	4733	65	0.75	29500	Good
Minnesota Valley WMD	Soberg WPA Parking	10043522	Gravel	9558	-	-	59500	Excellent
	Straight Creek WPA Parking	10043525	Gravel	5590	-	-	34800	Fair
	Cobb River Parking	10043516	Gravel	5607	-	-	34900	Fair
	Cobb River South Parking	10043515	Gravel	5878	-	-	36600	Fair
	Cobb River East Parking	10043517	Native	4038	-	-	10800	Fair
	Perbix WPA Parking	10043520	Gravel	3893	-	-	24200	Fair
	Redhead WPA Parking	10043523	Gravel	5860	-	-	36500	Fair
	Rice Lake WPA Parking	10052114	Native	5818	-	-	15600	Fair
	Erin Prairie Parking	10052014	Native	3848	-	-	10300	Fair
	Hurley WPA Parking	10052079	Native	11477	-	-	30800	Fair
	Wolf Creek WPA Parking	10052135	Native	4245	-	-	11400	Fair
	Dodge Center Creek Parking	10052006	Native	6219	-	-	16700	Fair
	Howard Farm WPA Parking	10052074	Native	14231	-	-	38200	Fair
	Preuss WPA Parking	10052018	Native	5676	-	-	15200	Fair
	Delehanty WPA Parking	10060219	Native	6172	-	-	16600	Fair
	Fickling WPA Parking	10052022	Native	3840	-	-	10300	Fair
	Dehning WPA Parking	10060218	Native	5927	-	-	15900	Fair
	Hahn Lake WPA Parking	10052025	Native	4105	-	-	11000	Fair
	High Island WPA Parking	10052034	Native	6731	-	-	18100	Fair
	Felber WPA Parking	10059773	Native	22811	-	-	61300	Good
	Shelby WPA Parking	10059770	Native	5976	-	-	16100	Good
	Willow Creek WPA Parking	-	Native	5646	-	-	15200	Good
	Evans Slough WPA Parking	10059771	Native	5575	-	-	15000	Good
	MN Pheasants WPA Parking	10059775	Native	1295	-	-	3500	Good
	Mud Lake WPA Parking	10043524	Gravel	6297	-	-	39200	Good

Table 77 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Morris	Scofield	10043607	Native	4317	65	0.32	9400	Fair
	Lynch Lake #1	10043647	Native	4238	65	0.32	9200	Fair
	Lynch Lake #2	10043647	Native	7614	65	0.32	16600	Fair
	Maki	10043654	Native	3483	65	0.32	7600	Fair
	Lynch Lake #3	10043647	Native	3775	65	0.32	8200	Fair
	Benson Lake #2	10043580	Native	6647	65	0.32	14500	Fair
	Benson Lake #1	10043580	Native	7191	65	0.32	15700	Fair
	Hagstrom	10043591	Native	5826	65	0.32	12700	Fair
	New Prairie	10043612	Native	2711	65	0.32	5900	Fair
	Snetting	10043611	Native	2656	65	0.32	5800	Fair
	Stewart #2	10043595	Native	5877	65	0.32	12800	Fair
	Stewart #1	10043595	Native	4119	65	0.32	9000	Fair
	Stammer	10043594	Native	2383	65	0.32	5200	Fair
	Starbuck	10043596	Native	5411	65	0.32	11800	Fair
	Froland	10043597	Native	7461	65	0.14	16300	Good
	Rolling Forks #5	10043614	Native	14423	65	0.32	31400	Fair
	Rolling Forks #4	10043614	Native	6308	65	0.32	13700	Fair
	Rolling Forks #3	10043614	Native	8664	65	0.32	18900	Fair
	Rolling Forks #2	10043614	Native	6169	65	0.32	13400	Fair
	Rolling Forks #1	10043614	Native	5294	65	0.32	11500	Fair
	Pedersen #2	10012018	Native	5602	65	0.32	12200	Fair
	Pedersen #1	10012018	Native	6274	65	0.32	13700	Fair
	Bengtson	10043651	Native	6378	65	0.32	13900	Fair
	Horton	10011978	Native	7114	65	0.32	15500	Fair
	Moore East	10011991	Native	5221	65	0.32	11400	Fair
	Hoff	10043590	Native	4715	65	0.32	10300	Fair
	Moore West	10011991	Native	2399	65	0.32	5200	Fair
	Fitzgerald	10043615	Native	7196	65	0.32	15700	Fair
	Solvie	10043640	Native	1079	65	0.32	2400	Fair
	Klevenburg	10043610	Native	2382	65	0.32	5200	Fair
	Little Chippewa River	10043609	Native	7471	65	0.32	16300	Fair
	Glacial Lakes	10043584	Native	6326	65	0.32	13800	Fair

Table 78 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Morris	Berg	10043583	Native	2398	65	0.32	5200	Fair
	Blue Mounds	10043582	Native	5644	65	0.32	12300	Fair
	Kolstad #1	10043581	Native	5909	65	0.32	12900	Fair
	Kolstad #2	10043581	Native	7101	65	0.32	15500	Fair
	Kolstad #3	10043581	Native	6725	65	0.32	14600	Fair
	Stenson Lake	10043599	Native	6944	65	0.32	15100	Fair
	Larson Slough	10043544	Native	4696	65	0.14	10200	Good
	Eids Lutheran	10043542	Native	5079	65	0.14	11100	Good
	Thomson	10043543	Native	5708	65	0.14	12400	Good
	Krogsrud	10011937	Native	7187	65	0.14	15700	Good
	Nelson	10011935	Native	8053	65	0.14	17500	Good
	Welsh	10043648	Native	6846	65	0.32	14900	Fair
	Svor	10043649	Native	5578	65	0.32	12100	Fair
	Loen #1	10043650	Native	6721	65	0.32	14600	Fair
	Welker	10043653	Native	5249	65	0.32	11400	Fair
	Stenerson Lake #1	10043598	Native	3240	65	0.32	7100	Fair
	Powers	10043568	Native	9275	65	0.32	20200	Fair
	Morris District Office Parking	10011973	Asphalt	34739	65	0.86	321400	Poor
	Aal	10054489	Native	5329	65	0.14	11600	Fair
	Ben Wade	10054485	Native	3933	65	0.17	8600	Fair
	Geise	10054480	Native	6246	65	0.17	13600	Fair
	Barry Lake #1	10043566	Native	12529	65	0.50	27300	Fair
	Geyer #1	10043661	Native	6987	65	0.23	15200	Fair
	Geyer #2	10048520	Native	5155	65	0.33	11200	Fair
	Geyer #3	10043661	Native	5238	65	0.23	11400	Fair
	Chokio	10048527	Native	3820	65	0.33	8300	Fair
	Odden #1	10043551	Native	9646	65	0.32	21000	Fair
	Dismal Swamp #1	10043548	Native	11448	65	0.32	24900	Fair
	Dismal Swamp #2	10043548	Native	9067	65	0.32	19700	Fair
	Big Stone	10043631	Native	9011	65	0.32	19600	Fair
	Golden	10043628	Native	7078	65	0.32	15400	Fair

Table 79 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Morris	Olson #1	10043545	Native	9662	65	0.32	21000	Fair
	Olson #2	10043545	Native	3759	65	0.32	8200	Fair
	Olson #3	10043545	Native	4892	65	0.32	10700	Fair
	Olson #4	10043545	Native	4896	65	0.32	10700	Fair
	Akron	10011934	Native	7565	65	0.32	16500	Fair
	Lubenow #3	10043644	Native	7235	65	0.21	15800	Fair
	Lubenow #1	10043644	Native	6766	65	0.21	14700	Good
	Lubenow #2	10043644	Native	6036	65	0.21	13100	Good
	Byre #1	10043646	Native	8174	65	0.32	17800	Fair
	Byre #2	10043646	Native	6956	65	0.32	15200	Fair
	Spring Lake	10012005	Native	8547	65	0.32	18600	Fair
	Westhausen	10043643	Native	9770	65	0.14	21300	Good
	Hastad #2	10043579	Native	8062	65	0.32	17600	Fair
	Hegland #2	10043579	Native	6323	65	0.32	13800	Fair
	Hastad #1	10043579	Native	2693	65	0.32	5900	Fair
	Hegland #1	10043578	Native	5738	65	0.32	12500	Fair
	Boraas	10043577	Native	2543	65	0.32	5500	Fair
	Quaal	10043576	Native	4620	65	0.32	10100	Fair
	Swede Home	10043663	Native	5235	65	0.32	11400	Fair
	Dakota	10043662	Native	3466	65	0.32	7500	Fair
	Bailey Slough	10011946	Native	3702	65	0.32	8100	Fair
	Pearson	10011947	Native	3944	65	0.32	8600	Fair
	Taylor	10011945	Native	2340	65	0.32	5100	Fair
	Bolson Slough	10043571	Native	5724	65	0.32	12500	Fair
	Florida Creek	10043572	Native	3225	65	0.32	7000	Fair
	Colbert #1	10043573	Native	6897	65	0.32	15000	Fair
	Colbert #2	10043573	Native	5152	65	0.32	11200	Fair
	Wildlife Trail Overlook Parking	10011977	Native	1751	65	0.42	3800	Fair
	Long Lake #4	10043641	Native	5759	65	0.32	12500	Fair
	Long Lake #5	10043641	Native	9785	65	0.32	21300	Fair
	Beck	10043561	Native	476	65	0.89	1000	Poor
	Sherstad Slough	10043624	Native	1578	65	0.32	3400	Fair
	Staack	10011965	Native	3047	65	0.21	6600	Fair

Table 80 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Morris	Hassel Creek	10011953	Native	3660	65	0.32	8000	Fair
	Greiner #2	10043588	Native	8183	65	0.32	17800	Fair
	Greiner #1	10043588	Native	9725	65	0.32	21200	Fair
	Walden #1	10043589	Native	7746	65	0.32	16900	Fair
	Twin Lakes	10043539	Native	9892	65	0.32	21500	Fair
	Lamprecht #2	10043617	Native	6679	65	0.32	14500	Fair
	Stimmler #1	10043618	Native	9409	65	0.32	20500	Fair
	Schultz #1	10043619	Native	7414	65	0.32	16100	Fair
	Schultz #2	10043619	Native	6315	65	0.32	13800	Fair
	Pepperton #1	10043620	Native	6917	65	0.32	15100	Fair
	Pepperton #2	10043620	Native	5685	65	0.32	12400	Fair
	Pepperton #4	10043620	Native	7545	65	0.32	16400	Fair
	Pepperton #5	10043620	Native	6645	65	0.32	14500	Fair
	Freeman	10043621	Native	9959	65	0.32	21700	Fair
	Pepperton #3	10043620	Native	5691	65	0.32	12400	Fair
	Miller	10043626	Native	8585	65	0.32	18700	Fair
	Fults	10043625	Native	9759	65	0.32	21300	Fair
	Hutchinson	10043638	Native	5270	65	0.32	11500	Fair
	Struck	10043637	Native	6610	65	0.32	14400	Fair
	Mau	10043635	Native	2237	65	0.32	4900	Fair
	Wente #2	10043636	Native	7258	65	0.32	15800	Fair
	Wente #1	10043636	Native	5272	65	0.32	11500	Fair
	Pomme de Terre Lake	10043634	Native	5407	65	0.32	11800	Fair
	Pomme de Terre River #2	10043639	Native	5665	65	0.32	12300	Fair
	Krantz Lake	10043605	Native	2846	65	0.32	6200	Fair
	Grove Lake #1	10043604	Native	6650	65	0.32	14500	Fair
	Mosquito Ranch #2	10012017	Native	7455	65	0.32	16200	Fair
	Mosquito Ranch #1	10012017	Native	2559	65	0.32	5600	Fair
	Brady	10043652	Native	8283	65	0.32	18000	Fair
	Rice	10012006	Native	6337	65	0.32	13800	Fair
	Walden #2	10043589	Native	7015	65	0.32	15300	Fair
	Grove Lake #2	10043604	Native	10090	65	0.32	22000	Fair
	Grove Lake #3	10043604	Native	11343	65	0.32	24700	Fair

Table 81 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Morris	Glenwood #3	10043606	Native	10954	65	0.32	23900	Fair
	Glenwood #2	10043606	Native	5498	65	0.32	12000	Fair
	Glenwood #1	10043606	Native	4206	65	0.32	9200	Fair
	Bangor #2	10043603	Native	6675	65	0.21	14500	Fair
	Benson Lake #3	10043580	Native	5204	65	0.32	11300	Fair
	Artichoke #3	10043546	Native	7416	65	0.31	16200	Fair
	Anderson	10043629	Native	4677	65	0.32	10200	Fair
	Stevens	10043630	Native	9744	65	0.32	21200	Fair
	Dybdahl	10043547	Native	5244	65	0.32	11400	Fair
	Jorgenson #1	10043555	Native	5939	65	0.32	12900	Fair
	Jorgenson #2	10043555	Native	6392	65	0.32	13900	Fair
	Wiley	10043554	Native	10958	65	0.32	23900	Fair
	Mero	10043616	Native	6833	65	0.32	14900	Fair
	Lamprecht #1	10043617	Native	5047	65	0.32	11000	Fair
	Lake Johanna #1	10043602	Native	8201	65	0.32	17900	Fair
	Welfare	10043633	Native	4852	65	0.32	10600	Fair
	Artichoke Lake #5	10043657	Native	5571	65	0.19	12100	Fair
	Artichoke Lake #4	10043657	Native	4860	65	0.19	10600	Fair
	Artichoke Lake #3	10043657	Native	5110	65	0.19	11100	Fair
	Artichoke Lake #2	10043657	Native	2617	65	0.19	5700	Fair
	Artichoke Lake #1	10043657	Native	25006	65	0.19	54500	Fair
	Henry	10043569	Native	4014	65	0.32	8700	Fair
	Twin Lakes Eastside	10043570	Native	5667	65	0.32	12300	Fair
	Artichoke #1	10043546	Native	7225	65	0.31	15700	Fair
	Artichoke #2	10043546	Native	4790	65	0.31	10400	Fair
	Johnson #2	10043553	Native	2657	65	0.32	5800	Fair
	Johnson #1	10043553	Native	5236	65	0.32	11400	Fair
	Bangor #1	10043603	Native	3085	65	0.21	6700	Fair
	Heidebrink #2	10011952	Native	18729	65	0.32	40800	Fair
	Overby #2	10043600	Native	4878	65	0.32	10600	Fair
	Overby #1	10043600	Native	9502	65	0.32	20700	Fair
	Nelson Lake #1	10043601	Native	3595	65	0.32	7800	Fair

Table 82 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Morris	Nelson Lake #2	10043601	Native	2794	65	0.32	6100	Fair
	Ouren	10043613	Native	4389	65	0.32	9600	Fair
	Heidebrink #1	10011952	Native	1988	65	0.32	4300	Fair
	Horse Lake	10043608	Native	4833	65	0.32	10500	Fair
	McIver #3	10043593	Native	4015	65	0.32	8700	Fair
	McIver #2	10043593	Native	3019	65	0.32	6600	Fair
	Mattson	10043592	Native	5177	65	0.32	11300	Fair
	Fish Lake #1	10043622	Native	6452	65	0.49	14100	Fair
	Fish Lake #2	10043622	Native	5242	65	0.49	11400	Poor
	Edwards West Lot	10011977	Native	3573	65	0.42	7800	Fair
	Edwards East Lot	10011977	Gravel	7418	65	0.42	37500	Fair
	Nordby	10043632	Native	9760	65	0.32	21300	Fair
	Wildlife Trail Entrance Parking	10011977	Native	8117	65	0.42	17700	Fair
	Tangen	10043537	Native	6090	65	0.32	13300	Fair
	Red Head Marsh North	10043538	Native	3881	65	0.14	8500	Good
	Johnson	10043623	Native	4660	65	0.16	10100	Fair
	Menzel	10043536	Native	7494	-	-	16300	Excellent
	Hillman #2	10043535	Native	8844	65	0.14	19300	Good
	Hillman #1	10043535	Native	9755	65	0.14	21200	Good
	Rothi #3	10043541	Native	6196	65	0.52	13500	Fair
	Rothi #2	10043541	Native	2153	65	0.52	4700	Poor
	Rothi #1	10043541	Native	10839	65	0.52	23600	Poor
	Helgeson #2	10043540	Native	5622	65	0.32	12200	Fair
	Helgeson #1	10043540	Native	5132	65	0.32	11200	Fair
	Larson	10043574	Native	3292	65	0.32	7200	Fair
	Hackert	10043575	Native	3246	65	0.32	7100	Fair
	Anderson	10043567	Native	3107	65	0.32	6800	Fair
	Robin Hood #3	10043658	Native	2931	65	0.32	6400	Fair
	Robin Hood #2	10043658	Native	7051	65	0.32	15400	Fair
	Robin Hood #1	10043658	Native	5295	65	0.32	11500	Fair
	Murphy	10043660	Native	4619	65	0.32	10100	Fair
	Paul	10043659	Native	6522	65	0.32	14200	Fair
	Togua	10043565	Native	2397	65	0.14	5200	Good

Table 83 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Morris	Lane #2	10043564	Native	4309	65	0.21	9400	Fair
	Lane #1	10043564	Native	7564	65	0.21	16500	Good
	Seidl	10043563	Native	6312	65	0.14	13700	Good
	Boehnke	10043560	Native	8051	65	0.14	17500	Good
	Karsky #1	10043559	Native	9392	65	0.14	20500	Good
	Karsky #3	10043559	Native	10733	65	0.14	23400	Good
	Karsky #2	10043559	Native	6925	65	0.14	15100	Good
	Haugen	10043562	Native	5218	65	0.14	11400	Good
	Bauman	10048517	Native	5616	65	0.35	12200	Fair
	Almond	10043557	Native	5377	65	0.14	11700	Good
	Goldsmith	10043556	Native	4232	65	0.14	9200	Good
	Stegner #1	10043558	Native	5947	65	0.23	13000	Fair
	Stegner #2	10043558	Native	5808	65	0.23	12600	Good
	Barry Lake #2	10043566	Native	7337	65	0.50	16000	Fair
	Spellman Lake	10054483	Native	4316	65	0.17	9400	Good
	Red Head Marsh Central	10048519	Primitive	1755	65	0.33	0	Fair
	Clinton	10048521	Native	4771	65	0.33	10400	Fair
	Curran	10048518	Native	4714	65	0.33	10300	Fair
	Fish Lake #3	-	Native	16309	-	-	35500	Fair
	Huebner	10048528	Native	4495	65	0.33	9800	Fair
	Equipment Parking	-	Gravel	23168	-	-	117000	Fair
	Shop Parking	10054490	Asphalt	18604	65	0.42	172100	Excellent
	Employee/Maintanence Parking	-	Asphalt	23768	-	-	219900	Fair
	Employee Parking	-	Native	2215	-	-	4800	Good
	Walden #4	10043589	Native	5621	65	0.32	12200	Fair
	Rustad	10060221	Native	4148	-	-	9000	Fair
	Loen #2	10043650	Gravel	512	65	0.32	2600	Good
	Gjerdigen	10048524	Native	8010	65	0.22	17400	Fair
	Paulson	10048524	Primitive	681	65	0.22	0	Fair
	Stenerson Lake#2	10043598	Native	4437	65	0.32	9700	Fair

Table 84 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Muscatatuck NWR	Persimmon Pond Parking A	10054333	Gravel	6120	65	0.13	30900	Good
	Lake Linda Parking	10054335	Gravel	9200	65	0.13	46500	Fair
	Myers Cabin Site Parking	10054334	Gravel	6961	65	0.13	35100	Good
	Visitor Center Parking A	10043675	Asphalt	7409	65	0.09	68500	Good
	Check Station Loop A	10043680	Asphalt	3915	65	0.36	36200	Excellent
	Visitor Center Parking B	10054329	Asphalt	14171	65	0.13	131100	Good
	Headquarters Parking	10043674	Asphalt	4942	65	0.09	45700	Good
	Shop South Parking	10049636	Gravel	8142	65	0.13	41100	Fair
	Visitor Center Overflow Annex Parking	10054330	Gravel	54250	65	0.15	273900	Fair
	Overlook Structure Access Parking	10054343	Gravel	1894	-	-	9600	Fair
	Check Station Loop B	10054331	Gravel	2027	65	0.36	10200	Fair
	Turkey Trail Parking	10054338	Gravel	2860	65	0.36	14400	Good
	Bird Trail Parking	10054345	Gravel	3629	65	0.13	18300	Good
	Hackman Overlook (Richart TH) Parking	10054344	Gravel	5973	65	0.13	30200	Good
	Stanfield Lake Restroom Parking	-	Native	1007	-	-	2200	Good
	Persimmon Pond Parking B	10054357	Native	3627	65	0.84	7900	Failed
	Stanfield Lake Loop Parking	10054342	Gravel	7699	65	0.11	38900	Good
	Stanfield Lake Boat Ramp Parking	10054332	Gravel	5753	65	0.13	29000	Good
	County Line Road Parking A	10054346	Gravel	762	65	0.13	3800	Good
	County Line Road Parking B	10054350	Gravel	706	65	0.36	3600	Good
	County Line Road South Parking	10054347	Gravel	3611	65	0.13	18200	Good
	Sandhill Ponds Parking	10054349	Gravel	3623	65	0.13	18300	Good
	Myers Cabin South Roadside Parking	10054336	Gravel	2037	65	0.13	10300	Good
	Main Shop Parking	10049636	Gravel	19021	65	0.13	96000	Good
	Shop Central Parking	10049636	Gravel	8242	65	0.13	41600	Fair
	Storm Creek TH Parking	10054339	Gravel	11398	65	0.13	57500	Good
	Restle Unit Parking	10054488	Gravel	3219	65	0.00	16300	Good

Table 85 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Necedah NWR	Observation Tower Parking	10043690	Gravel	2203	65	0.98	11600	Good
	DU Parking	10043691	Gravel	9213	-	-	48600	Good
	Headquarters Parking	10041418	Asphalt	11609	-	-	112200	Good
	Highway 21 Parking	10041423	Asphalt	13009	-	-	125700	Excellent
	Sprague Fishing Access #1	10011443	Gravel	3712	65	0.77	19600	Fair
	Sprague Fishing Access #2	10043688	Gravel	7220	65	0.33	38100	Fair
	Sprague Kiosk Parking	10043689	Gravel	5825	65	0.49	30700	Good
	Suk Cerney Parking	10058710	Gravel	3936	-	-	20800	Fair
	Turkey Track East Parking	10058755	Native	24044	-	-	54700	Fair
	Speedway Road Parking	10058749	Native	49604	-	-	112800	Fair
	Speedway Road Parking #2	10058750	Native	23397	-	-	53200	Fair
	Speedway Road Parking #3	10058719	Native	21912	-	-	49800	Fair
	Headquarters Service Parking	10058704	Gravel	7166	65	0.31	37800	Good
	Headquarters Service Loading Dock Parking	10058707	Gravel	803	-	-	4200	Good
	Cleary Building Service Parking	10058706	Gravel	2749	-	-	14500	Good
	Headquarters Staff Asphalt Parking	10058699	Asphalt	6850	65	0.51	66200	Fair
	Headquarters Staff Concrete Parking	10058699	Concrete	1608	65	0.51	18900	Good
	Maintenance Shop Parking	10058702	Gravel	10894	-	-	57400	Fair
	Maintenance Side of Shop Parking	10058702	Gravel	1046	-	-	5500	Good
	Staff New Maintenance Shop Parking	10058701	Gravel	5509	-	-	29100	Good
	Fire Cache Front Vehicle Parking	10058703	Gravel	5582	-	-	29400	Good
	Fire Cache Rear Vehicle Parking	10058703	Gravel	5787	-	-	30500	Good
	Ellen Allen Learning Center Parking	10058765	Asphalt	722	-	-	7000	Fair
	New Visitor Center Staff Parking	10059664	Gravel	9376	-	-	49400	Excellent
	New Visitor Center Staff Parking	10059663	Gravel	13705	-	-	72300	Excellent
	Grand Dike Hunter Parking	10058743	Gravel	1884	-	-	9900	Good
	Pair Ponds Parking	-	Gravel	988	-	-	5200	Good
	Bowshoot Parking	10058729	Native	1564	-	-	3600	Fair
	Staff Annex Parking	10058700	Gravel	13475	65	0.46	71100	Good
	Laske Gate Parking	10058746	Primitive	1282	-	-	0	Poor
	Laske West Parking	-	Gravel	4025	-	-	21200	Good
	Canfield East Parking	-	Gravel	1256	-	-	6600	Fair

Table 86 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Necedah NWR	Speedway Hunter Parking #1	-	Primitive	2240	-	-	0	Fair
	Speedway Parking #1	10058717	Primitive	7800	-	-	0	Fair
	Speedway Parking at Spencer-Robinson Ditch	10058718	Primitive	2369	-	-	0	Fair
	Speedway Hunter Parking #2	10058721	Primitive	4688	-	-	0	Fair
	Becker Gate Parking	10058726	Primitive	2799	-	-	0	Fair
	Parking 10th Avenue OSR 9A N.	10058728	Primitive	752	-	-	0	Fair
	Hansen West Gate Parking	10058732	Primitive	1772	-	-	0	Good
	Canfields Parking at Wildlife Viewing Area	10058713	Gravel	1202	-	-	6300	Good
	7th Avenue Northeast Side Park.	10058748	Primitive	872	-	-	0	Fair
	5th Avenue and 173 Parking	10058764	Primitive	6786	65	1.00	0	Fair
	Turkey Tracks Gate South Side Parking	10058756	Gravel	338	-	-	1800	Fair
	Sprague-Mather West Boundary Parking	10058735	Primitive	2482	-	-	0	Good
	Sprague-Mather Albert Lateral Ditch North Parking	10058733	Primitive	3924	-	-	0	Fair
	Sprague-Mather Albert Lateral Ditch South Parking	10058734	Primitive	1352	-	-	0	Fair
	6th Avenue Canfield Gate Parking	10058753	Gravel	366	-	-	1900	Good
	Sprague-Mather #45 Parking	10058742	Primitive	328	-	-	0	Fair
	Sprague-Mather #44 Parking	10058752	Native	2777	-	-	6300	Good
	Spencer-Robinson Ditch Parking	10058758	Primitive	1922	-	-	0	Good
	6th Avenue North of Canfield Park.	10058714	Primitive	763	-	-	0	Fair
	6th Avenue Canfield Gate Parking	10058731	Native	2130	-	-	4800	Fair
	Bewick Lateral South Side Parking	10058739	Primitive	1378	-	-	0	Good
	Bewick Lateral North Side Parking	10058738	Primitive	1827	-	-	0	Fair
	5th Avenue Parking	10058736	Native	967	-	-	2200	Good
	7th Avenue Northeast Side Parking	10058751	Primitive	1987	-	-	0	Good
	Speedway at Spencer-Robinson Trail Gate	10058716	Primitive	1419	-	-	0	Fair
	Speedway OSR 9B North Line Park.	10058722	Primitive	12750	-	-	0	Good
	Speedway OSR 9B Parking	10058723	Primitive	5194	-	-	0	Fair
	Hansen East Gate Parking	10058747	Primitive	769	-	-	0	Good
	Grand Dike East Parking	10058745	Native	3008	-	-	6800	Good
	Grand Dike West Parking	10058744	Native	3063	-	-	7000	Good
	Suk Cerney Dike Parking	10058730	Native	1297	-	-	3000	Good

Table 87 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Ottawa NWR	Visitor Parking	10010804	Gravel	19223	65	0.47	106800	Good
	Office Parking	10010803	Asphalt	4972	65	0.84	50600	Excellent
	MS Unit 7b Parking	10010800	Gravel	526	-	-	2900	Fair
	MS Unit 7a Parking	-	Gravel	352	-	-	2000	Fair
	Pool 9 Blind 9 Parking	-	Gravel	715	-	-	4000	Fair
	Pool 9 Blind 12 Parking	-	Gravel	932	-	-	5200	Fair
	Stange Parking	10010809	Gravel	5524	-	-	30700	Good
	County Line Road Parking	10010807	Gravel	3684	-	-	20500	Good
	Boneyard Parking	-	Gravel	57912	-	-	321600	Fair
	YCC Lodge Parking	10010806	Native	24783	65	0.22	59400	Fair
	Grimm Prairie Parking	10050878	Gravel	2731	65	0.00	15200	Good
	Diefenthaler Access Road	10050876	Native	9244	-	-	22100	Good
	Linsey-Limestone Road Parking	10010840	Asphalt	6552	-	-	66700	Fair
	Visitor Center Employee Parking	10051719	Asphalt	7554	-	-	76900	Excellent
	Visitor Center Parking	10051718	Asphalt	23615	-	-	240300	Excellent
	Visitor Center Large Vehicle Parking	10056054	Asphalt	33910	-	-	345100	Excellent
	Visitor Center Overflow Parking	10056053	Gravel	43187	-	-	239900	Good
	Entrance Barn Parking	-	Gravel	15710	-	-	87300	Fair
	Entrance Kiosk Parking	-	Asphalt	3574	-	-	36400	Excellent
	Wetland Management Observation Parking	10051717	Asphalt	1261	-	-	12800	Good
	Shop Parking	10010805	Gravel	25037	65	0.15	139100	Good
	Graffis Parking	10010808	Gravel	2246	-	-	12500	Fair
	Pool 7 Parking	-	Native	1600	-	-	3800	Fair
	Pool 9 Parking	-	Native	3347	-	-	8000	Fair
	Pool 8 Parking	-	Native	1026	-	-	2500	Fair
	Schnieder Access Parking	10057047	Gravel	2953	-	-	16400	Fair
	Gaeth-Kurdy Parking	-	Gravel	733	-	-	4100	Excellent
	Schoonover North Parking	-	Gravel	1704	-	-	9500	Good
	Schoonover East Parking	-	Gravel	3186	-	-	17700	Good

Table 88 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Patoka River NWR	Buck Parking	10054292	Gravel	4174	65	0.10	21100	Fair
	McClure Monument Parking	10010943	Gravel	1973	65	0.36	10000	Fair
	South Fork Trail Head Parking	10054294	Gravel	4543	-	-	22900	Fair
	Pikeville Boat Ramp Parking	10054296	Gravel	18733	-	-	94600	Fair
	Pikeville Boat Ramp Handicapped Park.	-	Concrete	324	-	-	3600	Good
	Kinman Parking	10061192	Native	1471	-	-	3200	Failed
	Dillin Bottom Parking	10055514	Gravel	4329	-	-	21900	Fair
	Survant Boat Ramp Parking	10036060	Gravel	9988	65	0.25	50400	Good
	Survant Boat Ramp Handicapped Park.	10036060	Concrete	275	65	0.25	3100	Good
	DuPont Parking	10061191	Gravel	2097	-	-	10600	Fair
	Lexington Parking	10059877	Gravel	2033	-	-	10300	Good
	Boyd Parking	10054298	Gravel	5966	-	-	30100	Good
	Maxey Parking	10061189	Gravel	4278	-	-	21600	Good
	Snakey Point Turnout Parking	10010945	Gravel	584	65	0.37	2900	Good
	Storage Bulding Parking Lot	10036057	Gravel	5342	65	0.13	27000	Fair
	Northwest Oatsville Parking	10059876	Gravel	3550	-	-	17900	Good
	Southwest Oatsville Parking	10059876	Gravel	4119	-	-	20800	Good
	Bel Parking	10061190	Native	1587	-	-	3500	Good
	Cane Ridge Parking	10056486	Gravel	7940	-	-	40100	Good
Rice Lake NWR	Rice River Parking	10037563	Gravel	15711	65	0.37	87300	Good
	Mandy Lake Parking	10011496	Gravel	4591	-	-	25500	Good
	1939 CCC Camp Parking	10058292	Gravel	3261	50	0.16	18100	Fair
	Twin Lakes Picnic Area Parking	10058294	Gravel	2457	-	-	13600	Fair
	Observation Deck Parking	10011475	Gravel	11323	65	0.38	62900	Fair
	Lake Control Parking	10060583	Gravel	6104	-	-	33900	Good
	Radial Gates Parking	10060584	Gravel	3939	-	-	21900	Good
	Refuge Office Parking	10011506	Asphalt	13547	-	-	137900	Excellent
	Storage Yard Parking	10011500	Gravel	5781	65	0.74	32100	Fair
	Maintenance Parking	10011500	Gravel	25080	65	0.74	139300	Good
	Twin Lakes Handicapped Parking	-	Asphalt	336	-	-	3400	Excellent
	West Fields Hunter Parking	10058299	Native	9793	65	0.13	23500	Fair
	North Bog Hunter Parking	-	Native	5644	-	-	13500	Good
	North Highway 65 Parking	10058283	Native	6880	65	0.08	16500	Good
	Magnason Hunter Parking	10058228	Native	3760	80	0.08	9000	Fair
	Wiitta Parking	10058279	Native	4491	80	0.08	10800	Good
	North Bog East Parking	10060585	Gravel	4729	-	-	26300	Fair
	South Trail Hunter Parking	-	Native	5276	-	-	12600	Fair

Table 89 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Rydell NWR	Auto Tour Parking #4	10053163	Gravel	1249	-	-	5700	Fair
	Auto Tour Parking #3	10043699	Gravel	6023	-	-	27700	Poor
	Auto Tour Parking #2	10043699	Gravel	4839	-	-	22300	Fair
	Auto Tour Parking #1	10043699	Gravel	8393	-	-	38600	Good
	Church Lake Parking	10043700	Gravel	5136	-	-	23600	Fair
	Clifford Lake Parking	10043701	Gravel	7718	-	-	35500	Good
	Route 100 Parking	10043702	Gravel	5021	-	-	23100	Good
	Headquarters Parking	10012049	Asphalt	15732	-	-	132600	Good
	Front Gate Parking	-	Asphalt	3801	-	-	32000	Excellent
	Overflow Parking	10043698	Gravel	22089	-	-	101600	Fair
	Overflow RV/Bus Parking	-	Native	17367	-	-	34500	Fair
	Shop Parking	-	Gravel	4350	-	-	20000	Good
	Shop Parking #2	-	Gravel	5191	-	-	23900	Good
	Shop Parking #4	-	Gravel	3111	-	-	14300	Good
	Shop Parking #3	-	Gravel	8643	-	-	39800	Good
Seney	Refuge Office Parking	10043704	Asphalt	15785	65	0.22	134700	Fair
	C-3 Pool Road Parking	-	Gravel	5292	-	-	24600	Good
	Shay Road Parking	10043705	Gravel	2584	65	0.37	12000	Good
	Visitor Center Parking	10043703	Asphalt	21961	65	0.22	187400	Fair
	Northern Hardwoods Cross-Country Ski Parking	10043705	Gravel	4851	65	0.37	22600	Good
	Driggs River Hunter Access Parking	10010462	Gravel	11813	-	-	55000	Good
	Wigwam Picnic Parking	-	Gravel	958	-	-	4500	Fair
	Boneyard Parking	10060628	Gravel	7700	-	-	35900	Poor
	Shop Parking	10058628	Asphalt	27850	-	-	237600	Fair
	Shop Gravel Parking	-	Gravel	6913	-	-	32200	Fair
	Bunkhouse Parking	10056127	Gravel	7194	-	-	33500	Fair
Sherburne NWR	Fox Road North Parking	10060831	Gravel	5230	-	-	31100	Fair
	County Road 5 Hunter West Access Parking	10060838	Gravel	11703	-	-	69600	Fair
	County Road 9 Hunter Access Parking	10060840	Gravel	2099	-	-	12500	Fair
	County Road 3 Hunter Access Parking	10060833	Native	7816	-	-	20000	Fair
	East Entrance Kiosk Parking	10043707	Gravel	11890	65	0.23	70700	Good

Table 90 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Sherburne NWR	Mahnomen Trail Parking	10011522	Asphalt	13768	65	0.00	150000	Good
	Old Schoolhouse Parking	10036212	Asphalt	19014	65	0.59	207200	Good
	Blue Hill Trail Parking	10011585	Asphalt	10299	65	0.15	112200	Good
	County Road 3 Fishing Access Parking	10036215	Gravel	5381	65	0.30	32000	Good
	Storlie Fishing Access	10060832	Gravel	7252	-	-	43100	Fair
	Long Pool Boat Launch & Parking	10036218	Native	28684	65	0.30	73600	Good
	Headquarters Parking	10011523	Asphalt	14306	65	0.64	155900	Good
	North Entrance Kiosk Parking	10043712	Gravel	9498	65	0.24	56500	Good
	Brande Road Parking	10060843	Native	4399	-	-	11300	Fair
	Rumbley Bridge Parking	10058350	Gravel	6404	80	0.41	38100	Good
	County Road 16 Parking	10060836	Gravel	3599	-	-	21400	Fair
	Carpenter Pool Parking	10060835	Native	2594	-	-	6700	Fair
	Savanna Trail Parking	10043710	Gravel	9180	65	0.25	54600	Good
	South Entrance Kiosk Parking	10043711	Gravel	7273	65	0.40	43200	Good
	County Road 4 Parking	10011583	Gravel	4706	-	-	28000	Good
	County Road 4 Fishing Access Parking	10036216	Gravel	4192	65	0.33	24900	Good
	County Road 1 Fishing Access Parking	10036214	Gravel	2658	65	0.51	15800	Good
	Cemetery Parking	-	Native	6740	-	-	17300	Fair
	County Road 5 East Hunter Parking	10060839	Gravel	8221	-	-	48900	Fair
	Prairie Trail Parking	-	Gravel	3014	-	-	17900	Good
	Wetland Overlook Parking	-	Gravel	4085	-	-	24300	Good
	Woodland Trail Parking	-	Gravel	3250	-	-	19300	Good
	Memorial Overlook Parking	-	Gravel	1243	-	-	7400	Good
	Durgin Parking	10060837	Native	3102	-	-	8000	Fair
	County Road 42 Parking	10060842	Native	5916	-	-	15200	Fair
	Maintenance Parking	10060844	Gravel	60059	-	-	357100	Good
	Maintenance Parking Pad 1	10060844	Concrete	1485	-	-	19600	Good
	Maintenance Parking Pad 2	10060844	Concrete	6785	-	-	89800	Good
	Maintenance Office Parking	10060844	Native	10389	-	-	26600	Good
	Shop South Parking	10060844	Native	11942	-	-	30600	Good
	Storlie Fishing Access West	10060830	Native	5647	-	-	14500	Good
	Fox Parking	10060831	Native	4461	-	-	11400	Fair
	County Road 70 Parking	10058351	Native	5997	-	-	15400	Fair

Table 91 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Shiawassee NWR	Stroebel Road Parking	10010555	Gravel	14409	65	0.39	75200	Good
	Visitor Center Parking	10010567	Asphalt	12859	-	-	122900	Good
	Refuge Nature Trail Parking	10010558	Gravel	20866	65	0.38	108900	Good
	Cass River Parking	10040359	Gravel	11745	-	-	61300	Good
	Visitor Center Staff Parking		Asphalt	20293	-	-	194000	Excellent
	Moore/Cresswell Road Parking	10052166	Gravel	2727	-	-	14200	Good
	Evon Road Service Parking	10010556	Gravel	10509	-	-	54800	Fair
	Houlihan Road Service Parking	10010557	Gravel	10295	65	0.38	53700	Fair
	SR 13 Boat Launch Parking	10060228	Gravel	9361	-	-	48800	Good
	Ambrose Road Parking	10010559	Gravel	5673	65	0.77	29600	Good
	Maintenance Parking	10010572	Gravel	34879	65	0.15	182000	Good
Squaw Creek NWR	Visitor Center Rear Parking	10050581	Asphalt	13301	65	0.08	131300	Excellent
	Visitor Center Restroom Parking	10050582	Asphalt	2345	65	0.08	23100	Excellent
	Visitor Center Parking	10050578	Asphalt	17006	65	0.07	167800	Good
	Visitor Center Bus Parking	10050582	Asphalt	1057	65	0.08	10400	Excellent
	Davis Creek Parking	-	Asphalt	6542	-	-	64600	Excellent
	Davis Creek Handicapped Parking	-	Asphalt	1824	-	-	18000	Excellent
	Teal Pool Parking	10053185	Gravel	4674	65	0.21	25200	Good
	Shop Parking	10013144	Asphalt	10251	65	0.15	101200	Good
	George L. Scheil Classroom Parking	-	Gravel	6961	-	-	37500	Good
	Boneyard Parking	10053190	Gravel	14473	65	0.56	77900	Fair
	Auto Tour Route #5 Parking	-	Gravel	2277	-	-	12300	Good
	Mallard Marsh Parking	-	Gravel	3989	-	-	21500	Fair
	Upper Shop Parking	10053190	Gravel	2616	65	0.56	14100	Good
	Shorebird Management Unit Parking	-	Gravel	968	-	-	5200	Good
	Cattail Pond Parking	-	Gravel	9156	-	-	49300	Excellent
	Pintail Pond Parking	-	Gravel	1886	-	-	10200	Good
	Split Levee Parking	-	Native	476	-	-	1100	Good

Table 92 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
St Croix	Kostka WPA Parking	10043725	Native	9354	65	0.73	24700	Good
	Deerpark WPA North Parking	10011879	Native	6151	65	0.79	16200	Fair
	Suckat WPA Parking	10043727	Native	2922	-	-	7700	Fair
	Flaters WPA Parking	10043728	Gravel	4423	65	0.24	27000	Fair
	Alden WPA Parking	10043729	Native	6962	65	0.22	18400	Fair
	Bierbrauer WPA Parking West	10073732	Native	2039	-	-	5400	Fair
	Bierbrauer WPA Parking East	10043732	Gravel	7532	65	0.24	46100	Good
	Hanten WPA Parking	10043733	Gravel	4885	65	0.22	29900	Good
	Amschler WPA Parking	10043734	Native	5830	65	0.55	15400	Poor
	District Office Parking	10011863	Asphalt	8843	-	-	99100	Good
	Somerset WPA Parking	10043738	Native	2011	-	-	5300	Fair
	Prairie Flats-South WPA Parking	10043737	Native	4098	65	0.26	10800	Fair
	Steffens WPA Parking	10043730	Native	6420	-	-	16900	Good
	Ten Mile WPA East Parking	10043722	Gravel	28593	65	0.22	174800	Fair
	Lundy WPA Parking	10043739	Native	4322	65	0.00	11400	Fair
	Kerber WPA Parking	10043740	Native	6286	65	0.22	16600	Fair
	Risberg WPA Parking	10043741	Native	3429	-	-	9000	Fair
	Clapp WPA Kinney Ave Parking	10043742	Gravel	5186	-	-	31700	Good
	Hammond WPA Parking	10043743	Native	2649	-	-	7000	Fair
	Rock Creek WPA Parking	10043723	Native	7078	65	0.22	18700	Fair
	Rose Lee WPA Parking	10043724	Native	2108	65	0.51	5600	Good
	Beyl Parking	10060587	Native	5512	-	-	14500	Good
	Prairie Flats North	10059339	Native	6607	80	0.00	17400	Good
	Erickson WPA Parking	10043735	Gravel	11880	65	0.09	72600	Good
	Betterly WPA Parking	10043736	Gravel	8173	-	-	50000	Good
	Deerpark WPA South Parking	10043731	Asphalt	546	-	-	6100	Good
	Bass Lake Parking	10060593	Gravel	3762	-	-	23000	Good
	Ten Mile WPA West Parking	10043722	Gravel	2639	65	0.22	16100	Good
	Oak Ridge Parking	10059340	Gravel	10807	-	-	66100	Good
	Star Prairie Parking	10060590	Gravel	6475	-	-	39600	Good
	Clear Lake WPA	10060588	Native	6595	-	-	17400	Good
	Kobernick WPA Parking	10060589	Primitive	465	-	-	0	Fair
	Maintenance Parking	10059332	Asphalt	7430	-	-	83300	Good
	Maintenance Rear of Shop Parking	10059332	Gravel	22966	-	-	140400	Good
	Clapp WPA 70th St Parking	10043742	Gravel	7032	-	-	43000	Excellent

Table 93 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Swan Lake NWR	Observation Tower Parking	10036807	Gravel	3099	-	-	15500	Good
	Parking Area P	10036816	Primitive	968	65	0.84	0	Fair
	Parking Area A3	10036816	Gravel	5515	65	0.84	27500	Good
	Parking Area B	10036816	Gravel	989	65	0.84	4900	Fair
	Parking Area B	10036816	Native	1198	65	0.84	2600	Poor
	Taylor Point Fishing Parking	10036811	Native	3412	-	-	7300	Fair
	Parking Area F	10036809	Native	5840	65	0.19	12600	Fair
	Parking Area G	10036816	Native	1410	65	0.84	3000	Fair
	Parking Area H	10036808	Native	4259	-	-	9200	Fair
	Visitor Center Parking	10036805	Gravel	5137	-	-	25600	Poor
	North Swan Lake Agriculture Parking	10036815	Gravel	2370	65	0.38	11800	Good
	Parking Area N	10036812	Gravel	3119	-	-	15600	Good
	Hunting Headquarters Parking	10036815	Gravel	50758	65	0.38	253400	Fair
	Parking Area A4	10036813	Gravel	4753	-	-	23700	Good
	Hunter Blinds Parking W	10060127	Gravel	994	-	-	5000	Good
	Hunter Blinds Parking S	10060124	Gravel	2699	-	-	13500	Good
	Hunter Blinds Parking T	10060125	Gravel	1836	-	-	9200	Good
	Maintenance Parking	10013218	Gravel	28411	-	-	141900	Good
	Parking Area A7	10060128	Gravel	2826	-	-	14100	Good
	Parking Area J	10036813	Gravel	2430	-	-	12100	Fair
	Parking Area C	10036810	Gravel	4638	65	0.21	23200	Good
Tamarac NWR	Pine Lake Ski Trail Parking	10011627	Native	7026	65	0.44	16700	Good
	East Tamarac Landing Parking	10036430	Gravel	6361	65	0.29	35000	Good
	West Entrance Kiosk Parking	10043747	Gravel	11505	65	0.29	63300	Good
	North Tamarac Landing Parking	10036429	Gravel	16945	65	0.29	93200	Fair
	South Chippewa Lake Picnic Parking	10036428	Native	12690	65	0.44	30100	Fair
	Office Parking	10011658	Asphalt	7934	65	0.49	79900	Fair
	South Entrance Kiosk Parking	10043748	Gravel	14657	65	0.29	80600	Good
	Visitor Center Parking	10011658	Asphalt	9928	65	0.49	100000	Fair
	Flat Lake Historic Marker Pullout	-	Gravel	2220	-	-	12200	Fair
	Highway 143 West Information Pullout	-	Gravel	537	-	-	3000	Fair

Table 94 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Tamarac NWR	Highway 143 East Information Pullout	-	Gravel	5778	-	-	31800	Fair
	Highway 26 Information Pullout	-	Native	2520	-	-	6000	Fair
	Cotton Lake Parking Area	10056082	Gravel	20298	65	0.29	111600	Good
	South Tamarac Lake Parking	10057915	Gravel	4711	65	0.78	25900	Good
	Old Indian Trailhead Parking	-	Gravel	1137	-	-	6300	Good
	Wauboose Lake Parking	10057920	Gravel	2571	65	0.63	14100	Good
	Big Egg Lake Parking	10057925	Native	3757	65	0.52	8900	Fair
	Lower Egg Lake Parking	10055192	Native	1334	65	0.36	3200	Fair
	Lost Lake Parking	10057918	Gravel	5275	65	0.63	29000	Fair
	Herfendahl Landing	10011641	Gravel	5979	-	-	32900	Good
	Blackbird Landing Parking	10057916	Gravel	2225	65	0.46	12200	Good
	Pine Lake Landing	10055187	Gravel	3536	65	0.36	19400	Fair
	Maintenance Parking	10060504	Gravel	24228	-	-	133200	Fair
	Employee Parking	10060504	Native	2244	-	-	5300	Good
	Bunkhouse Parking	10060506	Gravel	3627	-	-	19900	Good
	Shop Parking	10060504	Gravel	7578	-	-	41700	Good
Trempealeau NWR	Dike Road Parking	10043751	Gravel	2952	65	0.28	15700	Good
	Trempealeau River Park.	10043755	Gravel	3773	65	0.32	20100	Fair
	Headquarters Parking	10035868	Asphalt	8616	65	0.56	84100	Good
	Observation Deck Park.	10043753	Gravel	3590	65	0.26	19100	Good
	Boat Landing Parking	10011886	Gravel	21769	65	0.78	116000	Fair
	Overlook Parking	10043754	Gravel	11224	65	0.29	59800	Good
	Shop Parking South	10011888	Asphalt	11287	65	0.65	110200	Good
	Entrance Road Turnaround	10011889	Asphalt	2433	65	0.38	23800	Good
	Kiosk Parking	10011903	Gravel	8182	65	0.28	43600	Fair
	Entrance Parking	10035869	Asphalt	2749	-	-	26800	Good
	Marshland Parking	10011908	Asphalt	4885	65	0.57	47700	Good
	River Bottoms Parking	10044399	Gravel	4796	-	-	25600	Good
	Entrance Road Boat Ramp Parking	10011924	Gravel	2283	-	-	12200	Fair
	Prarie View Parking	10043752	Gravel	4817	-	-	25700	Fair
	Shop Parking North	10011888	Gravel	10891	65	0.65	58000	Good

Table 95 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Two Rivers NWR	Lower Swan Lake Boat Ramp Parking	10013760	Asphalt	12130	-	-	128400	Good
	Blooms Landing Boat Ramp Parking	10013763	Gravel	16189	-	-	93500	Fair
	Prairie Pond Boat Ramp Parking	10013793	Gravel	10193	-	-	58900	Good
	Gilead Boat Ramp Parking	10013791	Gravel	21524	65	0.71	124400	Fair
	Lower Swan Lake Pump Station Parking	10035854	Gravel	4570	-	-	26400	Good
	Calhoun Wetlands Pump Station Parking	10035853	Gravel	2133	-	-	12300	Good
	Gilbert Lake Parking	10042890	Gravel	3982	-	-	23000	Good
	Duck Club Parking	-	Asphalt	1738	-	-	18400	Good
	Prairie Pond Pump Station Parking	-	Gravel	2553	-	-	14800	Good
	Headquarters/Visitor Center Parking	10013746	Asphalt	24472	-	-	259100	Good
	Lower Swan Lake Overflow Parking	10013760	Asphalt	2729	-	-	28900	Good
	Employee Parking	10013746	Gravel	4660	-	-	26900	Good
	Shop Parking	10013746	Gravel	36810	-	-	212700	Good
	Apple Creek Parking Area	10035855	Gravel	1579	-	-	9100	Fair
Upper Mississippi - Mc Gregor	Potosi Point Parking Area	-	Gravel	24188	-	-	128900	Fair
	Cold Spring Parking Area	10012569	Gravel	22501	65	0.13	119900	Good
	Bertom Lake Parking Area	10012588	Asphalt	50571	65	0.05	493900	Good
	Glen Lake Boat Ramp Parking	10051819	Asphalt	21372	-	-	208700	Good
	Jay's Lake Parking Area	-	Gravel	42135	-	-	224600	Fair
	Turkey River Parking Area	10012581	Gravel	35420	65	0.57	188800	Good
	Big Slough Parking Area	10012568	Asphalt	28416	-	-	277500	Good
	Winneshiek Boat Ramp Parking Area	10051853	Gravel	9217	-	-	49100	Good
	Winneshiek Parking Area	10012567	Gravel	23420	65	0.79	124800	Good
	Upper Winneshiek Parking Area	10051856	Gravel	16375	-	-	87300	Poor
	New Albin Parking Area	10012564	Gravel	38427	65	0.38	204800	Good
	Ambrough Slough Parking Parking Area	10012573	Gravel	15485	65	0.38	82500	Good

Table 96 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Upper Mississippi - Mc Gregor	Cold Spring Fishing Access Parking Area	10012570	Asphalt	16760	-	-	163700	Fair
	Ambrough Slough Parking Parking Area	10012586	Gravel	8550	65	0.38	45600	Fair
	Headquarters Parking	10012580	Asphalt	9894	-	-	96600	Good
	Bagley Bottoms Parking Area	10012584	Gravel	8988	65	0.39	47900	Good
	Lynn Hollow Parking Area	10012583	Gravel	23870	65	0.76	127200	Fair
	Ballard Tract Parking	-	Gravel	2627	-	-	14000	Good
	Shop Parking	10052308	Gravel	4114	-	-	21900	Fair
	Glen Lake Boat Ramp Gravel Parking	-	Gravel	5775	-	-	30800	Good
	Casseville Maintenance Shop Parking	10051809	Gravel	3942	-	-	21000	Fair
Upper Mississippi River - Lacrosse	Halfway Creek Parking	10011705	Gravel	5566	-	-	29700	Fair
	Highway 26 Parking	10043763	Gravel	6076	-	-	32400	Good
	Round Lake Parking	10011675	Gravel	19594	-	-	104400	Fair
	I-90 Landing Parking	10011685	Asphalt	41736	-	-	407600	Good
	Long Lake Parking	10050592	Asphalt	16212	-	-	158300	Good
	Warehouse Parking	10053996	Asphalt	6433	-	-	62800	Poor
	Brownsville Overlook Parking	10057893	Asphalt	14542	-	-	142000	Excellent
Upper Mississippi - Savana	Ingersoll Wetlands Learning Center Parking	10011822	Asphalt	33899	-	-	331100	Good
	Sloan Marsh Parking	10011813	Asphalt	7639	-	-	74600	Good
	Frog Pond Parking	10011840	Gravel	6330	65	0.78	33700	Good
	Mickelson's Landing Parking	10011833	Gravel	14431	65	0.45	76900	Fair
	Barge Lake Landing Parking (Esmay Slough)	10011795	Gravel	9320	65	0.36	49700	Poor
	Spring Lake Overflow Parking	10011807	Gravel	31712	-	-	169000	Poor
	Spring Lake Parking	10011825	Asphalt	31200	65	0.00	304700	Fair
	Pleasant Creek Parking	10011798	Native	13156	65	0.34	30200	Fair
	River Road Parking	-	Gravel	11804	-	-	62900	Good
	Lost Mound Unit Parking	10052701	Asphalt	1013	-	-	9900	Poor
	Maintenance Front Parking	10011823	Gravel	5863	-	-	31200	Good
	Maintenance Shop Main Parking	10011823	Gravel	38121	-	-	203200	Good
	Prickly Pear Trail Parking	10060495	Gravel	1797	-	-	9600	Good
	Office Parking	10060493	Asphalt	14221	-	-	138900	Good
	Shop Parking	10060491	Gravel	26379	-	-	140600	Good
	Coast Guard Boat Launch Parking	-	Gravel	3682	-	-	19600	Good

Table 97 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Upper Mississippi - Winona	Pontoon Slough Landing	10060234	Gravel	5195	-	-	27700	Good
	Beef Slough Parking	10060235	Gravel	4471	-	-	23800	Fair
	Mertes Slough Handicapped Parking	10011767	Asphalt	4384	-	-	42800	Good
	Mertes Slough Access Parking	10011767	Asphalt	20589	-	-	201100	Good
	Upper McNally Landing Parking	10043763	Asphalt	30533	-	-	298200	Good
	Verchota Landing Parking	10011740	Asphalt	25594	-	-	250000	Good
	Weaver Landing Parking	10011745	Gravel	38916	-	-	207400	Good
	SR 25 Parking	-	Gravel	4726	-	-	25200	Good
	Zumbro Parking	10043776	Gravel	5010	-	-	26700	Good
	Indian Slough Landing Parking	10060233	Gravel	3214	-	-	17100	Fair
	Half Moon Canoe Landing Parking	10011724	Asphalt	11967	-	-	116900	Excellent
	Half Moon Boat Landing Parking	10011722	Asphalt	37017	-	-	361500	Good
	Garvin Brook Bottoms Parking	10060941	Gravel	1366	-	-	7300	Good
	Peterson Lake Landing	10043774	Asphalt	3766	-	-	36800	Good
	Peterson Lake Parking	10043774	Asphalt	6989	-	-	68300	Good
	Barton/Lofgren Parking	10011782	Gravel	1217	-	-	6500	Fair
	Shop Parking	10053996	Asphalt	13849	-	-	135200	Good
	Przybylski's Access Parking	10011755	Gravel	2440	-	-	13000	Good
	McNally Landing Service Parking	10060942	Native	2850	-	-	6600	Fair
Whittlesey Creek NWR	Terwilliger Road Parking	10050745	Gravel	2926	-	-	16900	Fair
	Poppe Parking	10050741	Gravel	2937	-	-	17000	Fair
	Andrus Access Parking	10050743	Gravel	1974	-	-	11400	Good
	Educational Center Parking	10054897	Gravel	9647	-	-	55700	Good
	Educational Center Handicapped Parking	10054897	Gravel	543	-	-	3100	Excellent
	Maintenance and Service Building Parking	10054897	Gravel	26705	-	-	154300	Good
Windom WMD	Lake Augusta Parking	10043783	Native	4072	65	0.32	7600	Fair
	Harden Lake Parking #1	10055517	Native	4153	65	0.32	7700	Fair
	Watonwan River Parking	10043786	Native	6950	65	0.32	13000	Fair
	Des Moines River Parking	10043781	Native	4445	65	0.32	8300	Fair
	Cottonwood Lake Parking	10043780	Native	5309	65	0.32	9900	Fair

Table 98 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Windom WMD	Mountain Lake Parking	10043784	Gravel	3447	65	0.32	14900	Good
	Wolf Lake Parking #1	10012216	Gravel	6935	65	0.32	30000	Fair
	String Lake Parking	10043801	Native	6980	65	0.32	13000	Fair
	Timber Lake Parking	10043803	Native	5785	65	0.32	10800	Fair
	Halls Lake Parking #1	10012202	Native	6219	65	0.16	11600	Fair
	Halls Lake Parking #2	10012202	Native	5854	65	0.16	10900	Fair
	Blixseth Parking	10055515	Gravel	3857	65	0.32	16700	Excellent
	Harder Lake West Parking	10055517	Gravel	7185	65	0.32	31000	Good
	Harder Lake North Parking	10055518	Native	13323	65	0.32	24800	Fair
	Buffalo Lake Parking	10055528	Native	4098	65	0.32	7600	Fair
	Slaughter Slough Parking	10055529	Native	6460	65	0.14	12000	Good
	Graham Lakes Parking	10055530	Native	4377	65	0.32	8200	Fair
	Bloom Parking	10055532	Native	4603	65	0.32	8600	Fair
	Lake Bella Parking	10055533	Native	6280	65	0.14	11700	Good
	Sioux River Parking	10055534	Native	7444	65	0.32	13900	Fair
	Skunk Creek Parking	10055535	Native	4617	65	0.32	8600	Fair
	Pletz Marsh Parking	10055536	Native	6557	65	0.72	12200	Poor
	Holy Trinity Parking	10055537	Native	4678	65	0.32	8700	Fair
	Hunter Parking	10055538	Native	4633	65	0.32	8600	Fair
	Pilot Grove Lake Parking	10055539	Gravel	6990	65	0.32	30200	Good
	Maple River Parking	10055540	Native	4294	65	0.32	8000	Fair
	Foster Creek Parking	10055541	Native	4213	65	0.14	7900	Good
	Goose Creek Parking	10055542	Gravel	6986	65	0.73	30200	Good
	Kiester Parking	10055543	Native	4336	65	0.32	8100	Fair
	Headquarters Parking	10050800	Asphalt	34868	-	-	276000	Good
	Dovray Parking	10055408	Native	4636	65	0.32	8600	Fair
	Talcott Lake Parking	10055531	Native	5536	65	0.32	10300	Fair
	Long Lake Parking #2	10043796	Gravel	6402	65	0.98	27700	Good
	Spirit Lake Parking	10043800	Gravel	6166	65	0.32	26600	Good

Table 99 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Windom WMD	Rush Lake Parking	10043798	Native	3672	65	0.32	6800	Fair
	Sioux Forks Parking #1	10043799	Native	5694	65	0.17	10600	Fair
	Little Sioux Parking #2	10043795	Native	6386	65	0.32	11900	Fair
	Little Sioux Parking #1	10043795	Native	7626	65	0.32	14200	Fair
	Iowa Parking #2	10043793	Native	4566	65	0.24	8500	Fair
	Iowa Parking #1	10043793	Native	5053	65	0.24	9400	Fair
	Round Lake Parking	10043797	Native	5912	65	0.32	11000	Fair
	Worthington Parking	10043804	Gravel	8623	65	0.36	37200	Good
	La Crosse Parking	10043794	Native	1971	65	0.32	3700	Fair
	Big Slough Parking	10043802	Native	6135	65	0.25	11400	Fair
	Westbrook Parking	10043787	Native	6383	65	0.32	11900	Fair
	Long Lake Parking #1	10043796	Native	6105	65	0.98	11400	Fair
	Storden Parking	10043785	Native	6081	65	0.32	11300	Fair
	Touch the Sky Southeast Parking	10055200	Native	3461	65	0.14	6400	Excellent
	Touch the Sky North Parking	10055202	Native	3263	65	0.14	6100	Good
	Touch the Sky Southwest Parking	10055202	Native	2911	65	0.14	5400	Good
	Pipestone WPA Parking	10055545	Gravel	6405	65	0.14	27700	Fair
	Big Slough WPA Access Road	10043802	Native	4084	65	0.25	7600	Good
	5-Mile Corner WPA Access Parking	10059881	Native	3712	-	-	6900	Good
	Mason WPA Access Parking	10059882	Native	4786	-	-	8900	Fair
	Jerry Schotzko WPA Parking	10060681	Native	5530	-	-	10300	Good
	Pletz Marsh Parking	10043791	Native	3819	-	-	7100	Good
	Iowa WPA Southwest Parking	10043793	Native	4754	65	0.24	8900	Fair
	Souix Forks WPA South Parking	10043799	Native	4431	65	0.17	8300	Fair
	Boot Lake Parking	10012178	Gravel	5056	65	0.38	21800	Excellent
	Fish Lake Parking	10043782	Gravel	4283	65	0.65	18500	Good
	Wolf Lake Cold Storage Parking	10055782	Gravel	17511	65	0.37	75600	Fair
	Wolf Lake Parking #2	10012216	Gravel	8420	65	0.32	36400	Good
	Headquarters Maintenance Parking	10060684	Gravel	20534	-	-	88700	Excellent

Table 100 . RIP and SAMMS Parking Lot Data by Unit (continuation)

FWS Unit	Name	Asset No.	Surface	Area Sq. Ft	API	FCI	CVR	Condition
Windom WMD	Wolf Lake Parking #3	10012216	Gravel	6050	65	0.32	26100	Good
	Swan Lake Parking	10060688	Native	4063	-	-	7600	Fair
	Harden Lake Parking #2	10055518	Gravel	6672	65	0.32	28800	Good
	Pierce Lake Parking	10055515	Gravel	4452	65	0.32	18600	Good
	Prescott WPA Parking	10055515	Native	4341	65	0.32	8100	Fair
	Iowa, Chicago & Eastern Access Road Parking	10060692	Native	5312	-	-	9900	Fair
	Turtle Creek Parking	10043788	Gravel	6964	65	0.32	30100	Good
	Lost Lake WPA Access Road Parking	10060691	Gravel	4292	-	-	18500	Excellent

RIP - Cycle 4, SAMMS Report December 2010.
http://cflgis1.cflhd.gov/egis/ds/ReportSearch.aspx
GIS files - CFLHD - November 22, 2010

Table 101 Combined SAMMS and RIP FWS Trail Data

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
IOWA	10012849	DeSoto NWR	Wood Duck Trail	Mowed	Excellent	55	0.9
	10012866		Grassland Nature Trail	Gravel	Excellent	55	0.14
	10012829		Cottonwood Nature Trail	Native	Excellent	55	0.33
	10012828		Missouri Meander Foot Trail	Gravel	Excellent	-	-
	10012846		Missouri Meander Foot Trail w/viewing area	Concrete	Excellent	65	0.84
	10012870		Bertrand Excavation Site Trail	Asphalt	Good	55	1.66
				Gravel	Excellent	55	1.66
				Boardwalk	Excellent	55	1.66
	10055404	Neal Smith NWR	Basswood Trail	Mowed	Excellent	-	-
	10055405		Savanna Trail	Gravel	Excellent	-	-
				Wood Chip	Excellent	-	-
	10014084		Prairie Overlook Trail	Concrete	Excellent	65	0.47
	10014084		Tallgrass Trail	Asphalt	Good	65	0.47
	10013833	Port Louisa NWR	Muscatine Slough	Admin Road	Not rated	-	-
	10013834		Interpretive Trail	Native	Excellent	65	0.99
					Good	65	0.99
				Admin Road	Not rated	65	0.99
	10012591	McGregor District NWR	Sturgeon Slough Hiking Trail	Native	Excellent	65	0.9
	N/A		Guttenburg Boat Launch Trail	Mowed	Excellent	-	-

Table 102 Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
ILLINOIS	10013996	Chautauqua NWR	Chautauqua Nature Trail	Boardwalk	Excellent	65	1
				Gravel	Excellent	65	1
	10014002		Eagle Bluff Trail	Gravel	Excellent	65	1
	10013622	Crab Orchard NWR	Harmony Trail	Gravel	Excellent	65	0.33
				Native	Excellent	65	0.33
	N/A		Prairie Trail	Mowed	Excellent	-	-
	N/A		Two Ponds Trail	Mowed	Excellent	-	-
	10046426		Wild Turkey Trail	Native	Excellent	-	-
	10049427		Rocky Bluff Trail	Gravel	Excellent	65	0.43
				Native	Excellent	65	0.43
	N/A		Grassy Creek Trail	Asphalt	Fair	-	-
	N/A		Woodland Nature Trail	Asphalt	Good	-	-
				Gravel	Excellent	-	-
	10012666	Cypress Creek NWR	Hickory Bottoms Trail	Native	Excellent	80	0.28
					Fair	80	0.28
				Mowed	Good	80	0.28
					Very Poor	80	0.28
	10045689		Limekiln Springs Trail	Native	Excellent	80	0.62
					Fair	80	0.62
				Boardwalk	Excellent	80	0.62
	10014055	Emiquon NWR	Belle Rose Trail	Mowed	Excellent	65	0.02
				Native	Excellent	65	0.02
				Admin Road	Not rated	65	0.02
	10014037	Meredosia NWR	Nature Trail	Gravel	Excellent	65	0.18
	10014039			Boardwalk	Excellent	-	-
	10011844	Savanna District - Upper Mississippi	Great River Bike Trail	Gravel	Excellent	-	-

Table 103 Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
INDIANA	10054481	Muscatatuck NWR	Richart Trail	Mowed	Excellent	-	-
				Native	Very Poor	-	-
	10059187		Bird Trail	Native	Very Poor	65	0.25
	N/A		Wood Duck Trail	Gravel	Excellent	-	-
	10054487		River Trail - East	Mowed	Good	65	0.84
					Very Poor	65	0.84
				Native	Excellent	65	0.84
	10054487		River Trail - West	Native	Fair	65	0.84
	10054487		Myer's Cabin Trail	Native	Good	65	0.84
	10054486		Persimmon Ponds Trail	Mowed	Excellent	65	0.84
	10054482		Mallard Pond Trail	Mowed	Poor	65	0.47
	10059188		Turkey Trail	Native	Fair	65	0.45
					Very Poor	65	0.45
	10054484		Endicott Trail	Mowed	Very Poor	-	-
				Native	Excellent	-	-
	10010623		Chestnut Ridge Trail	Asphalt	Excellent	65	0.03
				Gravel	Excellent	65	0.03
				Boardwalk	Excellent	65	0.03
	10049634		Sandhill Ponds Trail	Concrete	Excellent	-	-
				Mowed	Excellent	-	-
	10054283	Patoka River NWR	Hugh Boyd Trail	Gravel	Excellent	65	0.91
	10055145		Bird Trail	Mowed	Excellent	-	-
					Fair	-	-
	10054284		South Fork Fishing Trail	Native	Excellent	65	0.11
				Boardwalk	Excellent	65	0.11

Table 104 Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
MICHIGAN	10056120	Seney NWR	Bear Hollow Loop Ski Trail	Mowed	Excellent	-	-
				Admin Road	Not rated	-	-
	10056120		Cub Hollow Ski Trail	Native	Excellent	-	-
	10056120		Otter Run Ski Trail	Admin Road	Not rated	-	-
	10056120		Goose Pen Bend Trail	Admin Road	Not rated	-	-
	10056120		Manistique River Run Trail	Mowed	Excellent	-	-
				Admin Road	Not rated	-	-
	10056120		Smith Farm Trail	Mowed	Excellent	-	-
				Admin Road	Not rated	-	-
	10056120		Skunk Ridge Ski Trail	Mowed	Excellent	-	-
	10010432		Pine Ridge Nature Trail	Mowed	Excellent	65	0.13
				Admin Road	Not rated	65	0.13
				Boardwalk	Excellent	65	0.13
				Native	Excellent	65	0.13
	10036101	Shiawassee NWR	Ferguson Bayou Nature Trail	Native	Excellent	65	0.45
				Admin Road	Not rated	65	0.45
	10036042		Stroebel Woodland Nature Trail	Native	Excellent	65	0.06
					Good	65	0.06
	10055674		Cass River Nature Trail	Native	Excellent	45	0.34
					Fair	45	0.34
	10036103		Green Point Nature Trail	Native	Excellent	65	0.53
				Wood Chip	Excellent	65	0.53
				Gravel	Excellent	65	0.53

Table 105 Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
MINNESOTA	10042686	Agassiz NWR	Maakstad Trail	Mowed	Excellent	-	-
	10011208		Headquarters Hiking Trail	Gravel	Excellent	-	-
				Boardwalk	Excellent	-	-
	10056625		Rodahl Trail	Admin Road	Not rated	30	0.8
	10055160	Big Stone NWR	Granite Outcrop Trail	Native	Excellent	-	-
	10036164		No Bridge Fishing Area Hiking Trail	Mowed	Excellent	-	-
	10055156		Kaercher Overlook Trail	Asphalt	Excellent	65	0
	10011588	Crane Meadows NWR	Platte River Trail	Gravel	Excellent	65	0.98
				Mowed	Excellent	65	0.98
	N/A	Detroit Lakes WMD	Prairie Marsh Interpretive Trail	Asphalt	Excellent	-	-
				Gravel	Excellent	-	-
				Admin Road	Not rated	-	-
	10012158		Boardwalk Trail	Boardwalk	Excellent	-	-
	10012124	Fergus Falls WMD	Native Prarie Trail	Mowed	Excellent	-	-
			Malarad Marsh Trail	Gravel	Excellent	-	-
				Gravel	Good	-	-
				Boardwalk	Excellent	-	-
			Wetland Way Trail	Gravel	Excellent	-	-
			Tatanka Trail	Gravel	Excellent	-	-
				Mowed	Excellent	-	-
			Tintah Trail	Native	Poor	-	-
	10012604	Hamden Slough NWR	Hesby Memorial Trail	Concrete	Excellent	-	-

Table 106 . Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
MINNESOTA	10012355	Minnesota Valley NWR	Bluff Trail	Gravel	Excellent	-	-
				Boardwalk	Excellent	-	-
				Native	Excellent	-	-
					Good	-	-
					Poor	-	-
					Very Poor	-	-
	10012412		Hog Back Ridge Trail	Gravel	Excellent	65	0.09
				Native	Excellent	65	0.09
				Boardwalk	Excellent	65	0.09
				Admin Road	Not rated	65	0.09
	10012517		Middle Road Trail	Admin Road	Not rated	-	-
	N/A		Observation Deck Trail	Native	Excellent	-	-
	10012512		Mazomani Trail	Gravel	Excellent	-	-
	10012391			Mowed	Excellent	-	-
	10012391				Good	-	-
	10012391			Native	Excellent	-	-
	10012482		Chaska Trail	Admin Road	Not rated	-	-
	10012451		Fisher Lake Trail	Admin Road	Not rated	-	-
	10012448		Blue Lake Trail	Admin Road	Not rated	-	-
	10012453		Kopp Trail	Admin Road	Not rated	-	-
	10049371		Bloomington Ferry Trail	Admin Road	Not rated	65	0.74
	10012428		Black Dog Trail	Gravel	Excellent	65	0.47
	10012434			Mowed	Excellent	65	0.46
	10012365		Kelly Trail	Admin Road	Not rated	65	0.25
	10012356		Bass Ponds Trail	Admin Road	Not rated	65	0.3
				Gravel	Excellent	65	0.3
	10012519		Little Prairie Loop Trail	Admin Road	Not rated	-	-
	10012347		Hillside Trail	Asphalt	Excellent	65	0.84
				Gravel	Excellent	65	0.84
	10012355		Bluff Prairie Path	Asphalt	Good	-	-
					Fair	-	-

Table 107 . Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
MINNESOTA	10054546	Morris WMD	Prairie Pothole Trail	Mowed	Excellent	-	-
	10011958		Froland Nature Trail	Mowed	Excellent	65	1
	10054545		Prairie Pothole Handicap Accessible Trail	Asphalt	Excellent	65	0.84
	10012045	Rydell NWR	Tamarac Lake Trail	Admin Road	Not rated	80	0.33
				Boardwalk	Excellent	80	0.33
	10053158		Rice Lake	Asphalt	Excellent	80	0.35
	10053159		Round Lake Trail	Asphalt	Excellent	80	0.15
	10012045		Church Lake Trail	Asphalt	Excellent	80	0.33
	10053157		Golden Pond Trail	Asphalt	Excellent	-	-
				Boardwalk	Excellent	-	-
	N/A		Golden Pond Observation Deck Trail	Boardwalk	Excellent	-	-
	10011586	Sherburne NWR	Blue Hill Trail	Native	Excellent	65	0.47
	10011521		Mahomen Trail	Mowed	Excellent	80	0.46
	10058370		Prairie Trail	Mowed	Excellent	65	0.73
				Boardwalk	Excellent	65	0.73
	10011569		Nelson Pool #13 Trail	Native	Excellent	65	0.54
	10058372		Woodland Trail	Native	Excellent	65	0.84
	10011567		Old Savanna Trail	Asphalt	Excellent	-	-
	10055183	Tamarac NWR	Pine Lake Loop	Mowed	Excellent	65	0.9
				Admin Road	Not rated	65	0.9
	10055182		Tamarac Lake Loop	Mowed	Excellent	65	0.86
	10055180		Visitor Center Trail	Mowed	Excellent	65	0.79
	10057898		Booth Lake Trail	Admin Road	Not rated	80	0.13
	10055179		Old Indian Trail	Native	Excellent	65	0.14
	10055243	Windom WMD	Wolf Lake Trail	Native	Under Const.	-	-
	10012194		Worthington WPA Trail	Gravel	Excellent	65	0.52
					Good	65	0.52

Table 108 . Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
MISSOURI	10051878	Big Muddy National Fish and Wildlife Refuge	Overton Bottoms Trail	Admin Road	Not rated	65	0.29
	10042856		Lewis and Clark Trail of Discovery	Gravel	Excellent	80	0.82
				Native	Poor	80	0.82
	10055724		Historic River Landing Trail	Gravel	Good	-	-
	10051884		Boone's Crossing Trail	Wood Chip	Excellent	65	0.11
	10057300	Mingo NWR	Sweets Cabin Trail	Native	Excellent	55	0.91
	10013023		Hartz Pond Trail	Native	Fair	55	0.91
	10013006		Bluff Trail	Native	Excellent	65	0.15
				Gravel	Excellent	65	0.15
				Asphalt	Fair	65	0.15
	10013005		Boardwalk Nature Trail	Boardwalk	Good	-	-
				Boardwalk	Excellent	-	-
				Asphalt	Poor	-	-
	N/A		Rockhouse Marsh Overlook Trail	Asphalt	Poor	-	-
	10013141	Squaw Creek NWR	Loess Bluff Trail	Gravel	Excellent	-	-
				Native	Excellent	-	-
				Wood Chip	Excellent	-	-
	N/A		Eagle Overlook Trail	Admin Road	Not rated	-	-
	10043008		Callow Memorial Trail	Asphalt	Excellent	-	-
	10013221	Swan Lake NWR	Foot Trail	Wood Chip	Excellent	-	-
				Native	Excellent	-	-
OHIO	10010811	Ottawa NWR	Wildlife Trail	Gravel	Excellent	65	0.05
				Boardwalk	Excellent	65	0.05
				Mowed	Excellent	65	0.05
				Admin Road	Not rated	65	0.05

Table 109 . Combined SAMMS and RIP FWS Trail Data (continuation)

State	Asset ID	Service Unit	Name	Surface	Condition	API	FCI
WISCONSIN	10011306	Horicon NWR	Redhead Trail	Native	Excellent	-	-
	10011307		Red Fox Nature Trail	Native	Excellent	-	-
	10041739		Viewing Area Trail	Native	Excellent	-	-
				Asphalt	Excellent	-	-
	10011309		Deer Track Trail	Native	Excellent	-	-
	10011310		Two Hawks Trail	Native	Excellent	-	-
	10041738		Connection to Wild Goose State Park	Asphalt	Excellent	-	-
	10011308		Egret Trail	Gravel	Excellent	-	-
				Asphalt	Excellent	-	-
	10053999	LaCrosse District	Goose Island Interpretive Trail	Mowed	Excellent	-	-
	10011865	St. Croix WMD	Prairie Trail	Mowed	Good	-	-
	N/A	Trempealeau NWR	Nature Trail	Mowed	Excellent	-	-
	10011913		Prairie View Loop Trail	Mowed	Excellent	-	-
	10011894		Pine Creek Dike Trail	Mowed	Excellent	-	-
	10044399		River Bottom Road	Admin Road	Not rated	-	-
	10011922		Oxbow Dike	Admin Road	Not rated	-	-
	10011890		Delta Road	Admin Road	Not rated	65	0.17
	10011893		Lower Diversion Dike	Admin Road	Not rated	-	-
	10011896		Kieps Island Dike	Admin Road	Not rated	-	-
	10011910		Deck Trail	Asphalt	Good	-	-
	10054901	Whittlesey Creek NWR	Coaster Classroom Trail	Gravel	Excellent	-	-

Table 110 . FWS Trail Deficiencies

State	Service Unit	Type of deficiency	Number of Deficient Locations
IOWA	DeSoto NWR	Erosion	1
		Trail Structure	1
	Neal Smith NWR	Erosion	2
		Drainage	1
	Port Louisa NWR	Erosion	4
ILLINOIS	Cypress Creek NWR	Trail Structure	2
		Drainage	1
		Erosion	2
	Savanna District - Upper Mississippi	Erosion	10
INDIANA	Muscatatuck NWR	Erosion	16
		Drainage	32
	Patoka River NWR	Drainage	2
MICHIGAN	Shiawassee NWR	Drainage	34
		Trail Structure	1
		Erosion	11
MINNESOTA	Fergus Falls WMD	Erosion	2
		Trail Structure	1
	Minnesota Valley NWR	Trail Structure	9
		Drainage	2
		Erosion	11
	Windom WMD	Trail Structure	1
MISSOURI	Big Muddy National Fish and Wildlife Refuge	Erosion	4
		Drainage	1
	Mingo NWR	Erosion	2
		Trail Structure	2
WISCONSIN	Horicon NWR	Drainage	4
		Erosion	2
		Trail Structure	1
	LaCrosse District	Erosion	1
	St. Croix WMD	Erosion	1
	Trempealeau NWR	Erosion	1

Source: U.S. Fish and Wildlife Service, RIP Cycle 3 (2007), Cycle 4 not available for deficiencies.

Table 111 . Road Conditions by Surface Type

State	Service Unit	Surface	Condition	Miles	% in Unit
IOWA	Boyer Chute NWR	Asphalt	Fair	2.38	28%
		Gravel	Good	1.46	17%
		Gravel	Fair	1.17	14%
		Native	Good	1.18	14%
		Native	Fair	2.26	27%
	DeSoto NWR	Asphalt	Excellent	5.89	22%
		Asphalt	Fair	3.12	12%
		Asphalt	Poor	0.45	2%
		Gravel	Excellent	7.49	28%
		Gravel	Good	4.65	17%
		Gravel	Fair	0.10	0%
		Native	Good	3.50	13%
		Native	Fair	1.06	4%
		Primitive	Good	0.66	2%
	Driftless Area NWR	Gravel	Excellent	0.16	21%
		Native	Good	0.07	9%
		Native	Fair	0.53	70%
	Iowa WMD	Gravel	Excellent	1.60	100%
	McGregor District	Asphalt	Poor	0.22	4%
		Gravel	Excellent	0.67	14%
		Gravel	Good	2.15	44%
		Gravel	Fair	0.90	18%
		Primitive	Good	0.98	20%
	Neal Smith NWR	Asphalt	Fair	4.75	59%
		Gravel	Excellent	0.75	9%
		Gravel	Good	0.61	8%
		Gravel	Fair	0.52	6%
		Native	Good	0.51	6%
		Native	Fair	0.75	9%
		Primitive	Good	0.15	2%

Table 112 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
IOWA	Port Louisa NWR	Asphalt	Poor	0.05	0%
		Gravel	Excellent	0.89	5%
		Gravel	Good	8.40	44%
		Gravel	Fair	0.78	4%
		Native	Excellent	0.43	2%
		Native	Good	6.15	33%
		Native	Fair	2.20	12%
	Union Slough NWR	Gravel	Excellent	0.19	3%
		Gravel	Good	4.41	76%
		Native	Good	1.23	21%
ILLINOIS	Chautauqua NWR	Concrete	Good	0.14	1%
		Concrete	Fair	0.13	1%
		Asphalt	Fair	0.47	4%
		Gravel	Excellent	1.05	9%
		Gravel	Good	9.53	83%
		Native	Good	0.19	2%
	Crab Orchard NWR	Concrete	Good	0.10	0%
		Concrete	Fair	2.25	2%
		Concrete	Poor	1.42	1%
		Asphalt	Excellent	2.24	2%
		Asphalt	Good	1.60	1%
		Asphalt	Fair	29.99	23%
		Asphalt	Poor	11.68	9%
		Gravel	Excellent	10.64	8%
		Gravel	Good	50.48	38%
		Gravel	Fair	4.91	4%
		Gravel	Poor	0.51	0%
		Native	Good	9.68	7%
		Native	Fair	3.83	3%
		Primitive	Good	0.94	1%
		Primitive	Fair	2.19	2%
		Primitive	Poor	0.08	0%

Table 113 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
ILLINOIS	Cypress Creek NWR	Asphalt	Fair	0.59	2%
		Gravel	Excellent	3.15	9%
		Gravel	Good	2.38	7%
		Gravel	Fair	0.88	3%
		Native	Excellent	1.10	3%
		Native	Good	21.62	63%
		Native	Fair	3.72	11%
		Native	Poor	0.07	0%
		Primitive	Good	0.96	3%
	Emiquon NWR	Gravel	Good	0.39	6%
		Native	Excellent	5.61	89%
		Primitive	Fair	0.32	5%
	Meredosia NWR	Gravel	Good	0.23	4%
		Gravel	Failed	0.10	2%
		Native	-	5.04	94%
	Savanna District	Asphalt	Excellent	1.02	2%
		Asphalt	Good	0.08	0%
		Asphalt	Fair	6.97	12%
		Asphalt	Poor	14.58	25%
		Gravel	Excellent	19.58	33%
		Gravel	Good	4.97	8%
		Gravel	Fair	0.72	1%
		Native	Excellent	1.08	2%
		Native	Good	7.13	12%
		Native	Fair	3.35	6%
	Two Rivers NWR	Asphalt	Fair	0.67	3%
		Gravel	Excellent	4.27	20%
		Gravel	Good	10.82	50%
		Gravel	Fair	0.92	4%
		Native	Good	4.49	21%
		Primitive	Good	0.40	2%
	Middle Mississippi River NWR	Gravel	Good	0.14	3%
		Native	Fair	2.29	55%
		Primitive	Good	1.77	42%

Table 114 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
INDIANA	Big Oaks NWR	Gravel	Excellent	37.28	46%
		Gravel	Good	37.75	46%
		Gravel	Fair	6.18	8%
	Muscatatuck NWR	Concrete	Fair	0.15	1%
		Asphalt	Excellent	0.59	3%
		Asphalt	Good	0.20	1%
		Asphalt	Fair	0.09	0%
		Gravel	Excellent	7.21	34%
		Gravel	Good	4.51	21%
		Native	Excellent	0.15	1%
		Native	Good	4.08	19%
		Native	Fair	3.74	18%
		Primitive	Good	0.50	2%
	Patoka River NWR	Gravel	Excellent	0.17	3%
		Gravel	Good	0.78	14%
		Gravel	Fair	0.57	11%
		Native	Excellent	0.05	1%
		Native	Good	0.16	3%
		Native	Fair	1.72	32%
		Primitive	Excellent	0.03	1%
		Primitive	Good	0.72	13%
		Primitive	Fair	1.19	22%
MICHIGAN	Detroit Lakes WMD	Gravel	Excellent	0.37	13%
		Gravel	Good	1.70	61%
		Gravel	Fair	0.41	15%
		Native	Excellent	0.13	5%
		Native	Good	0.04	1%
		Primitive	Good	0.15	5%
	Detroit River International Wildlife Refuge	Gravel	Excellent	0.10	16%
		Gravel	Good	0.40	63%
		Native	Good	0.14	22%
	Michigan WMD	Gravel	Good	0.27	100%

Table 115 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
MICHIGAN	Seney NWR	Asphalt	Fair	0.22	0%
		Asphalt	Poor	1.19	1%
		Gravel	Excellent	34.56	37%
		Gravel	Good	27.24	29%
		Gravel	Fair	1.42	2%
		Native	Good	12.27	13%
		Native	Fair	12.23	13%
		Native	Poor	1.07	1%
		Primitive	Excellent	0.14	0%
		Primitive	Good	1.68	2%
		Primitive	Fair	2.23	2%
	Shiawassee NWR	Gravel	Excellent	9.88	30%
		Gravel	Good	6.20	19%
		Native	Excellent	0.50	2%
		Native	Good	7.65	23%
		Native	Fair	5.50	17%
		Primitive	Good	2.41	7%
		Primitive	Fair	0.50	2%
MINNESOTA	Agassiz NWR	Gravel	Excellent	29.31	28%
		Gravel	Good	17.15	17%
		Gravel	Fair	2.57	2%
		Native	Good	28.52	28%
		Native	Fair	21.62	21%
		Native	Poor	3.90	4%
		Primitive	Good	0.15	0%
	Big Stone NWR	Asphalt	Excellent	4.48	23%
		Asphalt	Good	1.02	5%
		Asphalt	Poor	0.69	3%
		Gravel	Excellent	7.82	39%
		Gravel	Good	3.53	18%
		Native	Good	1.91	10%
		Native	Fair	0.45	2%

Table 116 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
MINNESOTA	Crane Meadows NWR	Gravel	Excellent	0.62	82%
		Gravel	Good	0.14	18%
	Fergus Falls WMD	Asphalt	Excellent	0.03	0%
		Asphalt	Good	0.09	1%
		Gravel	Excellent	0.95	7%
		Gravel	Good	3.39	27%
		Gravel	Fair	0.65	5%
		Native	Good	0.84	7%
		Native	Fair	1.61	13%
		Native	Failed	0.62	5%
		Primitive	Excellent	0.23	2%
		Primitive	Good	1.69	13%
		Primitive	Fair	2.61	21%
	Glacial Ridge NWR	Native	Good	1.13	22%
		Primitive	Good	4.00	78%
	Hamden Slough NWR	Gravel	Good	1.02	39%
		Primitive	Good	0.33	13%
		Primitive	Fair	1.28	49%
	Litchfield WMD	Asphalt	Excellent	0.11	3%
		Gravel	Excellent	0.48	14%
		Gravel	Good	0.44	13%
		Gravel	Failed	0.12	4%
		Native	Excellent	0.34	10%
		Native	Good	0.91	27%
		Native	Fair	0.46	13%
		Native	Failed	0.33	10%
		Primitive	Good	0.23	7%
	Minnesota Valley NWR	Asphalt	Excellent	1.04	3%
		Asphalt	Fair	1.79	5%
		Gravel	Excellent	6.45	17%
		Gravel	Good	9.42	25%
		Native	Good	15.92	42%
		Native	Fair	2.36	6%
		Primitive	Excellent	0.72	2%

Table 117 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
MINNESOTA	Minnesota Valley WMD	Gravel	Excellent	0.59	26%
		Gravel	Good	0.24	11%
		Native	Good	1.19	53%
		Primitive	Excellent	0.22	10%
	Morris WMD	Gravel	Good	5.65	50%
		Native	Good	0.68	6%
		Native	Fair	0.57	5%
		Native	Failed	1.81	16%
		Primitive	Good	0.95	8%
		Primitive	Fair	1.55	14%
		Primitive	Failed	0.12	1%
	Rice Lake NWR	Asphalt	Excellent	0.13	1%
		Gravel	Excellent	11.11	51%
		Gravel	Good	6.45	29%
		Native	Good	2.45	11%
		Native	Fair	1.85	8%
	Rydell NWR	Asphalt	Excellent	0.02	0%
		Asphalt	Fair	0.12	1%
		Gravel	Excellent	5.18	55%
		Gravel	Good	2.17	23%
		Gravel	Fair	0.08	1%
		Native	Good	0.70	7%
		Primitive	Excellent	0.04	0%
		Primitive	Good	1.02	11%
		Primitive	Fair	0.14	1%
	Sherburne NWR	Asphalt	Fair	0.10	0%
		Gravel	Excellent	16.70	34%
		Gravel	Good	8.87	18%
		Gravel	Fair	0.49	1%
		Native	Excellent	0.26	1%
		Native	Good	10.49	21%
		Native	Fair	7.46	15%
		Primitive	Excellent	0.20	0%
		Primitive	Good	2.77	6%
		Primitive	Fair	1.64	3%

Table 118 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
MINNESOTA	Tamarac NWR	Asphalt	Poor	0.32	1%
		Gravel	Excellent	10.71	18%
		Gravel	Good	16.89	29%
		Gravel	Fair	4.05	7%
		Native	Excellent	0.38	1%
		Native	Good	21.05	36%
		Native	Fair	0.84	1%
		Primitive	Good	0.71	1%
		Primitive	Fair	4.15	7%
	Windom WMD	Asphalt	Fair	0.27	4%
		Gravel	Good	1.70	26%
		Gravel	Fair	0.54	8%
		Native	Good	2.59	40%
		Native	Fair	0.31	5%
		Primitive	Good	0.77	12%
		Primitive	Fair	0.32	5%
	Winona District	Asphalt	Excellent	0.28	41%
		Asphalt	Good	0.19	28%
		Gravel	Excellent	0.21	31%
MISSOURI	Big Muddy National Fish and Wildlife Refuge	Gravel	Excellent	1.49	9%
		Gravel	Good	6.66	42%
		Gravel	Fair	1.64	10%
		Native	Excellent	0.08	0%
		Native	Good	5.03	31%
		Native	Fair	0.62	4%
		Primitive	Good	0.52	3%
	Clarence Cannon NWR	Gravel	Excellent	4.48	49%
		Gravel	Good	3.74	41%
		Native	Good	0.88	10%
	Great River NWR	Gravel	Excellent	1.50	22%
		Gravel	Good	5.35	78%

Table 119 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
MISSOURI	Mingo NWR	Asphalt	Excellent	0.90	2%
		Asphalt	Good	0.15	0%
		Asphalt	Fair	6.34	12%
		Asphalt	Poor	1.05	2%
		Gravel	Excellent	22.19	42%
		Gravel	Good	11.04	21%
		Gravel	Fair	1.83	3%
		Native	Good	2.71	5%
		Native	Fair	3.88	7%
		Primitive	Good	3.09	6%
	Squaw Creek NWR	Asphalt	Good	0.52	2%
		Asphalt	Fair	0.20	1%
		Gravel	Excellent	10.13	34%
		Gravel	Good	3.13	10%
		Native	Excellent	0.22	1%
		Native	Good	11.42	38%
		Native	Fair	4.01	13%
		Primitive	Good	0.37	1%
	Swan Lake NWR	Gravel	Excellent	15.77	64%
		Gravel	Good	7.59	31%
		Gravel	Fair	1.07	4%
		Primitive	Good	0.24	1%
OHIO	Cedar Point NWR	Gravel	Excellent	2.22	20%
		Gravel	Good	5.42	49%
		Gravel	Fair	1.10	10%
		Native	Good	1.56	14%
		Native	Fair	0.75	7%
	Ottawa NWR	Asphalt	Excellent	0.63	1%
		Asphalt	Fair	0.63	1%
		Asphalt	Poor	0.15	0%
		Gravel	Excellent	10.86	23%
		Gravel	Good	21.62	45%
		Gravel	Fair	2.10	4%
		Native	Good	7.29	15%
		Native	Fair	4.00	8%
		Primitive	Excellent	0.07	0%
		Primitive	Good	0.30	1%
		Primitive	Fair	0.57	1%

Table 120 . Road Conditions by Surface Type (continuation)

State	Service Unit	Surface	Condition	Miles	% in Unit
WISCONSIN	Fox River NWR	Gravel	Good	0.37	26%
		Primitive	Fair	1.08	74%
	Horicon NWR	Asphalt	Excellent	0.11	0%
		Asphalt	Fair	3.76	13%
		Asphalt	Poor	0.31	1%
		Gravel	Excellent	11.32	40%
		Gravel	Good	4.81	17%
		Gravel	Fair	2.47	9%
		Native	Fair	1.58	6%
		Primitive	Good	1.73	6%
		Primitive	Fair	2.37	8%
	LaCrosse District	Gravel	Good	0.81	100%
	Leopold WMD	Gravel	Excellent	0.83	53%
		Gravel	Good	0.44	28%
		Native	Good	0.12	8%
		Native	Failed	0.19	12%
WISCONSIN	Necedah NWR	Gravel	Excellent	7.44	17%
		Gravel	Good	22.47	52%
		Gravel	Fair	4.88	11%
		Native	Excellent	0.10	0%
		Native	Good	5.05	12%
		Native	Fair	0.71	2%
		Primitive	Excellent	0.86	2%
		Primitive	Good	1.29	3%
		Primitive	Fair	0.45	1%
	St. Croix WMD	Asphalt	Poor	0.12	9%
		Gravel	Excellent	0.12	9%
		Gravel	Good	0.33	24%
		Primitive	Good	0.11	8%
		Primitive	Fair	0.69	50%
	Trempealeau NWR	Asphalt	Fair	1.03	6%
		Gravel	Excellent	6.17	38%
		Gravel	Good	6.51	40%
		Native	Good	1.66	10%
		Primitive	Good	1.04	6%
	Whittlesey Creek NWR	Primitive	Excellent	0.00	100%

Source: FHWA, Road Inventory Program Cycle 4.

C.3 Welcome and Orientation

Population trends are used in the baseline conditions analysis as a general indicator for future visitation. Population trends were derived from U.S. Census datasets. Census data from 2000 and 2010 were used to illustrate recent trends, while U.S. Census 2030 projections were used to indicate possible future trends. The summaries were created by using GIS to union county level population data with Service units and are shown in Table 121. Gateway communities were identified using U.S. Census data, supplemented with expert knowledge from FWS on which communities serve as gateways.

Table 121 . Population Change

Facility Name	Intersecting Counties and States	Population (2000-2010)					Projections (2010-2030)		
		2000	2010	% Change	Difference	Average Change by FWS Facility	2030	% Change	Average Change by FWS Facility
Boyer Chute NWR	Pottawattamie/IA	87704	93158	6%	5454	7%	92799	0%	7%
	Washington/NE	18780	20234	8%	1454		22962	13%	
DeSoto NWR	Pottawattamie/IA	87704	93158	6%	5454	3%	92799	0%	3%
	Harrison/IA	15666	14928	-5%	-738		14260	-4%	
	Washington/NE	18780	20234	8%	1454		22962	13%	
Driftless Area NWR	Allamakee/IA	14675	14330	-2%	-345	-1%	13904	-3%	-5%
	Clayton/IA	18678	18129	-3%	-549		16563	-9%	
	Dubuque/IA	89143	93653	5%	4510		91305	-3%	
	Jackson/IA	20296	19848	-2%	-448		19012	-4%	
McGregor District, Upper Mississippi National Wildlife and Fish Refuge	Houston/MN	19718	19244	-2%	-474	0%	20564	7%	2%
	Allmakee/IA	14675	14330	-2%	-345		13904	-3%	
	Clayton/IA	18678	18129	-3%	-549		16563	-9%	
	Dubuque/IA	89143	93653	5%	4510		91305	-3%	
	Vernon/WI	28056	29773	6%	1717		31867	7%	
	Crawford/WI	17243	16644	-3%	-599		19437	17%	
	Grant/WI	49597	51208	3%	1611		51433	0%	
Neal Smith NWR	Jasper/IA	37213	36842	-1%	-371	-1%	37589	2%	2%
Port Louisa NWR	Tama/IA	18103	17767	-2%	-336	-1%	16118	-9%	0%
	Benton/IA	25308	26076	3%	768		27286	5%	

Facility Name	Intersecting Counties and States	Population (2000-2010)					Projections (2010-2030)		
		2000	2010	% Change	Difference	Average Change by FWS Facility	2030	% Change	Average Change by FWS Facility
	Iowa/IA	15671	16355	4%	684		16346	0%	
	Poweshiek/IA	18815	18914	1%	99		18867	0%	
	Louisa/IA	12183	11387	-7%	-796		12195	7%	
	Mercer/IL	16957	16434	-3%	-523		15833	-4%	
Union Slough NWR	Kossuth/IA	17163	15543	-9%	-1620	-9%	11419	-27%	-27%
Chautauqua NWR	Marshall/IL	13180	12640	-4%	-540	-6%	11640	-8%	-6%
	Mason/IL	16038	14666	-9%	-1372		13936	-5%	
Crab Orchard NWR	Williamson/IL	61296	66357	8%	5061	2%	73961	11%	8%
	Jackson/IL	59612	60218	1%	606		62889	4%	
	Union/IL	18293	17808	-3%	-485		19112	7%	
Cypress Creek NWR	Union/IL	18293	17808	-3%	-485	-9%	19112	7%	-1%
	Johnson/IL	12878	12582	-2%	-296		16123	28%	
	Pulaski/IL	7348	6161	-16%	-1187		5062	-18%	
	Alexander/IL	9590	8238	-14%	-1352		6455	-22%	
Emiquon NWR	Fulton/IL	38250	37069	-3%	-1181	-3%	33758	-9%	-9%
Meredosia NWR	Cass/IL	13695	13642	0%	-53	-2%	12854	-6%	-3%
	Morgan/IL	36616	35547	-3%	-1069		35591	0%	
Two Rivers NWR	Greene/IL	14761	13886	-6%	-875	6%	12265	-12%	6%
	Calhoun/IL	5084	5089	0%	5		4625	-9%	
	Jersey/IL	21668	22985	6%	1317		24891	8%	
	St Charles/MO	283883	355367	25%	71484		483684	36%	

Facility Name	Intersecting Counties and States	Population (2000-2010)					Projections (2010-2030)		
		2000	2010	% Change	Difference	Average Change by FWS Facility	2030	% Change	Average Change by FWS Facility
Upper Mississippi River NWR	Jo Daviess/IL	22289	22678	2%	389	-3%	22652	0%	-6%
	Carrol/IL	16674	15387	-8%	-1287		13431	-13%	
Middle Mississippi River NWR	Jefferson/MO	198099	219046	11%	20947	9%	279796	28%	15%
	Monroe/IL	27619	32957	19%	5338		38691	17%	
	Jackson/IL	59612	60218	1%	606		62889	4%	
	Perry/MO	18132	18847	4%	715		21063	12%	
Big Oaks NWR	Jennings/IN	27554	28525	4%	971	5%	33546	18%	12%
	Ripley/IN	26523	28818	9%	2295		32093	11%	
	Jefferson/IN	31705	32428	2%	723		35123	8%	
Muscatatuck NWR	Monroe/IN	120563	137974	14%	17411	7%	161218	17%	16%
	Jackson/IN	41335	42376	3%	1041		47506	12%	
	Jennings/IN	27554	28525	4%	971		33546	18%	
Patoka River NWR	Gibson/IN	32500	33503	3%	1003	2%	34488	3%	2%
	Pike/IN	12837	12845	0%	8		12987	1%	
Detroit River International Wildlife Refuge	Washington/NE	18780	20234	8%	1454	7%	22962	13%	7%
	Pottawattamie/IA	87704	93158	6%	5454		92799	0%	
Harbor Island NWR	Chippewa/MI	38543	38713	0%	170	0%	43507	12%	12%
Huron NWR	Baraga/MI	8746	8604	-2%	-142	0%	9072	5%	2%
	Marquette/MI	64634	65703	2%	1069		65029	-1%	
Kirtlands Warbler WMA	Kalkaska/MI	16571	16891	2%	320	-2%	24119	43%	36%
	Crawford/MI	14273	14203	0%	-70		19437	37%	

Facility Name	Intersecting Counties and States	Population (2000-2010)					Projections (2010-2030)		
		2000	2010	% Change	Difference	Average Change by FWS Facility	2030	% Change	Average Change by FWS Facility
	Oscoda/MI	9418	8707	-8%	-711		11719	35%	
	Ogemaw/MI	21645	21234	-2%	-411		27528	30%	
	Roscommon/MI	25469	24682	-3%	-787		34637	40%	
	Clare/MI	31252	30104	-4%	-1148		39064	30%	
Michigan WMD	Schoolcraft/MI	8903	8127	-9%	-776	-5%	8479	4%	13%
	Mackinac/MI	11943	10591	-11%	-1352		12060	14%	
	Emmet/MI	31437	33649	7%	2212		41922	25%	
	Charlevoix/MI	26090	25796	-1%	-294		31838	23%	
	Alpena/MI	31314	29289	-6%	-2025		29311	0%	
	Arenac/MI	17269	16092	-7%	-1177		19809	23%	
	Huron/MI	36079	32236	-11%	-3843		33132	3%	
Seney NWR	Schoolcraft/MI	8903	8127	-9%	-776	-9%	8479	4%	4%
Big Stone NWR	Big Stone/MN	5820	5251	-10%	-569	-11%	3692	-30%	-30%
	Lac qui Parle/MN	8067	7110	-12%	-957		4918	-31%	
Crane Meadows NWR	Morrison/MN	31712	32883	4%	1171	4%	35799	9%	9%
Glacial Ridge NWR	Polk/MN	31369	30776	-2%	-593	-2%	28467	-8%	-8%
Hamden Slough NWR	Becker/MN	30000	32076	7%	2076	7%	35162	10%	10%
Mille Lacs NWR	Mille Lacs/MN	22330	26383	18%	4053	18%	30407	15%	15%
Minnesota Valley NWR	Carver/MN	70205	92107	31%	21902	19%	119405	30%	22%
	Hennepin/MN	1116200	1156212	4%	40012		1268088	10%	
	Ramsey/MN	511035	506278	-1%	-4757		532342	5%	

Facility Name	Intersecting Counties and States	Population (2000-2010)					Projections (2010-2030)		
		2000	2010	% Change	Difference	Average Change by FWS Facility	2030	% Change	Average Change by FWS Facility
	Dakota/MN	355904	396500	11%	40596		542347	37%	
	Scott/MN	89498	131939	47%	42441		168996	28%	
Rice Lake NWR	Aitkin/MN	15301	15646	2%	345	2%	17789	14%	14%
Rydell NWR	Polk/MN	31369	30776	-2%	-593	-2%	28467	-8%	-8%
Sherburne NWR	Sherburne/MN	64417	87832	36%	23415	36%	117883	34%	34%
Tamarac NWR	Becker/MN	30000	32076	7%	2076	7%	35162	10%	10%
Big Muddy National Fish and Wildlife Refuge	Clay/MO	184006	221939	21%	37933	6%	261506	18%	10%
	Jackson/MO	654880	674158	3%	19278		279796	-58%	
	Ray/MO	23354	23494	1%	140		27066	15%	
	Lafayette/MO	32960	33381	1%	421		37418	12%	
	Carroll/MO	10285	9295	-10%	-990		13431	44%	
	Saline/MO	23756	23370	-2%	-386		22442	-4%	
	Chariton/MO	8438	7831	-7%	-607		5986	-24%	
	Randolph/MO	24663	25414	3%	751		26533	4%	
	Howard/MO	10212	10144	-1%	-68		9859	-3%	
	Cooper/MO	16670	17601	6%	931		18802	7%	
	Boone/MO	135454	162642	20%	27188		197754	22%	
	Moniteau/MO	14827	15607	5%	780		18104	16%	
	Cole/MO	71397	75990	6%	4593		92475	22%	
	Callaway/MO	40766	44332	9%	3566		53308	20%	
	Osage/MO	13062	13878	6%	816		15120	9%	
	Montgomery/MO	12136	12236	1%	100		12881	5%	

Facility Name	Intersecting Counties and States	Population (2000-2010)					Projections (2010-2030)		
		2000	2010	% Change	Difference	Average Change by FWS Facility	2030	% Change	Average Change by FWS Facility
	Gasconade/MO	15342	15222	-1%	-120		17465	15%	
	Warren/MO	24525	32513	33%	7988		42335	30%	
	Franklin/MO	93807	101492	8%	7685		126574	25%	
	St. Charles/MO	283883	355367	25%	71484		483684	36%	
	St. Louis/MO	1016315	998954	-2%	-17361		1041667	4%	
Clarence Cannon NWR	Pike/MO	18351	18516	1%	165	1%	19050	3%	3%
Great River NWR	Clark/MO	7416	7139	-4%	-277	-4%	6443	-10%	-7%
	Adams/IL	68277	67103	-2%	-1174		64446	-4%	
	Pike/IL	17384	16430	-5%	-954		15086	-8%	
Mingo NWR	Wayne/MO	13259	13521	2%	262	1%	16402	21%	15%
	Stoddard/MO	29705	29968	1%	263		32306	8%	
Pilot Knob NWR	Iron/MO	10697	10630	-1%	-67	-1%	11259	6%	6%
Squaw Creek NWR	Holt/MO	5351	4912	-8%	-439	-8%	3961	-19%	-19%
Swan Lake NWR	Chariton/MO	8438	7831	-7%	-607	-7%	5986	-24%	-24%
Cedar Point NWR	Lucas/OH	455054	441815	-3%	-13239	-3%	515126	17%	17%
Ottawa NWR	Lucas/OH	455054	441815	-3%	-13239	-1%	515126	17%	11%
	Otawa/OH	40985	41428	1%	443		44067	6%	
Fox River NWR	Marquette/WI	15832	15404	-3%	-428	-3%	19714	28%	28%
Horicon NWR	Fond du Lac/WI	97296	101633	4%	4337	4%	109494	8%	10%
	Dodge/WI	85897	88759	3%	2862		99194	12%	
Necedah NWR	Juneau/WI	24316	26664	10%	2348	10%	30303	14%	14%
Trempealeau NWR	Buffalo/WI	13804	13587	-2%	-217	3%	13479	-1%	3%

Facility Name	Intersecting Counties and States	Population (2000-2010)					Projections (2010-2030)		
		2000	2010	% Change	Difference	Average Change by FWS Facility	2030	% Change	Average Change by FWS Facility
	Trempealeau/WI	27010	28816	7%	1806		30837	7%	
Whittlesey Creek NWR	Bayfield/WI	15013	15014	0%	1	0%	17049	14%	14%

Source: U.S. Census

Data in Light Blue background is a projection to 2009 base on 2000 Census

C.4 Planning

Data on completeness of Service plans is provided by FWS core team members. Data on the locations of non-service planning districts varies by state. Some states require manual reference of published maps. Metropolitan Planning Organization (MPO) data is provided by BTS, however, many data gaps were found so the data cannot be considered a stand-alone MPO resource.

C.5 Partnerships

Because agencies at all levels are increasingly interested in pooling funds to improve assets that benefit multiple organizations, non-Service owned roads that intersect Region 3 units have been identified and summarized. These roads were located using a GIS's ability select by location for all US Census Tiger roads intersecting FWS boundaries. The results of this process are summarized in Table 122. Other data cited in the *Partnerships* section comes from the information established in *Planning*.

Table 122 Non-Service Roads Intersecting Service Units

State	Service Unit	Road Name
Iowa	Boyer Chute	I-29
		I-680
	Desoto NWR	US Hwy 30
	Neal Smith NWR	Poplar Ave
		State Hwy 163
		W 2nd St
	Port Louisa NWR	11th Ave
		13th St
		212th Blvd
		220th Trl
		330th St
		42nd Ave
		7th Ave
		Co Hwy 21
		Co Rd E49
		Co Rd V18
		E 13 St
		E 5th St
		Great River Rd
		Harding St
		Highway 6 Trl
		Hwy 63
		Hwy V18
		J Ave
		Riverview Ct
		S County Rd
		S State St
		State Hwy 131
		State Hwy 21
		State Hwy 212
		State Hwy 220
		State Hwy 99
		State St
		Station St

State	Service Unit	Road Name
Iowa	Upper Mississippi River National Wildlife and Fish Refuge	Ansel Briggs Hwy
		N Riverview Dr
		S Riverview Dr
		State Hwy 62
		State St
	Upper Mississippi River National Wildlife and Fish Refuge - Mc Gregor District	7th St
		Ash
		Bus US Hwy 18
		First St
		Great River Rd
		Hwy 26
		Hwy 76
		Hwy Bus 18
		Main St
		N 2nd St
		N 5th St
		N Hwy 52
		Old Rd No 29
		Pikes Peak Rd
		Point Ann
		Prospect
		Railroad Ave
		Railroad St
		S 5th St
		S US Hwy 52
		State Hwy 182
		State Hwy 26
		State Hwy 76
		State Hwy 9
		US Hwy 18
		US Hwy 18 Bus
		US Hwy 52
		Water St
	Upper Mississippi	11th Ave S

State	Service Unit	Road Name
Iowa	Port Louisa NWR	T Ave
		U Ave
		US Hwy 151
		US Hwy 30
		US Hwy 6
		US Hwy 63
		W 13 St
		W Ave
		W South St
		Western Ave
		Y Ave

State	Service Unit	Road Name
Iowa	River National Wildlife and Fish Refuge - Savanna District	460th Ave
		8th Ave S
		Bellevue Rd
		Broad St
		Bus Hwy 67
		Camanche Ave
		Co Hwy Z36
		Dodge St
		Great River Rd
		Hwy 52
		Hwy 67
	Upper Mississippi River National Wildlife and Fish Refuge - Savanna District	Julien Dubuque Bridg
		Kerrigan Rd
		Lincoln Way
		N 3rd St
		N Hwy 52
		N Hwy 67
		N Riverview Dr
		N Washington Blvd
		S 2nd St
		S 3rd St
		State Hwy 64
		Sycamore St
		US Hwy 151
		US Hwy 20
		US Hwy 30
		US Hwy 52
		US Hwy 61
		US Hwy 67

State	Service Unit	Road Name
Illinois	Chautauqua NWR	Old Rte 29
		Prairie St
		State Rte 18
		State Rte 26
		State Rte 29
	Crab Orchard NWR	E Main St
		i-57
		State Rte 13
		State Rte 148
		N Refuge Rd
		State Rte 13
		S Park Ave
		W Deyoung St
		Noah's Ln
	Cypress Creek NWR	Cache River
		I-57
		N Church Rd
		State Hwy 127
		State Hwy 3
		State Rte 169
		State Rte 37
		US Hwy 51
		Walnut St
	Emiquon NWR	E Dearborn St
		E Laurel Ave
		E Laurel St
		N State Rte 78
		N State Rte 97
		Oak St
		S Promenade St
		S Water St
		State Rte 78
		State Rt 97
		US Hwy 136
		US Hwy 24
		W Dearborn St

State	Service Unit	Road Name
Illinois	Meredosia NWR	Main St
		Mill St
		State Hwy 104
		State Rte 100
		State Rte 104
		State Rte 99
		US Hwy 67
	Middle Mississippi River NWR	State Rte 156
		Walnut Rd
	Two Rivers NWF	Great River Rd
		Hwy 100
		Mc Adams Hwy
		River Rd
		Rte 100
		State Hwy 100 N
		State Hwy 100 W
		State Rte 100
	Upper Mississippi River National Wildlife Refuge and Fish	State Rte 84
		State Rte 84 S
	Savana District	3rd St
		Chicago Ave
		Clinton Rd
		E Main St
		Main St
		N Main St
		Rte 84 N
		S Main St
		Sinsinawa Ave
		South Ln
		State Rte 35
		State Rte 64
		State Rte 84
		US Hwy 20
		US Hwy 30
		US Hwy 52
		Viaduct Rd
		W Main St
		Waller Rd
		Wisconsin Ave

State	Service Unit	Road Name
Indiana	Big Oaks NWR	US Hwy 421
		N Graham Rd
		State Rd 250
		US Hwy 50
	Muscatatuck NWR	US Hwy 31
		US Hwy 50
		E Tipton St
		I-65
	Patoka River NWR	E Morton St
		E State Rd 364
		E State Rd 64
		N 9th St
		N Main St
		N Vincennes Ave
		Old Princeton Rd
		Poplar St
		State Rd 364
		S State Hwy 57
		S State Rd 257
		S State Rd 61
		State Rd 257
		State Rd 57
		State Rd 56
		State Rd 61
		State Rd 64
		W State Rd 56
		W State Rd 64

State	Service Unit	Road Name
Ohio	Ottawa NWR	Bono Port Clinton Rd
		N Camp Rd
		Navarre Ave
		State Rte 163
		State Rte 2
		State Rte 358
		State Rte 579
		State Rte 590
		W Harbor Rd
		W Lakeshore Dr
		W State Rte 2
		Willston Rd
Michigan	Detroit River International WR	Detroit-Toledo Expy
		Fisher Fwy
		Fort St
		I-75
		State Hwy 85
	Seney NWR	M 28
		State Hwy 28
		State Hwy 77
		State Hwy M 28
	Shiawassee NWR	East Rd
		Gratiot Rd
		I-75
		Midland Rd
		S Washington Ave
		State Hwy 13
		State Hwy 46
		State Hwy 47
		State Hwy 58
		State St
		US Hwy 23

State	Service Unit	Road Name
Minnesota	Minnesota Valley NWR	1st Ave E
		1st Ave W
		Cedar Ave
		Chaska Blvd
		Co Hwy 101
		Co Rd 101
		Co Rd 18
		Co Rd 23
		Co Rd 40
		Co Rd 69
		Co Rd G
		E 6th St
		Flying Cloud Dr
		Great Plains Blvd
		Hwy 13 E
		I-35
		I-494
		I-694
		Johnson Memorial Dr
		Jonathan Carver Pkwy
		Lewis St N
		N Chestnut St
		Shakopee Byp
		Sibley Memorial Hwy
		Spring Creek Dr
		State Hwy 101
		State Hwy 13
		State Hwy 41
		State Hwy 5
		State Hwy 65
		State Hwy 77
		State Hwy 96W
		Townline Ave
		US Hwy 10
		US Hwy 169
		US Hwy 212
		US Hwy 8
		W 6th St

State	Service Unit	Road Name
Minnesota	Big Stone NWR	2nd St SE
		Main St
		State Hwy 7
		US Hwy 12
		US Hwy 75
	Crane Meadows	Hwy 27
		State Hwy 27
	Glacial Ridge NWR	N Mill St
		State Hwy 32
		State Hwy 32 SW
		US Hwy 2
	Rice Lake NWR	State Hwy 65
	Upper Mississippi River National and Fish Refuge - La Crosse District	Front St
		Great River Rd
		Hwy 14
		I-90
		Leeward Rd
		Miller Valley Rd
		Spillway Ln
		Twin Bluffs Dr
		US Hwy 14
		US Hwy 61
	Mc Gregor District	State Hwy 26
	Upper Mississippi River National and Fish Refuge - Winona District	2nd St
		Hince Dr
		Hwy 14
		Hwy 61 W
		Pembroke Ave
		State Hwy 60
		US Hwy 61

State	Service Unit	Road Name
Missouri	Big Muddy National Fish and Wildlife Refuge	10 Hwy
		13th St
		14th St
		1st St
		23rd St S
		3rd St
		5th St
		Armour Rd
		Arrowhead Fwy
		Ash St
		Bell St
		Bingham Rd
		Bluff Rd
		Broadway Fwy
		Burlington St
		Christy St
		Clark St
		Clarkson Rd
		Co Rd 361
		Co Rd 404
		Co Rd 433
		Commerce Dr
		Cr 247
		Defiance Rd
		E 1st St
		E 2nd St
		E Ashley Rd
		E Broadway St
		E Fourth St
		E Hwy 100
		E Hwy 224
		E Hwy 240
		E Jackson St
		E Main St
		E Pacific St
		E State St
		E Truman Rd
		E US Hwy 24
		E Walnut St

State	Service Unit	Road Name
Missouri	Big Muddy National Fish and Wildlife Refuge	E Winner Rd
		First Capitol Dr
		Franklin
		Gateway
		Goethe St
		Granvel Blvd
		Hillside Blvd
		Hwy 100
		Hwy 100
		Hwy 131
		Hwy 179
		Hay 291
		Hwy 364
		Hwy F
		I-270
		I-29
		I-35
		I-435
		I-64
		I-670
		I-70
		Independence Ave
		James Rd
		Kingd Hwy
		Main St
		Market St
		McLean St
		Midtown Fwy
		Missouri Ave
		Mo 210 Hwy
		N 2nd St
		N 3rd St
		N Antioch Rd
		N Gateway Ave
		N Hwy 87
		N Kingshighway St
		N Main St
		N Pine St
		N Saline 65 Hwy

State	Service Unit	Road Name
Missouri	Big Muddy National Fish and Wildlife Refuge	N Spartan Dr
		N State Hwy 7
		N State Hwy 94
		N Twyman Rd
		N US Hwy 65
		N Woods Mill Rd
		NE Antioch Rd
		NE Vivion Rd
		Nelson Ave
		NW Gateway Ave
		NW Platte Dr
		NW Vivion Rd
		Old Bridge St
		Olive Blvd
		Old Hwy 179
		Randolph St
		Rex M Whitton Expy
		Riverway Blvd
		Rock Hill Rd
		S 13th St
		S 1st Capitol Dr
		S Cherry St
		S Elizabeth St
		S First Capitol Dr
		S Hwy 94
		S Missouri St
		S Mo 7 Hwy
		S Pine St
		S Saline 127 Hwy
		S Spartan Dr
		S State Hwy 7
		Saint Charles Rock Rd
		Saline 127 Hwy
		Saline St
		Salisbury Rd
		State Hwy 1

State	Service Unit	Road Name
Missouri	Big Muddy National Fish and Wildlife Refuge	State Hwy 10
		State Hwy 100
		State Hwy 11
		State Hwy 12
		State Hwy 122
		State Hwy 127
		State Hwy 129
		State Hwy 13
		State Hwy 131
		State Hwy 135
		State Hwy 139
		State Hwy 141
		State Hwy 179
		State Hwy 180
		State Hwy 19
		State Hwy 210
		State Hwy 213
		State Hwy 224
		State Hwy 23
		State Hwy 240
		State Hwy 291
		State Hwy 3
		State Hwy 33
		State Hwy 340
		State Hwy 364
		State Hwy 370
		State Hwy 41
		State Hwy 47
		State Hwy 5
		State Hwy 7
		State Hwy 78
		State Hwy 87
		State Hwy 89
		State Hwy 9
		State Hwy 94
		State Hwy 94

State	Service Unit	Road Name
Missouri	Big Muddy National Fish and Wildlife Refuge	Union St
		US Hwy 169
		US Hwy 24
		US Hwy 40
		Us Hwy 50
		US Hwy 54
		US Hwy 61
		US Hwy 63
		US Hwy 65
		US Hwy 69
		US Hwy 71
		I-70
		Volker Blvd
		W 224 Hwy
		W 23rd St S
		W Ashley Rd
		W Broadway St
		W Cunningham Dr
		W Jackson St
		W Missouri Ave
		W Park St
		W State St
		W Sugar Creek Dr
		W Tuttle Ave
		W Van Horn Tavern Rd
		W Walnut St
		Walker Rd
		Walnut St
		Willow Ave
		Woods Mill Rd

State	Service Unit	Road Name
Missouri	Clarence Cannon NWR	State Hwy 79
	Great River NWR	US Hwy 61
	Mingo NWR	State Hwy 51
	Ozark Cavefish NWR	Old Hwy 66
		State Hwy 266
		State Hwy 96
	Pilot Knob NWR	State Hwy 21
	Squaw Creek NWR	5th St
		E 3rd St
		I-29
		Nebraska St
		State Hwy 111
		State Hwy 118
		State St
		US Hwy 159
		US Hwy 59

State	Service Unit	Road Name
Wisconsin	Fox River NWR	Co Rd F
		Co Rd O
		Fox River Rd
	Upper Mississippi River National Wildlife and Fish Refuge - La Crosse District	2nd Ave
		3rd St
		4th St
		7th St
		Cass St
		Co Rd XX
		Copeland Ave
		Division St
		E 3rd St
		George St
		Great River Rd
		Hwy 53
		I-90
		Jackson St
		La Crosse St
		Main St
		Mormon Coulee Rd
		N Main St
		Rose St
		S Main St
		South Ave
		State Hwy 16
		State Hwy 162
		State Hwy 33
		State Hwy 35
		State Hwy 56
		US Hwy 14
		US Hwy 61
		US Hwy 53
		W George St
		West Ave S

State	Service Unit	Road Name
Wisconsin	Upper Mississippi River National Wildlife and Fish Refuge - McGregor District	A St
		Bluff Rd
		Co Hwy V
		Co Hwy Vv
		Co Rd A
		Co Rd N
		Co Rd P
		Co Rd V
		Co Rd Vv
		Co Rd X
		Denniston St
		E Amelia St
		E Chicago St
		Great River Rd
		Main St
		Marquette Rd
		State Hwy 133
		State Hwy 171
		State Hwy 35
		State Hwy 56
		State Hwy 81
		State Hwy 82
		State Rd 133
		State Rd 81
		US Hwy 18
		W Amelia St
		W Iowa St
		W Wisconsin St
	Necedah NWR	State Hwy 173
		State Hwy 21
		State Hwy 80
		W 3rd St
	Trempealeau NWR	Great River Rd
		State Hwy 54
	Horicon NWR	Co Rd Z
		State Hwy 26
		State Hwy 49

State	Service Unit	Road Name
Wisconsin	Upper Mississippi River National Wildlife and Fish Refuge - Savanna District	Great River Rd
		State Hwy 11
		State Hwy 35
		US Hwy 151
		US Hwy 61
	Upper Mississippi River National Wildlife and Fish Refuge - Winona District	3rd St
		Front St
		Great River Rd
		Hill St
		Main St
		Shore Dr
		North St
		Oak St
		State Hwy 25
		State Hwy 35
		State Hwy 37
		State Hwy 43
		State Hwy 54
		State Hwy 95
	Whittlesey Creek NWR	Co Hwy G
		State Hwy 13
		US Hwy 2

C.6 Sustainability

Baseline conditions associated with sustainability represent topics of climate change, transit, and non-motorized access to Service lands and reduced fossil fuel consumption. These themes are captured in several baseline condition indicators, including:

- Air-Quality Non-Attainment
- Service Units Intersected by Transit

Air Quality Non-Attainment

Because the Service is interested in helping to reduce emissions that contribute to climate change, locations identified as non-attainment areas by the EPA are identified in the baseline conditions section. A GIS layer was used to select any EPA non-attainment areas within one mile of a Service unit.

Service Units Intersected by Transit Districts

The Service wants to increase the use of transit by visitors to maximize person trips per vehicle mile traveled and lower emissions. As such, partnership with existing non-Service transit systems is viewed as an emerging opportunity for future transportation investment. Service units intersected by transit districts are summarized in the baseline conditions section.

APPENDIX D

USFWS R-3

Roadway Design Guidelines

Roadway Design Guidelines

Midwest Region

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Peter Field - Western Federal Lands, Federal Highway Administration
Doug Staller - Refuge Manager, Necedah NWR, FWS Region 3
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Brian Bainnson, ASLA

Cover: Bison as viewed from a road at Neil Smith NWR on a foggy morning. Roadways on National Wildlife Refuges create wonderful opportunities for wildlife viewing and photography, two of the Big Six activities supported by the National Wildlife Refuge System.

Photo: Richard C. Hager/USFWS

Purpose

The U.S. Fish & Wildlife Service (FWS) is the world's premier conservation agency, managing over 150 million acres of wildlife habitat on National Wildlife Refuges alone. FWS is in a unique position to demonstrate the land ethic so deeply interwoven in the rich fabric of our national heritage.

This guide highlights state of the art ecological, planning, design and engineering considerations for roadway projects that heed both the significant benefits and impacts these projects present. Roadway projects on FWS managed lands should conform to planning and design criteria that have been established to support the FWS mission. This document provides such criteria in the form of guidelines. These guidelines are summarized in a table of contents that serves as a project checklist.

The Roadway Design Guidelines are a wayfinding tool intended to facilitate dialog and decision making among project teams. The guidelines have been crafted to support the interdisciplinary team typically involved with decision making regarding a roadway project: Project Leaders, Project Managers, and technical experts from various disciplines.

This document includes 30 individual project planning and design guidelines, organized around 6 major themes. The project checklist serves as an overview of these guidelines, and has been provided as a tool to assist in project planning, design and implementation.

In the pages that follow you will find information and resources that will be useful in your work on roadway projects. Using these guidelines is not an end in itself. Rather, the guidelines are a starting point from which to explore solutions to implement a roadway project of the highest standard. Every guideline begins with a brief discussion of the intent for presenting a particular topic, followed by supporting principles central to honoring the guideline, as well as associated metrics. Selected resources are provided to gain a deeper understanding of the topic.

Brian Bainnson

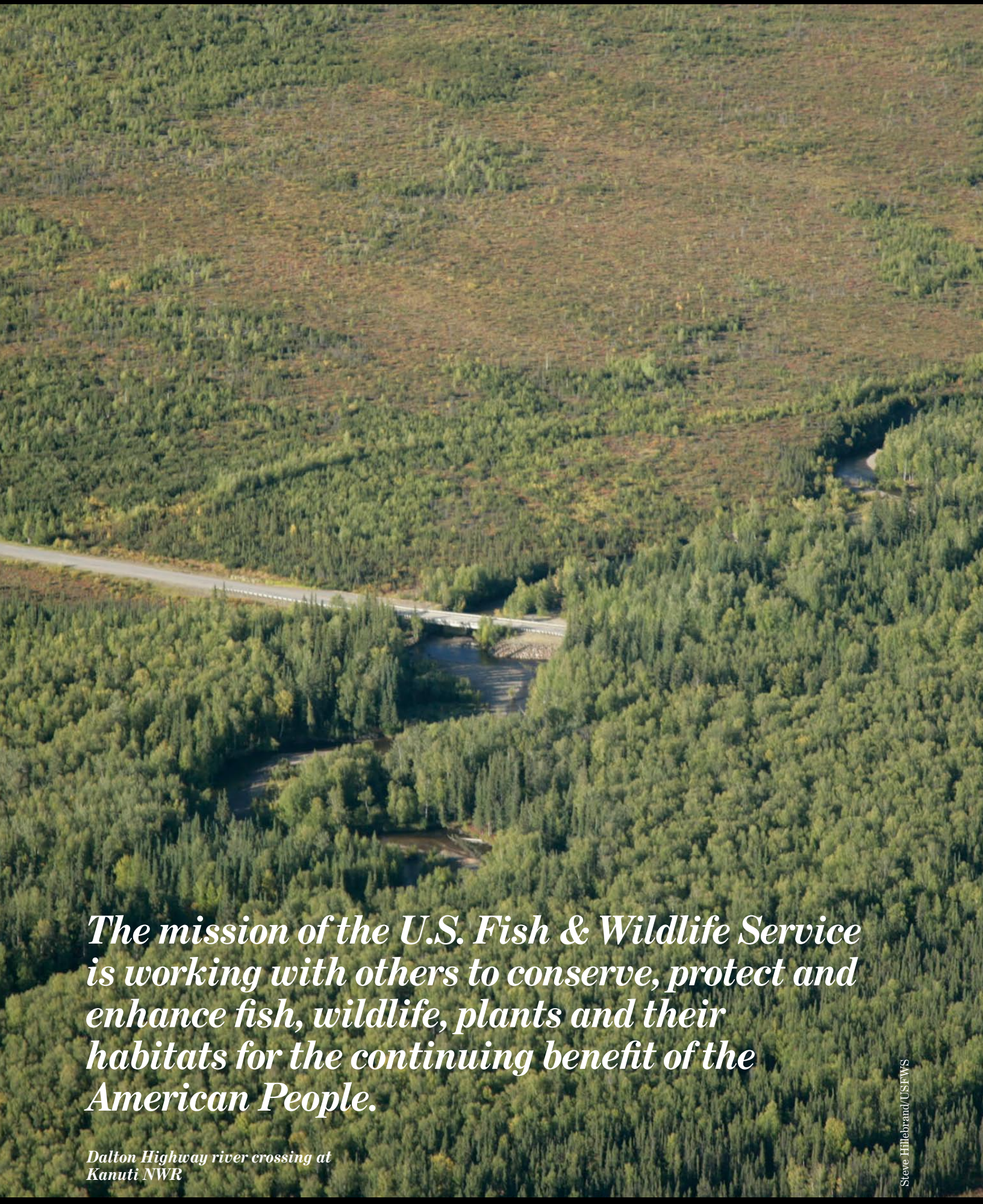
Eva Paredes/USFWS

Visitor contact facilities are often located in close proximity to roadways like this one at McNary National Wildlife Refuge (NWR) (top). Bison herd as viewed from roadway at the National Bison Range (bottom).

More Than Just A Road

A 'roadway' as referred to in these guidelines encompasses not only the suite of typical improvements associated with a vehicle-focused transportation project, but also related facilities such as parking, overlooks and the zone of ecological impacts from a road. These can be summarized as follows:

- **Typical transportation improvements** extend from the centerline of an existing or proposed road outward and include associated infrastructure components, such as paving, utilities, grading, drainage and planting.
- **Other facilities and infrastructure** commonly associated with vehicular transportation, include parking, visitor contact facilities, and pullouts.
- **Ecological connections and impacts** beyond the edge of the physical road or right of way, such as habitat fragmentation, habitat disturbance, pollution and aquatic and terrestrial species conflicts.



The mission of the U.S. Fish & Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American People.

Dalton Highway river crossing at Kanuti NWR

Steve Hillebrand/USFWS

Project Checklist

LE – Landscape Ecology

- [ ] LE-1 Improve habitat connectivity
- [ ] LE-2 Reduce impacts to wildlife and habitat
- [ ] LE-3 Understand hydrologic processes of regional landscape
- [ ] LE-4 Respond to intrinsic qualities of regional landscape
- [ ] LE-5 Address climate change

PC – Planning Context

- [ ] PC-1 Review relevant planning, policy and regulatory information
- [ ] PC-2 Define level of service for the project
- [ ] PC-3 Evaluate multiple siting and alignment alternatives
- [ ] PC-4 Assess full costs and impacts of transportation system
- [ ] PC-5 Communicate with team and stakeholders

DE – Design and Engineering

- [ ] DE-1 Preserve and restore native vegetation and other natural resources
- [ ] DE-2 Consider and plan for invasive species management
- [ ] DE-3 Minimize cut and fill to fit with existing landscape
- [ ] DE-4 Consider road geometries for lower speeds, safety and alertness
- [ ] DE-5 Consider construction impacts and best practices
- [ ] DE-6 Consider range and sources of materials for sustainable construction
- [ ] DE-7 Consider maintenance

OP – Organism Passage

- [ ] OP-1 Develop your corridor plan for crossing
- [ ] OP-2 Provide and enhance aquatic organism crossings
- [ ] OP-3 Provide and enhance terrestrial wildlife crossings
- [ ] OP-4 Evaluate the need for wildlife fencing and other guiding features
- [ ] OP-5 Consider warning and safety systems for drivers

SM – Stormwater Management

- [ ] SM-1 Buffer habitat from polluted runoff
- [ ] SM-2 Protect habitat from erosive flows and flooding
- [ ] SM-3 Monitor and maintain stormwater facilities
- [ ] SM-4 Promote stewardship of aquatic resources

VE – Visitor Experience

- [ ] VE-1 Preserve and highlight scenic value
- [ ] VE-2 Promote and facilitate multiple modes of transportation
- [ ] VE-3 Comply with accessibility standards and guidelines
- [ ] VE-4 Facilitate compatible wildlife dependent recreation and education

Highway through Siletz Bay NWR provides travelers with visual access to the Refuge. The highway affects habitat connectivity and the landscape's hydrology.

David Pitkin/USFWS

Landscape Ecology
Overview

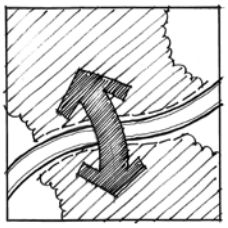
Pattern and Process
Roads and ecological function are intrinsically intertwined. Roadways on FWS managed lands in particular are frequently located in areas of high ecological importance.

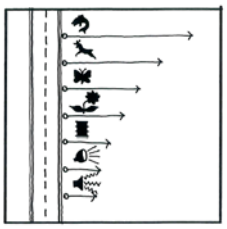
This section, Planning at the Scale of Landscape Ecology, is intended to help you consider the broad-scale environmental impacts of your decisions regarding roadways and transportation infrastructure. It addresses a range of issues, providing you with a set of tools for decision-making.

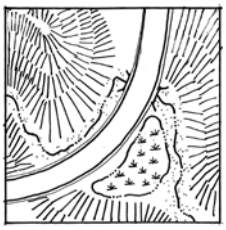
Any new roadway construction or improvements to existing roadways on FWS managed lands requires unique treatment, consistent with the mission of the Service and supported by a detailed understanding of refuge management goals. While the guidelines in this section cover principles which are, in general, applicable across a broad range of environments, take time to consider the guidelines and their specific implications within the unique bioregional context in which your projects will occur.

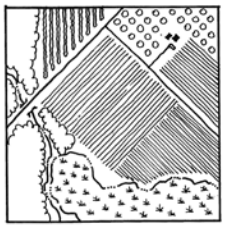
Research in the field of road ecology demonstrates that the multitude of adverse impacts of roads on landscapes, and the healthy function of the natural systems they traverse, are reduced by designing for slower travel speeds and lower traffic volume.

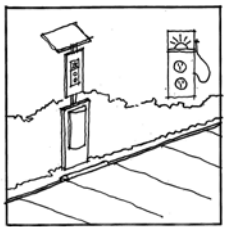
A significant component of a roadway project may be to remove roads from ecologically sensitive areas and restore those areas.











Landscape Ecology 101

Landscape ecology is the study of the relationship between spatial pattern and ecological processes on a wide variety of landscape scales and organizational levels. Some key landscape ecology concepts are:

Patch - Distinct area of a particular habitat or landscape type. Key considerations include size, number, location, and composition/contents. Small patches have a higher edge-to-interior ratio; some species thrive on edges, while others strictly prefer the qualities of a patch interior.

Edge - The shape, width, straightness, and other qualities of habitat or patch edges affects their performance and utility for various species.

Connectivity - This depends on distance, as well as other factors that may promote or inhibit movement between patches. A roadway may seem relatively narrow, but constitute a greater barrier than a broad field for some species.

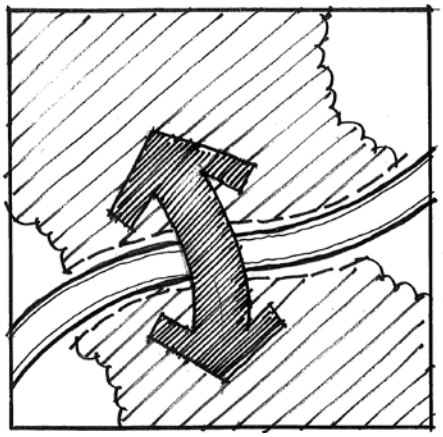
Mosaic - The bigger picture that includes the various patches and the matrix that contains them (e.g. areas of remnant woodland and wetlands, within a matrix of agricultural fields). Key elements include scale, grain (coarseness), patch diversity, and degree of fragmentation.

Roads form a **network**, which may be viewed as a **matrix** that contains a variety of habitat patches. They significantly affect connectivity, creating abrupt and harsh edge conditions, whose effects (such as light, noise, air quality, temperature, hydrology) can extend well into the adjacent habitat patches.

LE-1 Improve Habitat Connectivity

Intent

Roadways should be examined for their potential to impact habitat connectivity. Wherever possible such impacts should be minimized and/or mitigated. When a contiguous habitat area is bisected by a roadway, abrupt edge conditions are created. Such habitat fragmentation is generally undesirable. Hydrologic and soil community connectivity are also affected. Native plantings and other restoration activities associated with roadway improvements can be designed to support multiple habitat objectives, including buffering patch interiors and mitigating roadway impacts. In rare instances, roadway corridors may also serve as habitat connectors, linking otherwise fragmented communities.



Habitat connectivity is disrupted along any road corridor

Principles

- Identify and prioritize habitat restoration and connectivity opportunities at the landscape scale
- Review state habitat connectivity plans
- Consider impacts and footprint of the entire roadway as defined in these guidelines
- Develop partnerships among land management agencies
- Partner with neighbors
- Identify opportunities for individual projects to minimize impacts to wildlife and restore habitat connectivity

Metrics

- Trends in species mortality, avoidance, low population survival, sensitive or endangered species populations
- Decreased wildlife-vehicle collisions and/or roadway avoidance
- Distance between habitat patches
- Distribution of species/population along and across roadway

Resources

Overview of road ecology and guidelines for ecological road planning and design.

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions.

Graphic explanations of landscape ecology principles.

Dramstad, Olson, and Forman. 1996. Landscape Ecology Principles in Landscape Architecture and Land-Use Planning.

Discussion of positive and negative impacts of roadways on adjacent vegetation.

Forman, Richard. 2002. "Roadsides and Vegetation." In Proceedings of the International Conference on Ecology and Transportation, Keystone, CO, September 24-28, 2001.

Roadway design guidelines from applied ecology and experiential perspective.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards.

Effects of roadways on wildlife (see also entire February 2000 Conservation Biology issue).

Trombulak, Stephen and Christopher Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities.

Wildlife conservation and planning efforts among the western states.

Western Governors' Wildlife Council. http://www.westgov.org/. Resources include the Wildlife Corridors Initiative Report (2008) and Wildlife Sensitivity Maps.

Habitat Connectivity

Habitat connectivity is a term commonly used in landscape ecology to describe the degree of connection between nearby or adjacent habitat areas. Distinct habitat areas are frequently referred to as 'habitat patches'. If the connection between these patches is not good, the resultant fragmentation can lead to loss of diversity within a given population of a species and potentially local extinction of that species from one or both patches. Even for fairly mobile species, a roadway can present a significant barrier to movement between patches.

Terrestrial under-crossing facilitates wildlife movement across a landscape fragmented by a highway in Banff NP, Canada

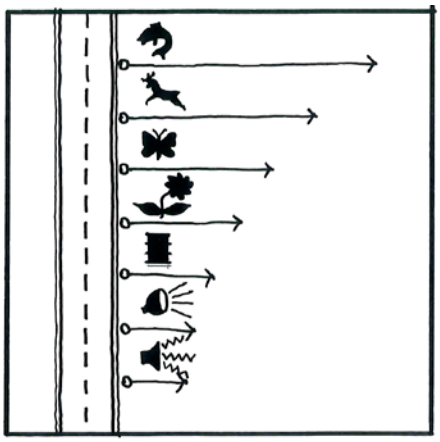
Patricia White/Flickr.com

LE-2 Reduce Impacts to Wildlife and Habitat

Intent

Roads have a significant impact on wildlife populations and habitat. Roads can directly impact wildlife through mortality (e.g. wildlife-vehicle collisions), roadway avoidance, habitat loss and habitat fragmentation. Wildlife-vehicle collisions are a safety concern for motorists. Traffic volume and roadway type directly relate to the severity of wildlife impacts. Roadkill data alone is not an accurate indicator of roadway impacts to wildlife, due to avoidance behavior and other issues. Mortality and avoidance are two species-dependent outcomes that may result from the barrier effect a roadway has on wildlife. In addition, maintenance practices, in combination with abundant edge habitat, can attract certain species of wildlife to a roadway, increasing the potential for conflict.

Consider roadway alignment, design, construction, and future maintenance methods that create the least detrimental impact to wildlife and habitats. Section OP (Organism Passage) discusses terrestrial and aquatic organism passage in more detail.



Impacts to wildlife and habitat extend outward from the roadway in various degrees, creating the 'road-effect zone'.

Principles

- Identify and limit the 'road-effect zone' (road ecology metric, see Definitions)
- Design for lower speeds, in order to minimize disturbance
- Consider management techniques to minimize disturbance to wildlife on auto tour routes
- Examine how road alters wildlife use patterns
- Examine how future effects on wildlife could make a project compatible (or not) with management goals
- Consider effects of noise, light and chemical pollution on habitats and wildlife

Metrics

- Reduction of wildlife-vehicle collisions
- Health of wildlife populations with habitats fragmented by or in proximity to roadways
- Road density (landscape ecology metric, see Definitions)
- Mesh size (landscape ecology metric, see Definitions)

Resources

Overview of road ecology, guidelines for ecological road planning and design. See especially discussion of road-effect zones, pp. 306-16.

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions.

Latest information on road ecology as it relates to mitigating interactions between roads and wildlife.

Beckmann, J. P., et al. 2010. Safe Passages.

Identifying & prioritizing habitat connectivity zones, and guidelines for design solutions.

FHWA. 2008. Best Practices Manual, Wildlife Vehicle Collision Reduction Study (Report to Congress).

Effects of roadways on wildlife (see also entire February 2000 Conservation Biology issue).

Trombulak, Stephen and Christopher Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities.

Buffer design guidelines.

Bentrup, G. 2008. Conservation buffers: design guidelines for buffers, corridors, and greenways. Access at: http://www.unl.edu/nac/bufferguidelines/

See also:

Section OP - Organism Passage

Roadways have significant impacts on both individuals and populations.

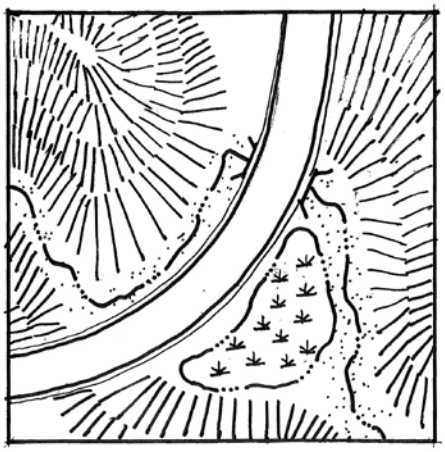
Mac Danzig Photography

Florian Schulz

LE-3 Understand Hydrologic Processes of Regional Landscape

Intent

Roadways can have dramatic impacts on hydrology at local, regional, and watershed scales. Disturbance to local hydrology is one negative impact to habitat caused by roadways. Impervious surfaces have a cumulative effect across a watershed, altering its hydrology and often creating detrimental consequences for wildlife. In some cases, the effects of a roadway on hydrology may be desired as part of a field station's approach to habitat management. Project teams should consider carefully how a roadway will impact local hydrology, or conversely how hydrologic processes can inform design decisions. Roadway improvements might support FWS management goals by addressing known issues and/or restoring historic hydrologic processes.



Roadways disrupt natural hydrology.

Principles

- Consider how road design may protect hydrologic processes
- Consider how to adapt an existing roadway for greater permeability
- Consider what effects the roadway might have on subsurface flows, water tables, and nearby aquifers, as well as how these elements affect construction options and feasibility
- Consider balance between restoring to pre-development conditions and maintaining historic alterations to hydrology
- Consider how development and roadway work will support current hydrologic and habitat management goals

Metrics

- Hydrologic modeling showing potential changes from roadways
- Stream flow data
- Changes in species composition (invasives vs. natives)

Resources

General reference on road ecology. See in particular overview of roadway effects on hydrology in Chapter 7.

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions. Island Press. Washington D.C.

Guidelines that address hydrology impacts of roadways.

Smith, Stacy (Idaho Technology Transfer Center, Univ. of Idaho). 2005. BMP Handbook: Best Management Practices for Idaho Rural Road Maintenance.

Design guidelines for low-use roads, focusing largely on hydrology.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Roadway design guidance for lower impact to hydrology.

Dashiell and Lancaster. Undated. Road Design Guidelines for Low Impact to Hydrology. Five Counties Salmonid Conservation Program. Weaverville, CA.

Guidebook on design and best practices for providing aquatic organism passage.

USDA Forest Service. 2008. Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings.

See also:

Section SM - Stormwater Management

Roads both affect and are affected by hydrology. Floodwaters wash out a road at Flint Hills NWR (top); levee road at Blackwater NWR (bottom).

Eva Paredes/USFWS

Leon Reed/Flickr.com

LE-4 Respond to Intrinsic Qualities of Regional Landscapes

Intent

Every landscape has a rich natural and cultural history, a distinct composition of flora and fauna, unique weather, drainage patterns and views. Such intrinsic qualities contribute to each location's "sense of place," or context, which should be a guiding factor in work there. A contextual approach should be taken when planning and designing all roadways on FWS lands, and should be used for such decisions as road alignment and location of visitor facilities. Consider local vernacular architecture and land management traditions (e.g. local historic and sustainable agricultural practices), aesthetic issues such as viewsheds and practical issues such as seasonal access to recreational opportunities.

Principles

- Consider Context Sensitive Solutions (CSS) for general design guidelines and engage a landscape architect
- Develop benchmarking tools for ecological performance
- Consider what local land use traditions are consistent with FWS goals and management activities
- Respond to visual appearance of regional landforms, vegetation, and other natural features
- Review historic land use patterns and cultural practices
- Consider visitor experience and potential educational and interpretive benefits of road and visitor facility designs

Metrics

- Visitor satisfaction
- Ecological literacy of visitors
- Documentation of visual analysis (visual resource assessment) process (see Resources below)

Resources

Context-sensitive highway planning and design case study.

Kentucky Transportation Center. Undated. Context-Sensitive Design Case Study No. 1: Paris Pike - Kentucky.

Performance metrics for CSS design.

TransTech Mgmt., Oldham Historic Properties Inc., and Parsons Brinckerhoff Quade & Douglas for National Cooperative Highway Research Program. 2004. Performance Measures for Context Sensitive Solutions - A Guidebook for State DOT's.

Items to address or consider.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Roadway design guidelines from applied ecology and experiential perspective.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139), and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards. Available at: http://www.jonesandjones.com/news/publications.html.

Guidelines for visual and context considerations for roadway design.

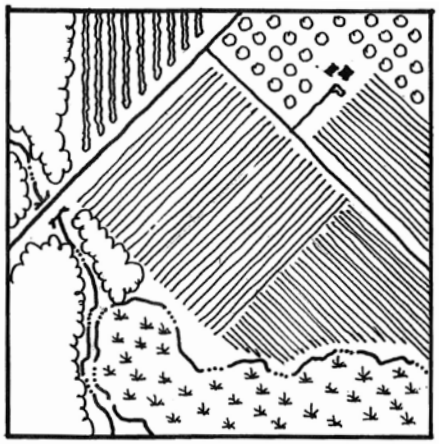
USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Transportation Research Board of The National Academies. 2002. A Guide to Best Practices for Achieving Context Sensitive Solutions (NCHRP Report 480).

Regional design guidelines.

New Mexico Department of Transportation. 2006. Architectural and Visual Quality Design Guidelines for Context Sensitive Design and Context Sensitive Solutions.

Nevada Department of Transportation. 2002. Pattern and Palette of Place: A Landscape and Aesthetic Master Plan for the Nevada State Highway System.



Historic land use patterns and natural features can help drive design.

Context Sensitive Solutions

The term Context Sensitive Solutions (CSS) refers to a decision-making process used by roadway designers and transportation engineers that accounts for many factors of a site's context—from topography and geology to cultural history and the intended users—during the planning, design, and maintenance of transportation facilities. Landscape architects played a leading role in developing this concept and are valuable team members for their expertise in determining how a project can appropriately respond to its context. Fundamental landscape architecture capabilities include identifying and expressing in built form the intrinsic qualities of a project's regional landscape.

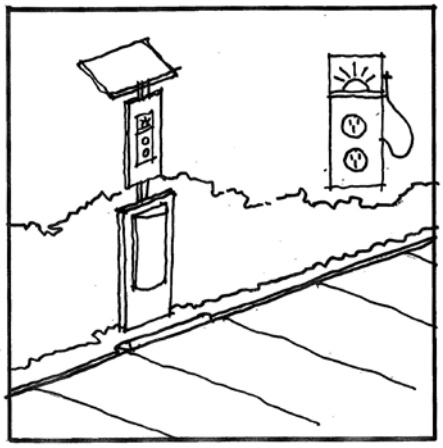
Leota Butte overlook at Ouray NWR provides an excellent landscape view.

Eva Paredes/USFWS

LE-5 Address Climate Change

Intent

Responding to climate change is a growing imperative for land managers and natural resource professionals, as well as the transportation and infrastructure sectors. Roadways on FWS managed lands may be particularly impacted because many are often in or near tidal zones, wetlands and floodplains. Factors to consider include how might roadways and visitor facilities be planned to reduce vehicle miles traveled (for visitors and staff); how will the roadways likely be impacted by changing weather and hydrologic patterns; and how might roadways be designed in a resilient and multifunctional manner that serves not only transportation, but perhaps other purposes such as protecting valuable facilities or habitat.



Facilitate greener transportation options.

Principles

- Provide alternative modes and means of access to FWS managed lands
- Consider potential climate change impacts when making decisions on location, scale and design life of infrastructure investments
- Consider construction materials and methods that have lower carbon footprints and climate impacts consistent with FWS and Department of the Interior (DOI) policies
- Use climate change research to inform transportation planning efforts at the landscape scale

Metrics

- Regional trends in weather-related damage and maintenance needs
- Vehicle miles traveled (VMT) on FWS roadways and associated greenhouse gas emissions
- Transportation modes used by visitors to reach and use FWS facilities
- Reports and data from the Emergency Relief for Federally Owned Roads (ERFO) program

Resources

Overview of transportation industry connection with climate change.

Transportation Research Board. 1997. Toward A Sustainable Future: Addressing the Long-Term Effects of Motor Vehicle Transportation on Climate and Ecology (SR 251).

Potential climate impacts of transportation sector and work towards reducing them.

Sperling, Daniel and Deborah Gordon. 2008. Two Billion Cars: Transforming a Culture. In: TR News, No. 259 (Nov-Dec).

Overview of general impacts of climate change on transportation infrastructure.

Transportation Research Board. 2008. Potential Impacts of Climate Change on US Transportation (TRB Report 290).

Regionally specific climate change impact information.

Climate Impacts Group. 2009. The Washington Climate Change Impacts Assessment.

Information, resources and organizations relating to sustainable transportation systems.

Green Highways Partnership. http://www.greenhighwayspartnership.org.

Assistance with emergencies and data on federally owned roads.

Emergency Relief for Federally Owned Roads (ERFO). http://flh.fhwa.dot.gov/programs/erfo/.

Official FWS climate change information and strategy.

http://www.fws.gov/home/climatechange/.

Climate change will impact roads on FWS managed lands. Road damage due to flooding at Arrowwood NWR (top); washed out bridge at Flint Hills NWR (bottom).

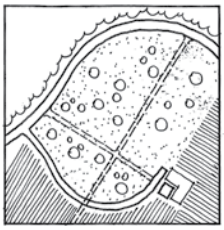
Eva Paredes/USFWS

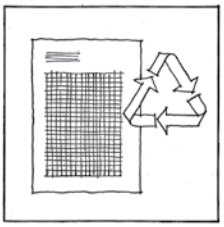
Eva Paredes/USFWS

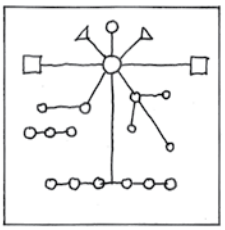
Planning Context
Overview

Planning the Process
Guidelines in this section are intended to help you consider a roadway project in a broad context before advancing to the specifics of site design and engineering presented in sections DE, OP, SM and VE of these guidelines. It is important to consider how a particular project fits into the Midwest Region's infrastructure, management and public access priorities. Consider how the access a roadway enables and impacts a roadway creates will fit into the management goals for the FWS managed lands it serves.

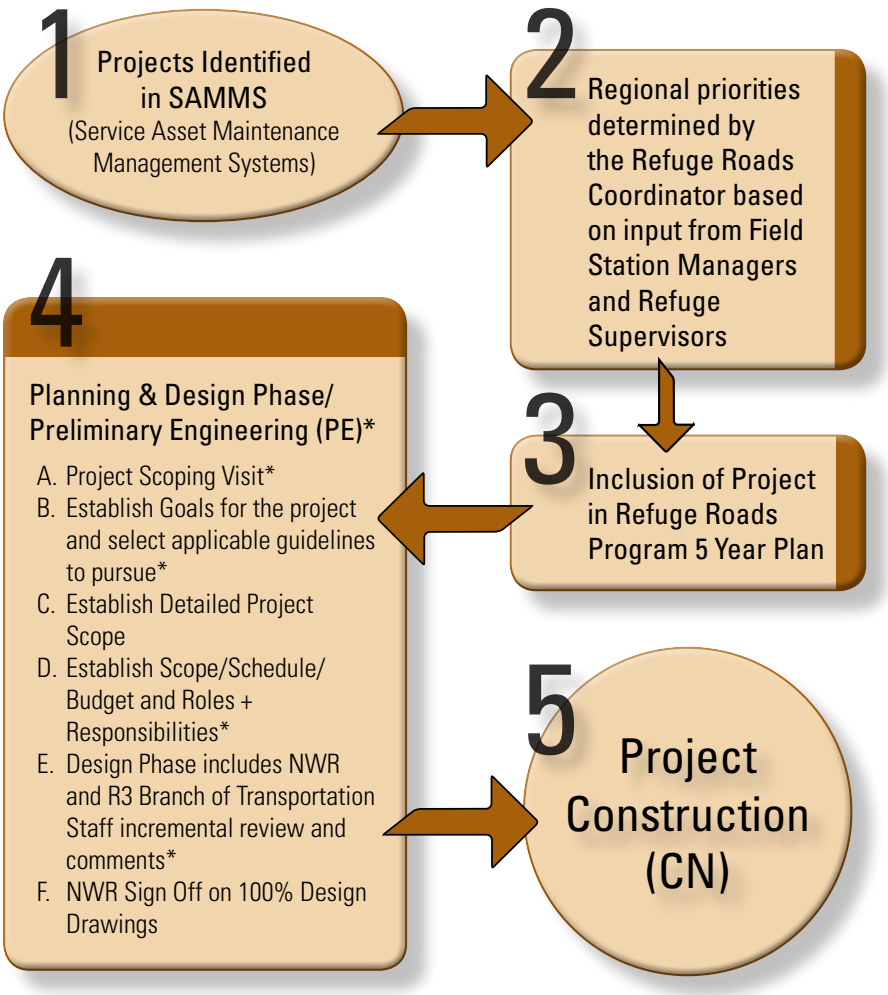
This section will help guide you to resources that will aid with or inform the planning process, as well as relevant documents that should be reviewed. It also serves as a reminder for project elements that are sometimes overlooked, such as developing a communications plan that addresses both internal and external communications about the project.







Typical FWS Region 3 Refuge Roads Project as delivered in partnership with the Federal Highway Administration (FHWA)



* Denotes the phase where the Roadway Design Guidelines are being used by the project team

PC-1 Review Relevant Planning, Policy and Regulatory Information

Intent

Take advantage of lessons learned and research in relevant fields. Reviewing relevant background information ensures your project team is considering the most advanced and applicable contextual information related to a specific project. Consider what applicable legal and FWS policy requirements your project must respond to in order to be successful.

Principles

- Review local, regional and state transportation plans to determine how efforts by other agencies may inform your project planning and design
- Contact GIS staff to initiate data gathering and discuss mapping and analysis needs
- Review your Comprehensive Conservation Plan (CCP) and step down plan sections on transportation planning
- Conduct survey work and geotechnical investigations
- Review the Regional Long Range Transportation Plan (LRTP)
- Review existing asset management data and any asset management plans
- Review requirements of NEPA and other applicable local regulations

Metrics

- List of related documents or case studies reviewed
- Concurrence from project team and stakeholders that relevant information has been reviewed and is ready to be applied to future phases of work

Resources

Overview of various systems of performance metrics.

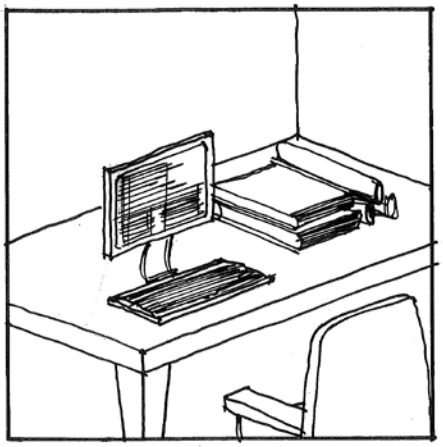
AASHTO. 2008. Guidelines For Environmental Performance Measures. NCHRP 25-25, Task 23. Prepared by Cambridge Systematics, Inc. Cambridge, MA.

NEPA information for EPA Region 10 (Pacific NW).

http://yosemite.epa.gov/R10/ECOCOMM.NSF/webpage/national+environmental+policy+act.

Guidelines for developing projects that work for local communities.

WSDOT. 2003. Building Projects that Build Communities: Recommended Best Practices.



Use in-house and online resources to find relevant case studies and up-to-date regulatory requirements.

Documents are shared and discussed during a project kickoff meeting at Umatilla NWR (top); a multidisciplinary team reviews resource documents during a project meeting in the Regional Office (bottom).

USFWS

Brian Baimson

PC-2 Define Level of Service for the Project

Intent

Your project team should identify what level of service (LOS) will be provided by roadways. This will help to adequately size facilities and ensure facility compatibility with current and anticipated demand. Designing for an appropriate LOS helps avoid over-building facilities, which can be costly. Plan to balance roadway improvements with wildlife conservation and habitat maintenance goals. Good phasing plans and cost estimates should be developed, keeping in mind that these may change over time, in response to changing visitor patterns, management priorities, or adjacent land use.

Principles

- Develop performance based, rather than prescriptive, goals and objectives
- Avoid unnecessarily over-designing facilities
- Consider utilizing partnerships and alternative transportation to accommodate special events that generate traffic or atypical demands on roadways
- Determine jurisdiction
- Decide whether roadways should enable more direct access to facilities or amenities
- Balance needs with resources and intended capacity and vehicle or user types
- Decide if and how it may be appropriate to promote lower design speeds
- Consider seasonal and multi-modal issues
- Examine case studies for other similar facilities in order to "right size" your facility for current and anticipated demands
- Consider Intelligent Transportation Systems (ITS) or other means of sharing traveler information to distribute traffic, inform visitors of seasonal closures and provide more trip planning
- Consider how the roadway can serve as a link to communities – gateways, access, etc.

Metrics

- Visitor use statistics (vehicle and trailhead)
- Visitor satisfaction
- Traffic and parking violations
- Traffic or congestion statistics
- Existing parking and roadway capacity

Resources

Design recommendations for various road types.

National Park Service. 1984. Park Road Standards.

Design recommendations for various road types.

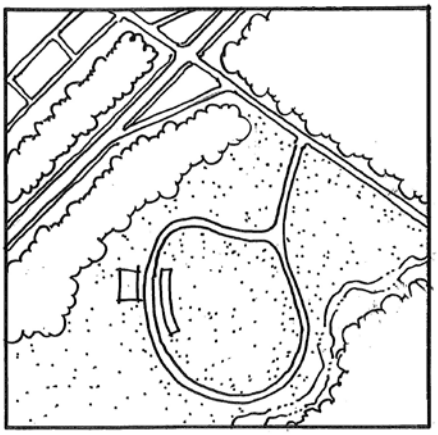
USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Regional guidelines for roadside development.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Public involvement may help clarify visitor needs.

Peaks, Harold E. and Sandra Hayes. 1999. "Building Roads in Sync With Community Values." In Public Roads (Mar./Apr. 1999).



Determine the intended vehicles and traffic volumes for the roadway.

Level of Service

The term Level of Service (LOS) is commonly used among transportation planners to refer to the number of vehicles served. However users of these guidelines should also consider the term to include other elements, such as types of users, seasonality of use and modes of transportation that a particular roadway serves. Multimodal access refers to the ability of a transportation facility to provide access via a variety of modes, such as car, bicycle, public transit or walking. In keeping with the FWS mission, consider where it is possible and appropriate to provide multimodal access to FWS facilities, and whether the scale and type of roadway is in line with local management objectives.

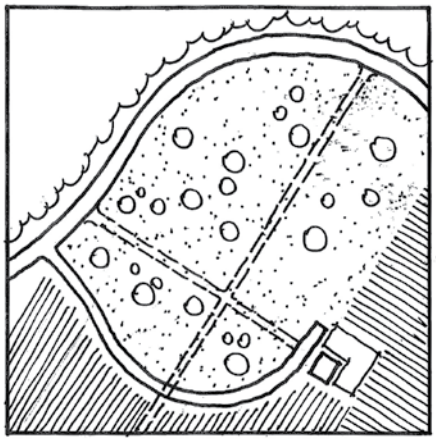
Wide gravel shoulder allows visitors to pull off of a 2-lane highway to view wildlife.

USFWS

PC-3 Evaluate Multiple Siting and Alignment Alternatives

Intent

Project teams should explore multiple design alternatives for roadway projects. A systematic alternatives evaluation process can be effectively used to arrive at a preferred alternative for further development. Alternatives development can reveal opportunities for projects to enhance visitor experience, protect wildlife, reduce ecological impacts to landscapes, minimize habitat fragmentation and provide alternative transportation methods. Reviewing a suite of alternatives will ensure that roadway decisions are compatible with the Service's mission and are made using the best possible information. The evaluation of alternatives will also support your NEPA process.



Explore and assess the effects of alternative road alignments.

Principles

- Determine if a roadway or road improvement is necessary
- Consider whether the roadway is in the right place
- Consider physical elements (e.g. hydrology), ecological effects (e.g. habitat fragmentation) as well as experiential factors (e.g. views, openness, arrival experience)
- Consider appropriateness of existing alignments versus potential alternatives
- Consider benefits or drawbacks of decommissioning existing facilities
- Determine how and when vehicles and people will move through the FWS managed lands
- Consider alternative modes of travel and potential for facility conversion, such as road to trail, trail in lieu of road, etc.
- Determine whether funding is tied to existing facilities

Metrics

- Comparison of road density for options considered
- Analysis of potential habitat fragmentation (e.g. vegetation or habitat mapping, wildlife tracking)

Resources

Case Studies.

Conboy Lake NWR, Visitor Experience Site Plan. Evaluated multiple vehicular and pedestrian circulation routes at HQ site. Contact Alex Schwartz, Project Manager (503/736 4723) for more information.

Umatilla NWR, McCormack Unit, Quarters Area Site Plan. Evaluated multiple roadway realignment concepts in conjunction with a new bunk house and residence. Contact Alex Schwartz, Project Manager.

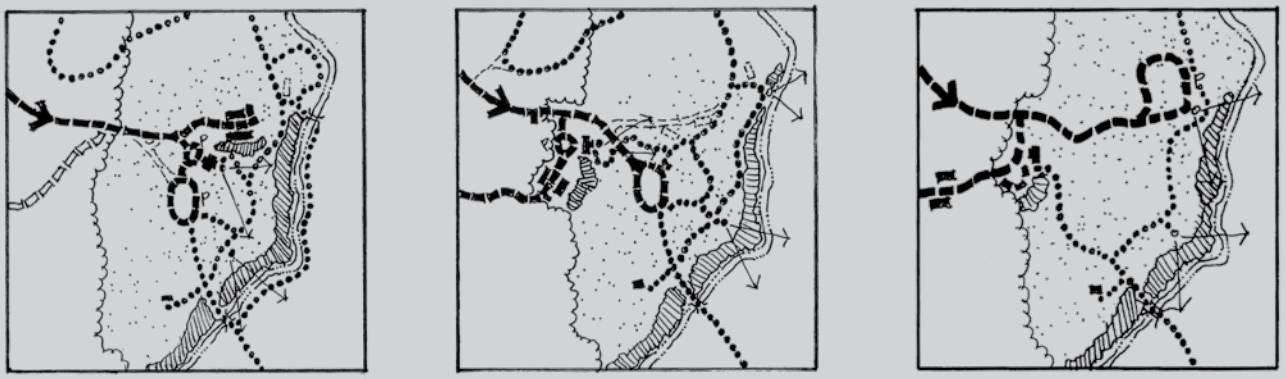
Roadway design guidelines using applied ecology and experience.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341).

A decommissioned roadway is restored with native vegetation.

SvR Design

Evaluate Alternatives

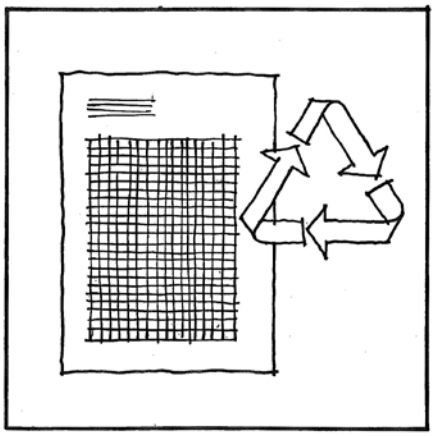


Conceptual site planning at Conboy Lake NWR evaluated three different alternatives for roadways on the site.

PC-4 Assess Full Costs and Impacts of Transportation System

Intent

Examine the full suite of costs associated with a roadway project in addition to the traditional design and construction costs. Consider the environmental impacts of the construction process and materials used, as well as future maintenance needs and costs. Projects that make sense in the near-term may not be environmentally beneficial or economically tractable in the long-term. Consider both environmental and monetary costs. Check resources for assigning monetary value to environmental costs.



Examine the characteristics of materials used in a project, including embodied energy and recyclability.

Principles

- Environmental impacts should be considered
- Evaluate the embodied energy of materials used
- Minimize externalization of environmental impacts through emissions and materials used
- Include comparison of costs of facilities for alternative modes of transportation in analysis
- Consider projected maintenance costs (often 65% of life cycle cost of an asset)

Metrics

- Carbon footprint (or ecological footprint)
- Vehicle miles traveled
- Long-term maintenance costs
- Life of pavement and other materials
- Greenroads rating system
- Life cycle costing (of total costs for construction and maintenance of a proposed transportation alternative)

Resources

Overview of various systems of performance metrics.

AASHTO. 2008. Guidelines For Environmental Performance Measures. NCHRP 25-25, Task 23.

Performance metrics for CSS.

TransTech Mgmt., et al. 2004. Performance Measures for Context Sensitive Solutions - A Guidebook for State DOT's.

Info & data on sustainable material.

Calkins, Meg. 2009. Materials for Sustainable Sites.

Overview of climate change impacts on transportation infrastructure.

Transportation Research Board. 2008. Potential Impacts of Climate Change on US Transportation.

Sustainability metrics.

University of Washington and CH2MHill. 2009. Greenroads Rating System, v1.0. http://www.greenroads.us/.

Example of triple bottom line assessment of infrastructure.

Stratus Consulting. 2009. A Triple Bottom Line Assessment of Traditional and Green Infrastructure ... in Philadelphia's Watersheds.

Triple Bottom Line in Transportation Management

The triple bottom line concept originates in business and accounting practices. It stipulates three key areas or 'resources' that should be addressed in measuring sustainability:

- Society (human capital)
- Environment (natural capital)
- Economy (financial capital)

This concept, also known as "people, planet, profit," offers an expanded spectrum of values and criteria for measuring a project or organization's success. Using this perspective in transportation management means that you would not only consider the long-term economic costs and benefits of a project, but also account for potential environmental and social costs and benefits over time.

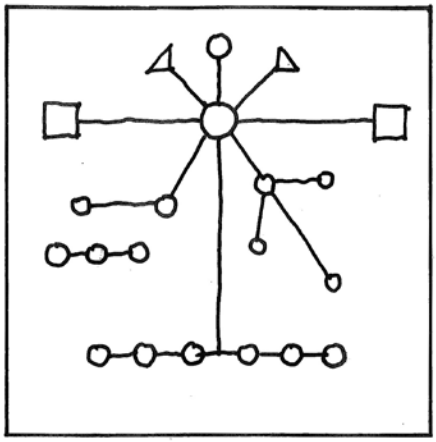
Road construction at Flint Hills NWR.

USFWS

PC-5 Communicate With Team and Stakeholders

Intent

Craft and document your approach for communications among your project team and with stakeholders. Ensure that roles and responsibilities are clearly defined in a project management plan. Carefully coordinate communications to help ensure consideration of a broad range of solutions in support of the best possible design outcome. Interdisciplinary project teams are the modern standard to ensure that work products are comprehensive and meet multiple objectives. Ensure that various elements of design are not overlooked and that there is organizational and public buy-in. Provide appropriate opportunities for involvement and review among your project team and stakeholders.



Develop a communications strategy and network.

Principles

- Address both internal and external communication needs in your project management plan
- Define clear roles and responsibilities for members of the project team
- Designate key agency contact(s) for all agencies/organizations involved
- Create a cross-functional (multi-disciplinary) team
- Develop design visualization and communication tools, such as graphics, plans, models, newsletters, web pages
- Identify the audience and develop solutions for communicating with people who don't read plans or technical documents
- Coordinate with transportation planning partners
- Contact Transportation Biologists in Ecological Services (ES) State Field Office to ensure project delivery is consistent with the mission of the Service
- Schedule project team meetings at regular intervals

Metrics

- Character and amount of public feedback on project
- Level of support and understanding of project within the organization
- Achievement of project goals

Resources

Guidelines for community and interdisciplinary planning process.

Lennertz, Bill, and Aarin Lutzenhiser. 2006. The Charrette Handbook. American Planning Association.

Case studies in collaborative management of wetlands and wildlife areas.

Porter, Douglas, and David Salvesen, eds. 1995. Collaborative Planning for Wetlands and Wildlife: Issues and Examples.

Public involvement for CSS.

Myerson, Deborah L., AICP, 1999. Getting It Right in the Right-of-Way: Citizen Participation in Context-Sensitive Highway Design. Scenic America. Available at: http://www.scenic.org/.

Public involvement for transportation projects.

Florida Department of Transportation. 2003. Public Involvement Handbook. Available at: http://www.dot.state.fl.us/EMO/pubs/public_involvement/pubinvolve.htm.

Members of Your Team

There are many professionals and stakeholder groups that you may want to include as part of your project team. Some possibilities include:

- Professional Engineers (PE)
- Landscape Architects (RLA)
- Transportation and Natural Resource Planners
- Field Biologists
- Project Leaders and Refuge Managers
- Refuge Roads Coordinators
- ES Transportation Biologists
- Representatives of other jurisdictions and agencies with local involvement

USFWS

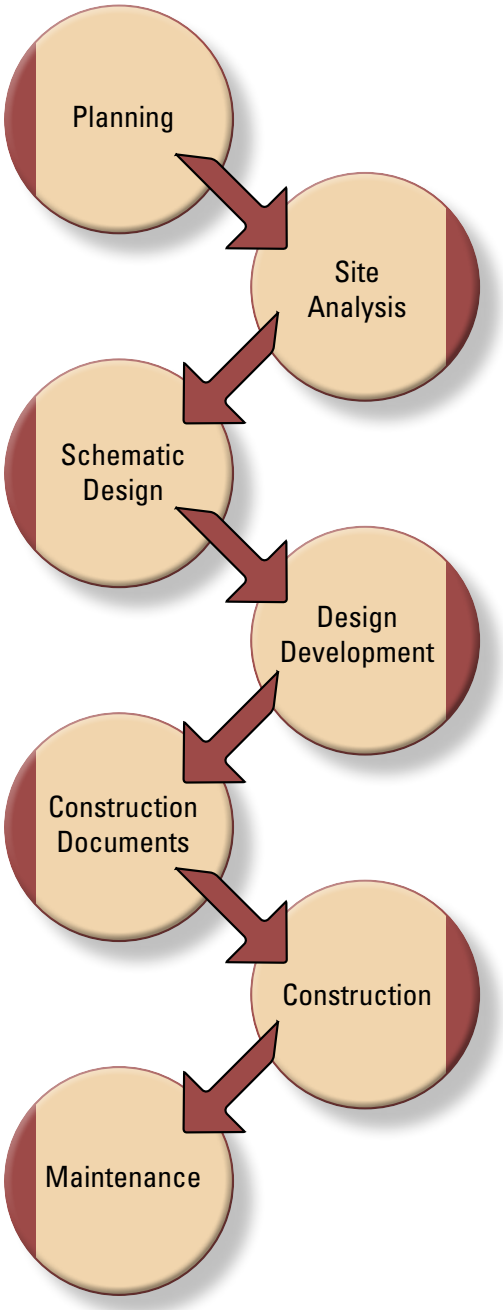
Project staff and stakeholders meet in the field at Pelican Island NWR (right).

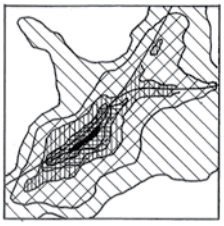
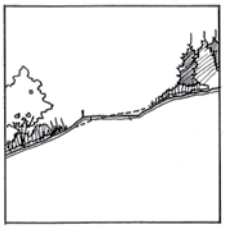
Design and Engineering
Overview

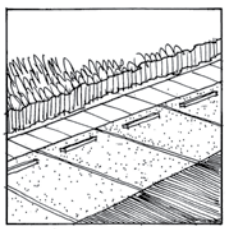
From Concept to Construction
This section recognizes that embedded in the technical aspects of a roadway project is the ability to directly support the mission of the Service. This section will guide you though a suite of considerations regarding the nuts and bolts of a roadway project, such as earthwork, alignment, safety, materials selections, vegetation preservation and management, construction practices and maintenance considerations.

Designing a complete roadway project includes using methods and materials that minimize the environmental impacts of the roadway and associated construction work. It also involves developing a design that leads the roadway to function more often as a restorative system, helping to heal previously impacted or damaged natural environments. Working with an interdisciplinary team can greatly facilitate a holistic design and engineering process. A roadway design process can be approached methodically, beginning with a broad vision and narrowing down to the technical details and ultimately construction activities to make it happen.

Process - Design to Construction



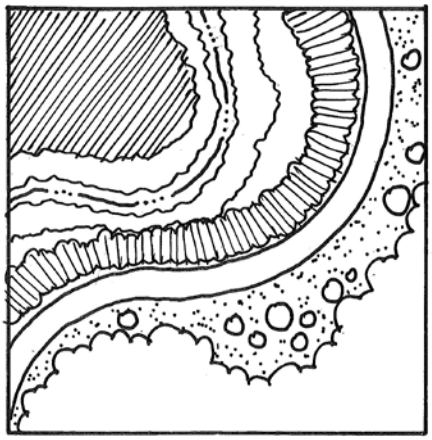




DE-1 Preserve and Restore Native Vegetation and Other Natural Resources

Intent

Roadway projects present opportunities to protect and restore native vegetation. Roadways commonly represent a barrier to wildlife and fragment habitat. However, roadway projects can represent an opportunity to heal historic wounds to a landscape and to ensure no further damage is done. Select roadway sites and alignments that avoid impacts to significant stands of existing vegetation. Look for restoration opportunities and consider what types of vegetation along roadway corridors are compatible with management goals.



Restored vegetation along road corridor can help support management goals.

Principles

- Explore ways to integrate restoration opportunities into project
- Consider how road surface conditions will affect nearby vegetation (e.g. dust, heat, other pollutants generated)
- Consider what types of vegetation and habitat along roadways will be compatible with management goals
- Use site prep and construction methods that protect and conserve existing native vegetation and natural resources
- Protect or stockpile and re-use healthy existing/native soils on site
- Protect heritage and other significant trees during and after construction (e.g. provide fencing, do not dig in or store material on top of root zones)
- Consider irrigation needs for establishing roadway vegetation
- Consider how invasive species will be managed during native vegetation establishment periods

Metrics

- Amount of post-construction restoration planned
- Vegetation surveys
- Reduced invasive species control needs

Resources

Regional guidelines for roadside development.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Comprehensive guidebook on roadside revegetation.

FHWA. 2007. Roadside Revegetation: An Integrated Approach to Establishing Native Plants.

New technology to minimize pile-driving construction impacts to aquatic organisms.

Reyff, James. 2009. Reducing Underwater Sounds with Air Bubble Curtains.

Road alignment at Nestucca Bay NWR preserves upland vegetation and forest.

Alex Schwartz/USFWS

Brian Bainnson

This roadway project at Steigerwald NWR required integration of native vegetation restoration (right). The planting plan was prepared by a registered landscape architect. The plants were installed by a licensed landscape contractor. Work included a temporary irrigation system and a 1-year maintenance and warranty period.

DE-2 Consider and Plan for Invasive Species Management

Intent

Invasive species are a major issue for habitat restoration and wildlife management efforts. Roadways often serve as a significant vector for the spread of invasive species. Thus, particular attention must be paid to this issue in the planning, design and maintenance of road corridors and road networks.

Principles

- Inventory invasive species in the region that are already present and what steps have been taken to combat their spread
- Ensure that planting plans feature plant species and densities, as well as establishment techniques to limit future invasive establishment
- Consider latest tools and techniques available to combat spread of invasive species
- Examine relevant state and regional lists of invasive species threats
- Search for and consider lessons from other relevant projects, based on similar ecosystems and/or similar project types
- Develop pre-project baselines to measure success of future management goals
- Address and plan for invasive species management during construction and general use
- Create an invasive species management plan following local Best Management Practices (BMPs), addressing both roadside and adjoining habitats
- Minimize disturbance and project footprint, including mobilization and staging areas

Metrics

- Invasive species survey data
- Staff time dedicated to invasive species management (and how that changes over time)

Resources

Invasive species along roadways from the perspective of road and landscape ecology (see Chapter 4, pp. 75-111).

Forman, Richard, et al. 2003. Road Ecology: Science and Solutions.

Establishment and maintenance of native plants along roadways.

Harper-Lore, Bonnie and Maggie Wilson, editors. 2000. Roadside Use of Native Plants. Available online at: http://www.fhwa.dot.gov/environment/rdsduse/index.htm.

FHWA. 2007. Roadside Revegetation: An Integrated Approach to Establishing Native Plants.

Guidance on roadside weed management.

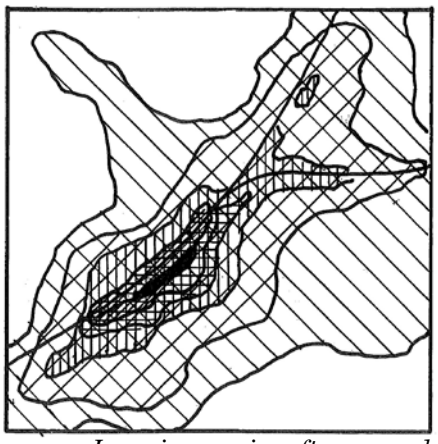
Ferguson, Leslie, C. L. Duncan and K. Snodgrass. 2003. Backcountry Road Maintenance and Weed Management.

Comprehensive list of roadside vegetation management resources.

Center for Environmental Excellence by AASHTO - Invasive Species/Vegetation Management, Reseach, Documents & Reports web page. See: http://environment.transportation.org/environmental_issues/invasive_species/docs_reports.aspx.

List of many resources on controlling invasive species, from construction best practices to ongoing maintenance.

Wisconsin Department of Transportation (WisDOT). 2003. Best Practices for Control of Invasive Plant Species.



Invasive species often spread outward from roadways.

Selected Steps for Invasive Species Management

- Post-construction maintenance plan
- Minimize disturbance
- Retain shade to the extent possible
- Know the quality of topsoil and mulch; avoid importing contaminated topsoils
- Know the quality of seed sources
- Clean equipment that has had contact with weed sources
- Over-sow disturbed areas with native seeds
- Avoid nitrogen fertilizers in the first year

List adapted from FHWA Roadside Revegetation Manual. See section 5.8 in manual.

Ryan Hagerty/USFWS

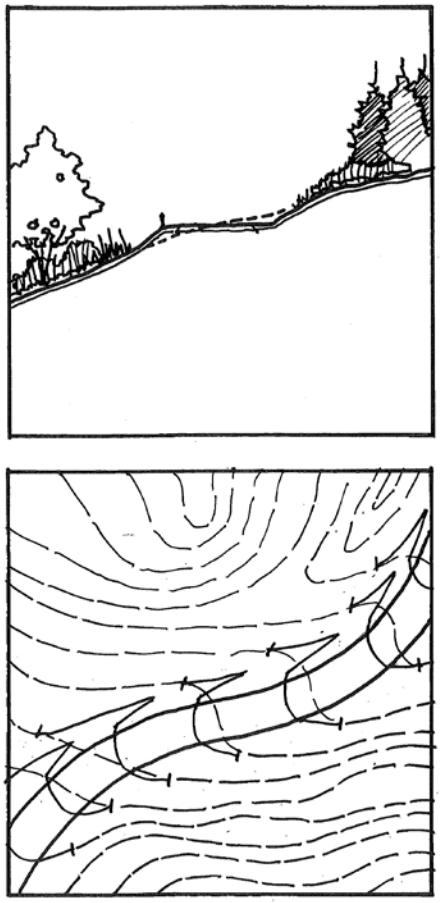
Controlling invasive species after their spread can be labor-intensive; spraying melaluka in FL (right).

DE-3 Minimize Cut and Fill to Fit With Existing Landscape

Intent

Roadways can be designed to fit with natural topography and seamlessly integrate with the landscape character. By studying the natural topography, designers can attempt to select a road alignment that will take advantage of views, while also minimizing the visual impact of the road itself. Conforming to the natural topography can minimize interruptions to the natural hydrology, and may help to preserve other important natural features, vegetation and habitat.

Elevated structures are often preferable for wildlife and habitat connectivity, and should be considered where possible. If that results in a cut/fill imbalance then seek innovative ways to use fill material. Examples include using excess fill material to construct pullouts, scenic viewpoints, and trailheads. Earthwork considerations discussed in this guideline are appropriate for both new construction projects and alterations or improvements to existing roadways.



Fitting in with existing topography is key to minimizing impacts.

Principles

- Consider roadway alignments that will minimize and balance cut and fill volumes
- Consider alternative structures to reduce fill volumes (e.g. bridge vs. culvert, etc.)
- Use roadways to highlight Refuge habitats as they follow existing terrain
- Look for continued opportunities to minimize and improve "aesthetic wounds"

Metrics

- Earthwork volumes per mile (compare to similar projects)
- Balanced cut and fill volumes
- Visual resources assessment

Resources

See cut and fill guideline on page 83.

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Case study on context sensitive solutions (CSS) for scenic highway.

Kentucky Transportation Center. Undated. Context-Sensitive Design Case Study No. 1: Paris Pike - Kentucky. College of Engineering, University of Kentucky. Lexington, KY.

Guidelines on appropriate lower-impact road alignment.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards. Hoboken, New Jersey: John Wiley & Sons. Available at: http://www.jonesandjones.com/news/publications.html.

Road design guidelines.

FHWA. Undated. Flexibility in Highway Design. FHWA Pub. No. FHWA-PD-97-062. Found at: http://www.fhwa.dot.gov/environment/flex/index.htm.

Common standard on roadway design.

AASHTO. 2004. AASHTO A Policy on Geometric Design of Highways and Streets, 5th Edition (aka 'Green Book). Washington, D.C.

Guidelines for design of very low volume roadways.

AASHTO. 2001. Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400), 1st Edition. Washington, D.C.

Gravel roads maintenance and design.

Skorseth and Selim. 2000. Gravel Roads Maintenance and Design Manual. South Dakota Local Transportation Assistance Program (USDOT - FHWA).

Roadway terraced along hillside at Hart Mountain NWR responds to opportunities and constraints of the topography

Fort Photo/Flickr.com

DE-4 Consider Road Geometries for Lower Speeds, Safety and Alertness

Intent

Low speeds can help protect wildlife, increase the value of roadside habitat and provide a greater degree of safety for all roadway users. In addition to improved safety for wildlife and roadway users, low travel speeds are compatible with the Big Six public uses. Low road speeds help to encourage alternative modes of transportation, including walking and bicycling. Lower actual speeds are achieved through deliberate roadway geometry and design, not simply signage.

Curving roads with varying views can promote alertness and lower speeds.

Principles

- Road alignments may include continuous curves, spiral curves, curving alignment, etc. in order to support safety and alertness
- Consider how curvilinear road geometries achieve multiple objectives and can specifically support habitat and wildlife management goals
- Consider the effect of road surface on travel speeds
- Determine and design around a roadway 'design speed' so that people will *want* to drive slower
- Consider safety and engineering standards that are applicable to the roadway's context

Metrics

- Road speed and volume study
- Accident reports
- Visual resources assessment
- Balanced cut and fill volumes
- Protection of vegetation and habitat
- FHWA Road Safety Audit

Resources

Design guidance based on human behavior patterns.

Transportation Research Board of The National Academies. 2008. Human Factors Guidelines for Road Systems.

Guidelines on appropriate lower-impact road alignment.

Jones, Grant R., et al. 2007. Applying Visual Resource Assessment for Highway Planning (pp.130-139) and Road Alignment (pp.330-341). In Landscape Architecture Graphic Standards. Hoboken, New Jersey: John Wiley & Sons. Available at: http://www.jonesandjones.com/news/publications.html.

Road design guidelines.

FHWA. Undated. Flexibility in Highway Design. Access at: http://www.fhwa.dot.gov/environment/flex/index.htm.

Standards for roadway design.

AASHTO. 2004. AASHTO A Policy on Geometric Design of Highways and Streets, 5th Edition (aka 'Green Book).

Handbook with design guidance on appropriate construction techniques for low traffic volume roads.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Curving roadway at Nestucca Bay NWR highlights scenery and discourages high speeds (top); emergency personnel respond to an accident at Ridgefield NWR (bottom).

Alex Schwartz/USFWS

USFWS

DE-5 Consider Construction Impacts and Best Practices

Intent

Roadway construction can have major impacts to terrestrial and aquatic organisms, as well as to environmental quality. Appropriate project planning, project management and construction management should be applied to ensure that impacts from construction activities are minimized and acceptable. The overall project footprint should be minimized as much as possible, especially with regard to construction activities such as staging materials and equipment.

Principles

- Consider appropriate season for construction
- Minimize construction impacts to terrestrial and aquatic organisms
- Implement construction best practices, such as dust and erosion control
- Look for staging opportunities that use existing developed sites and minimize impact to adjacent habitat areas
- Consider impacts of construction needs, such as water, on the surrounding environment
- Consider how construction elements, such as water wells, could be used for staff and visitor services in the future

Metrics

- Changes in population counts or behavior (e.g. breeding) of local organisms
- Visible signs of disturbance beyond limits of work
- Compliance with erosion control plan elements

Resources

Handbook with design guidance on appropriate construction techniques for low traffic volume roads.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Good checklist for items to address or consider.

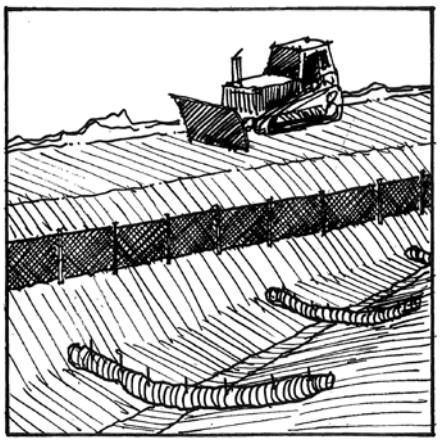
ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Guidelines with resources on environmentally-friendly construction practices.

University of Washington and CH2MHill. 2009. Greenroads Rating System, v1.0. http://www.greenroads.us/.

New technology to minimize pile-driving construction impacts to aquatic organisms.

Reyff, James. 2009. Reducing Underwater Sounds with Air Bubble Curtains.



Standard practices such as using silt fencing help reduce construction impacts to adjacent habitat.

Construction on an entry road, parking lot, and trailhead project at Steigerwald NWR, in partnership with FHWA's Federal Lands Highways program. Project required extensive multidisciplinary planning, design, and construction expertise to ensure implementation of best construction practices and minimization of habitat and scenic area disturbance.

FHWA

BMPs: Best Management Practices

Best management practices are methods that have been determined to be the most effective and practical means of preventing or reducing a project's short- and long-term environmental impacts. BMPs focus on prescriptive measures, typically in the construction and maintenance phases of a project. Design Guidelines are more general and require interpretation and adaptation.

BMPs available for roadway construction projects include:

- Erosion control
- Equipment and operation
- Noise and emissions
- Spill and Pollution Prevention
- Safety

DE-6 Consider Range and Sources of Materials for Sustainable Construction

Intent

There are numerous options available for materials that have sustainable characteristics. Consider selecting materials with lower embodied energy and carbon footprints, recycled content, high durability, and which have a high level of environmental performance. Using sustainable materials can achieve compliance with the Service's environmental and performance goals, as well as save money in the long term. Even existing roadway materials can be effectively recycled into a new project, including asphalt, aggregates and fill material.

Principles

- Identify range of materials that would be suitable or possible to use in a given project
- Consider various qualities of material options, including environmental performance, longevity, maintenance needs and aesthetic fit
- Study past performance and success of materials in other sites (case studies)
- Consider using materials that are certified for sustainability
- Consider paying more for a more durable material that may save money (through performance and maintenance) in the long run
- Source materials locally where possible

Metrics

- Embodied energy calculations
- Runoff discharge rates

Resources

See materials listed in Greenroads Guidelines.

University of Washington and CH2MHill. 2009. Greenroads Rating System, v1.0. http://www.greenroads.us/.

Check on embodied energy of proposed materials at University of Bath's Inventory of Carbon & Energy (ICE) Wiki.

See: http://wiki.bath.ac.uk/display/ICE/Home+Page.

The Sustainable Sites Initiative (SSI) provides resources and guidelines for materials and site development.

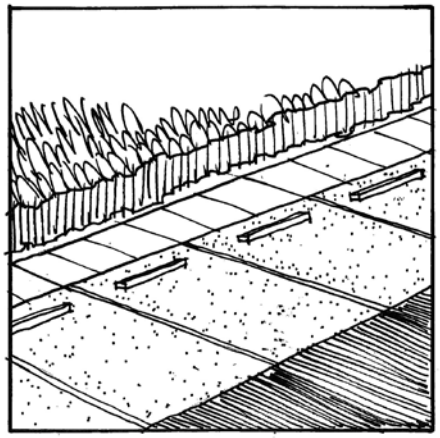
See: http://www.sustainablesites.org/.

For sites that include buildings, calculate the project's carbon footprint at BuildCarbonNeutral.

See: http://buildcarbonneutral.org.

Information and data on sustainable materials.

Calkins, Meg. 2009. Materials for Sustainable Sites.



Materials may vary for travel lanes, parking stalls and pedestrian pathways.

A parking lot at Tualatin River NWR used warm mix asphalt for main travel ways, pervious pavers in parking stalls and features a bioswale with amended soils and native plants to cleanse stormwater in order to protect habitat (top); local and sustainable materials were used to construct an Auto Tour pullout / wildlife viewing area at Modoc NWR (bottom).

Brain Bainson

Steve Clay/USFWS

Embodied Energy and Carbon Footprints

Embodied energy is generally defined as the energy (commercial and industrial) that was used to make a product. It generally includes the energy used to deliver the product to its point of use or consumption, and may also include any energy needed for the deconstruction and disposal of the product. It is commonly measured in megajoules of energy per kilogram of product (MJ/kg).

A carbon footprint is a similar metric, which measures the total amount of greenhouse gas emissions caused by a product. It is often expressed in terms of tons of CO_2 produced per kilogram of product (tCO_2/kg).

DE-7 Consider Maintenance

Intent

When planning a new roadway or retrofits to existing facilities, it is important to anticipate both short- and long-term maintenance needs. During the design phase, consider whether anticipated maintenance of potential designs is realistic, given existing or likely future budgets, staff training and skills, and other related factors. To be successful in their purpose, new types of materials (e.g. pervious paving) or facilities (e.g. wildlife underpasses or signals) may have new maintenance needs requiring staff training. Consider also that regular maintenance practices can extend the life of a facility. Weigh the pros and cons of potentially higher first costs with the benefit of lower life cycle maintenance costs for durable projects.

Consider trade-offs between longevity and maintenance needs.

Principles

- Examine current maintenance budgets, responsibilities and staff availability in concert with partners
- Estimate increase or reduction of maintenance needs for new facilities
- Consider current skills of maintenance staff and what types of training may be needed
- Consider whether contractors would be required to complete maintenance activities
- Be aware of concerns about adopting new practices, and be prepared to understand and address the concerns of operations and maintenance staff
- Provide achievable and responsive BMPs
- Discuss early in project who is responsible for repairs and maintenance to wildlife-specific facilities such as fencing
- Consider maintenance partnerships with State and County Transportation Dept's to leverage their transportation resources and expertise
- Consider the impacts of chemicals or other products that are used in roadway maintenance

Metrics

- Historic vs. current maintenance costs
- Road closure data
- BMPs correctly applied in field

Resources

Handbook with design guidance on construction and maintenance techniques for low traffic volume roads.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Good checklist for items to address or consider.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Gravel roads maintenance & design.

Skorseth and Selim. 2000. Gravel Roads Maintenance and Design Manual. South Dakota Local Transportation Assistance Program (USDOT - FHWA).

BMPs for rural road maintenance.

Smith, Stacy (Idaho Technology Transfer Center, Univ. of Idaho). 2005. BMP Handbook: Best Management Practices for Idaho Rural Road Maintenance.

Roadside vegetation management.

WSDOT. 1997. Integrated Vegetation Management for Roadsides.

Maintenance guidelines for sensitive areas.

Crane, Bill. 2006. Road Maintenance with Threatened, Endangered, or Sensitive Plants: Finding Solutions.

Maintenance guidelines.

Ruiz, Leo. 2005. Guidelines for Road Maintenance Levels.

Fire being used for maintenance of roadside vegetation

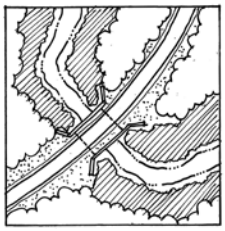
USFWS

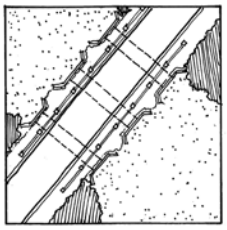
Organism Passage
Overview

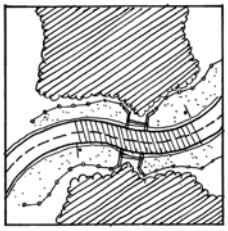
Terrestrial and Aquatic Passage
The conservation of fish, wildlife, plants and their habitats is the primary FWS mission. Roadways have major impacts on terrestrial and aquatic organisms. Roadways create barriers to wildlife movement and fragment habitat. Ensuring that organisms are able to safely move across (either over or under) roadways to meet basic life requisites is imperative to meeting the Service's mission.

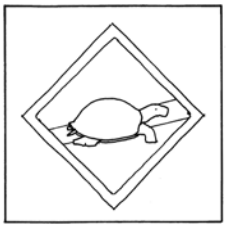
This section is intended to help direct you to guidance and resources for improving terrestrial and aquatic organism passage. The guidelines in this section reflect the growing body of science that documents the need for wildlife-sensitive planning, design, engineering, and construction of roadways. Recognizing the highly site- and species-specific nature of aquatic and terrestrial passage issues, you are particularly encouraged to seek out resources on regionally-appropriate techniques to facilitate passage of terrestrial and aquatic organisms.

Addressing organism passage issues on FWS managed lands is an emerging priority for the Service which these guidelines are intended to support. At present, addressing organism passage issues on FWS lands is most realistic in conjunction with high priority infrastructure projects such as bridge replacements. A future possibility is that projects intended to specifically address organism passage will be eligible for Refuge Roads funding.









OP-1 Develop Your Corridor Plan for Crossing

Intent

It is important to develop a comprehensive plan to address aquatic and terrestrial connectivity along a roadway. Corridor level plans are necessary to document habitat fragmentation, lack of stream continuity, population level roadway avoidance effects and wildlife-vehicle collisions (WVC). In addition to identifying the ecological impacts a roadway is having on organisms, plans should identify funding opportunities and partnerships in support of recommended mitigation measures. Successful plans identify target species and crossing "hot spots". Prioritize your specific individual crossing projects and include conceptual design documentation for crossing structures and supporting mitigation measures.

Principles

- Develop organizational partnerships
- Solicit expert review and input; wildlife crossing structures require expert design and review
- Monitor to locate roadkill hotspots but consider how roads change animal movements (avoidance)
- Identify target species based on management objectives
- Consider how crossing needs align with other transportation priorities and budgets
- Consider species' home range size and seasonal movements to determine extent of passage needed
- Consider how current or future roadway design speed and traffic volumes may impact wildlife

Metrics

- Safety (animal/vehicle collision reductions)
- Species population health
- Dispersal capability
- Daily/seasonal movement necessary to meet life requisites

Resources

Latest information on road ecology as it relates to mitigating interactions between roads and wildlife.

Beckmann, J. P., A. P. Clevenger, M. P. Huijser, and J. A. Hilty. 2010. Safe Passages.

Coordinating aquatic and terrestrial passage opportunities.

Jacobson et al. 2007. Combining Aquatic and Terrestrial Passage Design into a Continuous Discipline.

Effectiveness of various wildlife crossing facilities.

Transportation Research Board of The National Academies. 2008. Evaluation and the Use and Effectiveness of Wildlife Crossings (NCHRP Report 615).

Best practices for reduction of WVC.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Best Practices Manual. Access at http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm.

Guidance on reduction of WVC.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Report to Congress. Access at http://www.fhwa.dot.gov/publications/research/safety/08034/index.cfm.

Effects of roadways on wildlife (see entire Conservation Biology issue).

Trombulak, Stephen and C. Frissell. 2000. Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities.

Background research on roadway impacts to wildlife.

Mader, Sharon. 2006. Comparing the Ecological Effects of Linear Developments on Terrestrial Mammals.

See list of crossing issues by state, by FWS national Refuge Roads Coordinator (unpublished).

Wildlife Crossing and Aquatic Organism Passage Issues by State.

Examine the roadway corridor for locations where organisms would prefer to cross in the absence of a roadway. Study topography, vegetation patterns and hydrology along the corridor.

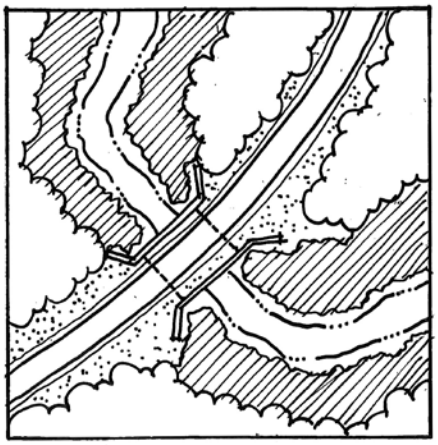
A corridor management and wildlife crossing plan is a critical tool to plan and fund projects; map showing monitoring locations for crossing plan study (below).

Robert Henke et al.

OP-2 Provide and Enhance Aquatic Organism Crossings

Intent

Roads, streams and rivers are similar systems in that they all transport material and organisms across the landscape in a linear fashion. Stream and river functions, such as the movement of woody debris, sediment transport and fish and wildlife passage have historically been impeded by engineering solutions intended to minimize disruptions to roadway infrastructure. Recognizing the importance of aquatic resources on FWS managed lands, an ecosystem-based approach to aquatic organism passage focuses on maintaining the continuity of a stream or river's characteristics where that system intersects a roadway.



Locate aquatic crossings to minimize interruption to normal stream flow and channel migration.

Principles

- Consider and design for long-range traffic volume projections for road
- Consider seasonality of wildlife movement and stream flows
- Develop list of target species for aquatic organism passage and focus planning and design efforts on supporting overall ecosystem health
- Consider range of stream crossing solutions and techniques
- Culverts or bridges that mimic the slope, structure and dimensions of the natural stream bed can allow aquatic species to freely move under roadways
- Plan for appropriate post-construction riparian and streambed restoration work
- Consider maintenance needs for various stream crossing designs
- Plan for appropriate in-water work windows
- Consider how to best complete road maintenance activities at or near stream crossings in order to avoid impacts to water quality

Metrics

- Surveys to show healthy passage of aquatic organisms
- Water quality measurements (upstream vs. downstream)
- Re-colonization of upstream habitat by aquatic organisms (in cases of improving/upgrading existing crossings)

Resources

Analysis & costs of culvert design and aquatic organism passage.

MN Dept. of Transportation. 2009. Cost Analysis of Alternative Culvert Installation Practices in Minnesota.

Design guidelines and best practices for aquatic organism passage.

USDA Forest Service. 2008. Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings.

Bridge construction guidance.

AZ Game and Fish Dept., Habitat Branch. 2008. Guidelines for Bridge Construction or Maintenance to Accommodate Fish & Wildlife Movement and Passage.

Riparian restoration guidance.

USDA Forest Service. 2002. Management Techniques for Riparian Restorations (Roads Field Guide, Volume II).

Design guidelines for stream crossings and proper road drainage.

William Weaver and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

See list of crossing issues by state, by FWS national Refuge Roads Coordinator (unpublished).

Wildlife Crossing and Aquatic Organism Passage Issues by State.

See aquatic organism passage in:

Proceedings of International Conference on Ecology and Transportation (ICOET). Access online at: http://www.icoet.net/.

Site visit to a new aquatic crossing structure during a Refuge Roads coordination meeting at Kenai NWR (top); viability for many aquatic species, such as salmon, depend on their ability to move through river and stream ecosystems (bottom).

John Sauer/USFWS

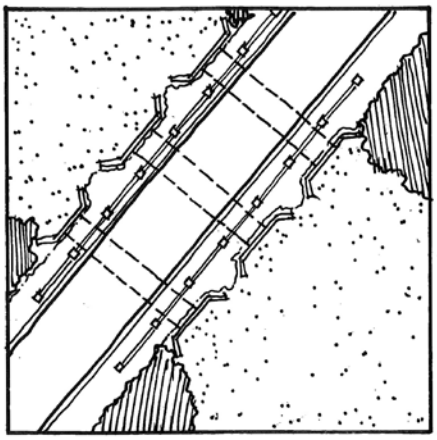
Florian Schulz

OP-3 Provide and Enhance Terrestrial Wildlife Crossings

Intent

Roadways are a significant barrier and danger for terrestrial organisms. When terrestrial organisms attempt to cross roadways in order to meet life requisites, fatalities and injuries can result for both wildlife and humans. If wildlife-vehicle collisions (WVC) regularly take place along a roadway, this is a good indicator of the need for mitigation. Another less visible effect of habitat fragmentation caused by roadways is avoidance behaviors that can have significant effects on populations.

The most effective mitigation measure to reduce WVC and to enhance terrestrial organism passage across roadways is to design and construct suitable crossing structures, in combination with barrier and diversion fencing, where appropriate. It is important to remember that every species is impacted by roadways in different ways. Terrestrial crossing projects can seek to meet multiple ecosystem connectivity objectives simultaneously.



Terrestrial wildlife crossings provide safer crossings for wildlife and connect fragmented habitat patches.

Principles

- Identify design species and their crossing structure needs; design crossings that work for as many species as possible
- Consider and design for long-range traffic volume projections for roadway
- Consider visual quality and aesthetic impact of structures
- Improve nearby habitat for wildlife, especially areas leading to or connecting with crossings
- Maximize opportunity for restoration project links to crossing/connectivity sites
- Consider "right crossing, right place" when locating crossings
- Review the corridor management or crossing plan
- Bridge replacements are the best opportunity in a 50-70 year time frame to create movement opportunities and should be taken advantage of even if no other projects are in the area

Metrics

- Evidence of unmet need to cross
- Improved wildlife counts in adjacent areas after crossing implementation
- Improved wildlife dispersal rates
- Reduction in WVC

Resources

Bridge construction guidance.

AZ Game and Fish Dept., Habitat Branch. 2008. Guidelines for Bridge Construction or Maintenance to Accommodate Fish & Wildlife Movement and Passage.

Wildlife crossing structures and fencing effectiveness evaluation.

Hardy et al, Western Transportation Institute. 2007. Evaluation of Wildlife Crossing Structures and Fencing US Hwy 93 Evaro to Polson.

Effectiveness of various wildlife crossing types.

Transportation Research Board of The National Academies. 2008. Evaluation and the Use and Effectiveness of Wildlife Crossings.

Best practices for WVC reduction.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Best Practices Manual.

Guidance on reduction of WVC.

FHWA. 2008. Wildlife-Vehicle Collision Reduction Study, Report to Congress.

See FWS Refuge Roads Coordinator list of crossing issues by state (unpublished).

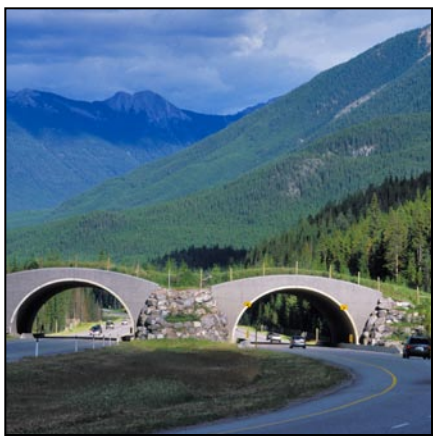
Wildlife Crossing and Aquatic Organism Passage Issues by State.

See crossing structure design in:

Proceedings of International Conference on Ecology and Transportation (ICOET). Access online at: http://www.icoet.net/.

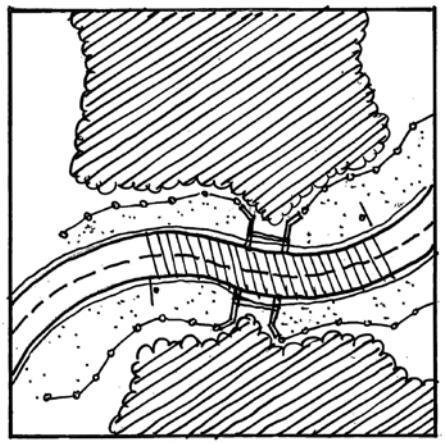
Bridge replacements are excellent opportunities to enhance terrestrial crossing opportunities (top); a wildlife overcrossing in Banff NP, Canada has successfully improved both safety and wildlife movement (bottom).

Brian Baimson



Florian Schulz

OP-4 Evaluate Need for Wildlife Fencing and Other Guiding Features



Fencing can help guide wildlife to safer crossing areas.

Intent

Wildlife-vehicle collisions (WVC) can be reduced through the use of barrier and diversion fencing or other features that help guide wildlife to crossing structures, including overpasses or underpasses. Effective wildlife barrier and diversion fencing forces animals off the road and into a crossing structure. In order for a crossing structure to be effective, it needs to be designed in conjunction with fencing. Project teams should consider aesthetics, where to end fencing and how fencing relates to topographical features in the landscape. Fencing design is highly species-specific and should be designed in consultation with an expert.

Barrier and diversion fencing requires maintenance. Successful projects account for maintenance concerns and budgets during the design phase. Fencing discussions might include a consideration of how to handle fence ends. Where to end a fence has major safety implications. It is a difficult decision, and is best done in consultation with an expert.

Principles

- Study WVC or other interactions along the corridor
- Recognize that fencing is a last resort option, and that the outcomes can be deadly for wildlife inadvertently trapped on a roadway
- Design fencing treatments based on species and environmental conditions
- Include escape structures in the design; jumpouts are more effective than the commonly used one-way gates
- To avoid "end run" WVC, end fencing beyond prime habitat areas *or* at locations with good visibility
- Boulder piles can act as a maintenance-free fence for ungulates
- Consider how best to accommodate multiple species
- Consider the aesthetic impacts of wildlife fencing
- Consider how to handle fencing at access roads

Metrics

- WVC counts
- Reduction in wildlife mortality due to WVC

Resources

BMPs for reduction of WVC.

FHWA. 2008. Best Practices Manual, Wildlife Vehicle Collision Reduction Study (Report to Congress). Found at http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm.

Wildlife crossing structures and fencing effectiveness evaluation.

Hardy et al, Western Transportation Institute. 2007. Evaluation of Wildlife Crossing Structures and Fencing on US Hwy 93 Evaro to Polson.

Effectiveness of various wildlife crossing types.

Transportation Research Board of The National Academies. 2008. Evaluation and the Use and Effectiveness of Wildlife Crossings (NCHRP Report 615).

Website with additional guidelines and case studies of construction and maintenance practices to benefit wildlife along roadways.

FHWA - Keeping It Simple: Easy Ways to Help Wildlife Along Roads. See: http://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm.

Continuous page wire fencing is commonly used to keep wildlife off roads and to direct them to crossing structures (top); jumpouts are essential features to allow trapped animals to leave the road whenever continuous fencing is used (bottom).

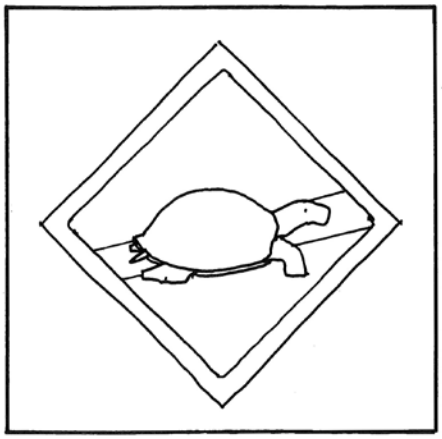
lisahends/Flickr.com

USFWS

OP-5 Consider Warning and Safety Systems for Drivers

Intent

An important component of facilitating terrestrial organism passage is promoting adequate awareness and caution on the part of drivers. Various systems exist to warn drivers of the presence of wildlife on a roadway. These systems include static signs to alert drivers to zones where wildlife typically cross roadways as well as flashing lights or other signals that respond to the presence of wildlife near the roadway. The most effective signage systems are active warning systems. Static warning signs, if strategically placed and well designed, can improve public awareness and may be a good fit for low volume roads.



Warning signs can help remind drivers to look out for wildlife on the road.

Principles

- Select the appropriate type of signage for the species, roadway LOS and site conditions
- Provide public information on the crossing design and intent
- Consider active warning systems for "end runs" of fencing, crossing hot spots and as temporary mitigation measures in the absence of crossing structures
- Consider the related benefits of communicating crossing and habitat areas, such as public education and communicating stewardship

Metrics

- Wildlife-vehicle collision (WVC) statistics (note that these are a better measure of safety than ecological conditions; even then, they are suspect unless expertly interpreted)

Resources

BMPs for reduction of WVC.

FHWA. 2008. Best Practices Manual, Wildlife Vehicle Collision Reduction Study (Report to Congress). Found at http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm.

Wildlife crossing structures and fencing effectiveness evaluation.

Hardy et al, Western Transportation Institute. 2007. Evaluation of Wildlife Crossing Structures and Fencing on US Hwy 93 Evaro to Polson.

Research on effectiveness of methods for collision reduction.

Huijser et al, and Salsman and Wilson. 2006. Animal Vehicle Crash Mitigation Using Advanced Technology, Phase I: Review, Design And Implementation, SPR-3(076).

In areas where wildlife is known to cross roadways, active warning systems can be effective to alert drivers to the presence of wildlife on or near a roadway.

Florian Schulz

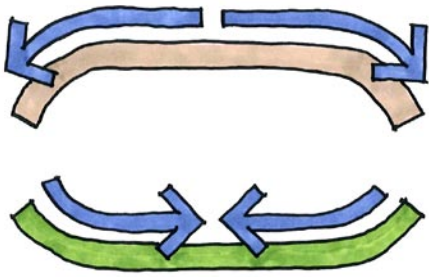
Stormwater Management
Overview

Cleaning Water, Improving Habitat
It is important to consider what happens to stormwater runoff along the entire roadway. Runoff from roadways on FWS managed lands may deliver chemical pollutants and sediment to surface and ground water. Roadways have a profound effect on the hydrology of a given site and watershed. Impervious surfaces increase runoff rates, volumes, temperature and duration. Roadway surfaces can concentrate flows, creating unnatural flow regimes that impact adjacent lands and lead to cumulative impacts downstream at the watershed scale, such as erosion and flooding.

This section discusses sustainable stormwater management techniques and points you to educational resources and guidelines on their design, construction and maintenance. Such techniques can help to clean stormwater runoff from roadways, filtering out particulates and other pollutants. They can also slow flows and detain water during peak storm events, restoring more natural flows to adjacent water bodies. A common term used to describe this approach to stormwater management is low impact development (LID). LID emphasizes conservation and the use of existing natural site features, integrated with distributed, small-scale stormwater controls to more closely mimic natural hydrologic patterns.

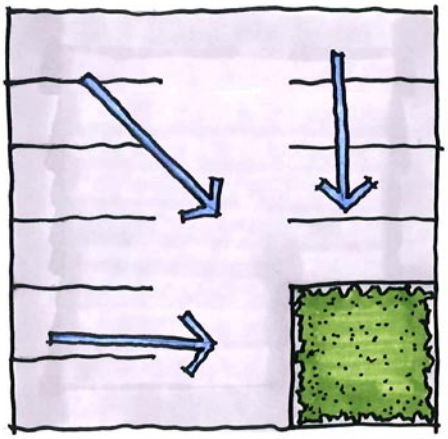
LID techniques include various features known collectively as natural drainage systems (NDS). These rely mainly on plantings, amended soils and other natural materials to treat, detain and retain stormwater runoff; these are often referred to as bioretention. Bioretention features include bioswales and rain gardens. Areas dedicated to NDS serve to buffer high value habitat from ecological disturbances caused by roadway infrastructure. Natural drainage features may also provide screening or visual buffering—functions that are often desirable when separating uses on a site or landscape.

NDS should be designed and implemented with care, so as to be compatible with habitat management goals. Concerns about their use include drawing wildlife closer to roadways through habitat creation (potentially causing increased negative animal-vehicle interactions), and the possibility of concentrating roadway pollutants into specific areas at levels that may be harmful to wildlife. These are important concerns to address, and care should be taken that each facility is designed to meet site-specific concerns.

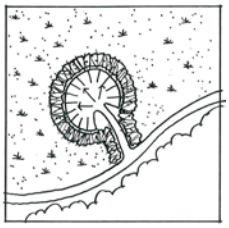


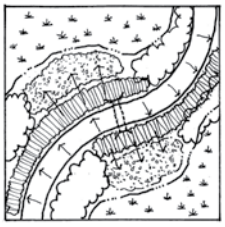
Typical facilities disperse runoff without treatment (top), while an LID approach detains and cleans water on site (bottom)

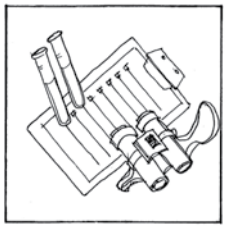
LID Philosophy
LID asks us to nurture stormwater rather than dispose of it. NDS features van help to achieve this.

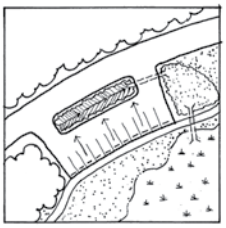


Typical NDS Sizing
An NDS feature such as a bioretention area typically requires an area of only 10% of the impervious area it is designed to treat.









SM-1 Buffer Habitat from Polluted Runoff

Intent

Runoff from roadways can carry unwanted pollutants into adjacent streams and water bodies. It can also adversely affect (increase) the temperature of receiving water bodies. Methods for reducing pollution (chemical, particulate and temperature) should be considered and used to minimize or eliminate water quality issues roadway runoff. Treatment facilities in the right-of-way can also serve to intercept and improve the quality of runoff water from other nearby sources.

Principles

- Adhere to a low impact development (LID) strategy in planning and designing repairs and improvements
- Consider natural drainage system (NDS) treatment facilities, including filter strips and bioswales
- Stormwater treatment facilities and approach need to be site-specific
- Consider appropriate NDS features for the type of roadway—parking, auto tour route, entry/access road, highway, etc.
- Look at hydrology planning in the area and be aware of roadway impacts on it

Metrics

- Water quality testing
- Temperature monitoring

Resources

Design guidelines for LID features.

US Dept. of Defense. 2004. Unified Facilities Criteria (UFC) - Design: Low Impact Development.

LID guidelines for Pacific NW.

Hinman, Curtis. 2005. Low Impact Development: Technical Guidance Manual for Puget Sound. Puget Sound Action Team. Access at: http://www.psparchives.com/publications/our_work/stormwater/lid/lid_tech_manual05/LID_manual2005.pdf.

Buffer design guidelines for that include stormwater treatment.

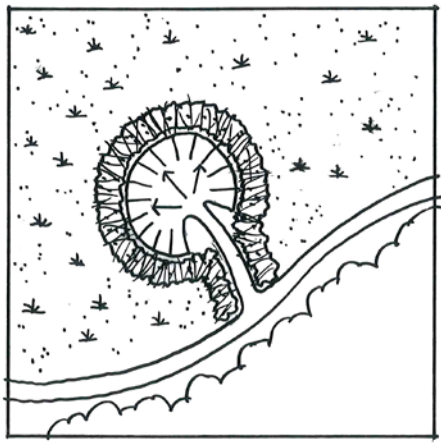
Bentrup, G. 2008. Conservation buffers: design guidelines for buffers, corridors, and greenways. Gen. Tech. Rep. SRS-109. Access at: http://www.unl.edu/nac/bufferguidelines/.

Roadway design guidance for lower impact to hydrology.

Dashiell and Lancaster. Undated. Road Design Guidelines for Low Impact to Hydrology. Five Counties Salmonid Conservation Program.

White paper on integrated LID and ecological analysis.

Mensing and Chapman. Undated. Conservation Development and Ecological Stormwater Management: An Ecological Systems Approach.



NDS features receive, clean and detain or retain runoff from roadways and other impervious surfaces; they can buffer habitat areas from negative ecological impacts.

Parking lot runoff at McNary NWR drains to a central bioswale that treats polluted runoff and buffers habitat from roadway impacts.

Brian Bainsson

Water Quality 101 **Issue: Stormwater runoff from roads and parking lots is laden with pollutants**

Alex Schwartz/USFWS

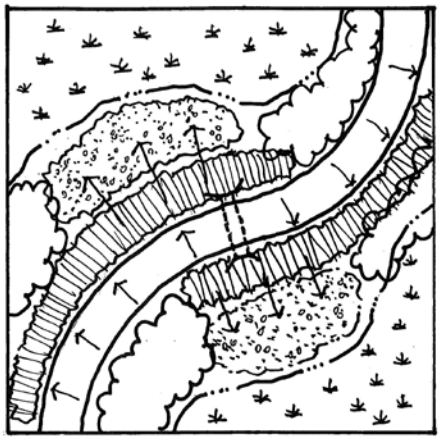
- Conventional facilities collect and drain polluted runoff using a variety of methods, such as sheet draining, "grassy swales," curbs and drainage inlets. These can quickly convey pollutants directly to sensitive habitats before the pollutants can be filtered out (*left*).
- Improved facilities are designed to intercept and filter polluted runoff before discharge to sensitive habitats (*right*).

SvR Design

SM-2 Protect Habitat from Erosive Flows and Flooding

Intent

The rate of flow of runoff from roadways is major issue of concern. Flow rates are typically much higher and shorter in duration than those which would come from the same areas in unpaved conditions. Such spikes in flow rates create erosion and flooding issues and prevent groundwater recharge. These effects can have major detrimental impacts on fish, wildlife and their habitats. Natural drainage system (NDS) facilities should be designed to not only clean water, but to detain peak flows and, where appropriate retain, runoff locally. Target flow control should be based on undeveloped conditions for local ecosystems, as well as current soil conditions and downstream concerns.



NDS features can detain runoff, slowing its flow to adjacent water bodies.

Principles

- Minimize quantity of stormwater runoff
- Minimize use of impervious materials
- Technologies to address water quantity issues include wet ponds, porous pavements, bioswales and rain gardens
- Improvements (stormwater facilities) must be sized appropriately to handle flow

Metrics

- Measurements of stormwater runoff rates and volumes
- Hydrographs for receiving water bodies

Resources

Design guidelines for low-use roads, focusing largely on hydrology.

Weaver, William and Danny Hagans. 1994. Handbook for Forest and Ranch Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads.

Low impact development (LID) guidelines for Pacific Northwest.

Hinman, Curtis. 2005. Low Impact Development: Technical Guidance Manual for Puget Sound. Puget Sound Action Team. Olympia, WA.

Design guidelines for LID features.

US Dept. of Defense. 2004. Unified Facilities Criteria (UFC) - Design: Low Impact Development.

Info on vegetative filter strips (page 44) and other practices.

Smith, Stacy (Idaho Technology Transfer Center, Univ. of Idaho). 2005. BMP Handbook: Best Management Practices for Idaho Rural Road Maintenance.

Roadway design guidance for lower impact to hydrology.

Dashiell and Lancaster. Undated. Road Design Guidelines for Low Impact to Hydrology. Five Counties Salmonid Conservation Program.

BMPs for ESA compliance.

WSDOT. Best Management Practices Field Guide for ESA Sec 4(d) Habitat Protection.

A gravel parking lot with central vegetative swale at Ash Meadows NWR minimizes impervious materials and allows for large storm events to be infiltrated on site, away from more sensitive habitats.

Jeff Holm/USFWS

Water Quantity 101 **Issue: Impervious surfaces increase runoff rates, temperature, and volume**

SvR Design

- Runoff from impervious areas often concentrates flows, which impacts adjacent lands and also leads to cumulative downstream and watershed-scale impacts
- Where space is limited or linear alignment is tight, choose materials such as pervious paving (*left*) to reduce runoff rates
- Use NDS features to detain runoff before discharge (*right*)

SvR Design

SM-3 Monitor and Maintain Stormwater Facilities

Intent

Monitoring and maintaining stormwater facilities after project construction is key to learning from your work and improving the effectiveness of future projects. Particular attention should be given to monitoring the effects of the project on the landscape's environmental quality. Budgeting for and following standard monitoring and maintenance protocols are a critical component for stormwater management on FWS managed lands.

Principles

- Employ stormwater facility monitoring protocols (per ASCE or other standards)
- Maintain facilities in a manner that optimizes facility performance
- Collect relevant baseline data before project construction
- Check for and use appropriate control measures on any invasive species
- Check for levels of contaminants coming from roadway, and track their fate in areas adjacent to roadway
- Monitor level of compatibility with local wildlife and surrounding habitats
- Document maintenance needs and costs
- Document effectiveness of soil mixes and plants used
- Share or publish monitoring results to help improve design and results in other projects
- Use monitoring results in adaptive management

Metrics

- Measurements of stormwater runoff rates, volumes, temperature and contaminants
- Hydrographs for receiving water bodies
- Analysis documenting water quality improvements due to NDS features

Resources

Technical guidelines for monitoring of stormwater in various conditions.

US EPA. 2002. Urban Stormwater BMP Performance Monitoring. Access at: http://water.epa.gov/scitech/wastetech/guide/stormwater/monitor.cfm.

NDS maintenance guidelines that include guidance on monitoring.

City of Bellevue, WA. 2009. Natural Drainage Practices Maintenance Guidelines. Access at: http://www.bellevuewa.gov/pdf/Utilities/Natural_Drainage_Practices.pdf.

Study from UC Davis & USFS finding that bioswale significantly reduced runoff and removed pollutants; includes monitoring protocols used.

Xiao, Qingfu and E. G. McPherson. 2009. Testing a Bioswale to Treat and Reduce Parking Lot Runoff. Access at: http://www.fs.fed.us/psw/programs/cufr/products/psw_cufr761_P47ReportLRes_AC.pdf.

Standard operating procedures for stormwater monitoring.

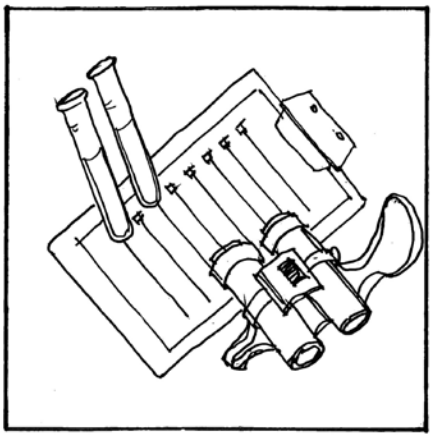
Washington Department of Ecology. 2010. Stormwater monitoring resources. Access at: http://www.ecy.wa.gov/programs/wq/stormwater/municipal/strmH2Omonitoring.html.

Guidance on stormwater monitoring for construction sites.

Washington Department of Ecology. 2006. How to do Stormwater Monitoring: A guide for construction sites. Access at: http://www.ecy.wa.gov/biblio/0610020.html.

Monitoring for larger debris.

ASCE. 2010. Guideline for Monitoring Stormwater Gross Solids. Order at: http://www.asce.org/Product.aspx?id=2147485997.



Monitoring projects will help advance the development of a focused approach to stormwater management on FWS managed lands that is responsive to the Service's mission.

Similar to managed wetlands, stormwater facilities should be periodically monitored for performance and to inform adaptive management and maintenance regimes.

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SM-4 Promote Stewardship of Aquatic Resources

Intent

Low impact development (LID) facilities for stormwater management serve the functional purposes of cleaning and slowing or retaining stormwater runoff and protecting our aquatic resources. Additionally they can help to raise public awareness and understanding of the relationship of roadways to aquatic resources, wildlife and habitat conservation. Stormwater facilities can be designed to reveal to and educate visitors about the impacts of development on aquatic resources. Facilities can communicate how they protect aquatic resources, and can influence behavior and management practices beyond FWS managed lands in support of the Service's mission.

Principles

- Prioritize aesthetic and educational components of highly visible stormwater management facilities
- Use stormwater facilities to communicate stewardship commitment of FWS
- Design stormwater facilities with native plants in arrangements that respond to multiple objectives, including management, educational/ interpretive, aesthetic and maintenance goals
- Make stormwater part of the site's interpretive story and reveal the process of stormwater quantity and quality controls to the extent possible
- Consider educational and volunteer opportunities presented by stormwater management facilities
- Consider potential benefits or drawbacks of additional wetland habitat areas created by natural drainage facilities

Metrics

- "Friends" groups involvement & awareness
- Production/use of interpretive materials or content
- Use of stormwater facilities as positive examples or success stories (e.g. in public media, professional circles, within FWS)

Resources

Social benefits of road and highway systems.

AASHTO. 2008. Above and Beyond: The Environmental and Social Contributions of America's Highway Programs.

Promotional information for visitors to FWS sites.

USFWS. 2005. Byways to America's Wildest Places: Discover Your National Wildlife Refuges.

Scenic byways guidelines with details on benefits of good road design.

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Green Values calculator can help to quantify benefits from LID (aka green infrastructure) facilities.

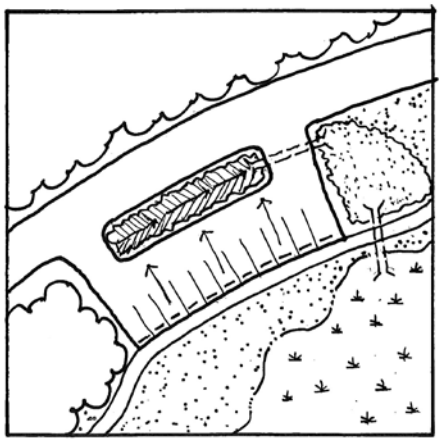
Center for Neighborhood Technology. 2010. Green Values Stormwater Management Calculator. Access at: http://greenvalues.cnt.org/

Additional resources on green infrastructure (another term that includes natural stormwater management facilities).

US EPA. 2010. Green Infrastructure: Managing Wet Weather With Green Infrastructure (website). Access at: http://cfpub.epa.gov/npdes/home.cfm?program_id=298.

Report examining social, economic, and environmental benefits of green infrastructure.

Stratus Consulting. 2009. A Triple Bottom Line Assessment of Traditional and Green Infrastructure Options for Controlling CSO Events in Philadelphia's Watersheds.



Stormwater treatment facilities integrated into roadways provide places where FWS stewardship of aquatic resources can be demonstrated.

Stormwater facilities can be an important part of visitor experience, providing interpretive opportunities (top) and allowing visitors hands-on experience planting or maintaining native vegetation (bottom).

Justin Martin

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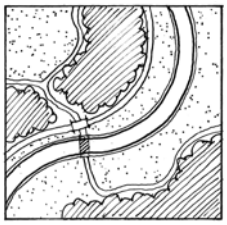
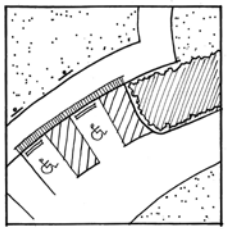
Visitor Experience
Overview

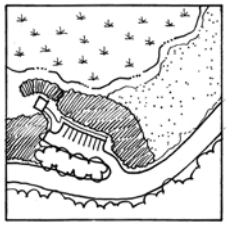
Engaging the Public
Conservation of fish, wildlife, plants and their habitats is at the core of the Service's mission. Providing public access compatible with conservation goals is paramount to achieving this mandate. Roadways are the primary infrastructure elements that facilitate public access to FWS managed lands. Conversely, landscapes without roads or limited or restricted public access on roads can support protection of sensitive habitats when necessary. This section is intended to help you consider how best to provide access to FWS managed lands. Well-designed roadways on FWS lands can help demonstrate to visitors how the Service's mission is carried out at the landscape scale.

Scenic roadways offer visitors a glimpse into the habitat areas that the Service manages, helping to inspire an ethic of stewardship and conservation among the public. Roadways should be designed to afford such experiences and to convey a sense of place that is unique to each site and destination. They should take into account both the natural and cultural histories of the land they traverse, revealing but not destroying special places and artifacts along the way. This section of the guidelines will point you to resources to help with design solutions focused on the visitor's experience. Design of roadway elements such as safety and guiding features, interpretive signs and visitor facilities should be relevant and specific to the region, if not to the individual site or refuge.

National Wildlife Refuges, Fish Hatcheries and other FWS managed lands are national treasures. Facilities there should help visitors connect with the natural heritage that the Service works to conserve.







VE-1 Preserve and Highlight Scenic Value

Intent

The scenic value of wildlife refuges plays an important role in the visitor experience. Road alignments should be chosen or revised carefully so as to preserve the scenic value of the journey. Roadway alignments and locations on FWS managed lands should afford views and simultaneously prevent roadways from becoming dominant features of the visual landscape.

Plan roadways to afford views to areas of high scenic value.

Principles

- Consider designs that respond to the character of the landscape and management practices. For example, an entrance road may offer a change in design speed, scale and geometry in order to help visitors decompress from previous highway travel
- Provide appropriate orientation and directional signage in a style that fits with the local character and landscape
- Consider and plan the viewsheds and impacts of roadways on the visual and auditory landscape
- Consider and plan coherent and consistent design elements with the facility (color, texture, form)
- Consider the entry experience (does it welcome and orient visitors?) and sequence of visitor experiences when arriving at FWS managed lands or high use areas such as visitor centers
- Consider opportunities for interpreting culture and the landscape along the corridor
- Provide safe places, such as overlooks and viewpoints, to enjoy scenery

Metrics

- Visual resource analysis/ management - USFS or BLM methodologies (see Resources below)

Resources

Scenic byways guidelines with details on benefits of good road design.

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Study on context sensitive roadway design from New Mexico.

New Mexico Department of Transportation. 2006. Architectural and Visual Quality Design Guidelines for Context Sensitive Design and Context Sensitive Solutions.

Roadside treatment design guidelines.

FHWA. 2008. Safe and Aesthetic Design of Urban Roadside Treatments.

Regional guidelines for roadside development.

ODOT. 2006. Roadside Development Design Manual - Guidelines for Visual Resource Management, Landscaping, and Hardscaping (DRAFT).

Design guidance based on human behavior patterns.

Transportation Research Board of The National Academies. 2008. Human Factors Guidelines for Road Systems (NCHRP Report 600B).

USFS visual assessment technique.

USDA Forest Service. 1995 (rev. 2000). Landscape Aesthetics: A Handbook for Scenery Management. AH-701.

BLM visual assessment technique.

BLM. 2007. Visual Resource Management (website). Access at http://www.blm.gov/nstc/VRM/.

Roadways provide or give access to scenic vistas (top) and visitor facilities such as a viewing blind at Finley NWR (bottom).

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Brian Baimson

VE-2 Promote and Facilitate Multiple Modes of Transportation

Intent

Access to FWS managed lands, where compatible with Station purpose, should be available to visitors via multiple forms of transportation, including public transit, bicycle, and walking. Alternative forms of transportation can help reduce visitors' carbon footprints, which in turn may have long term positive affects for the natural resources we manage. Planning and building to accommodate sustainable transportation options can help to achieve the FWS mission.

Principles

- Design alternative transportation facilities that are compatible with wildlife and habitat conservation
- Provide parking for bicycles and other alternative types of transportation
- Consider adding charging stations for electric vehicles
- Coordinate with other agencies or organizations that could provide public transportation to FWS managed lands
- Promote and partner to develop bicycle routes to FWS managed lands
- Consider bicycle routes through FWS managed lands where compatible with wildlife, safety, and user experience
- Consider signage or pavement markings to alert drivers to other types of road users
- Use outreach to encourage use of alternative transportation modes to and within the FWS managed lands

Metrics

- Counts of users arriving by public transportation, using bicycles, etc.
- Use rates of stationary facilities, such as special parking or bike racks

Resources

Potential funding source for transit and other alternative transportation options.

Paul S. Sarbanes Transit in Parks Program (5320). Access at: http://www.fta.dot.gov/funding/grants/grants_financing_6106.html.

Case studies for alternative transportation projects in National Parks.

See: http://www.volpe.dot.gov/nps/projects.html.

Design guidelines (see pp. 70-76).

USDA Forest Service. 2002. Scenic Byways: A Design Guide for Roadside Improvements.

Potential funding for developing alternative transportation systems for visitors through the Transit in Parks Program (5230)

See: http://www.fta.dot.gov/funding/grants/grants_financing_6106.html.

Bicycling on federal lands - case studies include two National Wildlife Refuges.

FHWA. 2008. Guide to Promoting Bicycling on Federal Lands. FHWA Pub. No. FHWA-CFL/TD-08-007.

Case studies that include alternative transportation programs in parks, such as shuttle bus systems.

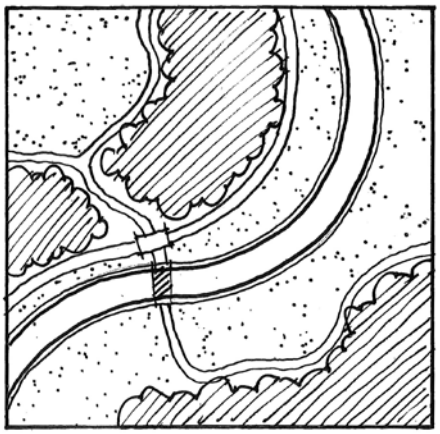
NPS Partnerships Case Studies (Transportation). See: http://www.nps.gov/partnerships/cs_type.htm#anchor19.

Lessons from Europe on traffic calming, enhancing mobility options.

Brewer, Jim, et al. 2001. Geometric Design Practices for European Roads. FHWA, Office of International Programs.

Case Study.

Tualatin River NWR. Two parking spaces designated for hybrid vehicles; bicycle racks provided at parking area; bus stop for a public transit line adjacent to the Refuge.



Providing separate facilities can encourage users who don't want to bike or walk along a roadway.

Roadway projects should facilitate multiple modes of transportation; a roadway at Ding Darling NWR (top) accommodates both autos and bikers for wildlife observation; parking lot at Great Swamp NWR visitor center (bottom) provides a safe, convenient place for bicycle parking.

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VE-3 Comply With Accessibility Standards and Guidelines

Intent
FWS managed lands should be accessible to all. FWS is subject to accessibility standards as dictated by the Architectural Barriers Act (ABA). Project teams should use the relevant suite of resources and guidance to ensure all FWS facilities are designed and constructed to comply with or exceed the mandates of the ABA.

Principles
- Define and consider visitor expectations for accessibility
- Balance safety and accessibility concerns
- Apply all relevant design criteria in order to meet or exceed the requirements of ABA
- Consider the relationship of accessible improvements to related infrastructure. Is there a completely accessible visitor experience?

Metrics
- Compliance with requirements, guidelines and standards
- Visitor use counts
- Outcomes of DCR facility audits

Resources
See ABA accessibility standards.

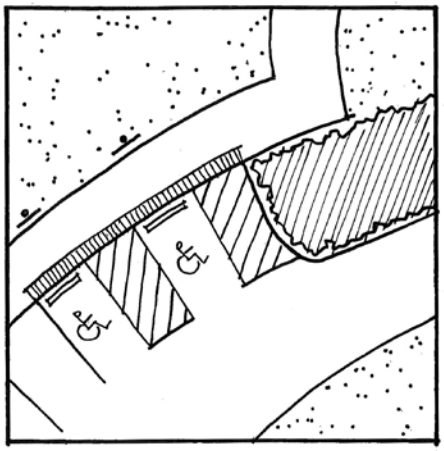
http://www.access-board.gov/gs.htm.

Draft Final Guidelines for accessibility in Outdoor Developed Areas on Federal lands:

http://www.access-board.gov/outdoor/.

Accessibility guidance for Federal outdoor areas (specific to USDA Forest Service lands/facilities).

USDA Forest Service. 2006. Accessibility Guidebook for Outdoor Recreation and Trails.



Brian Bainnson

Provide accessible parking spaces with appropriate access aisles and access to pathways (top); accessible parking at Great Swamp NWR (right).

What Federal Accessibility criteria should FWS projects follow?

The Architectural Barriers Act (ABA) of 1968
FWS is subject to the ABA. The ABA requires access to facilities designed, built, altered or leased with Federal funds. Passed by Congress in 1968, it marks one of the first efforts to ensure access to the built environment. The Access Board develops and maintains accessibility guidelines under this law. These guidelines serve as the basis for the standards used to enforce the law, the Architectural Barriers Act Accessibility Standard (ABASS).

Americans with Disabilities Act and the Architectural Barriers Act Accessibility Guidelines for Buildings and Facilities (ADAABAAG) as published in the Federal Register on July 23, 2004.
FWS should follow the scoping and technical requirements under the ABA sections. This direction covers accessibility to sites, facilities, buildings and elements by individuals with disabilities. The requirements are to be applied during design, construction, additions to and alterations of facilities.

Draft Final Accessibility Guidelines for Outdoor Developed Areas
Many FWS facilities can be characterized as Outdoor Developed Areas. The Access Board is proposing to issue accessibility guidelines for outdoor developed areas designed, constructed or altered by Federal agencies subject to the ABA of 1968. The guidelines cover trails, outdoor recreation access routes, beach access routes and picnic and camping facilities. Once these guidelines are finalized they will become the technical requirements for accessibility in outdoor developed areas. At this time, FWS may use these guidelines.

Accessibility Guidebook for Outdoor Recreation and Trails, USDA Forest Service, April 2006.
These guidelines only apply within National Forest System boundaries. However, they are a very useful tool for FWS projects recognizing that the Draft Final Accessibility Guidelines for Outdoor Developed Areas are still a work in progress.

And In General…
- Use principles of universal design—programs and facilities should be usable by all people, to the greatest extent possible, without separate or segregated access for people with disabilities.
- Accessibility does not supersede requirements for safety.
- Consider the level of development at a site to help balance safety and accessibility.

VE-4 Facilitate Compatible Wildlife Dependent Recreation and Education

Intent

The FWS mission is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. The mission of the Service should be integrated and transparent in the design of roadways on FWS managed lands. Roadways are key in fulfilling the Service's priority of connecting people with nature, and can provide opportunities to do so in ways that are compatible with the conservation mission of the Service.

Principles

- Consider whether current or anticipated visitor impacts are compatible with wildlife and their habitats
- Consider safety for visitors, staff and wildlife
- Provide orientation and interpretive information to support visitor experiences
- Consider the enabling legislation of the refuge - what is the purpose of the unit?
- Consider relationships with other recreational or educational sites within the region
- Consider demand, site carrying capacity and quality of visitor experience
- Determine what kind of access to recreation sites is available, appropriate and necessary
- Consider impacts to recreational activities from roads
- Promote appropriate facilities for safely viewing wildlife from roads where necessary
- Plan for appropriate signage, including entrance, orientation, directional and interpretive
- Consider access for and needs of school groups

Metrics

- Visitor counts
- Diversity and quality of activities available for visitors
- Ease of use (proximity, clarity, etc.) of recreational and educational elements

Resources

California State Parks Children in Nature Campaign.

http://www.parks.ca.gov/?page_id=24914.

Information on local, regional and national programs to connect kids with nature.

Children and Nature Network. See: http://www.childrenandnature.org/movement/info.

National Wildlife Federation's kids outside program.

See: http://www.nwf.org/beoutthere/.

Washington State Parks "No Child Left Inside" campaign.

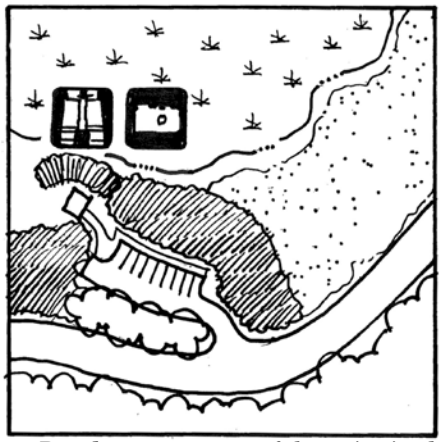
See: http://www.parks.wa.gov/NoChildLeftInside/.

USDA Forest Service Discover the Forest campaign.

http://www.discovertheforest.org/index.php.

Bicycling on federal lands - case studies include two National Wildlife Refuges.

FHWA. 2008. Guide to Promoting Bicycling on Federal Lands. FHWA Pub. No. FHWA-CFL/TD-08-007.



Roadways are one of the principal infrastructure elements that facilitate access to the Big 6 on FWS managed lands.

The Big Six

The 1997 Refuge System Improvement Act outlines "The Big Six" priority public uses for Refuge system improvements:

- Hunting
- Fishing
- Wildlife Photography
- Wildlife Observation
- Environmental Interpretation
- Environmental Education

Auto tour route at Ridgefield NWR provides visitors access to Big 6 activities, such as wildlife observation and photography.

USFWS

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Kentucky Transportation Center. Undated. Context-Sensitive Design Case Study No. 1: Paris Pike - Kentucky. College of Engineering, University of Kentucky. Lexington, KY.

Nevada Department of Transportation. 2002. Pattern and Palette of Place: A Landscape and Aesthetic Master Plan for the Nevada State Highway System.

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Appendix B: Glossary

Abbreviations

ABA Architectural Barriers Act

ABAAS Architectural Barriers Act Accessibility Standards

ADA Americans with Disabilities Act

ASCE American Society of Civil Engineers

BLM Bureau of Land Management

CCP Comprehensive Conservation Plan

CFR Code of Federal Regulations

DCR Office of Diversity and Civil Rights (FWS Region 3)

EE Environmental Education

ES Ecological Services

ESA Endangered Species Act

FHWA Federal Highway Administration

FWS U.S. Fish & Wildlife Service (also Service, USFWS)

GIS Geographic Information System

LID low impact development

LOS level of service

LRTP Long Range Transportation Plan

NDS natural drainage system

NEPA National Environmental Policy Act

NWR National Wildlife Refuge (also Refuge).

NWRS National Wildlife Refuge System

ODOT Oregon Department of Transportation

R3 Region 3 of the FWS (IL, IN, IA, MI, MN, MO, OH and WI)

ROW Right-of-way

SAMMS Service Asset Maintenance Management System

USDA United States Department of Agriculture

USFS United States Forest Service

VMT Vehicle miles traveled

WDFW Washington State Department of Fish and Wildlife

WSDOT Washington State Department of Transportation

WSPRC Washington State Parks and Recreation Commission

WVC Wildlife-vehicle collisions

Definitions

Adaptive Management. Refers to a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plan. Analysis of results help managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Alternative. Alternatives are different means of accomplishing Refuge purposes and goals and contributing to the System mission (draft Service Manual 602 FW 1.5). The no action alternative is the manner in which the refuge is currently managed, while the action alternatives are all other alternatives.

Biological Diversity (also Biodiversity). The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1. 12B). The System's focus is on indigenous species, biotic communities, and ecological processes.

Biological Integrity. Biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities (NWRS Biological integrity policy).

Compatible Use. A wildlife-dependent recreational use or any other use of a Refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the Mission of the System or the purposes of the refuge (Service Manual 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.

Comprehensive Conservation Plan. A document that describes the desired future conditions of the Refuge, and provides long-range guidance and management direction for the Refuge manager to accomplish the purposes of the refuge, contribute to the mission of the System, and to meet other relevant mandates (Service Manual 602 FW 1.5).

Contaminants (also Environmental Contaminants). Chemicals present at levels greater than those naturally occurring in the environment resulting from anthropogenic or natural processes that potentially result in changes to biota at any ecological level (USGS, assessing EC threats to lands managed by USFWS). Pollutants that degrade other resources upon contact or mixing (Adapted from Webster's II).

Cooperative Agreement. This is a simple habitat protection action, in which no property rights are acquired. An agreement is usually long term but can be modified by either party. They are most effective in establishing multiple use management of land. An example would be a wildlife agreement on a Corps reservoir.

Context Sensitive Solutions (CSS). A theoretical and practical approach to transportation decision-making and design that takes into consideration the communities and lands through which streets, roads, and highways pass ("the context"). CSS seeks to balance the need to move vehicles and other transportation modes efficiently and safely with other desirable outcomes, including historic preservation, environmental goals such as wildlife and habitat conservation and the creation of vital public spaces.

Cultural Resources. The physical remains, objects, historic records and traditional lifeways that connect us to our nation's past (USFWS, Considering Cultural Resources).

Disturbance. Significant alteration of habitat structure or composition. May be natural (e.g. fire) or human-caused events (e.g. aircraft overflights).

Ecosystem. A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.

Ecosystem Management. Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and that basic ecosystem processes are perpetuated indefinitely.

Environmental Assessment. A concise public document, prepared in compliance with the National Environmental Policy Act (NEPA), that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether an environmental impact statement must be prepared, or a finding of no significant impact can be issued (40 CFR 1508.9).

Endangered Species (Federal). A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.

Environmental Education Facility. A building or site with one or more classrooms or teaching areas and environmental education resources to accommodate groups of students.

Gap Analysis. Analysis done to identify and map elements of biodiversity that are not adequately represented in the nation's network of reserves. It provides an overview of the distribution and conservation status of several components of biodiversity, with an emphasis on vegetation and terrestrial vertebrates (Cassidy et al.1997).

Goal. Descriptive, open-ended and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (Draft Service Manual 620 FW 1.5).

Green infrastructure. A concept and approach in which natural assets are managed and/or designed to provide multiple ecosystem and human services, including services such as stormwater management, flood prevention, carbon sequestration, and habitat. Green infrastructure includes natural drainage systems (NDS) and may be applied as a tool in achieving low impact development (LID).

Habitat. Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.

Habitat Connectivity (Also Landscape Connectivity). The arrangement of habitats that allows organisms and ecological processes to move across the landscape; patches of similar habitats are either close together or linked by corridors of appropriate vegetation/habitat. The opposite of fragmentation (Turnbull NWR Habitat Management Plan).

Habitat Management Plan. A plan that guides Refuge activities related to the maintenance, restoration, and enhancement of habitats for the benefit of wildlife, fish, and plant populations.

Habitat Restoration. Management emphasis designed to move ecosystems to desired conditions and processes and/or to healthy ecosystems.

Historic Conditions. Composition, structure and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgment, were present prior to substantial human related changes to the landscape (NWRS Biological integrity policy).

Hydrologic influence. Having an effect on water quality and quantity.

Hydrology. A science dealing with the properties, distribution and circulation of water on and below the earth's surface and in the atmosphere (yourdictionary.com).

Indicator. Something that serves as a sign or symptom (Webster's II).

Interpretation. A teaching technique that combines factual information with stimulating explanation (yourdictionary.com). Frequently used to help people understand natural and cultural resources.

Interpretive Trail. A trail with informative signs, numbered posts that refer to information in a brochure, or where guided talks are conducted for the purpose of providing factual information and stimulating explanations of what visitors see, hear, feel, or otherwise experience while on the trail.

Landform. A natural feature of a land surface (yourdictionary.com).

Landscape Linkages. Landscape features linking areas of similar habitat. Plants and smaller animals are able to use landscape linkages to move between larger landscape blocks over a period of generations.

Landscape Ecology. The science and study of the relationship between spatial pattern and ecological processes on a wide variety of landscape scales and organizational levels.

Low Impact Development (LID). A stormwater management strategy that emphasizes conservation and use of existing natural site features integrated with distributed, small-scale stormwater controls to more closely mimic natural hydrologic patterns. (LID Guidance Manual for Puget Sound).

Maintenance. The upkeep of constructed facilities, structures and capitalized equipment necessary to realize the originally anticipated useful life of a fixed asset. Maintenance includes preventative maintenance; cyclic maintenance; repairs; replacement of parts, components, or items of equipment, periodic condition assessment; periodic inspections, adjustment, lubrication and cleaning (non-janitorial) of equipment; painting, resurfacing, rehabilitation; special safety inspections; and other actions to assure continuing service and to prevent breakdown.

Mesh Size. The average area or diameter of the polygons enclosed by a road network, as in a fishnet; it is proportional to road density but focuses on the enclosed parcels rather than the roads (Forman 2003).

Mission Statement. Succinct statement of a unit's purpose and reason for being.

Monitoring. The process of collecting information to track changes of selected parameters over time.

National Environmental Policy Act of 1969 (NEPA). Requires all Federal agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (from 40 CFR 1500).

National Register of Historic Places. The Nation's master inventory of known historic properties administered by the National Park Service. Includes buildings, structures, sites, objects and districts that possess historic, architectural, engineering, archeological, or cultural significance at the national, state and local levels.

National Wildlife Refuge (also Refuge). A designated area of land, water, or an interest in land or water within the System.

National Wildlife Refuge System (NWRS; also System). Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction; all lands, waters and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; games ranges; wildlife management areas; or waterfowl production areas.

Native. With respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem (NWRS Biological integrity policy).

Natural Drainage System (NDS). A set of stormwater management features using plants and specialized soils that slow and infiltrate stormwater and can help remove pollutants through filtration and bioremediation. These features—such as open, vegetated swales, stormwater cascades and small rain gardens or wet ponds—mimic or restore natural functions impeded by development. In contrast to pipes and vaults, these systems increase in functional value over time.

Non-Consumptive Recreation. Recreational activities that do not involve harvest, removal or consumption of fish, wildlife or other natural resources.

Noxious Weed. A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or non-native, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or has adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.

Nutrient Loading. The presence of nutrients, such as nitrogen and phosphorus, in waterways insufficient amounts to cause effects such as algal blooms and oxygen depletion, with potentially lethal effects on fish and wildlife species.

Operations. Activities related to the normal performance of the functions for which a facility or item of equipment is intended to be used. Costs such as utilities (electricity, water, sewage) fuel, janitorial services, window cleaning, rodent and pest control, upkeep of grounds, vehicle rentals, waste management and personnel costs for operating staff are generally included within the scope of operations.

Outreach. The process of providing information to the public on a specific issue through the use of the media, printed materials and presentations.

Plant Community. An assemblage of plant species unique in its composition that occurs in particular locations, under particular influences, which reflect or integrate the environmental influences on the site, such as soils, temperature, elevation, solar radiation, slope, aspect and rainfall.

Preferred Alternative. This is the alternative determined (by the decision maker) to best achieve the Refuge purpose, vision and goals; that best contributes to the System mission and addresses the significant issues; and that is consistent with principles of sound fish and wildlife management.

Priority Public Uses. Hunting, fishing, wildlife observation and photography, environmental education and interpretation were identified by the National Wildlife Refuge system Improvement Act of 1997 as the six ("Big Six") priority public uses of the National Wildlife Refuge System.

Public. Individuals, organizations, and groups outside the planning team, including officials of Federal, State, and local government agencies, Indian tribes and foreign nations. It includes those who may or may not have indicated an interest in Service issues and those who may be affected by Service decisions.

Refuge Purpose(s). The purpose(s) specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, a refuge unit, or refuge subunit (Draft Service Manual 602 EW 1.5).

Restoration. The act of bringing back to a former or original condition (Webster's II).

Riparian. An area or habitat that is transitional from terrestrial to aquatic ecosystems, including streams, lakes, wet areas, and adjacent plant communities and their associated soils which have free water at or near the surface; an area whose components are directly or indirectly attributed to the influence of water; and of or relating to a river. Specifically applied to ecology, "riparian" describes the land immediately adjoining and directly influenced by streams. For example, riparian vegetation includes any and all plant life growing on the land adjoining a stream and directly influenced by the stream.

Road Density. The average total road length per unit area of landscape (i.e. kilometers per square km, or miles per square mile) (Forman 2003).

Road-Effect Zone. The zone of influence of a roadway into the surrounding areas. Distance depends upon the type of effect and site conditions (Forman 2003; see graphic, p. 308).

Roadway. The suite of typical improvements associated with a vehicle-focused transportation project. This extends from the centerline of an existing or proposed road outward, to include associated infrastructure components such as paving, utilities, grading and planting. Roadway also refers here to other facilities and infrastructure commonly associated with vehicular transportation, such as parking, visitor contact facilities and pullouts. From an ecological perspective, the roadway conceptually includes impacts such as habitat fragmentation, habitat disturbance, pollution, and aquatic and terrestrial species conflicts.

Strategy. A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.5).

Viewpoint. A designated point that provides an opportunity to see wildlife or habitats of interest. The point may or may not be "supported" with an interpretive sign. Usually the viewpoint is supported by a pullout or a parking area.

Visitor Center. A building with staff that provides visitors with interpretation, education and general information about the natural and cultural resources of the Refuge and the local area.

Visitor Contact Point or Center. A kiosk or other location where visitors may go to learn about Refuge resources, facilities, trails, etc.

Vision Statement. A concise statement of the desired future condition of the planning unit, based primarily upon the System mission, specific Refuge purposes and other relevant mandates (Service Manual 602 FW 1.5).

Watershed. The region or area drained by a river system or other body of water (Webster's II).

Wetlands. Transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water at some time each year (Service Manual 660 FW 2).

- Permanent wetland - a wetland basin or portion of a basin that is covered with water throughout the year in all years except extreme drought. Typically, the basin bottom is vegetated with submerged aquatic plant species, including milfoil, coontail and pondweeds.

- Semi-permanent wetland - a wetland basin or portion of a basin where surface water persists throughout the growing season of most years. Typical vegetation is composed of cattails and bulrushes.

- Seasonal wetland - a wetland basin or portion of a basin where surface water is present in the early part of the growing season but is absent by the end of the season in most years. Typically vegetated with sedges, rushes, spikerushes or burreed.

Wildlife-Dependent Recreation. Hunting, fishing, wildlife observation and photography, environmental education and interpretation. These are also referred to as the priority public uses of the National Wildlife Refuge System or “Big Six”.

U.S. Department of the Interior
U.S. Fish & Wildlife Service

http://www.fws.gov

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APPENDIX E

Glossary

Asset management – Asset management is a systematic process of maintaining, upgrading, and operating physical assets cost effectively. It includes preservation, upgrading and timely replacement of assets, through cost effective management, programming, and resource allocation decisions. Asset management combines engineering principles with sound business practices and economic theory, and provides tools to facilitate a more organized, logical approach to decision making.

Asset priority index (API) – API is a SAMMS metric used by field station managers to assess how critical each property asset is to accomplishing the FWS mission and goals. FWS uses the API to ensure that maintenance activities and projects proposed for funding are focused on highest priority assets. Similarly, the API is used to identify lowest priority assets for disposal.

Best Management Practices (BMPs) – BMPs are effective, practical, structural or nonstructural methods which prevent or reduce the movement of sediment, nutrients, pesticides, and other pollutants from the land to surface or ground water, or which otherwise protect water quality from potential adverse effects of human activities. These practices are developed to achieve a balance between water quality protection and the production of wood crops within natural and economic limitations.

Congestion Management System (CMS) also known as Congestion Management Process (CMP) – The CMS is a systematic approach, used by the U.S. Fish and Wildlife Service and other land management agencies that provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies. The CMS represents the state of the-practice in addressing congestion, by providing information on transportation system performance, and alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet Federal, State and local needs.
See http://www.fhwa.dot.gov/resourcecenter/teams/planning/cms.cfm and
http://www.fws.gov/refuges/roads/guidance for more information.

Context Sensitive Solutions (CSS) – CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. See http://www.fhwa.dot.gov/context/what.cfm for more information. The LRTP Region 3 emphasizes this concept through the encouragement of using the FWS Roadway Design Guidelines Midwest Region Document (Appendix D).

Comprehensive Conservation Plan (CCP) – CCPs are planning documents developed for individual FWS wildlife refuges to provides a description of the desired future conditions and long-range guidance for the project leader to accomplish purposes of the refuge system and the refuge. CCPs establish management direction to achieve refuge purposes.

Comprehensive Hatchery Management Plan (CHMP) – CHMPs are operational management plans specific to fish hatcheries that are developed to outline policies and objectives relevant to the overall management of a specific fish hatchery. These documents are used as planning reference tools, to help integrate FWS objectives and priorities with those of other agencies; fulfill obligations under the Endangered Species Act and other management programs; identify and define specific hatchery reforms to implement; and provide a foundation for future program and budget development.

Core Team – This group serves as the project steering committee for the development of this Long Range Transportation Plan for FWS Lands in Region 3. The groups is composed of representatives from regional and headquarters offices of U.S. Fish and Wildlife Service and planning leadership from the Federal Highway Administration Federal Lands Highway Division.

Cultural landscape – The cultural landscape refers to a geographic area, including both cultural and natural elements, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values.

Cultural resources – Cultural resources include properties such as landscapes or districts, sites, building, structures, objects, or cultural practices that are usually greater than 50 years of age and possess architectural, historic, scientific, or other technical value. By their nature, these resources are non-renewable.

Deferred maintenance (DM) - Maintenance that was not performed when it should have been or when it was scheduled and, therefore, was put off or delayed for a future period.

Extended Team – This group serves as technical resource experts and key stakeholders from the U.S. Fish and Wildlife Service and Federal Land Highways, providing technical assistance and local context knowledge to the Core Team for the Long Range Transportation Plan for FWS lands in Region 3.

Facility condition index (FCI) – FCI is the ratio of the deferred maintenance costs to replacement value. This ratio is generated from data generated from condition assessments. This is an industry accepted indicator of the overall health of facility infrastructure.

Federal Lands Highway Program (FLHP) - The FLHP was created by the 1982 Surface Transportation Assistance Act and is administered through the Office of Federal Lands Highway of the Federal Highway Administration. The Office of Federal Lands Highway provides program stewardship and transportation engineering services for planning, design, construction, and rehabilitation of the highways and bridges that provide access to and through federally owned lands. The primary purpose of the FLHP is to provide financial resources and technical assistance for a coordinated program of public roads that service the transportation needs of Federal and Indian lands.

Fisheries Program – The FWS Fisheries Program partners with states, Native American Tribes, and other interested groups to restore and maintain fish and other important aquatic resources at self-sustaining levels and to support federal mitigation programs for the benefit of the American public. FWS takes a holistic approach to fishery conservation focusing on an array of scientific fishery management and conservations efforts.

Intergovernmental agreement (IGA) – An IGA is a formal contract between two or more jurisdictions under which governmental agencies agree to provide a service, perform a function or provide funding to another governmental agency under specific terms, as defined in the contract. For example, an agency may contract with another entity for law enforcement services. Intergovernmental agreements may also take the form of a joint service agreement where two or more jurisdictions join forces to plan, finance and deliver a service within the boundaries of all participating jurisdictions.

Agencies may also enter into various types of service exchange arrangements under which participating jurisdictions agree to lend services to one another, generally without any payment being required.

Level of service (LOS) - Roadway traffic congestion is expressed in terms of LOS as defined by the Highway Capacity Manual (HCM) http://www.trb.org/main/blurbs/164718.aspx. Operational LOS is a congestion measure used to describe service quality and is related to the density of the traffic stream. Free flow conditions with no restrictions are described as LOS A. LOS B through D conditions demonstrates progressively worse traffic conditions. LOS F is generally defined as "failure", where the observed or forecasted traffic demand equals or exceeds the defined capacity of the roadway system element. LOS F represents extremely congested, stop-and-go traffic flow conditions with excessive or unacceptable travel time delays.

Long Range Transportation Plan (LRTP) - The LRTP is a long-term blueprint of a region's transportation system. Usually LRTPs are conducted every five years and are plans for twenty to thirty years into the future. The plan identifies and analyzes transportation needs of the metropolitan region or of a state, and creates a framework for project priorities. These plans are normally the product of recommendations and studies carried out and put forth by a Metropolitan Planning Organization (MPO) or a state Department of Transportation (DOT). In the context of the USFWS transportation planning process, the LRTP term can be applied to a single service unit, a complex of several units, or a multistate regional grouping of FWS units.

Metropolitan Planning Organization (MPO) - A MPO is a transportation policy-making organization made up of representatives from local government and transportation authorities. In 1962, the United States Congress passed legislation that required the formation of a MPO for urbanized areas with a population greater than 50,000. Congress created MPOs in order to ensure that existing and future expenditures for transportation projects and programs are based on a continuing, cooperative and comprehensive ("3-C") planning process. Federal funding for transportation projects and programs are channeled through this planning process.

Mission critical – Mission critical refers to a road or facility that is vitally important to meet mission of the FWS.

Multimodal transportation – The term multimodal refers to all forms of motorized and non-motorized transport including cars, trucks, buses, boats, planes, bicycles, and pedestrians, etc.

National Highway System (NHS) – The term refers to the thousands of miles of roadway important to the nation's economy, defense, and mobility. It includes different subsystems: Interstate, other principal arterials, strategic highway networks, major strategic highway network connectors and intermodal connectors. The NHS was developed by the Department of Transportation (DOT) in cooperation with the states, local officials and metropolitan planning organizations (MPOs)

National Highway Planning Network (NHPN) - The National Highway Planning Network (NHPN) is a 1:100,000 scale network database that contains line features representing just over 450,000 miles of current and planned highways in the U.S. The NHPN consists of interstates, principal arterials, and rural minor arterials.

National Park Service (NPS) - The National Park Service was created by an Act signed by President Woodrow Wilson on August 25, 1916. The National Park Service is a bureau of the Department of the Interior. Directly overseeing its operation is the Department's Assistant Secretary for Fish and Wildlife and Parks.

Natural resources – Natural resources include features and values found in nature such as plants and animals, water, air, soils, topographic features, geologic features, paleontological resources, natural quiet, and clear night skies that are worthy of preservation.

Paul S. Sarbanes Transit in Parks Program (Section 5320) – Congress established the program to enhance the protection of national parks and federal lands and increase the enjoyment of those visiting them. Administered by the Federal Transit Administration in partnership with the Department of the Interior and the Forest Service, the program funds capital and planning expenses for alternative transportation systems such as shuttle buses and bicycle trails in national parks and public lands. The goals of the program are to conserve natural, historical, and cultural resources; reduce congestion and pollution; improve visitor mobility and accessibility; enhance visitor experience; and ensure access to all, including persons with disabilities.

Project Leaders – The Project Leader is responsible to the refuge, hatchery or refuge complex Regional Director for the safe and efficient implementation of activities within their unit, including cooperative activities with other agencies or landowners, in accordance with delegations of authorities.

Real Property Inventory (RPI) – The RPI contains information on all fixed assets with a replacement cost of $5,000 or more. These fixed assets include such items as buildings, roads, bridges, levees, water management structures, fish raceways, boardwalks, fences, and other structures and facilities. The FWS collects data annually and report it to the General Services Administration.

Refuge Road Program - The Refuge Roads program was created under the 1998 Transportation Equity Act for the 21st Century (TEA-21). That act and the subsequent passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) provides authorization for National Wildlife Refuge System roads under the Federal Lands Highway program (FLHP). Through the refuge road program, $29 million annually is authorized for spending on maintenance and improvements on Refuge Roads within the National Wildlife Refuge System. This includes project planning and contract administration as well as construction. Enhancements such as comfort stations, parking lots, bicycle/pedestrian facilities and interpretive signage related to roads are also allowable.

Regional Transportation Planning Organization (RTPO) - A RTPO is formed through a voluntary association of local governments within a county or contiguous counties. RTPO members include cities, counties, tribes, ports, transportation service providers, private employers and others. MPOs and RTPOs serve the same basic transportation planning functions – to develop a long-range transportation plan, coordinate within a region, and prepare a transportation improvement program. RTPOs are specific to the state of Washington. However, other states have similar regional transportation planning entities that serve this same purpose.

Road Inventory Program (RIP) - With the use of state-of-the-art equipment and engineering expertise, this program documents the condition assessment of all public roads and parking lots on national wildlife refuges and national fish hatcheries over a five year period. This inventory and condition assessment serves as the FWS's basic public use road management system. It provides a benchmark from which the FWS is able to document the status, condition, funding needs and improvements of the public roads. This information is integrated within a Geographic Information System (GIS). FWS currently manages over 4,900 miles of public roads in the 50 states, Puerto Rico, Virgin Islands and Guam. Approximately 8% of the roads are paved. The remaining 92% are gravel or native material. The value of these assets is estimated at $1.5 billion.

Road Safety Audit (RSA) – A road safety audit is a formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. A RSA, adaptable to local needs and conditions, are a powerful tool for agencies to enhance the state of safety practices on the United State.

Service Asset Maintenance Management System (SAMMS) – SAMMS is an asset management database developed and maintained by the FWS that documents facility and equipment deficiencies, justifies budget requests for maintenance needs, and provides a sound basis for management decision-making.
Property inventory data is maintained as part of the SAMMS to aid in completing inspection and maintenance activities and quantify the complete picture of facilities and equipment owned by FWS. This tool allows field station managers obtain accurate and current information on all real and personal property for which they are responsible. Two types of inventories are conducted and maintained within SAMMS, a Real Property Inventory and a Personal Property Inventory.

Statewide Transportation Improvement Program (STIP) – The STIP is a prioritized, multiyear program for the implementation of transportation improvement projects. As such, it serves as a management tool to ensure the most effective use of funding for transportation improvements. The STIP is a requirement of the transportation planning process, legislated by the SAFETEA-LU. Traditional state sponsored transportation improvements are not eligible for federal funding unless they are listed in the STIP.

Transportation Improvement Program (TIP) – The TIP is a program prepared by a metropolitan or rural planning organization that lists projects to be funded with FHWA/FTA funds for the next one- to three-year period. The Federal Lands Highway Divisions (FLH) prepare each year a four-year frame TIP of projects, mainly from Fish and Wildlife Service (FWS), The National Park Service (NPS) and the Forest Service (FS).

Transportation infrastructure – Transportation infrastructure includes roads, bridges, sidewalks, trails (paved and unpaved, front country and back country), waterways, etc.

Transportation planning – Transportation planning for federal land management agencies incorporates a continuing, comprehensive, and collaborative process to encourage and promote the development of multimodal transportation systems to ensure safe and efficient movement of visitors, employees, and goods while balancing resource protection, visitor experience, and community needs.

Travel Demand Management (TDM) – TDM is a term given to a broad range of strategies that optimize transportation system performance for commute and non-commute trips. Strategies typically include those that encourage travelers to change their travel mode from driving alone to choosing a carpool, vanpool, public transit vehicle, or other commuter alternative. Managing travel demand focuses on providing all travelers, regardless of whether they drive alone, with choices of location, route, and time, not just mode of travel. Information technology is playing and increasingly more important role in the delivery of TDM strategies.

Transportation System Management (TSM) - It focuses on operational and minor capital actions (signal timing optimization, adding a turn lane, etc.) to improve operations on a road network element.

User capacity – As it applies to wildlife refuges and fish hatcheries, user capacity is the type and level of use that can be accommodated while sustaining the desired resource and social conditions based on the purpose and objectives of a refuge or hatchery unit.

Vehicle miles traveled (VMT) – VMT, or the total number of miles that vehicles are driven represents key data for highway planning and management, and a common measure of roadway use. Along with other data, VMT is often used in estimating congestion, air quality, and potential gas-tax revenues.

Visitor experience – The visitor experience refers to quality and perception of a visitor's visit to a wildlife refuge or fish hatchery in the context of the intended uses at a given facility (wildlife viewing, environmental education, and ease of access.

Visitor facility enhancement (VFE) – The VFE program includes improvements on FWS owned lands aimed at enhancing wildlife viewing opportunities for the public while providing access in the form of interpretive pullouts, trails, and interpretive kiosks which provide a public benefit. Projects in this program must conserve, protect, and enhance fish, wildlife and plants for the continuing benefit of the American people, consistent with the FWS Mission.

APPENDIX F

Communication Plan

Long Range Transportation Plan for the U.S. Fish and Wildlife Service Lands in Region 3 Public Involvement Plan

Background

U.S. Fish and Wildlife Service (Service) Region 3 is developing a long range transportation plan (LRTP) that will establish goals, and objectives for how transportation can best help the Service achieve its overarching mission of connecting people to nature at National Wildlife Refuges and National Fish Hatcheries. The purpose of this LRTP is to develop a transportation planning process for regional level transportation planning within the Service. It will bring the Service into compliance with Federal legislation requiring Federal Land Management Agencies to conduct long-range transportation planning in a manner consistent with U.S. Department of Transportation planning practices for States and Metropolitan Planning Organizations (MPOs).

The LRTP will provide Service leaders with a replicable region-level transportation planning process, benchmarks for evaluating transportation projects in an asset-informed environment across the region, and essential facts necessary for informing future planning and operational decisions.

Goals of Public Outreach and Communications

The fundamental purpose of this Public Involvement Plan (PIP) is to provide the structure for an inclusive public process that internal and external stakeholder groups may participate in during the development of the LRTP for Service Lands in Region 3.

The goals of this effort include:

- Solicit input from Service staff that will inform the transportation planning effort
- Inform and educate external stakeholders about decision-making in Region 3 relative to transportation planning
- Provide opportunities for stakeholders to identify their concerns, values, ideas, and interests of the Region 3 transportation system
- Provide Service staff and external stakeholders the opportunity to review and comment on the LRTP at key decision points
- Build support from internal and external stakeholders for the processes and projects adopted under the LRTP
- Strengthen existing partnerships while forging new ones
- Identify opportunities for coordination with priority MPOs and States for short and medium term project development

Public Involvement Approach

The Service recognizes that different transportation planning efforts have varying levels of public participation throughout the decision-making processes. Region 3 LRTP encompasses a geographic area of eight Midwestern states and given the geographic and demographic diversity, there cannot be an expectation that all or even most of the potential stakeholders will be able to participate, or have interest in directly influencing the outcomes of the plan. Figure 1 illustrates the varying levels of public participation for this LRTP.

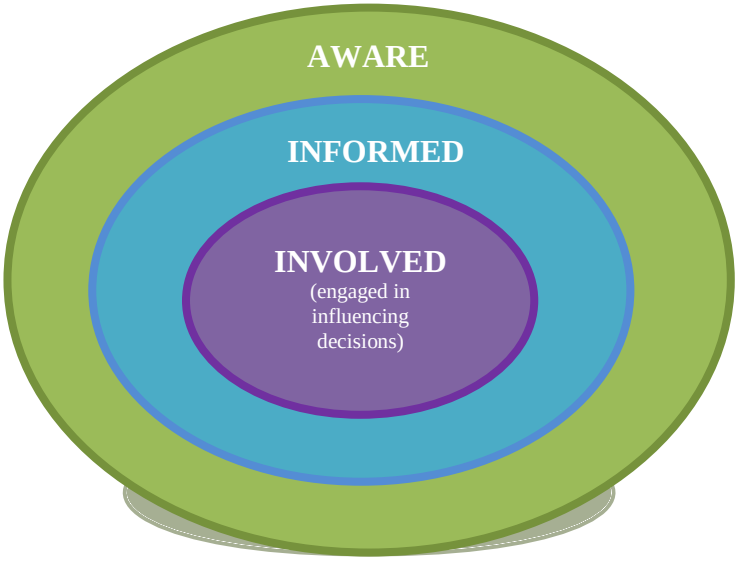


Figure 1. Levels of Public Participation for Region 3 LRTP

The Service seeks to affect a large number of interested persons and groups by making them *aware* that the planning activities are taking place, illustrated by the large outer circle. This group will realize that the Service has a process for making transportation decisions and that there is a potential for specific transportation projects to emerge from that process (the LRTP). A somewhat smaller group will be knowledgeable about the LRTP and the transportation problems it seeks to address. For this group, the public involvement processes will be designed to *inform* them of the rationale for the LRTP, the related decision-making processes, and the anticipated outcomes for Region 3. A much smaller group will be *involved*, or actively engaged in influencing the decision, represented by the small inner circle in Figure 1.

Table 1 summarizes the internal and external stakeholders the Service hopes to engage at these varying levels throughout the LRTP development. A complete listing of contact information for these stakeholders can be found in the Table 3 of this appendix.

Table 1. Internal and External Stakeholders in Region 3

INVOLVED	INFORMED	AWARE
Internal		
Region 3 LRTP Core Team	Region 3 Area Regional Directors	Budget, contracting, and general services offices
		External Affairs
	Project Leaders	Fire and Law Enforcement
		Safety Office
	Refuge/Hatchery supervisors	Cultural Resources Office
Region 3 LRTP Extended Team (subject matter experts)		Fisheries Resource Office
	Division Chiefs	Aquatic Nuisance Species coordinator
		National CCP coordinator
	Refuge Road Coordinators	Chiefs of Planning and Natural Resources
		National Refuge Chiefs
		Washington Office
External		
	MPOs	Congressional/Reauthorization staff and committees
	State Departments of Transportation	Agencies with a MOU with the Service
	U.S. Army Corps of Engineers	State Historic Preservation Office
	Bureau of Reclamation	Collaborative Environmental Transportation Agreement for Streamlining
	Bureau of Indian Affairs	National Oceanic and Atmospheric Administration
	U.S. Forest Service	U.S. Coast Guard
	National Park Service	Federal Aviation Administration
		State Parks
	Bureau of Land Management	National Wildlife Refuge Association
		Refuge and Hatchery Friends Groups
	State Byways	Conservation Organizations
		Council of University Transportation Centers
	State Fish and Game Agencies	Railroads (those located within the Service units)
		Gateway Communities
	Department of Defense Agencies	Libraries of communities around Service units
		Governors Association
	FHWA Division offices in Region 3	Transportation Research Board (TRB) Transportation Needs of Parks and Public Lands Committee
		State Tourism Offices

Strategies

The strategies used to engage the public and agency groups are perhaps the most important element of a public involvement plan. Strategies are intended to target a specific audience with an intended purpose. Table 2 identifies the key milestones in the LRTP decision-making process at which specific outreach strategies will be designed to seek input from Service staff and external stakeholders.

Table 2. Stakeholder Involvement Strategy by Task

Key Milestones of the Plan	Outreach Strategy
Vision, Mission, Goals, and Objectives	Initial Contact - Targeted meetings/contact with internal core and extended team, solicit input.
Purpose and Need	
Definition of transportation Service lands	
Existing conditions and trends	Midway Update - Targeted meetings with internal core team members and some external stakeholders, solicit input.
Strategies based on Management	
Systems/Needs/Other priorities	
Performance Measures	
Investigation of funding opportunities	
Preferred strategy and fiscal constraint	Final input - Final Planning Update and availability on website; seek consensus among key stakeholders.
Plan and Summary Report	
Process Document	

Table 3. Stakeholder Contact List

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
Core Team	Involved	Bowman	Jared	Wildlife Biologist (Planning)	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5495	Jared_bowman@fws.gov
	Involved	DeAlessio	Gabe	Wildlife Biologist (GIS)	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5496	Gabriel_DeAlessio@fws.gov
	Involved	Grimm	Lewis	Transportation Planner	Federal Lands Highway	-	21400 Ridgetop Circle, Sterling, VA 20166	703-404-6289	lewis.grimm@dot.gov
	Involved	Jaeschke	Chris	Transportation Planner	Federal Lands Highway	-	21400 Ridgetop Circle, Sterling, VA 20166	703-404-6306	christoph.jaeschke@dot.gov
	Involved	Jutz	Brandon	Planning Team Leader	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5407	brandon_jutz@fws.gov
	Involved	Ocel	Norah	Transportation Planner	Federal Lands Highway	-	21400 Ridgetop Circle, Sterling, VA 20166	703-404-6213	norah.ocel@dot.gov
	Involved	O'Connell	Maggie	Chief, Visitor Services	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5167	Maggie_O'connell@fws.gov
	Involved	Radloff	David	Fishery Biologist, Outreach, Database Management	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5158	David_radloff@fws.gov
	Involved	Royal	Makayah	Transportation Planner	Federal Lands Highway	-	21400 Ridgetop Circle, Sterling, VA 20166	703-948-1405	makayah.royal@dot.gov
	Involved	Schwartz	Alex	Landscape Architect, Branch of Transportation	Fish and Wildlife Service	-	2600 S.E. 98th Avenue-S100, Portland, OR 97266	503-231-6179	alex_schwartz@fws.gov

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
Extended Team	Involved	Caldwell	Nathan	Trails, Byways, Transportation Enhancements, and Alternative Transportation Coordinator	Fish and Wildlife Service	-	4401 N. Fairfax Drive, Arlington, VA 22203	703-358-2205	nathan_caldwell@fws.gov
	Involved	Gosse	Jeff	Federal Projects and FERC Coordinator	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5138	jeff_gosse@fws.gov
	Involved	-	VACANT	Chief, Facilites Management	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	-	-
Extended Team	Involved	Spah	Joe	Facilities Managament Coordinator	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5447	Joe_spah@fws.gov
Extended Team	Involved	Suder	Steve	National Coordinator, Refuge Transportation Program	Fish and Wildlife Service	-	4401 N. Fairfax Drive, Arlington, VA 22203	703-358-1752	Steve_Suder@fws.gov
	Involved	Turner	Todd	Deputy Assistant Regional Director	Fish and Wildlife Service. Fisheries and Aquatic Resources Program	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5127	Todd_turner@fws.gov
Region 3 Management	Informed	-							
Project Leaders	Informed								
Division Chiefs	Informed								
Refuge/Hatchery Supervisors	Informed	Foerster	Kevin	Refuge Supervisor	Fish and Wildlife Service	-	51 E. 4th Street, Room 101 Winona, MN 55987	507-452-4232	kevin_foerster@fws.gov

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
	Informed	Sprenger	Matt	Refuge Supervisor	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5327	matt_sprenger@fws.gov
	Informed	Leach	Jim	Refuge Supervisor	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5406	jim_leach@fws.gov
	Informed	Schilling	Kurt	Program Manager, National Fish Hatcheries	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5139	Kurt_Schilling@fws.gov
	Informed	Speer	Rick	Assistant Refuge Supervisor	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-55140	rick_speer@fws.gov
Refuge Roads Coordinators	Informed	Holm	Jeff	Regional Refuge Transportation Coordinator R1	Fish and Wildlife Service	-	911 NE 11th Avenue - Eastside Federal Complex, Portland, OR 97232-4181	503-231-2161	Jeff_Holm@fws.gov
	Informed	O'Brien	Rob	Regional Refuge Transportation Coordinator R2	Fish and Wildlife Service	-	P.O. Box 1306, 500 Gold Ave S.W. Albuquerque, NM 81703	505-248-6908	Robert_OBrien@fws.gov
	Informed	Clark	Jo Ann	Regional Refuge Transportation Coordinator R4	Fish and Wildlife Service	-	1875 Century Blvd, Atlanta, GA 30345	404-679-4114	JoAnn_Clark@fws.gov
	Informed	Mast	Jeff	Regional Refuge Transportation Coordinator R5	Fish and Wildlife Service	-	300 Westgate Center Drive, Hadley, MA 01035-9589	413-253-8638	Jeffrey_Mast@fws.gov
	Informed	Graves	James	Regional Refuge Transportation Coordinator R6	Fish and Wildlife Service	-	134 Union Blvd., Lakewood, CO 80228	303-236-4354	James_Graves@fws.gov
	Informed	Civitillo	Troy	Regional Refuge Transportation Coordinator R7	Fish and Wildlife Service	-	1011 East Tudor Road, Anchorage, AK 99503-6199	907-786-3579	Troy_Civitillo@fws.gov

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
	Informed	Holm	Jeff	Regional Refuge Transportation Coordinator R1	Fish and Wildlife Service	-	911 NE 11th Avenue - Eastside Federal Complex, Portland, OR 97232-4181	503-231-2161	Jeff_Holm@fws.gov
Engineers	Informed	Swedenborg	Craig	Regional Engineer	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5265	craig_swedenborg@fws.gov
Budget	Aware	Spomer	Ketti	Chief, Refuge Budget and Administration	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5464	ketti_spomer@fws.gov
External Affairs	Aware	Shaw	Tina	External Affairs, Refuges	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5360	tina_shaw@fws.gov
Fire	Aware	Dearborn	Dan	Chief, Fire Management	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5366	dan_dearborn@fws.gov
Law Enforcement	Aware	Jussila	Chris	Chief, Refuge Law Enforcement	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5408	chris_jussila@fws.gov
Cultural Resource Office	Aware	Myster	James	Regional Archeologist	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5439	james_myster@fws.gov
FWS National CCP Coordinator	Aware	Alliston	Ross	Refuge Planner, Div. of Conservation Planning & Policy	Fish and Wildlife Service	-	4401 North Fairfax Drive, Room 655, Arlington, VA 22203	703-358-2388	ross_alliston@fws.gov
Chiefs of Planning and Natural	Aware	Houghten	Chuck	Chief, Conservation Planning (R1)	Fish and Wildlife Service	-	911 NE 11th Avenue - Eastside Federal Complex, Portland, OR 97232-4181	503-231-6207	charles_houghten@fws.gov

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
Resources	Aware	Wagner-Greven	Jeannie	Chief, Conservation Planning (R2)	Fish and Wildlife Service	-	P.O. Box 1306, Albuquerque, NM	505-248-6823	jeannie_wagnergreven@fws.gov
	Aware	Hopp	Rose	Chief, Planning Branch (R4)	Fish and Wildlife Service	-	1875 Century Blvd., Atlanta, GA 30345	404-679-7247	rose_hopp@fws.gov
	Aware	McGarigal	Nancy	Refuge Planner, Div. Conservation Planning and Policy (R5)	Fish and Wildlife Service	-	300 Westgate Center Drive, Hadley, MA 01035-9589	413-253-8562	nancy_mcgarigal@fws.gov
	Aware	Lucas	David	Chief, Conservation Planning (R6)	Fish and Wildlife Service	-	134 Union Blvd., Lakewood, CO 80228	303-236-4366	david_c_lucas@fws.gov
	Aware	Clough	Helen	Chief, Conservation Planning (R7)	Fish and Wildlife Service	-	1011 East Tudor Road, Anchorage, AK 99503-6199	907-786-3353	helen_clough@fws.gov
	Aware	Pelz	mark	Chief, CA/NV Refuge Planning Office (R8)	Fish and Wildlife Service	-	2800 Cottage Way,-Suite W-1832, Sacramento, CA 95825	916-414-6500	mark_pelz@fws.gov
Regional Refuge Chiefs	Aware	Kurth	Jim	Assistant Director National Wildlife Refuge System	Fish and Wildlife Service	-	4401 N. Fairfax Drive, Alrington, VA 22203	703-358-2394	jim_kurth@fws.gov
	Aware	West	Robin	R1	Fish and Wildlife Service	-	911 NE 11th Avenue - Eastside Federal Complex, Portland, OR 97232-4181	503-231-6214	robin_west@fws.gov
	Aware	Archibeque	Aaron	R2	Fish and Wildlife Service	-	P.O. Box 1306, Albuquerque, NM	-	aaron_archibeque@fws.gov

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
	Aware	Schultz	Rick	R3	Fish and Wildlife Service	-	5600 American Blvd. West, S 990, Bloomington, MN 55437	612-713-5401	rick_schultz@fws.gov
	Aware	Viker	David	R4	Fish and Wildlife Service	-	1875 Century Blvd., Atlanta, GA 30345	404-679-7152	david_viker@fws.gov
	Aware	Kahan	Scott	R5	Fish and Wildlife Service	-	300 Westgate Center Drive, Hadley, MA 01035-9589	413-253-8550	scott_kahan@fws.gov
	Aware	Coleman	Rick	R6	Fish and Wildlife Service	-	134 Union Blvd., Lakewood, CO 80228	303-236-4303	rick coleman@fws.gov
	Aware	Eliis	Mitch	R7	Fish and Wildlife Service	-	1011 East Tudor Road, Anchorage, AK 99503-6199	907-786-3667	mitch-ellis@fws.gov
	Aware	Kolar	Margaret	R8	Fish and Wildlife Service	-	2800 Cottage Way,-Suite W-1832, Sacramento, CA 95825	916-414-6464	margaret kolar@fws.gov
National Park Service	Informed	Vander	Waine	Park Roads Coordinator, Midwest Region	National Park Service	-	601 Riverfront Drive, Omaha, NE 68102	402-661-1570	wayne_vander_tuin@nps.gov
	Informed	Thomson	David	Rivers, Trails & Conservation Assistance	National Park Service	-	601 Riverfront Drive, Omaha, NE 68102	402-661-1570	dave_thomson@nps.gov
National Oceanic and Atmospheric Administration	Informed	-			Department of Commerce	-	1315 East West Highway, Silver Spring, MD 20910	301-713-1622	regional.collaboration@noaa.gov

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
Coast Guard	Informed	Bingaman	John	Ninth Coast Guard District Chief of Staff	Department of Homeland Security	-	1240 East 9th Street Cleveland, OH 44199-2060	216-902-6118	-
Federal Aviation Administration	Informed	-			Department of Transportation	-	800 Independence Ave, SW Washington, DC 20591	866-835-5322	-
Bureau of Indian Affairs	Informed	Rosen	Diane	Midwest Regional Director	Department of the Interior	-	One Federal Drive, Room 550, Ft Snelling, MN 55111-4007	612-713-4400	-
U.S. Forest Service	Informed	Kim	Josiah	Region 9	Forest Service	-	626 East Wisconsin Ave, Milwaukee, WI 53202	414-297-3268	jkim@fs.fed.us
State Historic Preservation Office (SHPO-IO)	Aware	-			State	-	600 East Locust Des Moines, IO 50319	515-281-5111	-
State Historic Preservation Office (SHPO-IL)	Aware	-			State	-	313 South Sixth Street Springfield, IL 62701	217-785-4324	-
State Historic Preservation Office (SHPO-MI)	Aware	-			State	-	702 W. Kalamazoo St. P.O.Box 30740, Lansing MI 48909-8240	517-373-1630	preservation@michigan.gov
State Historic Preservation Office (SHPO-MN)	Aware	-			State	-	345 W. Kellogg Blvd, St Paul, MN 55102	651-259-3000	webmaster@mnhs.org
State Historic Preservation Office (SHPO-MO)	Aware	Miles	Mark	Director - SHPO	State	-	P.O. Box 176, Jefferson City, MO 65102	800-361-4827	moshop@dnr.mo.gov

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
State Historic Preservation Office (SHPO-OH)	Aware	-			State	-	800 E. 17th Ave, Columbus, OH 43211-2474	614-298-2000	ohpo@ohiohistory.org
State Historic Preservation Office (SHPO-WI)	Aware	-			State	-	816 State Street, Madison, WI 53706	608-264-6013	-
National Wildlife Refuge Association	Aware	Hirsch	Evan	President, National Wildlife refuge Association	Non-Profit	-	1250 Connecticut Ave NW, Suite 600 Washington, DC 20036	202-292-2429	nwrapresident@refugeassociation.org
State Parks (IO)	Aware	-			State	-	502 E. 9th Street, Des Moines, IA 50319-0034	515-281-5918	webmaster@dnr.iowa.gov
State Parks (IL)	Aware	-			State	-	One Natural Resources Way, Springfield, IL 62702-1271	217-782-6302	-
State Parks (IN)	Aware	-			State	-	One North Capitol Suite 600 Indianapolis, IN 46204	800-677-9800	dnrwebmaster@dnr.in.gov
State Parks (MI)	Aware	Olson	Ron	Chief of Parks and Recreation	State	-	530 Allegan, PO Box 30031 Lansing, MI 48909-7757	517-373-9900	olsonr@michigan.gov
State Parks (MN)	Aware	-			State	-	500 Lafayette Road, St. Paul, MN 55155	651-296-6157	info.dnr@state.mn.us
State Parks (OH)	Aware	-			State	-	2045 Morse Road, Building B, Columbus, OH 43229-6693	614-265-6561	OhioStateParks@dnr.state.oh.us

Internal Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
State Parks (WI)	Aware	-			State	-	101 S. Webster St PO Box 7921 Madison, WI 53707-7921	608-266-2621	-
TRB Transportation Needs of Parks and Public Lands Committee	Aware	Zimmerman	Carol	Director of Highway Operation Program and ITS		-	500 Fifth Street NW, Washington, DC 20001	202-334-2934	zimmermanc@battelle.org
State Tourism Office (IO)	Aware	Lode	Shawna	Manager	State	-	200 East Grand Ave., Des Moines, IA 50309	515-725-3090	shawna.lode@iowa.gov
State Tourism Office (IL)	Aware	-			State	-	500 E Monroe, Springfield, IL 62701	-	ceo.enjoyillinois@illinois.gov
State Tourism Office (IN)	Aware	Vaughan	Amy	Tourism Director	State	-	One North Capitol Suite 600 Indianapolis, IN 46204	317-232-8860	avaughan@VisitIndiana.com
State Tourism Office (MI)	Aware	-			State	-	300 N. Washington Sq Lansing, MI 48913	800-644-2489	-
State Tourism Office (MN)	Aware	-			State	-	121 7th Place East St.Paul, MN 55101-2146	651-296-5029	-
State Tourism Office (MO)	Aware	-			State	-	P.O. Box 1055 Jefferson City, MO 65102	573-751-4133	tourism@ded.mo.gov
State Tourism Office (OH)	Aware	-			State	-	P.O.Box 1001 Columbus, OH 43216-1001	800-282-5393	-

Internal Stakeholders									
Stakeholder Category	**PI Category**	**Last Name**	**First Name**	**Title**	**Organization /Agency**	**Method of Communication**	**Mailing Address**	**Phone**	**Email**
State Tourism Office (WI)	Aware	-			State	-	201 West Washington Ave Madison, WI 53708-8690	608-266-2161	-

External Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
FHWA HQ Byway Program	Informed	Jensen	Gary	NSB Program Team Leader	Federal Highway Administration	-	1200 New Jersey Ave SE, Washington DC 20590	202-366-2048	nsb-director@byways.org
CARE (Cooperative Alliance for Refuge Enhancement)	Informed				Non-Profit	-	1130 17th Street NW Washington, DC 20036	800-385-9712	defenders@mail.defenders.org
State DOT (IO)	Informed	Larson	Sandra	Director of Research and Technology - Hwy Division	State	-	800 Lincoln Way, Ames, IA 50010	515-239-1205	-
State DOT (IL)	Informed	Illinois Department of Transportation			State	-	2300 S. Dirksen Parkway, Springfield, IL 62764	217-782-7820	-
State DOT (IN)	Informed	Smith	Steve	INDOT Division of Planning	State	-	100 North Senate Ave, Room N955 Indianapolis, IN 46204-2217	317-232-5646	ssmith@indot.in.gov

External Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
State DOT (MI)	Informed	Michigan Department of Transportation			State	-	425 W. Ottawa St. P.O. Box 30050 Lansing, MI 48909	517-373-2090	-
State DOT (MN)	Informed	Minnesota Department of Transportation			State	-	395 John Ireland Blvd Saint Paul, MN 55155	651-296-3000	info.dot@state.mn.us
State DOT (MO)	Informed	Missouri Department of Transportation			State	-	105 W. Capitol Avenue Jefferson City, MO 65102	888-275-6636	-
State DOT (OH)	Informed	Kaseman	Dan	Administrator for Planning & Programs	State	-	1980 West Broad Street Columbus, OH 43223	419-999-6861	Dan.Kaseman@dot.state.oh.us
State DOT (WI)	Informed	Wisconsin Department of Transportation			State	-	4802 Sheboygan Avenue, Madison, WI 53707-7999	608-266-3662	-
U.S. Army Corps of Engineers	Informed	Price	Michael	District Engineer and Commander	U.S. Army - St Paul District	-	180 Fifth St E. St Paul, MN 55101	651-290-5300	-
Bureau of Reclamation	Informed	Glaser	Donald	Regional Director	DOI	-	2800 Cottage Way,-Suite W-1832, Sacramento, CA 95825	916-978-5000	-
State Fish and Game Agencies	Informed	Landwehr	Thomas	Commissioner, Minnesota Department of Natural Resources	Minnesota	-	500 Lafayette Road, St. Paul, MN 55155	651-259-5022	Tom.Landwehr@state.mn.us
State Fish and Game Agencies	Informed	Stepp	Cathy	Secretary, Wisconsin Department of Natural Resources	Wisconsin	-	101 S Webster Street, Madison, WI 53707-7921	608-267-7556	dnrsecretary@wisconsin.gov
State Fish and Game Agencies	Informed	Lande	Roger	Iowa DNR Director	Iowa	-	502 E. 9th Street, Des Moines, IA 50319-0034	515-281-5385	roger.lande@dnr.iowa.gov

External Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
State Fish and Game Agencies	Informed	Stokes	Rodney	Director, Michigan Department of Natural Resources	Michigan	-	Mason Building, Sixth Floor, PO Box 30028, Lansing, MI 48909	517-373-0023	STOKESR@michigan.gov
State Fish and Game Agencies	Informed	Zody	Scott	Interim Director, Ohio Department of Natural Resources	Ohio	-	2045 Morse Road, Building B, Columbus, OH 43229-6693	614-265-6888	scott.zody@dnr.state.oh.us
State Fish and Game Agencies	Informed	Miller	Marc	Director, Illinois Department of Natural Resources	Illinois	-	One Natural Resources Way, Springfield, IL 62702-1271	217-785-0075	marc.miller@illinois.gov
State Fish and Game Agencies	Informed	Carter	Robert	DNR Director	Indiana	-	402 W Washington St Room W256, Indianapolis, IN 46204	317-232-4020	rcarter@dnr.in.gov
State Fish and Game Agencies	Informed	Parker Pauley	Sara	Director, Missouri Department of Natural Resources	Missouri	-	DNR, PO Box 176, Jefferson City, MO 65102	573-522-6221	contact@dnr.mo.gov
FHWA IO Division	Informed	Hiatt	Becky	Planning Team Leader	Department of Transportation	-	105 6th Street, Ames, IA 50010	515-233-7321	Rebecca.Hiatt@dot.gov
FHWA IL Division	Informed	Kohler	Jon-Paul	Planning Development Manager	Department of Transportation	-	3250 Executive Park Drive, Springfield, IL 62703	(217) 492-4988	Jon-Paul.Kohler@dot.gov
FHWA IN Division	Informed	DuMontelle	Jay	Planning Team Leader	Department of Transportation	-	575 N. Pennsylvania St, Room 254 Indianapolis, IN 46204	317-226-7491	Jay.DuMontelle@dot.gov
FHWA MI Division	Informed	Cameron	Donald	Planning Development Manager	Department of Transportation	-	315 W. Allegan, Room 201 Lansing, MI 48933	517-702-1826	Donald.Cameron@dot.gov
FHWA MN Division	Informed	Moe	Susan	Planning and Research Program Manager	Department of Transportation	-	380 Jackson Street, Suite 500 St Paul, MN 55101	651-291-6109	Susan.Moe@dot.gov

External Stakeholders									
Stakeholder Category	PI Category	Last Name	First Name	Title	Organization /Agency	Method of Communication	Mailing Address	Phone	Email
FHWA MO Division	Informed	McMahon	Brad	Planning Officer	Department of Transportation	-	3220 W. Edgewood, Suite H Jefferson City, MO 65109	573-638-2609	bradley.mcmahon@dot.gov
FHWA OH Division	Informed	Oesterling	Leigh	Planning &Environmental Team Leader	Department of Transportation	-	200 North High Street, Room 328 Columbus, OH 43215	614-280-6896	Leigh.Oesterling@dot.gov
FHWA WI Division	Informed	Mc Comb	Dwight	Planning & Program Development Engineer	Department of Transportation	-	525 Junction Road, Suite 8000 Madison, WI 53717	608-829-7518	Wisconsin.FHWA@dot.gov
Bureau of Land Management	Informed	Abbey	Bob	Director	Department of the Interior	-	1849 C Street NW, Rm 5665 Washington DC 20240	202-208-3801	Director@blm.gov

APPENDIX G

CCP Guidance

National Wildlife Refuge Comprehensive Conservation Plan Transportation Planning Guidance

Updated February 20, 2008

Transportation Planning Requirements and Guidance

The Refuge Roads Program (RRP) was established in June 1998, when Congress passed the *Transportation Equity Act for the 21st Century* (TEA-21). The passage of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) in August 2005 reauthorized the RRP and authorized the Alternative Transportation for Parks and Public Lands (ATPPL) program.

Under Title 23 U.S.C. §204(a)(2), the Department of Transportation, in cooperation with the Department of the Interior, is required to develop transportation planning procedures for the Fish and Wildlife Service (Service) that are consistent with the metropolitan and statewide planning processes.

Under Title 49 U.S.C. §5320(e)(1)(A), the Department of Transportation, in cooperation with the Department of the Interior, is required to develop transportation planning procedures for the Service that are consistent with the metropolitan planning provisions, the statewide planning provisions and the public participation requirements.

All transportation projects funded under the RRP must take into consideration the Comprehensive Conservation Plan (CCP), related land use planning (i.e. step-down management plans) and impacts of planning on existing transportation facilities as required by Title 23 U.S.C. §202(e). The whole transportation system should support the mission of the FWS to "conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of present and future generations."

Failure to address/identify/integrate transportation related planning considerations and needs in a station's CCP and step-down management plans would result in the individual refuge or waterfowl production area having to develop a separate transportation plan (i.e. a transportation step-down management plan) before any RRP funding or other transportation program funding can be allocated for transportation related improvements.

Transportation planning is an eligible activity for funding under the Refuge Roads Program. There is a nationwide, interagency indefinite delivery indefinite quantity (IDIQ) contract for architect-engineer services for transportation planning, design and implementation that can be used for transportation planning assistance.

When assistance is needed with transportation planning, the Regional Refuge Roads Coordinator should be contacted. For regional contacts and additional information on refuge roads visit the Service's web site at http://www.fws.gov/refuges/roads/index.html.

The Service's refuge planning policy requires that one of the elements to be considered in the development of a CCP is transportation, including public use roads and trails, pedestrian and cyclist needs, and water and air access as appropriate for each unit of the Refuge System. Transportation issues have always been an inherent part of providing public access and facilitating the Service's priority public uses. The transportation element in the planning requirements helps focus attention on the public safety and access issues associated with the Service's public use programs.

It is important to note that this assessment needs to include the transportation systems within the individual refuge as well as the public access to the refuge. Management and public use changes at a refuge may not only impact the refuge transportation systems but also the local transportation systems that provide access to the refuge. Like wildlife connectivity issues, transportation needs tends to be regional in nature, so transportation planning involves ongoing collaboration and coordination with local and regional stakeholders that manage roads, trails, and transit systems.

The Service must coordinate any proposed transportation system changes and improvements with the respective State, Metropolitan and Rural Planning Organizations to assure that, among other considerations, there will be no negative impacts to congestion or air quality.

Every CCP and step-down management plan related to public use should have clearly identifiable transportation related planning documentation. The transportation planning component of these plans is intended to identify, evaluate and integrate in a comprehensive manner the specific needs, considerations and potential impacts of all transportation alternatives identified by the Service and the public during the planning process. This includes public and administrative roads, multiple use trails, air and water based transportation, pedestrian issues, and public transit all which vary by location and use.

Transportation Project Identification Categories

1) **Roads/Bridge improvements** – Road segments/bridges in fair and poor condition

2) **Maintenance issues** – Seasonal road issues, ROW and unclear maintenance agreements with counties

3) **Parking areas** – New areas needed, seasonal parking areas needed to be taken out

4) **Safety** – speed issues within refuges/hatcheries, Left-hand turn pockets/acel/decal lanes from outside unit

5) **Wildlife Corridor Connectivity** – Fish passage culverts, roads that act as wildlife barriers, identifying areas on county/state roads that access refuges with high or potentially high wildlife/vehicle collision issues

6) **Resource impacts due to transportation** – Invasive species impacts due to roads, ATV use, erosion damage, bridge restrictions of river/stream corridors

7) **Congestion** – Crowded conditions at entry points, roads, parking lots, destinations

8) **Bike/ped Issues –** Opportunities to increase bike/ped use, connect to local bike/ped networks, provide nonmotorized access to refuges from surrounding communities.

9) **Trails** – Need for new trails, trail improvements, opportunities to convert roads to trail, connect to local, regional, or national trails systems

10) **Transit/shuttle/trams** –Shuttle/tram opportunities, improve external transit connections

11) **Dust mitigation/air quality** – Air quality issues due to dirt roads, reduction of pollution from increased use of alternative transportation

12) **Access issues** – Too many/not enough/improperly located access points

13) **Auto tour route issues** – Initiate or improve auto-tour route using green infrastructure and context sensitive solutions.

14) **External transportation impacts** – State/regional/local transportation conditions or projects that impact unit, opportunities to partner with surrounding jurisdictions

15) **Traveler information** – Need for improved ITS, wayfinding, kiosks, brochures, and web

16) **Other -** Water access/docks/boat ramps, other transportation issues/opportunities

Alternative Transportation Planning

A holistic approach to transportation includes a variety of concepts that should be incorporated into the transportation planning process. Considering 'Alternative Transportation' (including transit, bike, pedestrian, air, and water access) on federally managed lands can help achieve the following goals:

- *Relieve traffic congestion and parking shortages* - Alternative Transportation reduces the number of vehicles needed to transport an equal or greater number of visitors to destinations thereby reducing the need for private vehicle parking spaces.

- *Enhance visitor mobility and accessibility* - Alternative Transportation enhances visitor experience by permitting visitors to enjoy their site experience rather than concentrating on driving or finding scarce parking spaces. Bike access allows visitors to enjoy their surroundings at a slower pace and connect more readily to the resources. Additionally, transit can provide visitors with disabilities improved access to many sites.

- *Preserve sensitive natural, cultural and historic resources* – Alternative Transportation can reduce negative impacts to resources made by private vehicles by reducing the parking footprint, minimizing impacts to wildlife due to traffic, and providing more controlled access to sensitive resources.

- *Provide improved interpretation, education and visitor information services* – At cultural and historical sites, Alternative Transportation can enhance the ability of site personnel to provide interpretive services to present past events in a logical, sequential manner.

- *Reduce pollution* -. Air quality could be improved by decreasing the total number of vehicles accessing sites as well as replacing older vehicles with lower emission vehicles. Ambient noise levels can also be reduced with alternative transportation, which improves visitor experience and reduces wildlife disturbance.

- *Improve economic development opportunities for gateway communities* - Alternative Transportation can improve connectivity with surrounding communities, thereby increasing the accessibility of recreational activities. Increasing accessibility through Alternative Transportation can increase the site visitation levels, resulting in additional economic revenues in the local communities through increased use of hotels, restaurants, and other visitor oriented services.

Alternative Transportation Systems

Alternative Transportation systems can serve both internal trips within and external trips to Federal Lands. In general, at sites where Alternative Transportation is feasible and prudent, needs may be modest and can be served by a small number of vehicles operating on a seasonal basis.

Non-motorized Transportation includes bicycling, walking, hiking, wheelchair use, running, bird-watching, nature interpretation, backpacking, equestrian, non-motorized human-powered snow uses (i.e., skiing, snowshoeing, etc.).

Examples of non-motorized projects include:

- Expand existing bikeways or create new bikeways to increase the opportunity to use a bicycle as a mode of transportation and provide better internal linkages.
- Connect Federal agency trails to the regional trail system and adjacent community trails.
- Build pedestrian paths along tour routes to increase safety and encourage bike/pedestrian use.
- Build hiking trails to encourage non-motorized visitation.
- Provide bicycle rental program to encourage non-motorized travel.

Bus transit systems include a variety of vehicle technologies including tourist trams, vans and van conversions, school buses, small transit buses, historic trolley replicas, standard transit buses, airport apron buses, articulated transit buses, bi-articulated buses, buses with trailers, low floor transit buses, motor coaches, double-decker buses, snow coaches, and electric trolley buses. These vehicles are typically propelled by conventional internal combustion engines (gasoline or diesel) or alternative fuels such as compressed natural gas, bio-diesel, or hybrid electric. Buses can use existing or improved public roads to or within parks/public lands.

Most new alternative transportation systems for federally managed public lands will likely be based on buses. Examples include:

- Develop a guided internal tour route, monitor use to implement changes in tour length, period of operation, seasonality, reservation system. Utilize clean-fuel vehicle, tram, and/or an enclosed, climate-controlled shuttle for the hot summer months.
- In areas of heavy parking congestion, close off access to private vehicles and provide a tour route for visitor access.
- Develop an on-demand or regularly scheduled shuttle service from the visitor center or other large parking lots to and from the major activity areas within the Refuge.

- Establish a peak season, weekend shuttle system that operates on a fixed schedule between a potential parking lot/activity center located in the gateway community and the Federal lands.
- Work with surrounding public transit agencies to extend existing public bus routes to the Federal facilities to enhance public access and to increase access by under-served communities. It would be operated frequently enough to afford an attractive alternative to driving for visitors and residents.
- Develop a transit program for transporting visitors from hotels to tourist events.
- Fixed guideway (rail, light rail, streetcars) systems could be considered in very limited applications where infrastructure is already in place.

Waterborne Transportation should be considered wherever there are areas with limited, if any, access by land, such as on an island, peninsula, or lake. This type of transportation may be particularly useful where major communities are located around the waterways. Types of waterborne transit vehicles include: pontoons and skiffs, mono hull vessels, canoes, kayaks, catamarans and hydrofoils.

Examples include:

- Establish a ferry shuttle to transport visitors between the local area and the Federal lands.
- Establish an interpretive boat ride to tour wetland areas.
- Encourage canoe or kayak use by establishing water trails.

Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems is a term to describe application of the most current technology to improve communication to the traveling public, a powerful tool in enhancing the visitor experience. Examples include electronic signs relaying real-time information on roadways, such as road conditions, construction information, parking availability, and weather information.

Establishing a 511 telephone number is another way to broadcast information. State Departments of Transportation (DOTs) develop ITS plans that develop both the technology needed as well as the content of messaging. For more information on ITS, go to http://www.fws.gov/refuges/roads/its.html

Transportation Planning Resources

Transportation Plans help identify transportation needs within Refuges and lay out potential strategies to improve mobility and safety, while protecting resources. As described earlier, the CCP transportation step-down management plan is a tool to comprehensively plan transportation.

Step-down transportation plans should consider Alternative Transportation systems concepts, however, they tend to be high-level and policy oriented. Additional transportation planning will be required to determine the feasibility and operations of these systems.

Public Involvement

During the transportation planning process, the Service will provide the public an opportunity to comment on the existing and any proposed changes or improvements to the refuge's public transportation systems and infrastructure. This would include public use roads, parking, land and water trails, transit systems (including ferries, trams, shuttles, buses, etc.) and other applicable forms of land, water and air transportation providing access to or within an individual unit. Also included in this would be any related transportation infrastructure such as visitor information, signage, comfort stations, guard rails, water access points, etc.

In order to facilitate public access to the list of transportation improvements being proposed for funding under the RRP for the current year and subsequent four years, the Service will post a list of projects on the Refuge System web site and the three Federal Highway Administration (FHWA) Federal Lands Highway Divisions web sites.

Additionally, the Service and FHWA will post copies of the most current inventory and condition assessments, and geographic information systems data for public use roads and trails on their respective web servers. This will facilitate the public's ability to access information about the current status and location of the respective trail and road infrastructure.

The comprehensive transportation element (plan) will articulate to the public how access is proposed or provided to a specific station; how transportation facilities support and help facilitate the Service's highest priority of comprehensive resource management and protection; ensures safe public access and improves the visitor experience; and, that compatibility requirements relative to the protected resources will be used to evaluate public use.

Transportation Data

The Service's public use roads and trails on refuges and hatcheries have been identified and mapped by FHWA, as part of the Road Inventory Program (RIP) inventory and condition assessment conducted on behalf of the Service. This information has been provided to all refuges and hatcheries. Copies of specific reports are available for public review upon request. The RIP data for improved roads (paved and gravel) is updated on a five-year cycle.

Planning and Funding Resources

Transportation Guidebooks have been developed, link to some of the documents are located at:

Transportation Planning: National Transportation Program, Policies and Guidance, USFWS Programs & Data, go to:
http://www.fws.gov/refuges/roads

Scenic Byways Program information, go to:
http://www.fws.gov/refuges/roads/byways.html

Refuge Trails information, go to: http://www.fws.gov/refuges/roads/trails.html

Transportation Enhancement Programs information, go to:
http://www.fws.gov/refuges/roads/transEnhancements.html

National Park Service Shuttle Systems, go to:
http://www.nps.gov/transportation/tmp/shuttles.htm

Alternative Transportation for Parks and Public Lands Link, go to:
http://www.fta.dot.gov/funding/grants/grants_financing_6106.html

Federal transportation programs link, go to: http://www.fws.gov/refuges/roads/links.html

Most comprehensive resource is the refuge roads website, go to:
http://www.fws.gov/refuges/roads/index.html

APPENDIX H

Contact Information for Non-Service Transportation Planning Organizations

Contact Information for Non-Service Transportation Planning Organizations

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
IA	Ames Area MPO	Damion Pregitzer	City Hall, 515 Clark Avenue, Ames, IA 50010-0811	projectinfo@aampo.org	(515) 239-5275
	Area 15 Regional Planning Commission	Chris Bowers, Transportation Director	Video Conferencing Training Center, 651 Indian Hills Drive, Building 17, PO Box 1110, Ottumwa, IA 52501	cbowers@indianhills.edu	(641) 684-6551
	ATURA Transportation Planning Alliance - Southern Iowa Council of Governments	Backy Nardy, Transportation Planner	101 E. Montgomery Street, PO Box 102, Creston, IA 50801	nardy@sicog.com	(641) 782-8491
	Bi-State Regional Commission	Gena McCullough, Transportation Director	1504 Third Avenue, PO Box 3368, Rock Island, IL 61204	gmccullough@bistateonline.org	(309) 763-6300
	Central Iowa Regional Transportation Planning Alliance	Tom Kane, Executive Director	6200 Aurora Avenue, Suite 300W, Urbandale, IA 50322	tjkane@dmampo.org	(515) 334-0075
	Central Section	Mike Clayton, District Transportation Planner	1020 S. Fourth St., Ames, IA 50010	mike.clayton@dot.iowa.gov	(515) 239-1202
	Chariton Valley Planning & Development	Julie Pribyl, Program Support Specialist	205 1/2 N. 13th St., Suite A, Centerville, IA 52544	jpribyl@charitonvalleyplanning.com	(641) 437-4359
	East Central Border Section	Sam Shae, District Transportation Planner	8723 Northwest Blvd., PO Box 2646, Davenport, IA 52809	sam.shae@dot.iowa.gov	(563) 823-4377
	East Central Intergovernmental Association	Kelley Deutmeyer, Executive Director	7600 Commerce Park, Dubuque, IA 52002	kdeutmeyer@ecia.org	(563) 556-4166
	East Central Intergovernmental Association	Chandra Ravada, Transportation Director	East Central Intergovernmental Association, 7600 Commerce Park, Dubuque, IA 52002	CRavada@ecia.org	(563) 556-4166
	East Central Intergovernmental Association	Chandra Ravada, Transportation Director	East Central Intergovernmental Association, 7600 Commerce Park, Dubuque, IA 52002	CRavada@ecia.org	(563) 556-4166
	East Central Iowa Council of Governments	Mary Rump, Transportation Planner	700 16th St. NE, Suite 301, Cedar Rapids, IA 52402	mary.rump@ecicog.org	(319) 365-9941
	East Central Section	Catherine Cutlerm, District Transportation Planner	430 16th Ave. SW, Cedar Rapids, IA 52404	catherine.cutler@dot.iowa.gov	(319) 364-0235

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Iowa Northland Regional Transportation Authority	Kevin Blanshan, Transportation Director	229 E. Park Ave., Waterloo, IA 50703	kblanshan@inrcog.org	(319) 235-0311
	MAPA Rural Transportation Planning Affiliation	Greg Youell, Transportation Director	2222 Cuming Street, Omaha, NE 68102	gyouell@mapacog.org	(402) 444-6866
	MIDAS Council of Governments	Shirley Helgevod, Local Assistance Manager	601 1st Avenue South, Fort Dodge, IA 50501	shelgevold-midas@prairienet.net	(515) 576-7183
	North Iowa Area Council of Governments	Chris Diggins, Transportation Local Assistance Director	526 6th St. SW, Mason City, IA 50401	cdiggins@niacog.org	(641) 423-0491
	Northeast Iowa Planning & Development Commission	Aaron Sedey, Regional Planner	217 West Fifth, PO Box 1493, Spencer, IA 51301	aaron.sedey@nwipdc.org	(712) 262-7225 ext. 138
	Northeast Section	Krista Rostad, District Transportation Planner	1420 Fourth St. SE, Mason City, IA 50402	krista.rostad@dot.iowa.gov	(641) 422-9447
	Northwest Section	Dakin Schultz, District Transportaiton Planner	2800 E. Gordon Dr., PO Box 987, Sioux City, IA 51102	dakin.schultz@dot.iowa.gov	(712) 274-5837
	Region Six Planning Commission	Donna Sampson, Planner	903 East Main Street, Suite A, Marshalltown, IA 50158	dsampson@region6planning.org	(641) 752-0717
	Region XII Council of Governments	Chris Whitaker, Transportation Planner	1009 East Anthony PO Box 768, Carroll, IA 51401	cwhitaker@region12cog.org	(712) 792-9914
	Siouxland Regional Transportation Planning Association	Michelle Bostinelos, Transportation Director	1122 Pierce Street, PO Box 1077, Sioux City, Iowa 51102	mbostinelos@simpco.org	(712) 279-6286
	Southeast Iowa Regional Planning Commission	Zach James, Transportation Planner	211 N. Gear Avenue, Suite 100, West Burlington, IA 52655	zjames@seirpc.com	(319) 753-5107 ext. 213
	Southeast Section	Andy Loonan, District Transportation Planner	307 W. Briggs, PO Box 587, Fairfield, IA 52556	andy.loonan@dot.iowa.gov	(641) 469-4007
	Southwest Iowa Planning Council	Courtney Harter, Transportation Planner	1501 Southwest 7th Street, Atlantic Iowa	courtney.harter@swipco.org	(712) 243-4196
	Southwest Section	Scott Suhr, District Transportation Planner	2210 E. 7th St., Atlantic, IA 50022	scot.suhr@dot.iowa.gov	(712) 243-7627

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Upper Exploreland Regional Planning Commission	Aaron S. Burkes, Executive Director	134 West Greene, PO Box 219, Postville, IA 52162	aburkes@uerpc.org	(563) 864-7551
IL	Bi-State Regional Commission	Gena McCullough, Transportation Director	1504 Third Avenue, PO Box 3368, Rock Island, IL 61204	gmccullough@bistateonline.org	(309) 763-6300
	Blackhawk Hills Resource Conservation and Development District	Dave Dornbusch, RC&D Coordinator	102 E. Rte. 30, Suite 3, Rock Falls, IL 61071	dave.dornbusch@il.usda.gov	(815) 625-3854 ext. 2
	Greater Egypt Regional Planning and Development Commission	A.S. "Ike" Kirkikis, Executive Director	608 East College, PO Box 3160, Carbondale, IL 62902	gerpdc@midwest.net	(618) 549-3306
	Greater Wabash Regional Planning Commission	Sarah Mann, Executive Director	10 West Main, PO Box 209, Albion, IL 62806	sarahmann@gwrpc.com	(618) 445-3612
	Morgan County Regional Planning Commission	Dusty Douglas, Director	345 West State, Jacksonville, IL 62650	ddouglas@morgancounty-il.com	(217) 243-9404
	North Central Illinois Council of Governments	Jeff Joyce, Human Services Transportation Coordinator	613 W Marquette Street, Ottawa, IL 61350	jjoyce@ncicg.org	(815) 433-5830
	Region 2, District 2	Eric Therkildsen, Regional Engineer	819 Depot Avenue, Dixon, IL 61021	eric.therkildsen@illinois.gov	(815) 284-2271
	Region 3, District 4	Joseph E. Crowe, Regional Engineer	401 Main Street, Peoria, IL 61602	joseph.crowe@illinois.gov	(309) 671-3333
	Region 4, District 6	Christine M. Reed, Acting Regional Engineer	126 East Ash Street, Springfield, IL 62704	christine.reed@illinois.gov	(217) 782-7301
	Region 5, District 8	Mary C. Lamie, Regional Engineer	1102 Eastport Plaza Drive, Collinsville, IL 62234	mary.lamie@illinois.gov	(618) 346-3100
	Region 5, District 9	Mary C. Lamie, Regional Engineer	State Transportation Building, PO Box 100, Carbondale, IL 62903	mary.lamie@illinois.gov	(618) 549-2171
	South Central Illinois Regional Planning and Development Commission	Lindsey Holtz, Regional Human Services Transportation Planner	120 Delmar Avenue, Suite A, Salem, IL 62881	lindseyh@scirpdc.com	(618) 548-4234

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Southern Five Regional Planning District and Development Commission	Lisa D. Thurston, Executive Director	219 Rustic Campus Drive, Ullin, IL 62992	sfrpc@southernfive.org	(618) 634-2284
	Southwestern Illinois Metro and Regional Planning Commission	Sarah Farmer	230 West Poplar Street, PO Box 606, Harrisburg, IL 62946	sfarmer.sirpdc@clearwave.com	(618) 252-7463
	Two Rivers Regional Council of Public Officials	Cheryl Esselman, Executive Director	1125 Hampshire Street, Quincy, IL 62301	c14.esselman@trrcopo.org	(217) 224-8171
	West Central Development Council	Michael Sherer, Director	116 South Plum Street, Carlinville, IL 62626	michael.sherer@west-central.org	(217) 854-9642
	Western Illinois Regional Council	Suzan Nash, Executive Director	223 South Randolph, Macomb, IL 61455	wirc@wirpc.org	(309) 837-3941
IN	Economic Development Coalition of Southwest Indiana	Greg Wathen, President & CEO	318 Main Street, Suite 400, Evansville, IN 47708	gwathen@southwestindiana.org	(812) 423-2020
	Indiana 15 Regional Planning Commission	Lisa R. Gehlhausen, Executive Director	221 E. First Street, Ferdinand, IN 47532	lisa@ind15rpc.org	(812) 367-8455
	River Hills Economic Development District	Jill Saegesser, Executive Director	300 Spring Street, Suite 2A, Jeffersonville, IN 47130	jsaegesser@riverhills.cc	(812) 288-4624
	Seymour	Kathy Eaton-McKalip, Deputy Commissioner	185 Agrico Lane, Seymour, IN 47274	secommunications@indot.IN.gov	(812) 522-5649
	Southeastern Indiana Regional Planning Commission	Susan Craig, Executive Director	405 West US 50, PO Box 765, Versailles, IN 47042	susan.craig@sirpc.org	(812) 689-5505
	Vincennes	Russell Fowler, Deputy Commissioner	3650 South US Hwy. 41, Vincennes, IN 47591	swincommunications@indot.in.gov	(812) 882-8330
MI	Bay	Robert A. Ranck Jr., Bay Region Engineer	55 E. Morley Dr., Saginaw, MI 48601	RanckJ@michigan.gov	(989) 773-3532
	Central Upper Peninsula Planning and Development Commission	Peter Van Steen, Transportation Planner	2415 14th Avenue South, Escanaba, MI 49829	pvansteen@cuppad.org	(906) 786-9234
	East Central Michigan Planning &	Anamika Laad, Transportation, Land Use	3144 Davenport Avenue, Suite 200, Saginaw, MI 48602	info@emcog.org	(989) 751-6022

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Development Regional Commission	& GIS			
	Eastern Upper Peninsula Regional Planning and Development Commission	Nathan Fazer, Community Planner	PO Box 520 Sault Ste. Marie, MI 49783	nfazer@eup-planning.org	(906) 635-1581
	GLS Region V Planning Commission	Julie Hinterman, Director	1101 Beach St., Flint, MI 48502	gcmpc@co.genesee.mi.us	(810) 257-3010
	Metro	Tony Kratofil, Metro Region Engineer	18101 W. Nine Mile Rd., Southfield, MI 48075	kratofilt@michigan.gov	(248) 483-5103
	North	Scott Thayer, North Region Engineer	1088 M-32 East, Gaylord, MI 49735	THAYERS@michigan.gov	(989) 731-5090
	Northeast Michigan Council of Governments	Nico Tucker, Transportation and Resource Planner	80 Livingston Blvd., Suite 8, PO Box 457, Gaylord, MI 49734	ntucker@nemcog.org	(989) 705-3732
	Northwest Michigan Council of Governments	Mathias McCauley, Director of Regional Planning & Community Development	NWM Council of Governments, PO Box 506, Traverse City, MI 49685	mccauley@nwm.cog.mi.us	(231) 929-5061
	Region 2 Planning Commission	Steve Duke, Executive Director	120 W. Michigan Ave., Jackson, MI 49201	sduke@co.jackson.mi.us	(517) 788-4426
	Saginaw Metropolitan Area Transportation Study	Brian Wendling, Saginaw County Road Commission Managing Director	3020 Sheridan Ave., Saginaw, MI 48601	wendlingb@scrc-mi.org	(989) 752-6140
	Southcentral Michigan Planning Council	Rand Bowman, Executive Director	PO Box 2137, Portage, MI 49081	randbowman@yahoo.com	(269) 323-0045
	Southeast Michigan COG (SEMCOG)	Jeffrey Tumidanski, Transportation Planner	Southeast Michigan Council of Governments, 535 Griswold Street, Suite 300, Detroit, MI 48226-3602	tumidanski@semcog.org	(313) 324-3320
	Southwest	Roberta Welke, Southwest Region Engineer	1501 Kilgore Road, Kalamazoo, MI 49001	welkeb@michigan.gov	(269) 337-3910
	Southwestern Michigan Commission	K. John Egelhaaf, Executive Director	185 East Main Street, Suite 701, Benton Harbor, Mi 49022	egelhaafj@swmpc.org	(269) 925-1137 ext. 12
	Superior	Randel Van Portfliet, Superior Region Engineer	1818 Third Avenue North, Escanaba, MI 49829	vanportfliet@michigan.gov	(906) 786-1800

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Tri-County Regional Planning Commission	Paul Hamilton, Chief Transportation Planner	913 W Holmes Road, Suite 201, Lansing, MI 48910	phamilton@mitcrpc.org	(517) 393-0342
	University	Mark Chaput, University Region Engineer	4701 W. Michigan Ave., Jackson, MI 49201	ChaputM@michigan.gov	(517) 750-0428
	West Michigan Regional Planning Commission	Dave Bee, Director	820 Monroe NW, Suite 214, Grand Rapids, MI 49503	dbee@wmrpc.org	(616) 774-8400
	West Michigan Shoreline Regional Development Commission	Brian Mulnix, Program manager	P.O. Box 387, 316 Morris Avenue, Suite 340, Muskegon, MI 49443	bmulnix@wmsrdc.org	(231) 722-7878 ext. 20
MN	Arrowhead Regional Development Commission	Bryan Anderson	221 West 1st Street, Duluth, MN 55802	banderson@ardc.org	(218) 529-7529
	East Central Regional Development Commission	Robert Bollenbeck	100 Park Street South, Mora, MN 55051	robert.bollenbeck@ecrdc.org	(320) 679-4065 ext. 24
	Headwaters Regional Development Commission	Matthew Dyrdahl, AICP Physical Planner	PO Box 906, Bemidji, MN 56619-0906	mdyrdahl@hrdc.org	(218) 444-4732
	Metropolitan Council	David Vessel, Transportation Specialist	390 Robert St. N., St. Paul, MN 55101	david.vessel@metc.state.mn.us	(651) 602-1000
	Mid-Minnesota Development Commission	Matthew Johnson, Community Planning & Development Director	333 Sixth Street SW, Suite 2, Willmar, MN 56201-5615	communityplanning@mmrdc.org	(320) 235-8504
	MNDOT - District 1	Walter Leu, Assistant District Engineer State Aid and Planning	1123 Mesaba Ave, Duluth, MN 55811	walter.leu@state.mn.us	(218) 725-2705
	MNDOT - District 2	Kent Ehrenstrom, Northwest District Transit Planner	3920 Highway 2 West, Bemidji, MN 56601	kent.ehrenstrom@state.mn.us	(218) 755-6555
	MNDOT - District 3	Bob Busch, Transportation District Engineer	7694 Industrial Park Road, Baxter, MN 56425-8096	robert.busch@state.mn.us	(218) 828-5700
	MNDOT - District 4	Lee Berget, Transportation District	1000 Highway 10 West, Detroit Lakes, MN 56501	lee.berget@state.mn.us	(218) 846-3603

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
		Engineer			
	MNDOT - District 6	Nelrae Succio, District Engineer	2900 48th Street NW, Rochester, MN 55901-5848	nelrae.succio@state.mn.us	(507) 286.7501
	MNDOT - District 7	Douglas Haeder, Assistant District Engineer - State Aid/Planning	2151 Bassett Drive, Mankato, MN 56001-6888	douglas.haeder@state.mn.us	(507) 304-6100
	MNDOT - District 8	Jon Huseby, District Engineer	2505 Transportation Road, Willmar, MN 56201	jon.huseby@state.mn.us	(320) 231-5497
	MNDOT - Metro District	Pat Bursaw, Director of Planning, Program Management, and Transit	2000-2010 Minnesota Department of Transportation, 395 John Ireland Blvd, St. Paul, MN 55155-1899	pat.bursaw@state.mn.us	(651) 234-7783
	Northwest Region	Don Gutkowski, Director	718 W. Clairemont Avenue, Eau Claire, WI 54701	eauclaire.dtd@dot.wi.gov	(715) 836-2891
	Northwest Regional Development Commission	Troy Schroeder, Transportation Planner	115 South Main, Suite 1, Warren, MN 56762	tschroeder@nwrdc.org	(218) 745-9107
	Region 5 Development Commission	Jake Huebsch, Transportation Planner	Region Five Development Commission, 403 Prairie Ave. NE, Suite 100, Staples, MN 56479	jhuebsch@regionfive.org	(218) 894-3233 ext. 15
	Region 7W Long Range Transportation Plan	Steven Voss, Region 7W Coordinator	7694 Industrial Park Road, Baxter, MN 56425-8096	steve.voss@state.mn.us	(218) 828-5815
	Region Nine Development Commission	Ronda Allis, Director & Transportation Coordinator	10 Civic Center Plaza Suite 3, PO Box 3367, Mankato, MN 56002	ronda@rndc.org	(507) 389-8886
	Southeastern Regional Development Commission	Mark Schoenfelder, Acting Planning Director	2900 48th St. NW, Rochester, MN 55901	mark.schoenfelder@state.mn.us	(507) 286-7552
	Southwest Regional Development Commission	John Shepard, Development Planner	2401 Broadway Avenue, Suite 1, Slayton, MN 56172	jshepard@swrdc.org	(507) 836-1633
	St. Cloud Area Planning Organization (APO)	Scott Mareck, Executive Director and Transportation Planning Manager	Saint Cloud Area Planning Organization, 1040 County Road Four, Saint Cloud, MN 56303	mareck@stcloudapo.org	(320) 252-7568

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Upper Minnesota Valley Regional Development Commission	Michelle Bouta, Community Development Planner	323 West Schlieman Avenue, Appleton, MN 56208	michelle.bouta@umvrdc.org	(320) 289-1981
	West Central Initiative	Wayne Hurley, Transportation Planning Director	1000 Western Avenue, Fergus Falls, MN 56537	wayne@wcif.org	(218) 739-2239
MO	Boonslick Regional Planning Commission	Steve W. Etcher, Executive Director	Boonslick Regional Planning Commission, 111 Steinhagen, PO Box 429, Warrenton, MO 63383	etcher@boonslick.org	(636) 456-3473 x106
	Bootheel Regional Planning & Economic Development Commission	Scott Perry, transportation Planner	105 E. North Main, Dexter, MO 63841	sperry@newwavecomm.net	(573) 614-5178 ext. 104
	Columbia Area Transportation Study Organization	Bill Watkins, City Manager	City of Columbia - CATSO, Planning Department, PO Box 6015, Columbia, MO 65205-6015	planning@gocolumbiamo.com	(573) 874-7239
	District 1, Northwest Region	Don Wichern, District Engineer	3602 North Belt Highway, St. Joseph, MO 64506	don.wichem@modot.gov	(816) 387-2350
	District 10, Southeast Region	Mark Shelton, District Engineer	2675 North Main St., PO Box 160, Sikeston, MO 63801	mark.shelton@modot.gov	(573) 472-5333
	District 2, North Central Region	Dan Niec, District Engineer	902 N. Missouri St., PO Box 8, Macon, MO 63552	dan.niec@modot.gov	(660) 385-3176
	District 3, Northeast Region	Paula Gough, District Engineer	S. Route 61, PO Box 1067, Hannibal, MO 63401	paula.gough@modot.gov	(573) 248-2490
	District 4, Kansas City Region	Beth Wright, District Engineer	District 4 Headquarters, 600 NE Colbern Road, Lee's Summit, MO 64086	ben.wright@modot.gov	(816) 437-3628
	District 5, Central Region	Roger Schwartze, District Engineer	1511 Missouri Blvd., Jefferson City, MO 65109	roger.schwartze@modot.gov	(573) 751-3322
	District 6, St. Louis Region	Ed Hassinger, District Engineer	1590 Woodlake Drive, Chesterfield, MO 63017	ed.hassinger@modot.gov	(314) 275-1500
	District 7, Southwest Region	Becky Baltz, District Engineer	3901 East 32nd Street, Joplin, MO 64804	becky.baltz@modot.gov	(417) 621-6500
	District 9, South Central Region	Tom Stehn, District Engineer	910 Springfield Road, PO Box 220, Willow Springs, MO 65793	tom.stehn@modot.gov	(417) 469-3134

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	East-West Gateway Council of Government	J. Blair, Transportation Planning Director	East-West Gateway Council of Government, One Memorial Drive, Ste 1600, St. Louis, MO 63102	TIP@ewgateway.org	(314) 421-4220
	Green Hills Regional Planning Commission	Randy Railsback, Executive Director	1104 Main Street, Trenton, MO 64683	randy@ghrpc.org	(660) 359-5636 ext. 11
	Harry S Truman Coordinating Council	Gloria Bottom, Transportation Planner	800 E. Pennell, Carl Junction, MO 64834	gbottom@hstcc.org	(417) 649-6400
	Kaysinger Basin Regional Planning Commissio	Samantha Dingfelder, Transportation Planner	908 North Second Street, Clinton, MO 64735	sam@kaysinger.com	(660) 885-3393
	Mark Twain Regional Council of Governments	Robin Ftzgerald, Executive Director	42494 Delaware Lane, Perry, MO 63462	fitzgeraldcog@railstech.com	(573) 565-2203
	Meramec Regional Planning Commission	Richard Cavender, Executive Director	#4 Industrial Drive, St. James, MO 65559	rac@meramecregion.org	(573) 265-2993
	Mid-America Regional Council	Mell Henderson, Total Transportation Policy Committee	600 Broadway, Suite 200, Kansas City, MO 64105	melh@marc.org	(816) 701-8257
	Mid-America Regional Council	Mell Henderson, Total Transportation Policy Committee	600 Broadway, Suite 200, Kansas City, MO 64105	melh@marc.org	(816) 701-8257
	Mid-Missouri Regional Planning Commission	Eddie Brickner, Presiding Commissioner	Cooper County, 200 Main Street, Boonville, MO 65233	ekbrick@iland.net	(660) 882-2228
	Mo-Kan Regional Council	Tim Bliss, Executive Director	224 North 7th Street, St. Joseph, MO 64501	tom@mo-kan.org	(816) 233-3144
	Northeast Missouri Regional Planning Commission	David Davison, Executive Director	326 E. Jefferson, PO Box 248, Memphis, MO 63555	davedavison@nemorpc.org	(660) 465-7281
	Northwest Missouri Regional Council of Governments	Dana Ternus, Regional Planner	114 West Third Street, Maryville, MO 64468	dana@nwmorcog.org	(660) 582-5121
	Ozark Foothills Regional Planning Commission	Felicity Brady, Executive Director	3019 Fair Street, Poplar Bluff, MO 63901	felicity@ofrpc.org	(573) 785-6402
	Pioneer Trails Regional Planning Commission	Randy White, Executive Director	802 S. Gordon St., Room 102, PO Box 123, Concordia, MO 64020	randy@trailsrpc.org	(660) 463-7934

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Southeast Missouri Regional Planning & Economic Development Commission	A. Drew Christian, Regional Planner	1 W. St. Joseph Street, PO Box 366, Perryville, MO 63775	dchristian@semorpc.org	(573) 547-8357
NE	Omaha - Council Bluffs Metropolitan Planning Agency	Paul Hunt - Assistant Planner, Transportation	Metropolitan Area Planning Agency, 2222 Cuming Street, Omaha, Nebraska 68102- 4328	phunt@mapacog.org	(402) 444-6866 ext. 221
OH	District 2	Todd M. Audet, District Deputy Director	317 East Poe Rd., Bowling Green, OH 43402	todd.audet@dot.state.oh.usa	(419) 353-8131
	Toledo Metropolitan Area COG (TMACOG)	Diane Reamer-Evans, Transportation Project Manager	Toledo Metropolitan Area Council of Governments, PO Box 9508, Toledo, OH 43697-9508	evans@tmacog.org	(419) 241-9155 ext . 117
WI	Bay-Lake Regional Planning Commission	Jeff Agee-Aguayo	441 South Jackson Street, Green Bay, WI 54301	jagee@baylakerpc.org	(920) 448-2820
	Capital Area Regional Planning Commission	Mike Kakuska, Senior Environmental Planner	City-County Building, Room 362, 201 Martin Luther King Jr. Blvd., Madison, WI 53703	MikeK@CapitalAreaRPC.org	(608) 266-9111
	East Central Wisconsin Regional Planning Commission	Walt Raith	400 Ahnaip St., Suite 100, Menasha, WI 54952	wraith@eastcentralrpc.org	(920) 751-4770
	La Crosse Area Planning Committee	Jackie Eastwood, Transportation Planner	La Crosse Area Planning Committee, 400 North Fourth Street, La Crosse, WI 54601	Eastwood.Jackie@co.La-Crosse.wi.us	(608) 785-5977
	Madison Area Transportation Planning Board	William Schaefer, Transportation Planning Manager	121 S. Pinckney Street, Suite 400, Madison, WI 53703	wschaefer@cityofmadison.com	(608) 266-4336
	Mississippi River Regional Planning Commission	Peter Fletcher	1707 Main St., Suite 240, La Crosse, WI 54601	peter@mrrpc..com	(608) 785-9396
	North Central Region	Dan Grasser, Director	510 N. Hanson Lake Road, Rhinelander, WI 54501	ncr.dtsd@dot.wi.gov	(715) 365-3490
	Northcentral Wisconsin Regional Planning Commission	Darryl Landeau	210 McClellan St., Suite 2010, Wausau, WI 54403	dlandeau@ncwrpc.org	(715) 849-5510 ext. 308
	Northeast Region	Mike Berg, Director	944 Vanderperren Way, Green Bay, WI 54304	greenbay.dtd@dot.wi.gov	(920) 492-5643

State	Organization Name	Contact Name, Position	Address	E-mail	Phone
	Northwest Regional Planning Commission	Sheldon Johnson	1400 South River Street, Spooner, WI 54801	sjohnson@nwrpc.org	(715) 635-2197
	Southeast Region	Dewayne Johnson, Director	141 NW Barstow Street, PO Box 798, Waukesha, WI 53187	waukesha.dtd@dot.wi.gov	(262) 548-5903
	Southeastern Wisconsin Regional Planning Commission & MPO	Chris Hiebert	W239 N1812 Rockwood Drive, PO Box 1607, Waukesha, WI 53187-1607	chiebert@sewrpc.org	(262) 547-6722 (#227)
	Southwest Region	Joe Olson, Director	3550 Mormon Coulee Road, La Crosse, WI, 54601	lacrosse.dtd@dot.wi.gov	(608) 785-9022 ext. 13
	Southwestern Wisconsin Regional Planning Commission	Amy Seeboth	One University Plaza, Room 719, Platteville, WI 53818	seebotha@uwplatt.edu	(608) 342-1636
	West Central Wisconsin Regional Planning Commission	Ann Schell	800 Wisconsin St., Mailbox #9, Eau Claire, WI 54703-3606	aschell@wcwrpc.org	(715) 836-2918

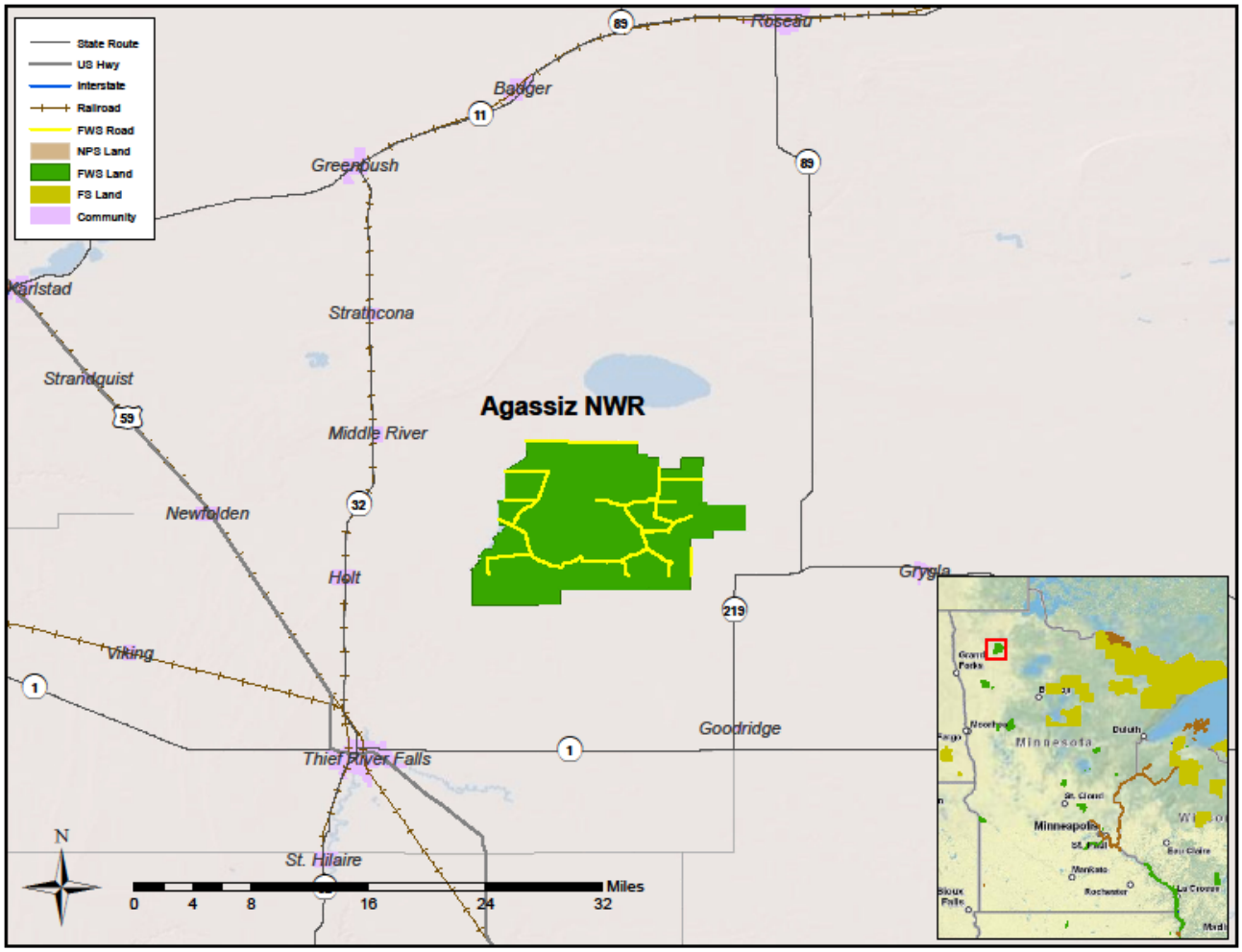
APPENDIX I

Refuge Fact Sheets

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Agassiz National Wildlife Refuge



FACTS	Agassiz NWR
Road Miles (TOTAL)	103.22
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	49.03
• Native Road (Miles)	54.04
• Primitive Road (Miles)	0.15
Trail Miles (TOTAL)	1.54

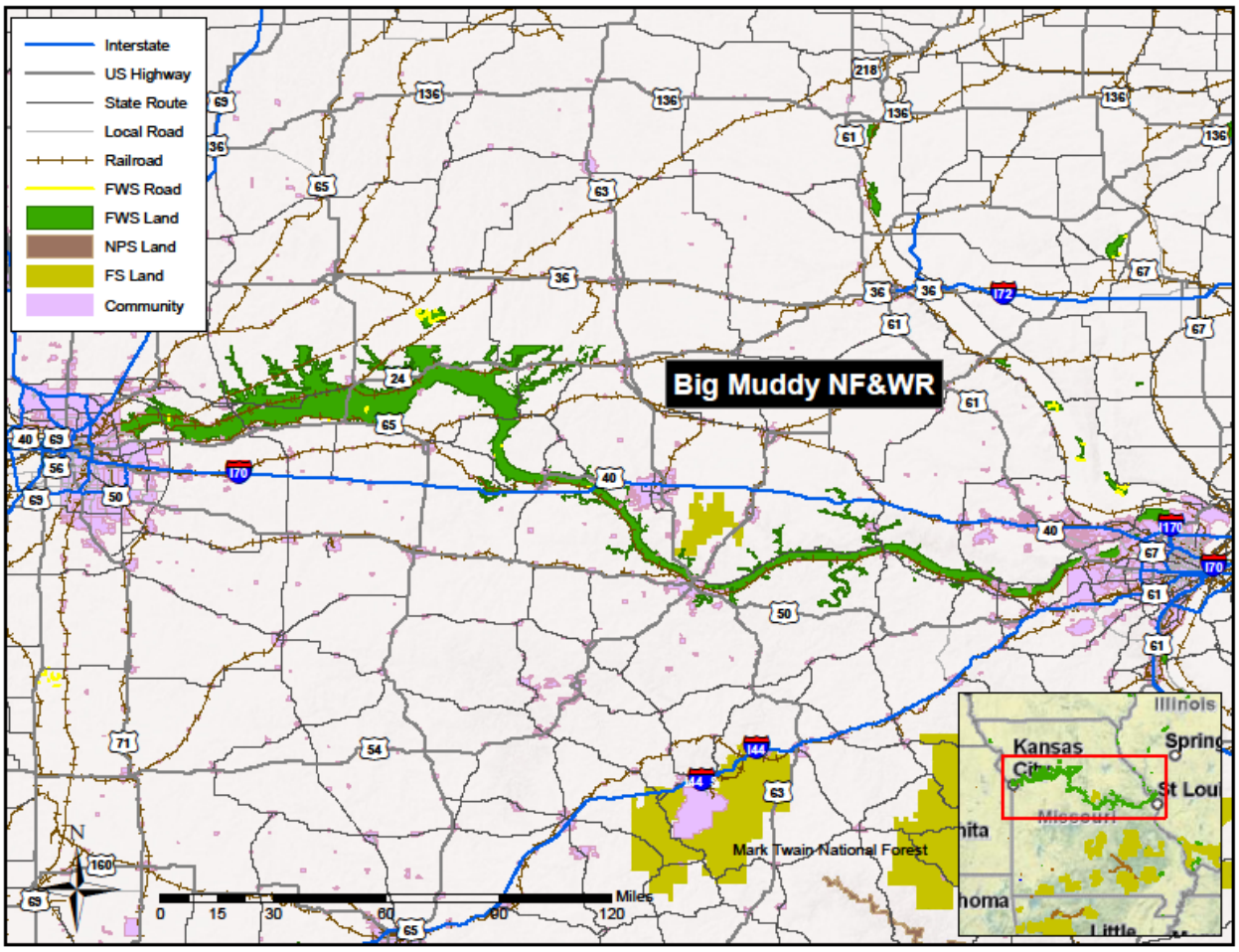
FACTS	Agassiz NWR
Parking Lot (square feet)	145,586
Unit Acreage	61,500
Access Point	Marshall County Road 7
Main activities	Hunting and Fishing
Special Events	Public Duck Banding (Mid Sept); Open House (varies-Spring & Fall)
Proximity to nearest FLMAs (miles-direction)	Chippewa National Forest (70-E/SE); Voyageurs National Park (125-E)
Transportation Hub (miles away)	Thief River Falls, MN (23)
Gateway Community (miles away)	Holt, MN (11)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Condition of existing transportation assets
	County Road bisects the refuge
Habitat Fragmentation	County Road bisects the refuge
Animal-Vehicle collisions	Deer & Canada Geese (non-endangered species) along County Road
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	Access roads through and adjacent to refuge are gravel. Closest town of 8500 pop is 25 miles away. Grand Forks, ND & Winnipeg, Canada are 1.5 hours and Minneapolis, MN is 6 hrs driving time

Refuge	Transit Distance	Trail Distance	Priority
Agassiz NWR *Middle River, MN*	More than 3 miles	More than 3 miles	Low
Existing or Planned ATS: • An Amtrak station is located more than three miles from the refuge. **Opportunities for Future ATS:** • The biggest challenges on the refuge are the distance from population centers, staff capacity shortages, and the condition of existing transportation assets. • The refuge is remote with unpaved access roads and no population centers nearby. High gas prices have deterred some visitors from driving to the refuge in recent years.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Big Muddy National Wildlife Refuge



FACTS	Big Muddy NWR
Road Miles (TOTAL)	16.04
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	9.79
• Native Road (Miles)	5.73
• Primitive Road (Miles)	0.52
Trail Miles (TOTAL)	2.91
Parking Lot (square feet)	68,349
Unit Acreage	16,000

FACTS	Big Muddy NWR
Access Point	New Haven Rd
Main activities	Hunting, Fishing and Wildlife Observation
Special Events	Wings of Spring (May), Missouri River Cleanup (varies); Race for the River (September)
Proximity to nearest FLMAs (miles-direction)	Mark Twain National Forest (5-N); Ozark National Scenic Riverway (100-S)
Transportation Hub (miles away)	Columbia, MO (6)
Gateway Community (miles away)	Columbia, MO (6)
Scenic Byway	Meeting of the Great Rivers Byway
Air quality Non-Attainment Area	PM-2.5.1997
Main transportation challenges identified	At-grade railroad crossing
Habitat Fragmentation	Yes, several species
Animal-Vehicle collisions	White tailed deer (non-endangered species) on public roads leading to units
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Pedestrian trails to and within station
Most important enhancement priority	Parking Management solutions
Other	Water access facilities and improved signage

Refuge	Transit Distance	Trail Distance	Priority
Big Muddy NWR *Columbia, MO*	More than 3 miles	Direct connection	Medium

Existing or Planned ATS:

- The Katy Trail State Park trail runs for 225 miles and has a direct connection to some of the units of the site, but the nearest section of the trail to visitor amenities in the refuge is more than three miles away.
- An Amtrak station is located more than three miles from the station.
- Approximately nine percent of visitors access the site through water-based modes.

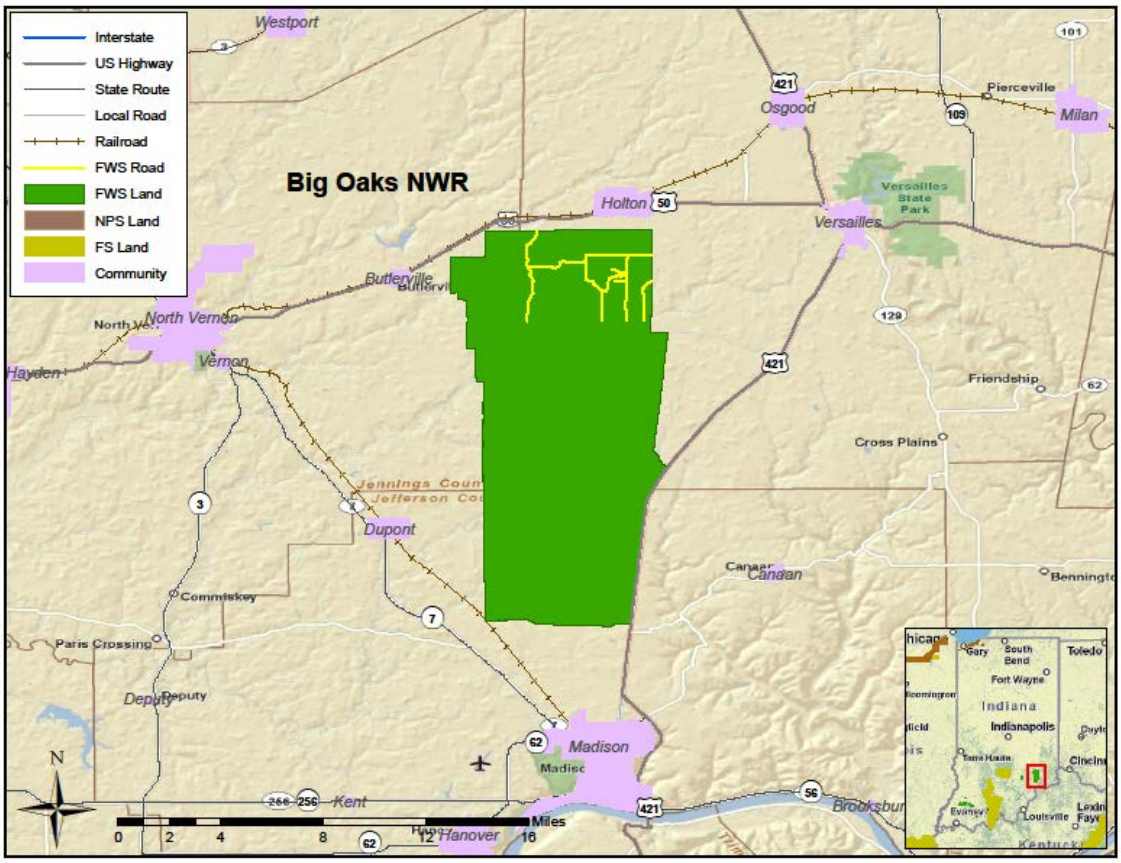
Opportunities for Future ATS:

- Pedestrian paths could allow greater access to the refuge from nearby towns, as a significant number of visitors come from within 10 miles of the station. The refuge would also benefit from pedestrian paths for access within station.
- The greatest need is for improved water access facilities and improved signage.
- The station has several special events attracting large numbers of visitors, such as Wings of Spring in May and regular Missouri River cleanups. These events could incorporate more ATS for access to and within the station, or to shuttle visitors to event locations.
- The greatest challenge is the large number of units and their dispersed nature. Social media and other promotional tools are important for increasing safe access and visitation.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Big Oaks National Wildlife Refuge



FACTS	Big Oaks NWR
Road Miles (TOTAL)	81.21
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	81.21
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	61,926

FACTS	Big Oaks NWR
Unit Acreage	50,000
Access Point	West Niblo Road
Main activities	Hunting and Fishing
Special Events	Deer hunts (October and November); Take a kid fishing (July); Outdoor Women at Big Oaks NWR (June)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Hoosier National Forest (40-W); Mammoth Cave (120-S)
Transportation Hub (miles away-as the crow flies)	Louisville, KY (61)
Gateway Community (miles away-as the crow flies)	Madison, IN (9)
Scenic Byway	Ohio River Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Bus parking
	Lack of safe vehicular access within unit
	Condition of existing transportation assets
	Visitor orientation to and within station
Habitat Fragmentation	Forest and grassland
Animal-Vehicle collisions	Deer (non-endangered specie) on the east perimeter of unit
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Bicycle and Pedestrian trails to and within unit
	Parking Management Solutions
	Turning lanes for access to unit
Most important enhancement priority	Hazard mitigation
Other	No Parking, poor roads, poor access to refuge office

Refuge	Transit Distance	Trail Distance	Priority
Big Oaks NWR *Madison, IN*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- The Madison Heritage Trail is located in Madison, IN, approximately 15 miles to the south.
- Most visitors come from within 50 miles of the station.

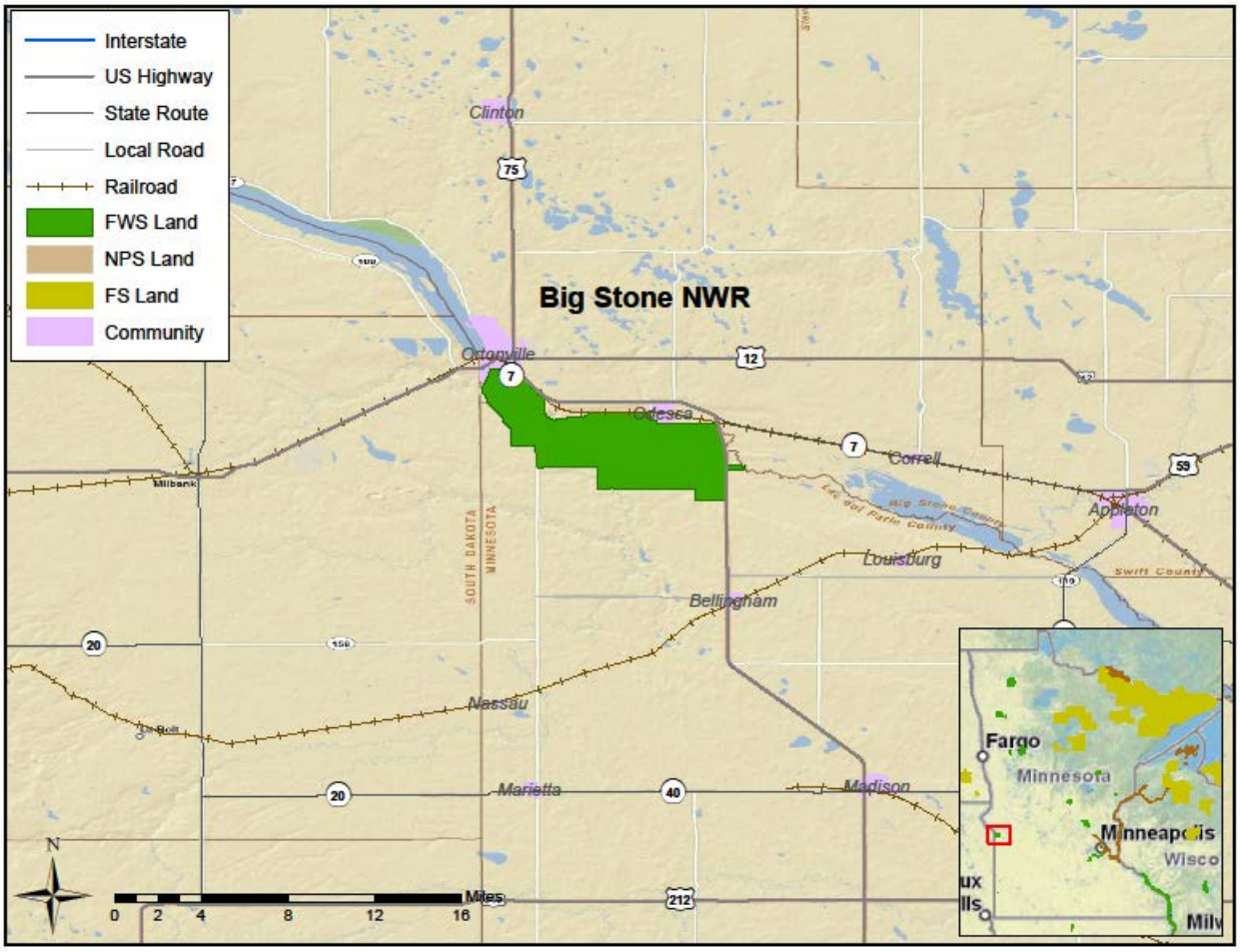
Opportunities for Future ATS:

- Safety is a key transportation concern for the refuge. They could benefit from improved road conditions, new parking, and turning lanes to access to the station. They could also use bicycle and pedestrian trails for safe access within the station.
- If there were a transit vehicle available at low or no cost, the refuge may be able to use it for programs or special events.
- Challenges facing the refuge include bus parking, safe driving conditions in refuge, and visitor orientation. The refuge also faces staff and funding shortages and unsafe road conditions surrounding the station.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Big Stone National Wildlife Refuge



FACTS	Big Stone NWR
Road Miles (TOTAL)	19.90
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	6.19
• **Gravel Road (Miles)**	11.35
• **Native Road (Miles)**	2.36
• **Primitive Road (Miles)**	-

FACTS	Big Stone NWR
Trail Miles (TOTAL)	2.68
Parking Lot (square feet)	272,191
Unit Acreage	11,521
Access Point	Big Stone County Road 19
Main activities	Wildlife Observation
Special Events	Youth Fishing Day (3rd Saturday in May)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Sheyenne National Grassland (80-NW); Pipestone National Monument (85-S)
Transportation Hub (miles away-as the crow flies)	Ortonville, MN (7)
Gateway Community (miles away-as the crow flies)	Odessa, MN (1)
Scenic Byway	Minnesota River Valley Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Deer/vehicle collisions
Habitat Fragmentation	Frogs and insects
Animal-Vehicle collisions	Deer (non-endangered species) along roads
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Improve orientation signage to unit
Most important enhancement priority	Signage

Refuge	Transit Distance	Trail Distance	Priority
Big Stone NWR and WMD *Ortonville, MN*	More than 3 miles	Direct connection	Low

Existing or Planned ATS:

- There is a local bus service targeted at seniors and persons with disabilities approximately eight miles from the refuge. Greyhound and Amtrak service are 120 miles away.
- The Minnesota River Headwaters Trail runs within the refuge. It was developed collaboratively between the USFWS and Big Stone County with other state and local partners. The multi-use trail connects the headwaters of the Minnesota River with the refuge and the auto tour route.
- Approximately 10 percent of visitors access the refuge by walking or bicycling, and most visitors live within 10 miles of the refuge.

Opportunities for Future ATS:

- Due to distance from population centers and lack of transit, the station does not see many opportunities for ATS.
- The refuge would benefit most from promotion of existing ATS connections, improved pedestrian trails or paths to access the station and improved signage for visitor orientation.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

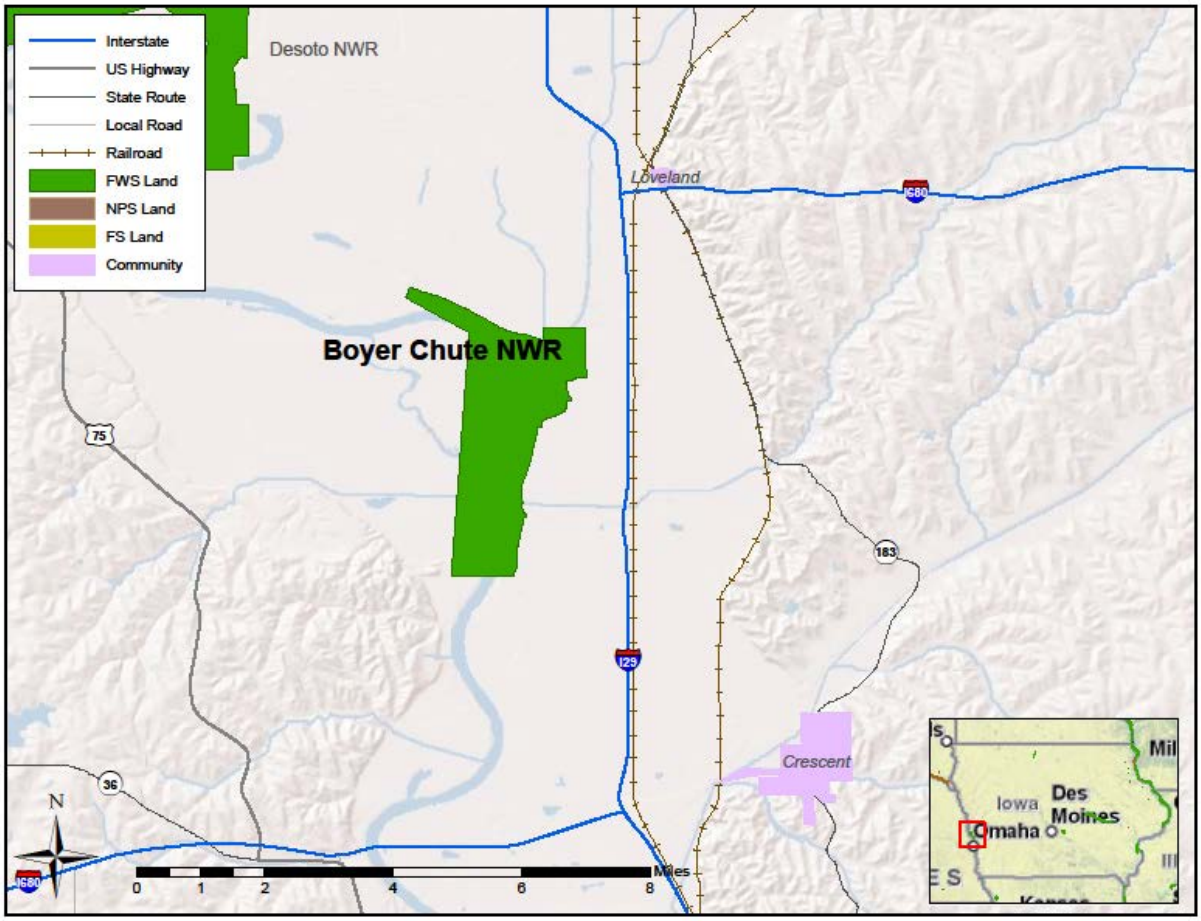
Big Stone Wetland Management District

FACTS	Big Stone WMD
Road Miles (TOTAL)	-
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	77,938
Unit Acreage	3,000
Access Point	Big Stone County Road 19
Main activities	Wildlife Observation
Special Events	Youth Fishing Day (3rd Saturday in May)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Sheyenne National Grassland (80-NW); Pipestone National Monument (85-S)
Transportation Hub (miles away-as the crow flies)	Ortonville, MN (7)
Gateway Community (miles away-as the crow flies)	Odessa, MN (1)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Deer/vehicle collisions
Habitat Fragmentation?	Frogs and insects
Animal-Vehicle collisions?	Deer (non-endangered species) along roads
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Improve orientation signage to unit
Most important enhancement priority	Signage

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Boyer Chute National Wildlife Refuge



FACTS	Boyer Chute NWR
Road Miles (TOTAL)	8.45
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	2.38
• Gravel Road (Miles)	2.63
• Native Road (Miles)	3.44
• Primitive Road (Miles)	-

FACTS	Boyer Chute NWR
Trail Miles (TOTAL)	9.1
Parking Lot (sqft)	157,430
Unit Acreage	3,350
Access Point	County Road 34
Main activities	Hunting, Fishing, Wildlife Observation, and Environmental Education
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Missouri National Recreation River (90-NW); Nebraska National Forest (225-W)
Transportation Hub (miles away-as the crow flies)	Omaha, NE (21)
Gateway Community (miles away-as the crow flies)	Fort Calhoun, NE (4)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Resource conflicts with cars or bicycles
Habitat Fragmentation	Yes, Wetlands, floodplain forest and grassland dependent species
Animal-Vehicle collisions	Yes, Deer, turkey, geese, snakes and turtles (non-endangered species) along the auto tour route
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Properly reducing impacts to wildlife
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Boyer Chute NWR *Calhoun, NE*	More than 3 miles	2-5 miles	Medium

Existing or Planned ATS:

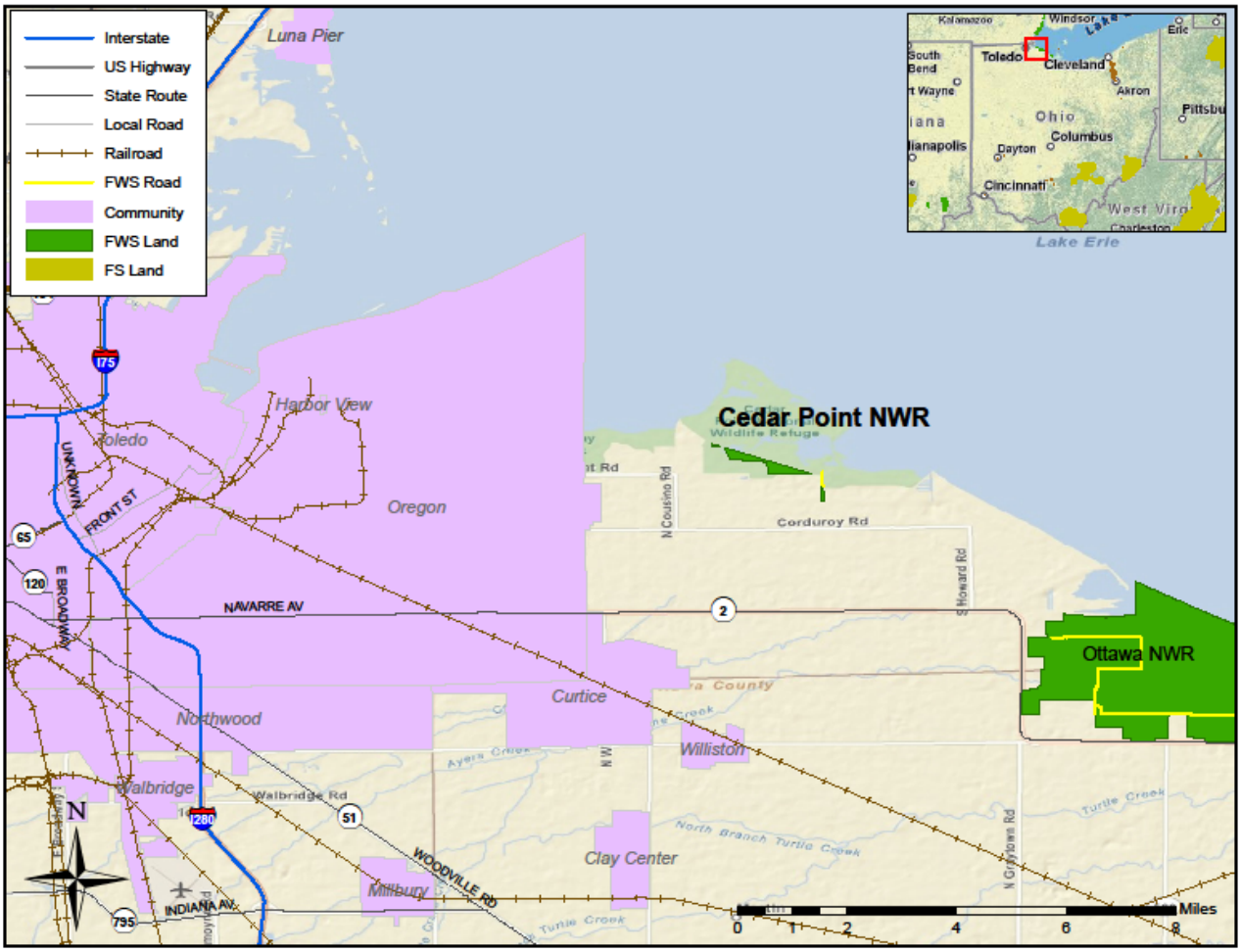
- John J. Pershing Drive and North River Road have some bicycle infrastructure (such as on-road bike routes) closer to the refuge, but the nearest designated bike path is approximately five miles south of the refuge.
- Metro Area Transit (Omaha, NE) has a bus (Route 30) with service approximately 10 miles south of the refuge.

Opportunities for Future ATS:

- There is the potential for a multi-use trail connecting the metropolitan Omaha area to multiple recreational sites along the Mississippi River in proximity to the refuge.
- Refuge management expresses concerns about resource conflicts between vehicles and resources. Improved infrastructure for non-motorized transportation within the refuge may reduce these conflicts and minimize the need for new roads or road improvements.
- Most visitors come from 10 to 50 miles from the refuge, and the distance from population centers and lack of transit offers challenges in improving access.

U.S. Fish and Wildlife Service

Cedar Point National Wildlife Refuge



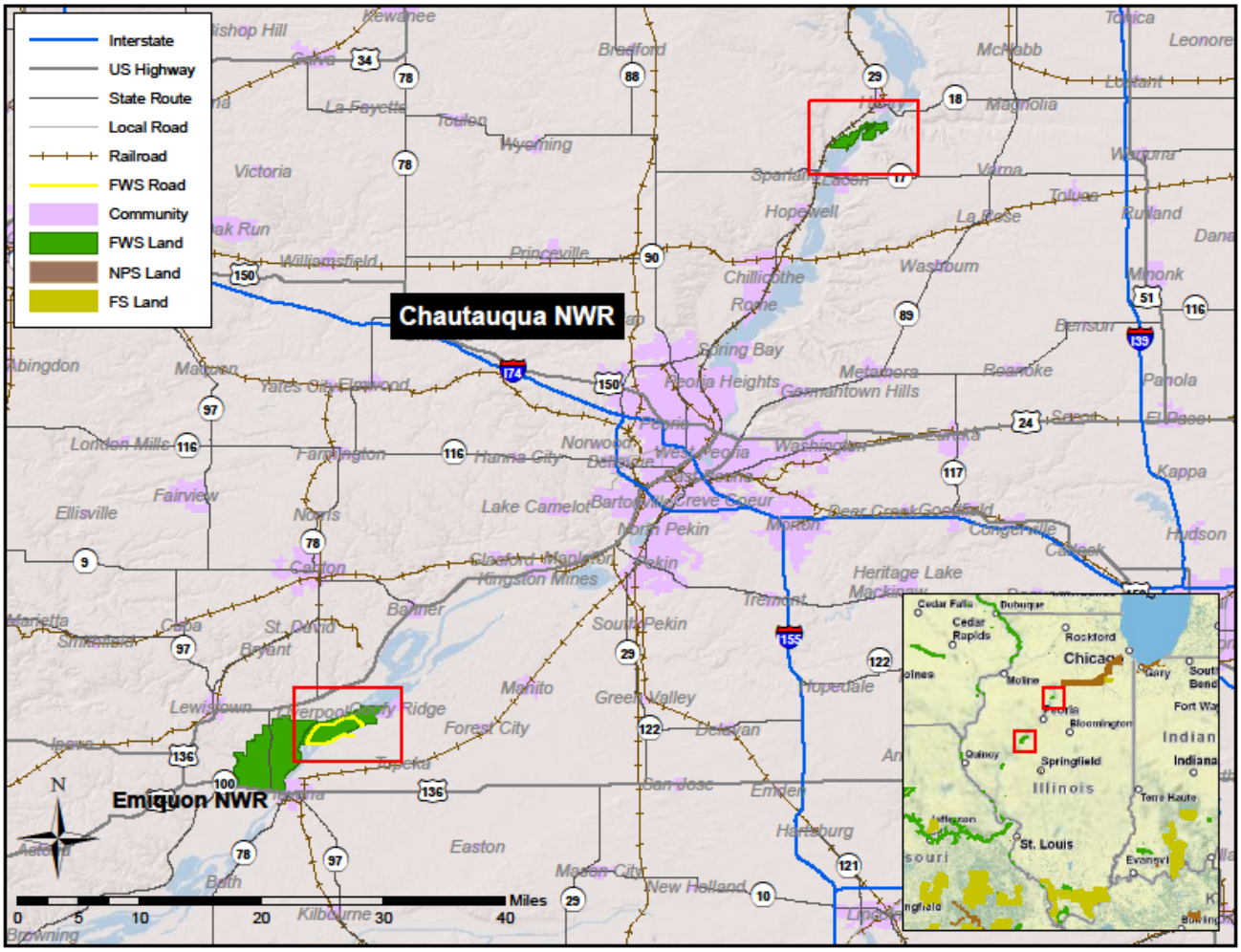
FACTS	Cedar Point NWR
Road Miles (TOTAL)	11.05
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	8.74
• Native Road (Miles)	2.31
• Primitive Road (Miles)	-

FACTS	Cedar Point NWR
Trail Miles (TOTAL)	-
Parking Lot (square feet)	1,910
Unit Acreage	2,445
Access Point	Yondota Road
Main activities	Fishing from June to August
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Wayne National Forest (150-S); Cuyahoga Valley National Park (90-E)
Transportation Hub (miles away-as the crow flies)	Toledo, OH (17)
Gateway Community (miles away-as the crow flies)	Oregon, OH (12)
Scenic Byway	Lake Erie Costal Trail Byway
Air quality Non-Attainment Area	PM-2.5.2006
Main transportation challenges identified	Most of the refuge is closed to the public
Habitat Fragmentation?	-
Animal-Vehicle collisions?	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	Refuge is managed by staff at Ottawa NWR

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Chautauqua National Wildlife Refuge



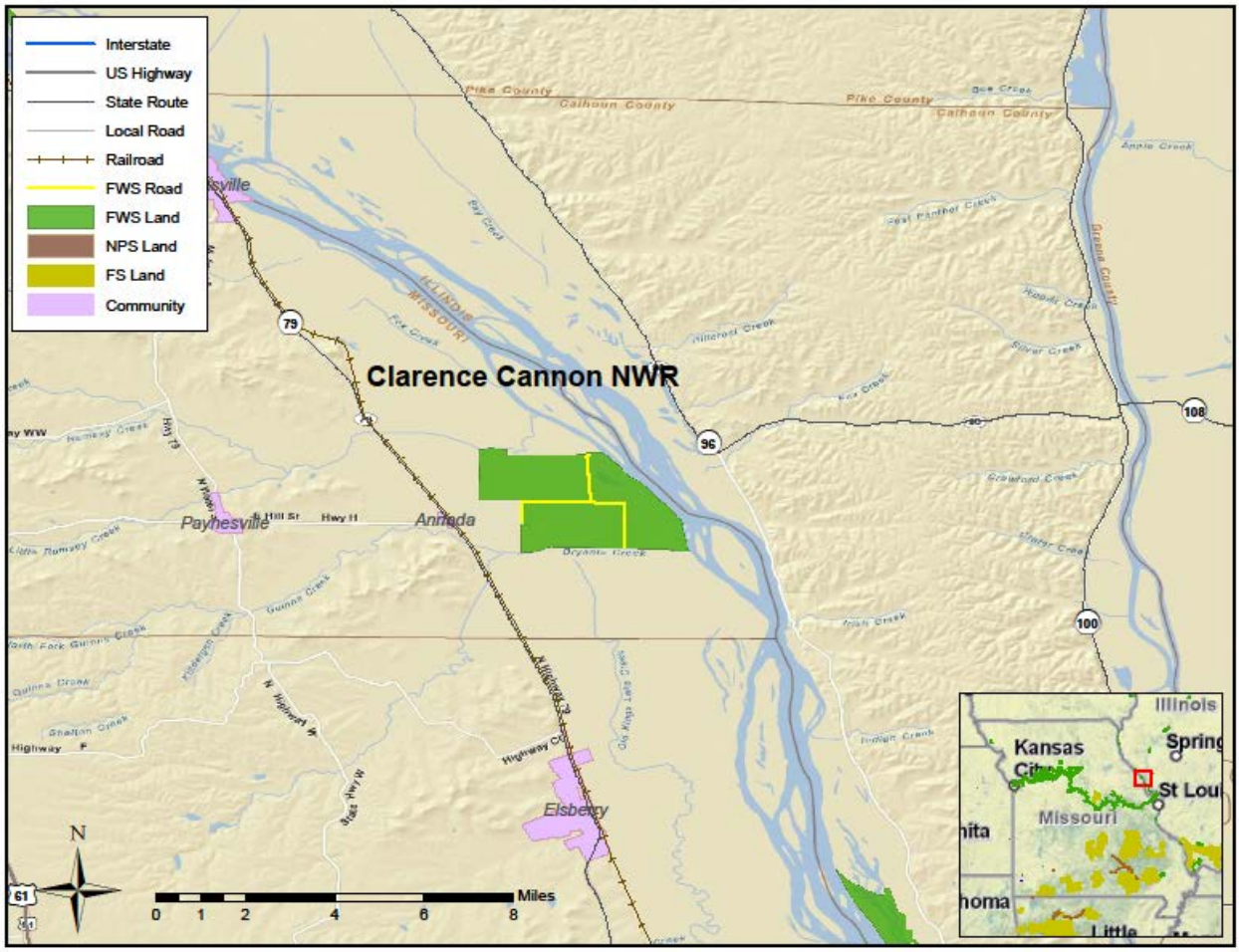
FACTS	Chautauqua NWR
Road Miles (TOTAL)	11.51
• Concrete Road (Miles)	0.27
• Asphalt Road (Miles)	0.47
• Gravel Road (Miles)	10.58
• Native Road (Miles)	0.19

FACTS	Chautauqua NWR
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	0.59
Parking Lot (square feet)	164,015
Unit Acreage	6,200
Access Point	2110N
Main activities	Environmental Education, Fishing, Hunting, Interpretation, Photography and Wildlife Observation
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Illinois and Michigan Canal Corridor (20-NE); Joliet Army Ammunition Plant Forest (65-NE)
Transportation Hub (miles away-as the crow flies)	Peoria, IL (54)
Gateway Community (miles away-as the crow flies)	Havana, IL (9)
Scenic Byway	Illinois River Road (national Scenic Byway)
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Clarence Cannon National Wildlife Refuge



FACTS	Clarence Cannon NWR
Road Miles (TOTAL)	9.10
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	-
• **Gravel Road (Miles)**	8.22

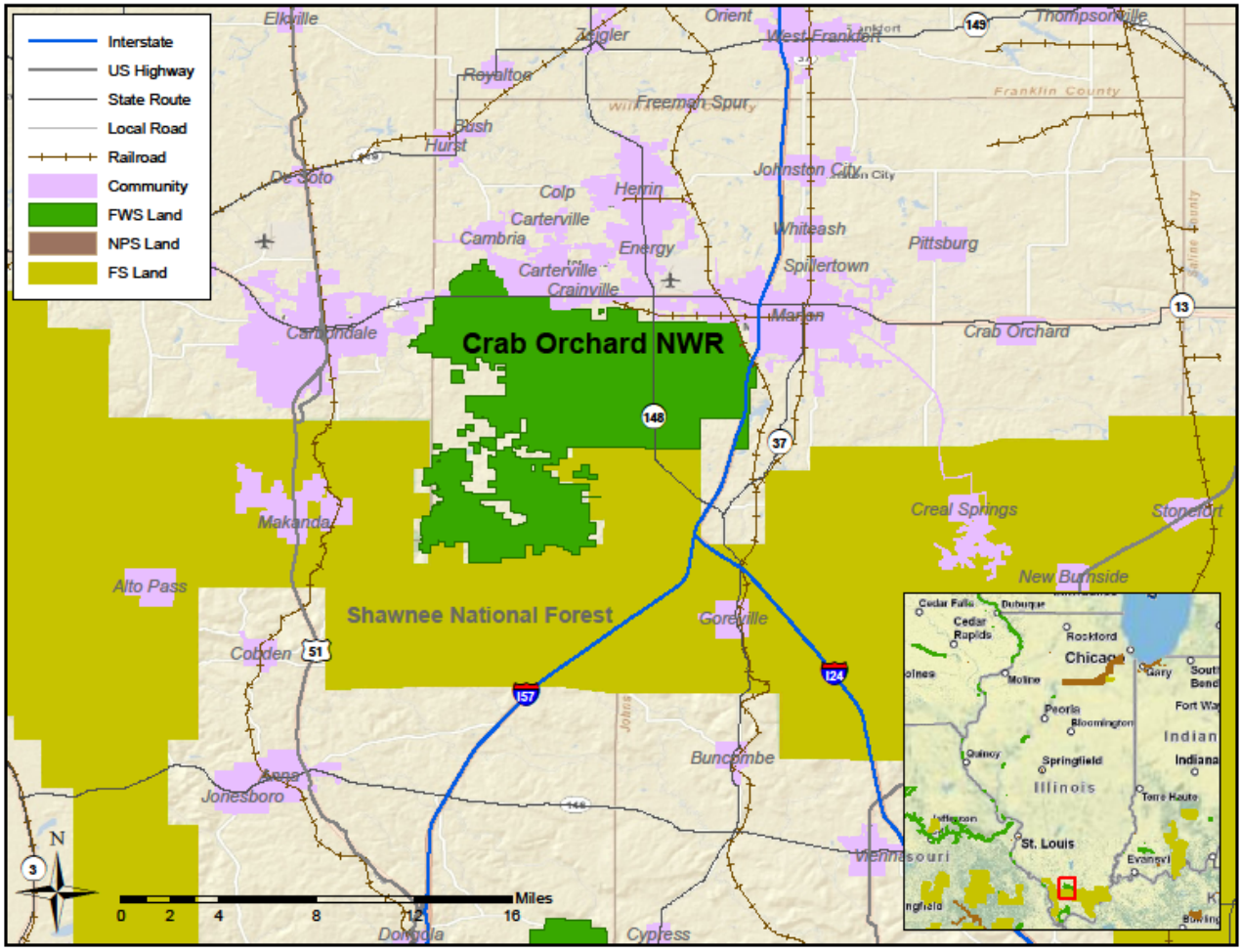
FACTS	Clarence Cannon NWR
• Native Road (Miles)	0.88
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	0.91
Parking Lot (square feet)	40,780
Unit Acreage	3,750
Access Point	County Road 206
Main activities	Wildlife Observation and Photography
Special Events	Youth Fishing Day, Mobility/Visually Impaired Hunt
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mark Twain National Forest (75-W); Illinois and Michigan Canal Corridor (165-NE)
Transportation Hub (miles away-as the crow flies)	St. Louis, MO (66)
Gateway Community (miles away-as the crow flies)	Annada, MO (1)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	Wetlands
Animal-Vehicle collisions	Frogs, crayfish, snakes (non-endangered species) along refuge roads
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Parking Management Solutions
Most important enhancement priority	-
Other	Managed by Great River NWR

Refuge	Transit Distance	Trail Distance	Priority
Clarence Cannon NWR *Annada, MO*	More than 3 miles	More than 3 miles	Low
Existing or Planned ATS: • The distance from population centers and lack of transit offers challenges in improving access to the refuge. The refuge is approximately one hour and thirty minutes from St. Louis. **Opportunities for Future ATS:** • The refuge faces challenges of safe pedestrian access, visitor orientation, and at-grade railroad crossings. • The refuge may benefit from parking management solutions; they anticipate increasing visitation in the future.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Crab Orchard National Wildlife Refuge



FACTS	Crab Orchard NWR
Road Miles (TOTAL)	132.55
• Concrete Road (Miles)	3.77
• Asphalt Road (Miles)	45.52
• Gravel Road (Miles)	66.54

FACTS	Crab Orchard NWR
• Native Road (Miles)	13.51
• Primitive Road (Miles)	3.21
Trail Miles (TOTAL)	7.20
Parking Lot (square feet)	1,516,786
Unit Acreage	44,000
Access Point	Illinois Route 148
Main activities	Hunting, Fishing, Wildlife Observation and Environmental Education
Special Events	Southern Illinois Hunting and Fishing Days (Mid-Sept); International Migratory Bird Day (mid-May)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Shawnee National Forest (1-S); Jefferson National Expansion Memorial (85-NW)
Transportation Hub (miles away-as the crow flies)	Marion, IL (6)
Gateway Community (miles away-as the crow flies)	Marion, IL (6)
Scenic Byway	Great River and Ohio River Byways
Air quality Non-Attainment Area	None
Main transportation challenges identified	Lack of mass transit in area, no bicycle paths, funding for school bus transportation
Habitat Fragmentation	Roads, agricultural fields
Animal-Vehicle collisions	Deer, small mammals and turtles (non-endangered species) on and adjacent roads to the unit
Safety Concern for visitors accessing the unit/Visitor center	Old Highway 13 and Wolf Creek Road
Enhancements identified to help visitor program	Bicycle trails to and within unit
Most important enhancement priority	Transit service

Refuge	Transit Distance	Trail Distance	Priority
Crab Orchard NWR *Carbondale, IL*	More than 3 miles	More than 3 miles	High

Existing or Planned ATS:

- Greyhound and Amtrak both serve Carbondale, which is located 14 miles from the refuge.
- Rides Mass Transit District offers weekday, on-demand transit service to Marion, Carbondale, Carterville, and other cities around southeastern Illinois.

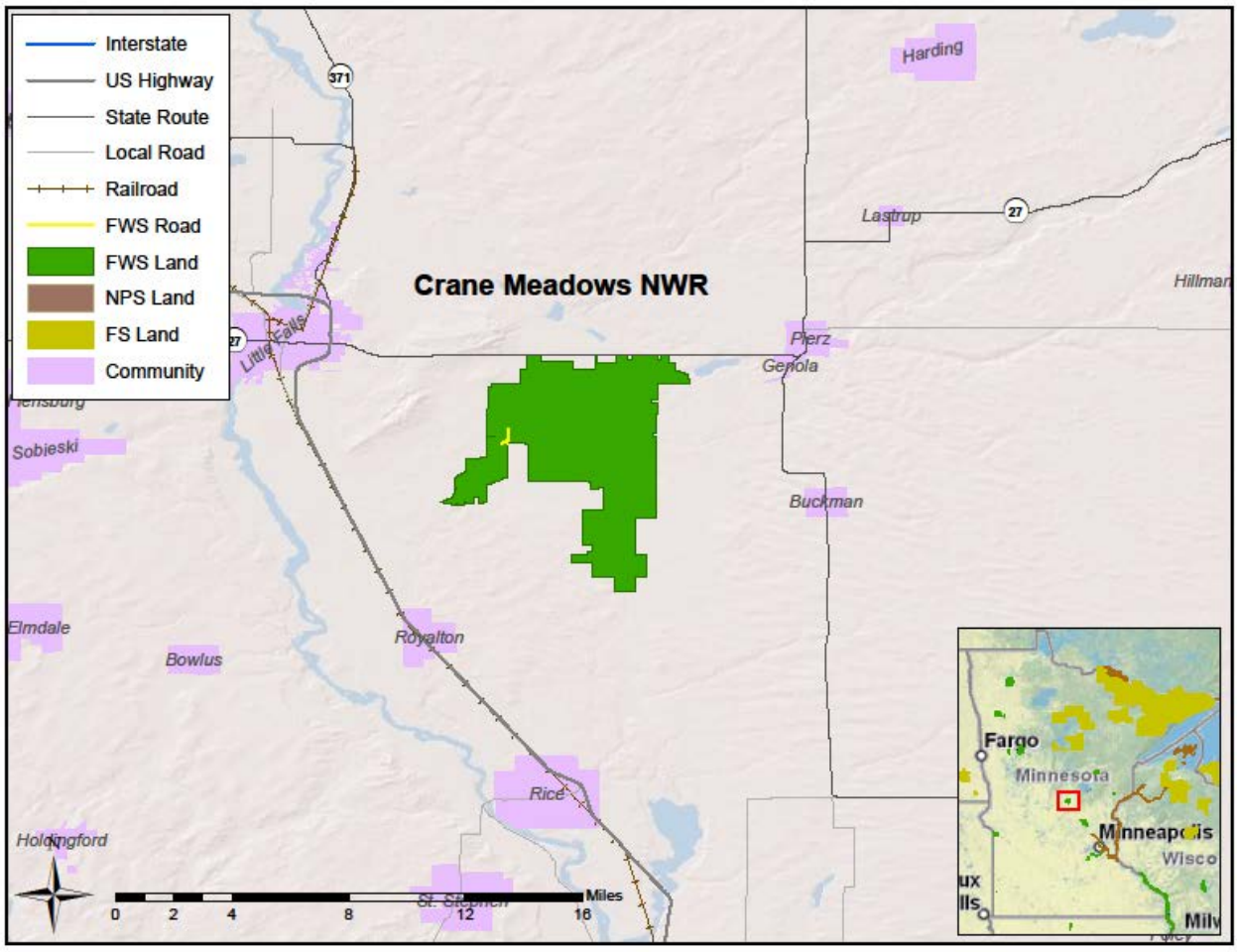
Opportunities for Future ATS:

- Transit may be able to assist the refuge with the Southern Illinois Hunting and Fishing Days, a large event that attracts 80,000 people. Transit vehicles can help bring people from the community college parking lot to sites around the refuge.
- The greatest challenge is a lack of transit service, and the refuge would like to see better transit connections with the surrounding urbanized areas. While there is some transit available within Carbondale and Marion, there is little service available between the two cities and none with stops at the refuge. This may include a shuttle service on weekend days from central parking areas in Carbondale or Marion or expansion of their Eagle Tours (in FWS-owned vans) for refuge interpretive programs.
- There may be an opportunity to improve bicycle paths or trails leading to and within the station. Refuge staff report increased bicycle use on newly paved roads within the station. Roads surrounding the refuge are not safe for bicycles due to high speeds and narrow shoulders, but there may be long-term potential to add a bike path through the refuge on old rail beds and connect to a regional bike network.
- Other challenges include congestion on roads leading to the station, bus parking, funding for school bus transportation, staff capacity, and safe pedestrian access.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Crane Meadows National Wildlife Refuge



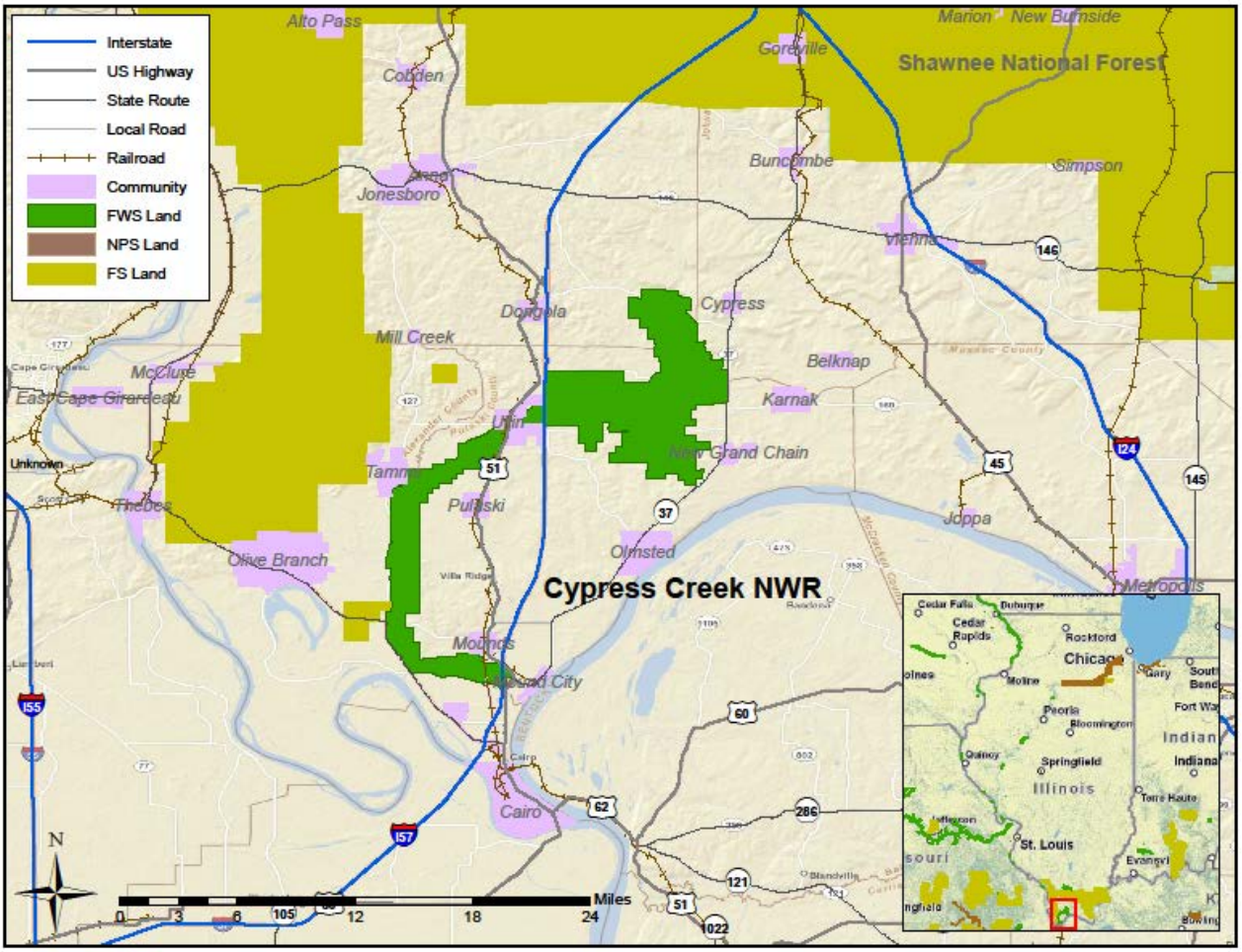
FACTS	Crane Meadows NWR
Road Miles (TOTAL)	0.76
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	-
• **Gravel Road (Miles)**	0.76
• **Native Road (Miles)**	-

FACTS	Crane Meadows NWR
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	3.71
Parking Lot (square feet)	91,745
Unit Acreage	2,000
Access Point	Platte River Trailhead
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mississippi National River and Recreational Area (55-SE); Chippewa National Forest (70-N)
Transportation Hub (miles away-as the crow flies)	St. Cloud, MN (32)
Gateway Community (miles away-as the crow flies)	Little Falls, MN (9)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Cypress Creek National Wildlife Refuge



FACTS	Cypress Creek NWR
Road Miles (TOTAL)	34.48
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	0.59
• **Gravel Road (Miles)**	6.41
• **Native Road (Miles)**	26.51

FACTS	Cypress Creek NWR
• Primitive Road (Miles)	0.96
Trail Miles (TOTAL)	2.41
Parking Lot (square feet)	156,046
Unit Acreage	15,000
Access Point	Shawnee College Road
Main activities	Hunting, Wildlife Observation, Environmental Education and Interpretation
Special Events	Cache River Nature Fest (May); Refuge Week (October)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Shawnee National Forest (2-E); Fort Donelson National Battlefield (85-SE)
Transportation Hub (miles away-as the crow flies)	Marion, IL (35)
Gateway Community (miles away-as the crow flies)	Ullin, IL (9)
Scenic Byway	Great River Road (National Scenic Roadway)
Air quality Non-Attainment Area	None
Main transportation challenges identified	Lack of walking/biking trails within the Refuge and connecting to existing trails.
Habitat Fragmentation	Native Harwood Forest
Animal-Vehicle collisions	Deer, raccoon, skunk and others (non-endangered species) throughout
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Bicycle and pedestrian trails to and within unit
	Improved orientation signage to unit
Most important enhancement priority	Pedestrian trail within unit

Refuge	Transit Distance	Trail Distance	Priority
Cypress Creek NWR *Ullin, IL*	More than 3 miles	Less than ½ mile	Low

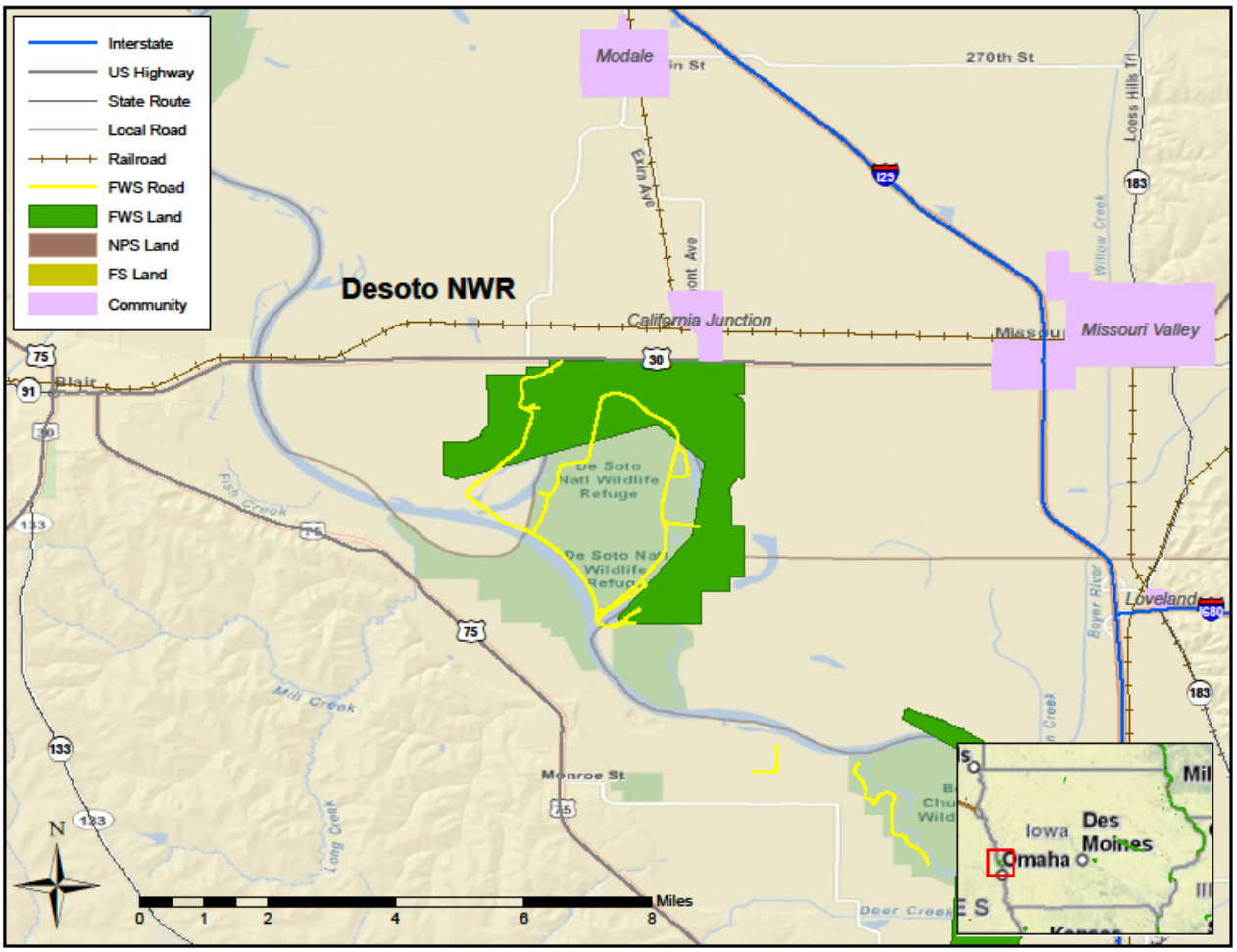
Existing or Planned ATS:

- Greyhound bus and Amtrak offer transit service more than three miles from the refuge.
- The Tunnel Hill State Trails comes within one-half mile of the refuge.
- The refuge is located far from population centers and lacks transit service in close proximity.

Opportunities for Future ATS:

- The refuge's greatest challenges are bus parking, resource conflicts with vehicles, funding and staffing shortages, and safe pedestrian access.
- The refuge would like to have more pedestrian and bicycle trails for access within the station. They would also like to see more trails for access to the station and improved signage for orientation to the station.
- The refuge would benefit from stronger connections to existing trails in the region, such as the Tunnel Hill State Trail.

DeSoto National Wildlife Refuge



FACTS	DeSoto NWR
Road Miles (TOTAL)	26.92
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	9.46
• Gravel Road (Miles)	12.24
• Native Road (Miles)	4.56
• Primitive Road (Miles)	0.66
Trail Miles (TOTAL)	3.64

FACTS	DeSoto NWR
Parking Lot (square feet)	789,297
Unit Acreage	8,358
Access Point	US Highway 30
Main activities	Fishing, Photography and Interpretation
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Missouri National Recreation River Park (95-NW); Nebraska National Forest (218-W)
Transportation Hub (miles away-as the crow flies)	Omaha, NE (28)
Gateway Community (miles away-as the crow flies)	Missouri Valley, IA (8)
Scenic Byway	Loess Hills Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
DeSoto NWR *Missouri Valley, IA*	More than 3 miles	None	Low

Existing or Planned ATS:

- Regional bicycle networks are located in this section of the Mississippi River Valley, but none are in close proximity to the refuge.

Opportunities for Future ATS:

- There is the potential for a multi-use trail connecting the metropolitan Omaha area to multiple recreational sites along the Mississippi River in proximity to the refuge.
- Refuge management expresses concerns about resource conflicts between vehicles and resources. Improved infrastructure for non-motorized transportation within the refuge may reduce these conflicts and minimize the need for new roads or road improvements.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Detroit Lakes Wetland Management District

FACTS	Detroit Lakes WMD
Road Miles (TOTAL)	2.80
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	2.48
• Native Road (Miles)	0.17
• Primitive Road (Miles)	0.15
Trail Miles (TOTAL)	1.20
Parking Lot (square feet)	371,952
Unit Acreage	11,000
Access Point	Tower Road
Main activities	Hunting
Special Events	Prairie Fun Day (2nd Saturday in August)
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Detroit Lakes, MN (3)
Gateway Community (miles away-as the crow flies)	Detroit Lakes, MN (3)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Visitor orientation to and within station
	Lack of public transportation
Habitat Fragmentation	Yes, nesting migratory birds
Animal-Vehicle collisions	Deer and small mammals (non-endangered species) throughout the district
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle and Pedestrian trail to and within station
Most important enhancement priority	Pedestrian trail within station

Refuge	Transit Distance	Trail Distance	Priority
Detroit Lakes WMD *Detroit Lakes, MN*	More than 3 miles	½ to 1 mile	Low

Existing or Planned ATS:

- An Amtrak station is located more than three miles from the Headquarters WPA.
- Although there is a regional bicycle/pedestrian trail, there are few, if any, visitors who use the trail to access the WMD. Most visitors live 10 miles or more from the station.

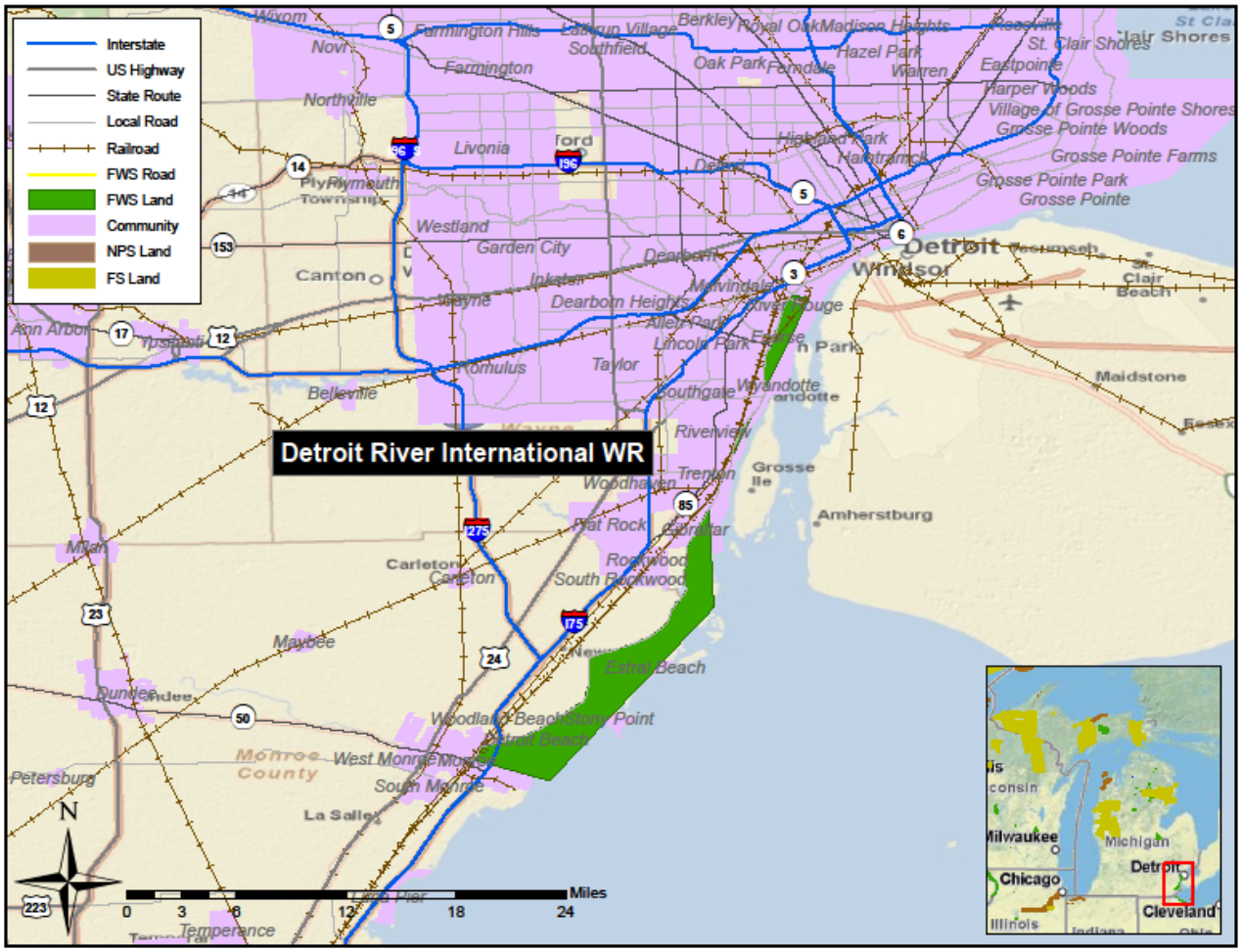
Opportunities for Future ATS:

- The station could benefit from connections to the Detroit Lakes trail system, which includes the Pine to Prairie Birding Trail, the Lake Country Scenic Byway, and Winter Wonderland snowmobile and cross-country ski trails. The station would like to improve bicycle and pedestrian trails for access to and especially *within* the station.
- The station's greatest transportation needs include improved signage for effective visitor orientation to and within the station.
- Due to distance from population centers and lack of transit, the WMD has no plans for ATS.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Detroit River International Wildlife Refuge



FACTS	Detroit River International WR
Road Miles (TOTAL)	0.64
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	-
• **Gravel Road (Miles)**	0.50
• **Native Road (Miles)**	0.14
• **Primitive Road (Miles)**	-

FACTS	Detroit River International WR
Trail Miles (TOTAL)	5.6
Parking Lot (square feet)	30,998
Unit Acreage	4,982
Access Point	Groh Road
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Perry's Victory and International Peace Memorial (32-SE); Huron National Forest (145-N)
Transportation Hub (miles away-as the crow flies)	Detroit, MI (43)
Gateway Community (miles away-as the crow flies)	Grosse Ile, MI (3)
Scenic Byway	Woodward Avenue (M1) Byway
Air quality Non-Attainment Area	PM-2.5.2006
Main transportation challenges identified	Construction of an entry road and parking lot at the Refuge Gateway in Trenton, Michigan. This is the future site of our visitor center. Once an approved hunt plan, unit will need parking areas, etc.
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	Numerous open houses and programming at Humbug Marsh Unit. It has an environmental education shelter, two wildlife observation decks, and three miles of trails. Refuge Gateway (owned by Wayne County, but cooperatively managed with USFWS) currently undergoing restoration.

Refuge	Transit Distance	Trail Distance	Priority
Detroit River IWR *Detroit, MI*	Less than 2 miles	2 to 4 miles	High

Existing or Planned ATS:

- The SMART bus line has four routes that stop within two miles of the Humbug Marsh unit of the refuge. The bus routes range in frequency from 30 minutes to two hours and run six to seven days per week.
- The Kennedy Park and Elizabeth Park Trails are located within two miles of the refuge.

Opportunities for Future ATS:

- The refuge would like to add bicycle trails to link some of the units with nearby communities.
- The refuge is constructing a new Visitor Center and completing a Visitor Services Plan; they expect visitation to increase.
- There are significant opportunities to improve access to underserved populations around the refuge through increase in transit and non-motorized access.

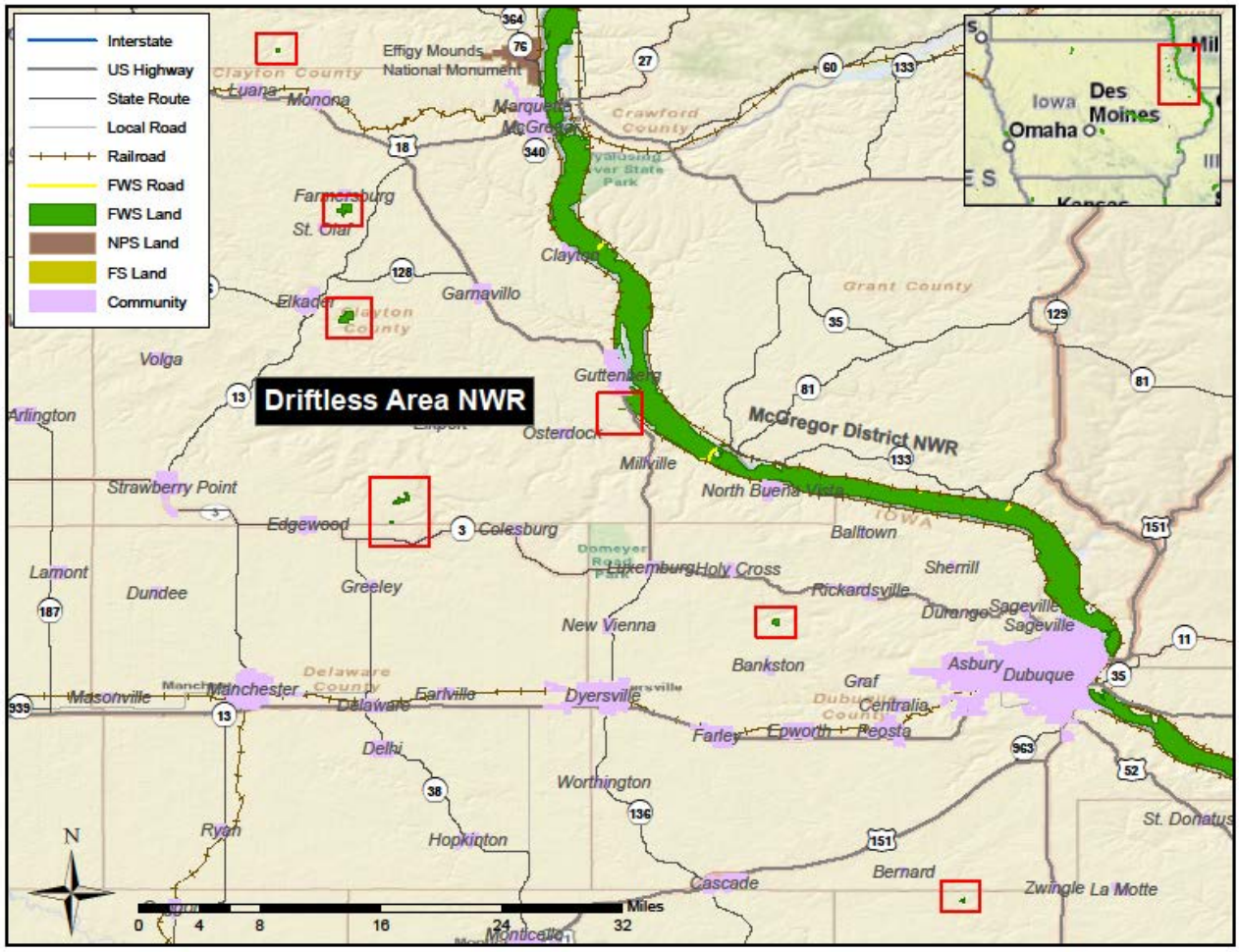
Other:

- The refuge is planning to construct an entry road at the gateway in Trenton, the future visitor center site (same as Humbug Marsh?)

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Driftless Area National Wildlife Refuge



FACTS	Driftless Area NWR
Road Miles (TOTAL)	0.76
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	0.16
• Native Road (Miles)	0.60
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	9,713

FACTS	Driftless Area NWR
Unit Acreage	775
Access Point	Business Hwy 18 North
Main activities	Hunting and Fishing,
Special Events	River Fest, Mississippi River Adventure Days (Spring and Summer)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Effigy Mounds National Monument (10-E); Herbert Hoover Historic Site (55-S)
Transportation Hub (miles away-as the crow flies)	La Crosse, WI (62)
Gateway Community (miles away-as the crow flies)	McGregor, IA (1)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Bus Parking
	Funding shortage (including fee collection)
	Lack of safe pedestrian access
	Lack of safe vehicular access within your station
	Condition of existing transportation assets
	Unsafe road conditions surrounding the station
	Turning lanes for access to station
Habitat Fragmentation	Yes, Floodplain forests
Animal-Vehicle collisions	Yes, raccoon, deer, skunks, ducks, (non-endangered species) on the road between McGregor and Marquette, along all the roads that pass by Driftless Area tracts.
Safety Concern for visitors accessing the unit/Visitor center	Right turn lane needed
Enhancements identified to help visitor program	Internal transit - seasonal
	Bicycle trails for access to station
	Water Access Facilities
Most important enhancement priority	Water Access Facilities
	Hazard mitigation
Other	Office located at the McGregor District of the Upper Mississippi River NW&FR

Refuge	Transit Distance	Trail Distance	Priority
Upper Mississippi NWR, Driftless Area *McGregor, IA*	More than 3 miles	More than 3 miles	Medium

Existing or Planned ATS:

- The Yellow River Forest Trail (upstream) and Heritage Trail (downstream) are within four miles of the refuge.
- Coulee Cab is a transit service but access is more than three miles from the station, and an Amtrak station is 50 miles from the station.
- The majority of visitors access the station through water-based modes.

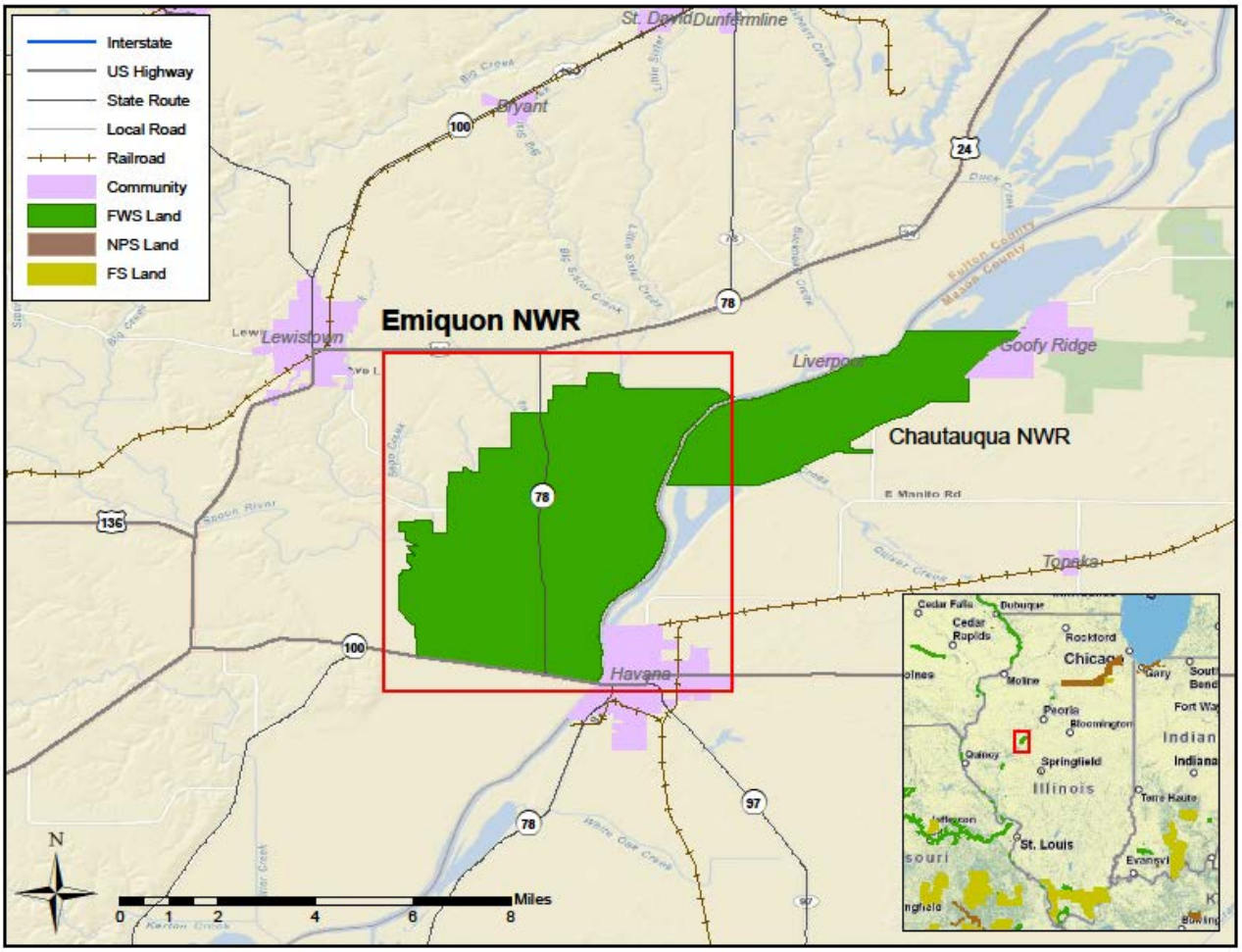
Opportunities for Future ATS:

- The refuge needs to address safe vehicle and pedestrian access to and within the station, bus parking, and road conditions.
- The refuge may benefit from seasonal internal transit, parking management solutions, pedestrian paths within the station, and bicycle paths to access the station.
- With improved water-access facilities, the refuge may enjoy greater visitation from water-based access.
- If the refuge gets a new visitor center and office complex, the planning and construction of the complex should be integrated with new transportation safety measures and ATS infrastructure.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Emiquon National Wildlife Refuge



FACTS	Emiquon NWR
Road Miles (TOTAL)	6.32
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	0.39
• Native Road (Miles)	5.61

FACTS	Emiquon NWR
• Primitive Road (Miles)	0.32
Trail Miles (TOTAL)	1.17
Parking Lot (square feet)	46,714
Unit Acreage	284
Access Point	Route 97/78, accessible by Highway 24 from Peoria or Lewistown, and State Highway 136 from Havana, Illinois
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Lincoln Home National Historic Site (45-SE); Joliet Army Ammunition Plant Forest (120-E)
Transportation Hub (miles away-as the crow flies)	Peoria, IL (54)
Gateway Community (miles away-as the crow flies)	Havana, IL (9)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	Emiquon Refuge is part of the Illinois River National Wildlife Refuge Complex, with headquarters at Chautauqua Refuge, in Havana, Illinois.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Fergus Falls Wetland Management District

FACTS	Fergus Falls WMD
Road Miles (TOTAL)	12.71
Concrete Road (Miles)	-
Asphalt Road (Miles)	0.12
Gravel Road (Miles)	4.99
Native Road (Miles)	3.07
Primitive Road (Miles)	4.53
Trail Miles (TOTAL)	4.10
Parking Lot (square feet)	1,197,024
Unit Acreage	44,499
Access Point	Otter Tail County Road 82 (Exit 61)
Main activities	Hunting, Fishing, Wildlife Observation, Photography, Environmental education and Interpretation
Special Events	Return to the Prairie (August); Christmas on the Prairie (December) and Marsh Madness (March)
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Fergus Falls, MN (4)
Gateway Community (miles away-as the crow flies)	Fergus Falls, MN (4)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	Yes, Native Prairie
Animal-Vehicle collisions	Deer, skunk and raccoon (non-endangered species) through the district
Safety Concern for visitors accessing the unit/Visitor center	
Enhancements identified to help visitor program	Bicycle and Pedestrian Trails to and within station

Refuge	Transit Distance	Trail Distance	Priority
Fergus Falls WMD *Fergus Falls, MN*	1- 3 miles	Less than ½ mile	Low

Existing or Planned ATS:

- Greyhound bus service passes within three miles of the WMD.
- The Central Lakes Trail comes within one-half mile of the WMD.
- Approximately twenty percent of visitors access the site through pedestrian or bicycling modes; many visitors live within 10 miles of the station, and most live within 50 miles.

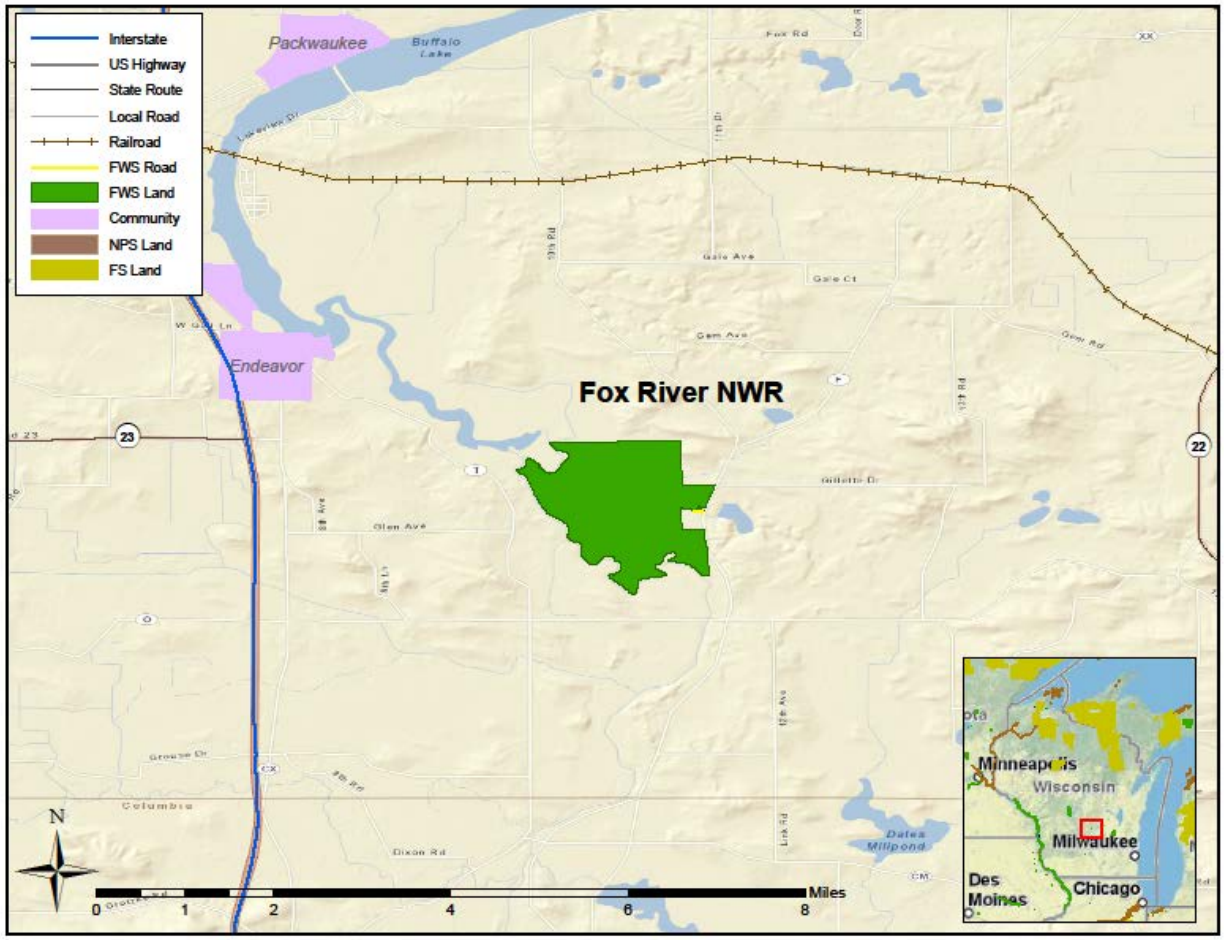
Opportunities for Future ATS:

- Key challenges for the WMD involve staff and funding capacity, signage, and road conditions both leading to and within the station.
- The station has experienced challenges with school groups unable to afford bus costs.
- The station would benefit from pedestrian trails to and within the station, bicycle paths for access to the station, and improved bus parking.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Fox River National Wildlife Refuge



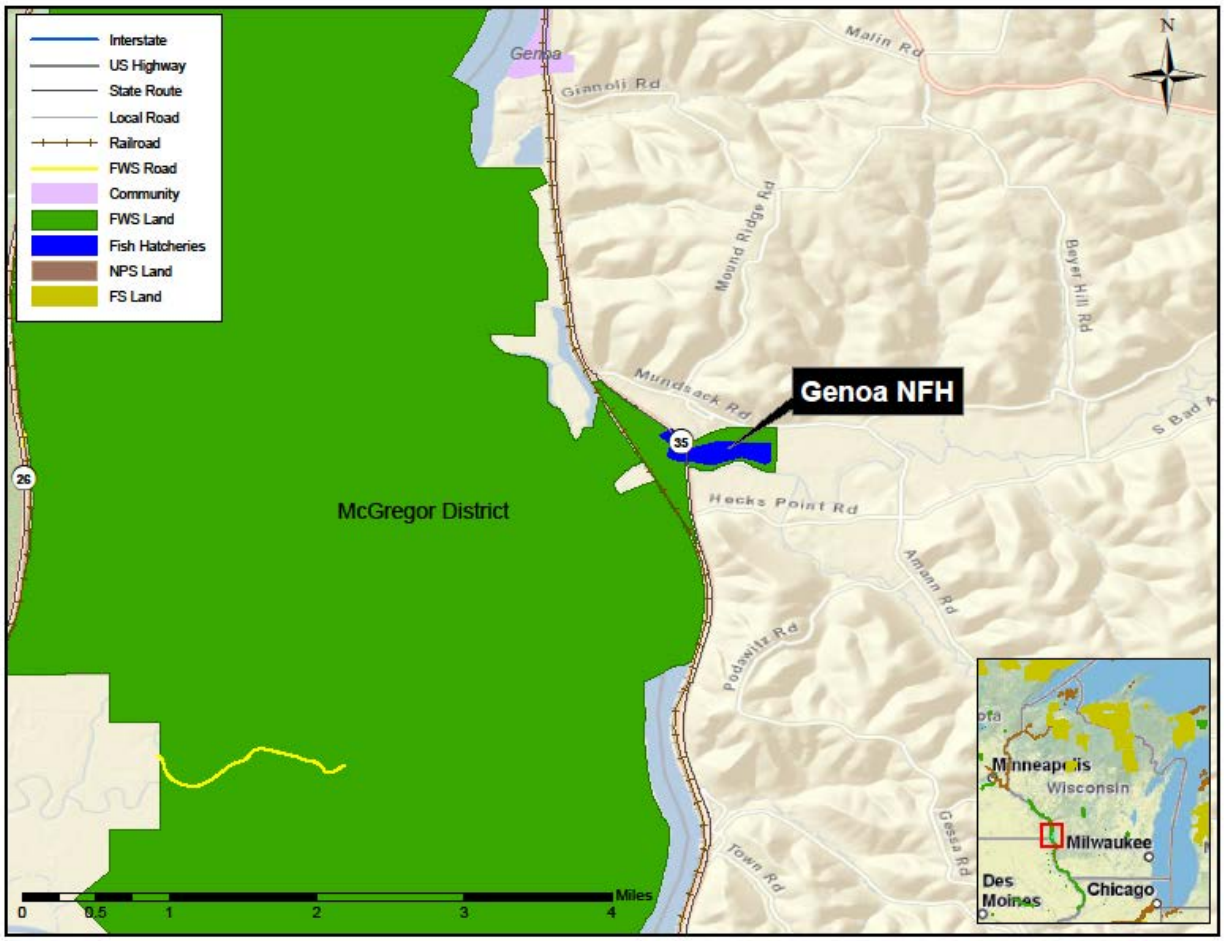
FACTS	Fox River NWR
Road Miles (TOTAL)	1.45
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	0.37
• Native Road (Miles)	-
• Primitive Road (Miles)	1.08

FACTS	Fox River NWR
Trail Miles (TOTAL)	-
Parking Lot (square feet)	12,951
Unit Acreage	1,054
Access Point	County Highway F
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Ice Age National Scenic Trail (45-S); Nicolet National Forest (110-NE)
Transportation Hub (miles away-as the crow flies)	Madison, WI (51)
Gateway Community (miles away-as the crow flies)	Portage, WI (12)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Fish Hatchery Fact Sheet

Genoa National Fish Hatchery



FACTS	Genoa NFH
Road Miles (TOTAL)	3.36
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	3.23
• Native Road (Miles)	0.13
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-

FACTS	Genoa NFH
Parking Lot (square feet)	41,706
Unit Acreage	155
Access Point	-
Main activities	Hunting, Fishing, Environmental Education and Interpretation
Special Events	Open House (February); Fishing days (May); Disabled Fishing Event (December)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Effigy Mounds National Monument (30-S); Chequamegon National Forest (115-N)
Transportation Hub (miles away-as the crow flies)	LaCrosse, WI (21)
Gateway Community (miles away-as the crow flies)	Genoa, WI (4)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Unsafe road conditions surrounding station
	Parking areas for special events, and new interpretive center
Habitat Fragmentation	No
Animal-Vehicle collisions	Deer, Canada geese (non-endangered species) on highway 35
Safety Concern for visitors accessing the unit/Visitor center	Left turn lane is needed
Enhancements identified to help visitor program	Pedestrian trails within station
	Bicycle racks
	Water- access facilities
	Parking Management Solutions
Most important enhancement priority	Hazard mitigation
Other	Group did a transportation audit at Genoa in June 2011.

Refuge	Transit Distance	Trail Distance	Priority
Genoa NFH *Genoa, WI*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- The hatchery is located along a National Scenic Byway approximately 30 miles from La Crosse, WI.
- A large portion of visitors (approximately 15 percent) access the hatchery by school bus or other private transit.

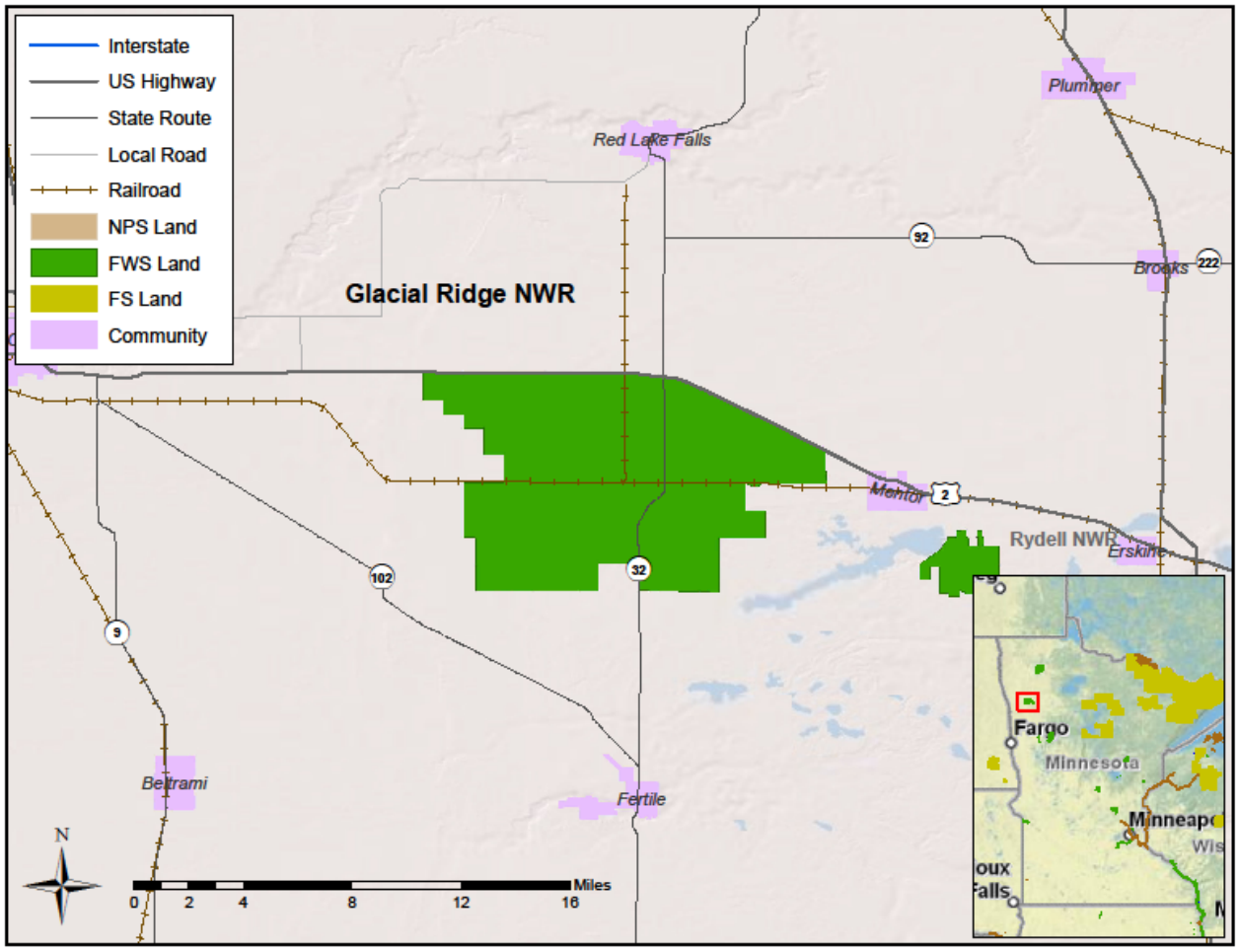
Opportunities for Future ATS:

- The hatchery is located on a high-speed road, with hatchery facilities on both sides of the road. Their largest transportation priority is hazard mitigation. A turn lane would also help with safe vehicular access.
- The hatchery will be getting a new interpretive center, built with Scenic Byway funds, for which they would like to include parking solutions (including bus parking) and pedestrian access. Increasing visitation will increase transportation challenges.
- The hatchery could benefit from bicycle racks, pedestrian paths for station access, water access facilities, and parking management solutions.
- Transportation challenges include bus parking, visitor orientation and signage, staff capacity, and lack of transit service.
- If there were a transit vehicle available at low or no cost, the hatchery may be able to use it to transport visitors from nearby towns to special events such as Open Houses and kids' fishing days, or to transfer visitors between sites in the hatchery.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Glacial Ridge National Wildlife Refuge



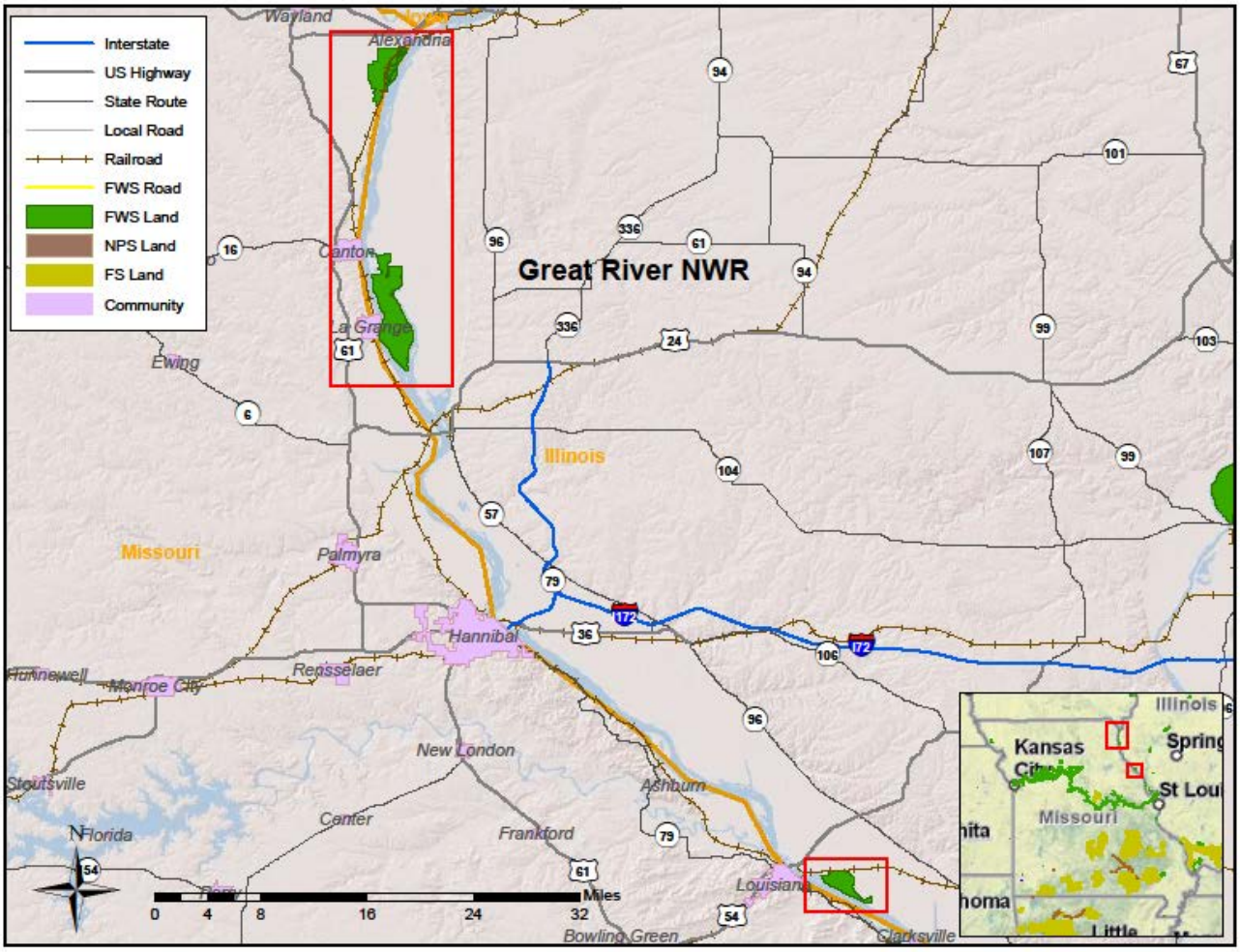
FACTS	Glacial Ridge NWR
Road Miles (TOTAL)	5.13
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	1.13
• Primitive Road (Miles)	4.00

FACTS	Glacial Ridge NWR
Trail Miles (TOTAL)	-
Parking Lot (square feet)	43,137
Unit Acreage	2,790
Access Point	-
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chippewa National Forest (75-E); Independence National Historic Park (195-W)
Transportation Hub (miles away-as the crow flies)	Crookston, MN (30)
Gateway Community (miles away-as the crow flies)	Erskine, MN (6)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	Currently managed by Rydell NWR staff

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Great River National Wildlife Refuge



FACTS	Great River NWR
Road Miles (TOTAL)	6.85
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	6.85
• Native Road (Miles)	-
• Primitive Road (Miles)	-

FACTS	Great River NWR
Trail Miles (TOTAL)	-
Parking Lot (square feet)	19,839
Unit Acreage	11,600
Access Point	County Road 206
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mark Twain National Forest (85-S); Illinois and Michigan Canal National Heritage Corridor (150-NE)
Transportation Hub (miles away-as the crow flies)	St. Louis, MO (66)
Gateway Community (miles away-as the crow flies)	Annada, MO (1)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

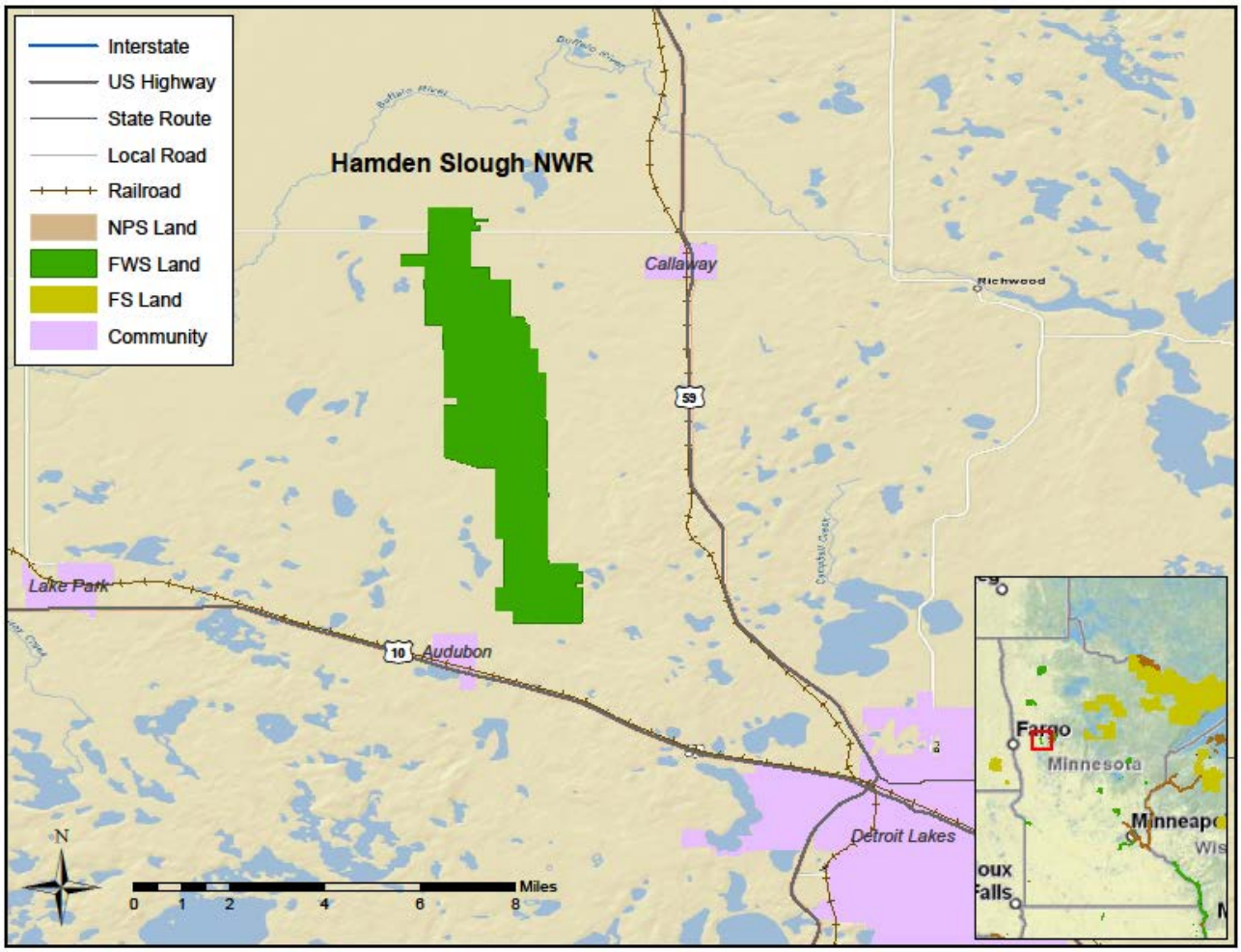
Green Bay National Wildlife Refuge

FACTS	Green Bay NWR
Road Miles (TOTAL)	-
Concrete Road (Miles)	-
Asphalt Road (Miles)	-
Gravel Road (Miles)	-
Native Road (Miles)	-
Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	-
Unit Acreage	330
Access Point	Not open to the public
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Green Bay, WI (90)
Gateway Community (miles away-as the crow flies)	Washington Island, WI (3)
Scenic Byway	-
Air quality Non-Attainment Area	PM-2.5.2006
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Hamden Slough National Wildlife Refuge



FACTS	Hamden Slough NWR
Road Miles (TOTAL)	2.63
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	1.02
• Native Road (Miles)	-
• Primitive Road (Miles)	1.61

FACTS	Hamden Slough NWR
Trail Miles (TOTAL)	0.23
Parking Lot (square feet)	52,764
Unit Acreage	5,250
Access Point	Road #131/North Tower Road
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chippewa National Forest (60-E); Mississippi National River and Recreation Area (165-SE)
Transportation Hub (miles away-as the crow flies)	Detroit Lakes, MN (8)
Gateway Community (miles away-as the crow flies)	Audubon, MN (2)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

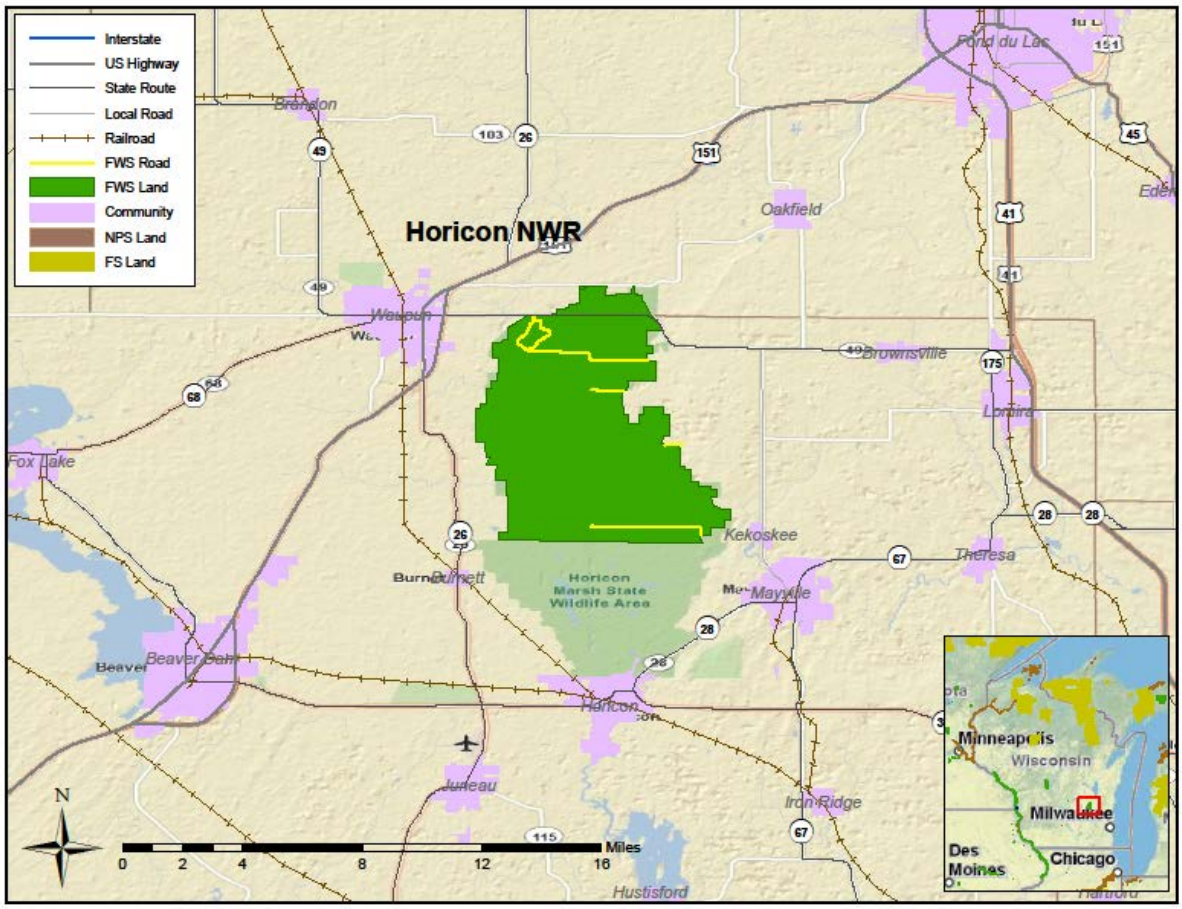
Harbor Island National Wildlife Refuge

FACTS	Harbor Island NWR
Road Miles (TOTAL)	-
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	-
Unit Acreage	695
Access Point	-
Main activities	Fishing and Hunting
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Sault Ste. Marie, MI
Gateway Community (miles away-as the crow flies)	Drummond, MI
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	The refuge is managed by staff at Seney National Wildlife Refuge

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Horicon National Wildlife Refuge



FACTS	Horicon NWR
Road Miles (TOTAL)	28.46
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	4.18
• Gravel Road (Miles)	18.60
• Native Road (Miles)	1.58
• Primitive Road (Miles)	4.10
Trail Miles (TOTAL)	6.71
Parking Lot (square feet)	258,487
Unit Acreage	21,000
Access Point	County Road Z
Main activities	Hunting, Wildlife Observation, and Photography

FACTS	Horicon NWR
Special Events	Horicon Marsh Bird Festival (2nd week in May); Horicon Marsh 5K (October) and National WR celebration (October 2015)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Ice Age National Scenic Trail (55-SW); Nicolet National Forest (100-N)
Transportation Hub (miles away-as the crow flies)	Oshkosh, WI (40)
Gateway Community (miles away-as the crow flies)	Mayville, WI (8)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Congestion on roads leading to station
	Resource conflicts with cars and bicycles
	Lack of safe pedestrian access
	Lack of safe vehicular access within station
	Visitor Orientation to and within station
	Unsafe road conditions surrounding station
	Getting visitors across Highway 49 safely. High numbers of visitors using auto tour route at certain times of day/year. Lack of trail at visitor center making visitors travel further for hiking opportunity.
Habitat Fragmentation	Yes, Butler garter snake
Animal-Vehicle collisions	Multiple birds, mammals, and frogs (non-endangered species) along Hw 49 and on auto tour route.
Safety Concern for visitors accessing the unit/Visitor center	Left turn lane is needed
Enhancements identified to help visitor program	Bicycle and pedestrian trails to and within station
	Turning lanes for access to station
	Improved signage for orientation to station
Most important enhancement priority	Internal transit seasonal

Refuge	Transit Distance	Trail Distance	Priority
Horicon NWR *Mayville, WI*	More than 3 miles	Direct connection	Medium

Existing or Planned ATS:

- The Wild Goose State Trail passes through the refuge. The multi-use trail has a crushed gravel surface and is 34 miles in length.

Opportunities for Future ATS:

- The refuge would benefit most from seasonal internal transit.
- The refuge would like to improve the safety of pedestrian crossing of S.R. 49, which passes through the refuge.
- The addition of hiking trails near the Visitor Center may reduce the need for visitors to travel elsewhere in the site for hiking opportunities.
- The auto tour route is very heavily used and may benefit from an electric tram to transport visitors within the refuge.
- Other ATS improvements include new transit for access to the refuge, promotion and marketing for existing ATS, and improved signage.
- The Horicon Marsh Bird Festival, held in May, attracts approximately 11,000 visitors, and the National Wildlife Refuge Week events, in October, attract approximately 10,000 visitors. The refuge allows visitors to park in the grass along roads but could use transit to help manage crowds.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Huron National Wildlife Refuge

FACTS	Huron NWR
Road Miles (TOTAL)	-
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	-
Unit Acreage	147
Access Point	Only West Huron Island is open to public use by boat
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Houghton, MI
Gateway Community (miles away-as the crow flies)	Skanee Township, MI (12)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

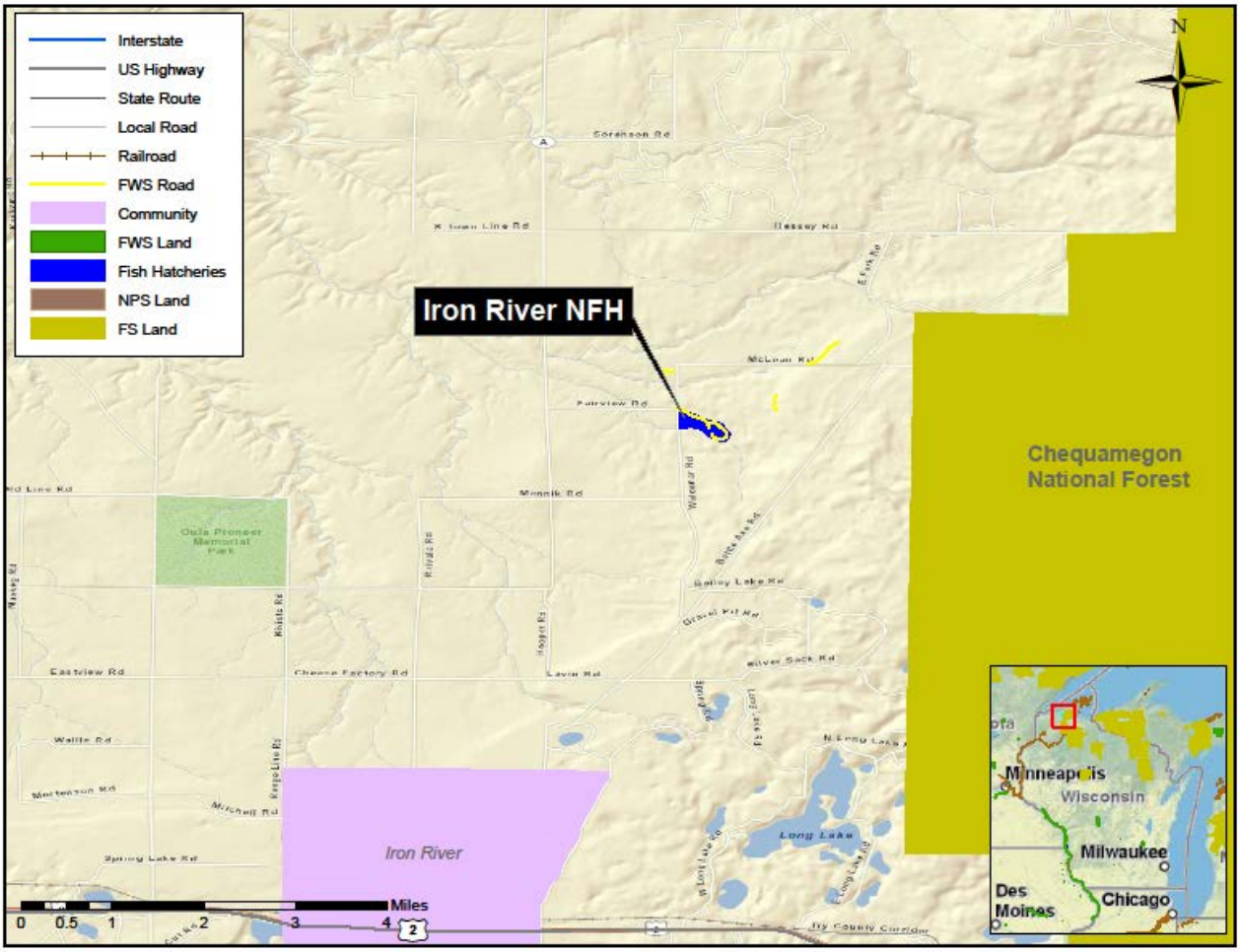
Iowa Wetland Management District

FACTS	Iowa WMD
Road Miles (TOTAL)	1.60
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	1.60
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	33,106
Unit Acreage	Part of Union Slough National Wildlife Refuge
Access Point	County road A-42
Main activities	Hunting
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Mason City, IA (56)
Gateway Community (miles away-as the crow flies)	Bancroft, IA (6)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Fish Hatchery Fact Sheet

Iron River National Fish Hatchery



FACTS	Iron River NFH
Road Miles (TOTAL)	4.61
• **Concrete Road (Miles)**	1.51
• **Asphalt Road (Miles)**	0.90
• **Gravel Road (Miles)**	0.67
• **Native Road (Miles)**	1.53

FACTS	Iron River NFH
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	3.6
Parking Lot (square feet)	47,272
Unit Acreage	1,200
Access Point	Fairview Road
Main activities	Wildlife Observation, Environmental Education
Special Events	Annual Open House (September)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chequamegon National Forest (2-E); Apostle Islands National Lakeshore (20-NE)
Transportation Hub (miles away-as the crow flies)	Duluth, MN (43)
Gateway Community (miles away-as the crow flies)	Iron River, WI (8)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Lack of safe pedestrian access
	At-grade railroad crossing
	Unsafe road conditions surrounding unit
Habitat Fragmentation	No
Animal-Vehicle collisions	Deer, turkeys, grouse (non-endangered species) on all roads
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Pedestrian trails within unit
	Improved signage for orientation within unit
Most important enhancement priority	Improve paved road with bicycle access
Other	Poor access roads entering facility. These are not service owned

Refuge	Transit Distance	Trail Distance	Priority
Iron River NFH *Iron River, WI*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- The hatchery is in a remote setting, far from population centers and transit service, with limited alternatives to vehicle access.

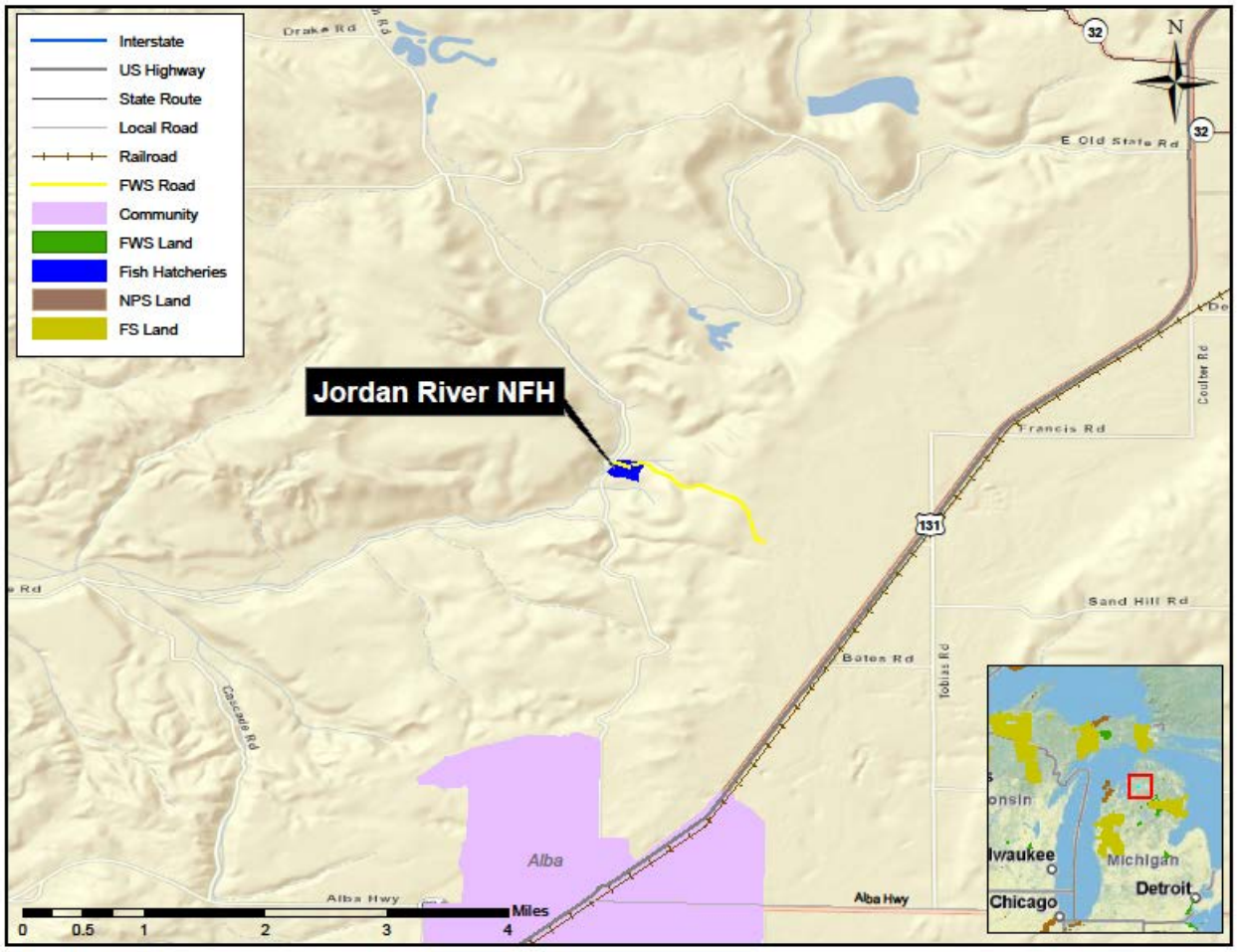
Opportunities for Future ATS:

- The hatchery's challenges include funding and staffing shortages, safe pedestrian access, at-grade railroad crossings, and unsafe road conditions surrounding the station.
- The hatchery's greatest need includes improved signage for orientation to the station and improved pedestrian trails within the station.
- The hatchery entrance road is unpaved and in poor condition; it is not owned by FWS. The hatchery would like to see an improved, paved road with bicycle access.

U.S. Fish and Wildlife Service

National Fish Hatchery Fact Sheet

Jordan River National Fish Hatchery



FACTS	Jordan River NFH
Road Miles (TOTAL)	2.41
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	2.26
• Gravel Road (Miles)	0.15
• Native Road (Miles)	-
• Primitive Road (Miles)	-

FACTS	Jordan River NFH
Trail Miles (TOTAL)	0.7
Parking Lot (square feet)	54,055
Unit Acreage	-
Access Point	Turner Road
Main activities	Hunting, Fishing, Wildlife Observation, Environmental Education and Interpretation
Special Events	Annual Open House (July/August); Fall Festival (October); Winter Bean Pot (February)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Huron National Forest (30-SE); Sleeping Bear Dunes National Lakeshore (40-W)
Transportation Hub (miles away-as the crow flies)	Gaylord, MI (17)
Gateway Community (miles away-as the crow flies)	Alba, MI (4)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Condition of existing transportation assets
	Appropriate and effective signage
	Unsafe road conditions surrounding unit
	Degraded road infrastructure on facility
Habitat Fragmentation	No
Animal-Vehicle collisions	No
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Pedestrian trail to unit (1 mile)
	Improved signage for orientation to unit
Most important enhancement priority	Signage

Refuge	Transit Distance	Trail Distance	Priority
Jordan River NFH *Elmira, MI*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- Antrim County Bus Service offers service more than three miles from the refuge.
- The hatchery is in a rural setting, far from population centers and transit service.

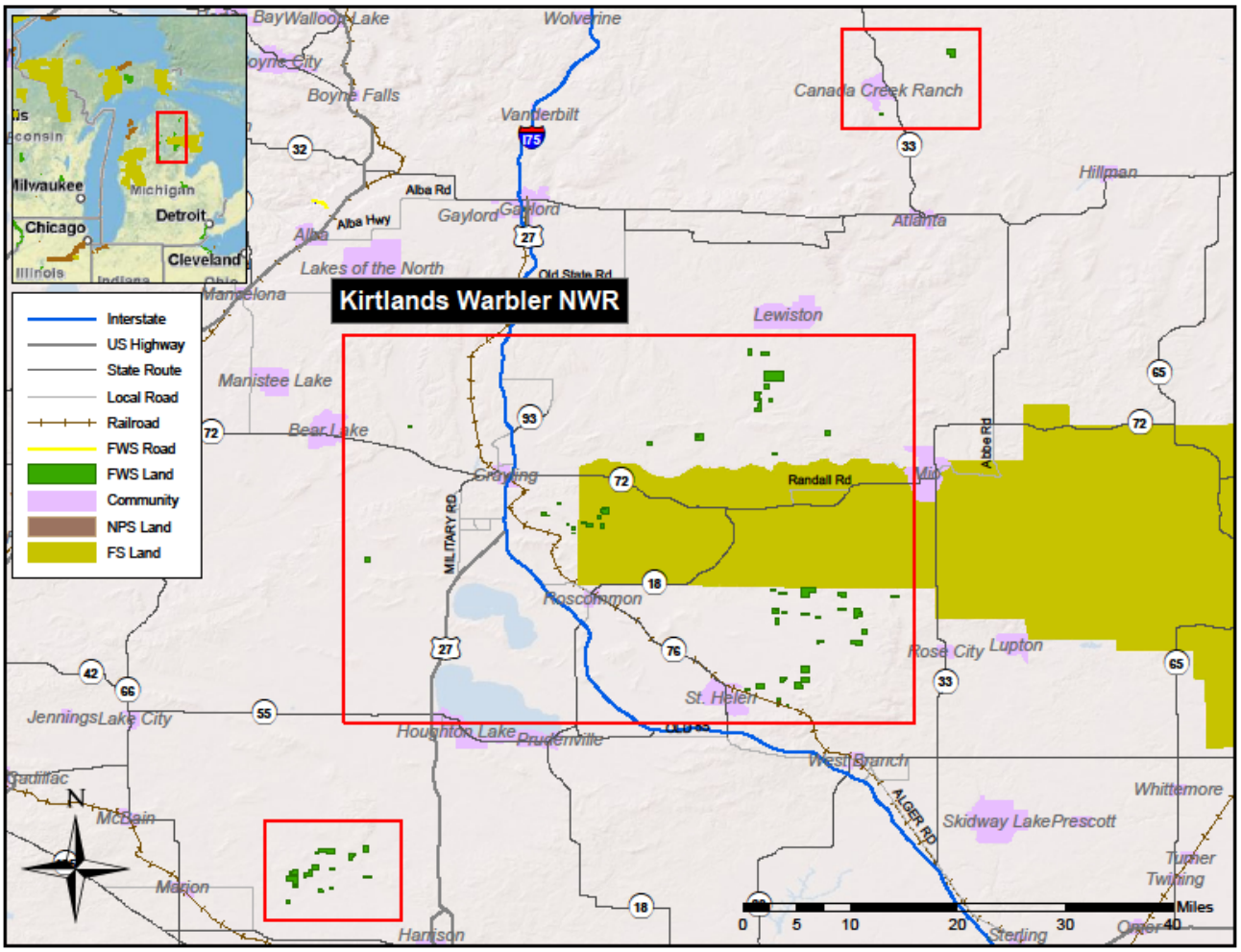
Opportunities for Future ATS:

- The hatchery's challenges include condition of existing transportation assets both within and surrounding the station and appropriate signage.
- The hatchery's greatest need includes improved signage for orientation to the station.
- The hatchery would like to add improved pedestrian and bicycle paths for access to the station.
- The hatchery should also explore parking management solutions to handle some of its higher visitation events that attract up to 700 people.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Kirtlands Warbler Wildlife Management Area



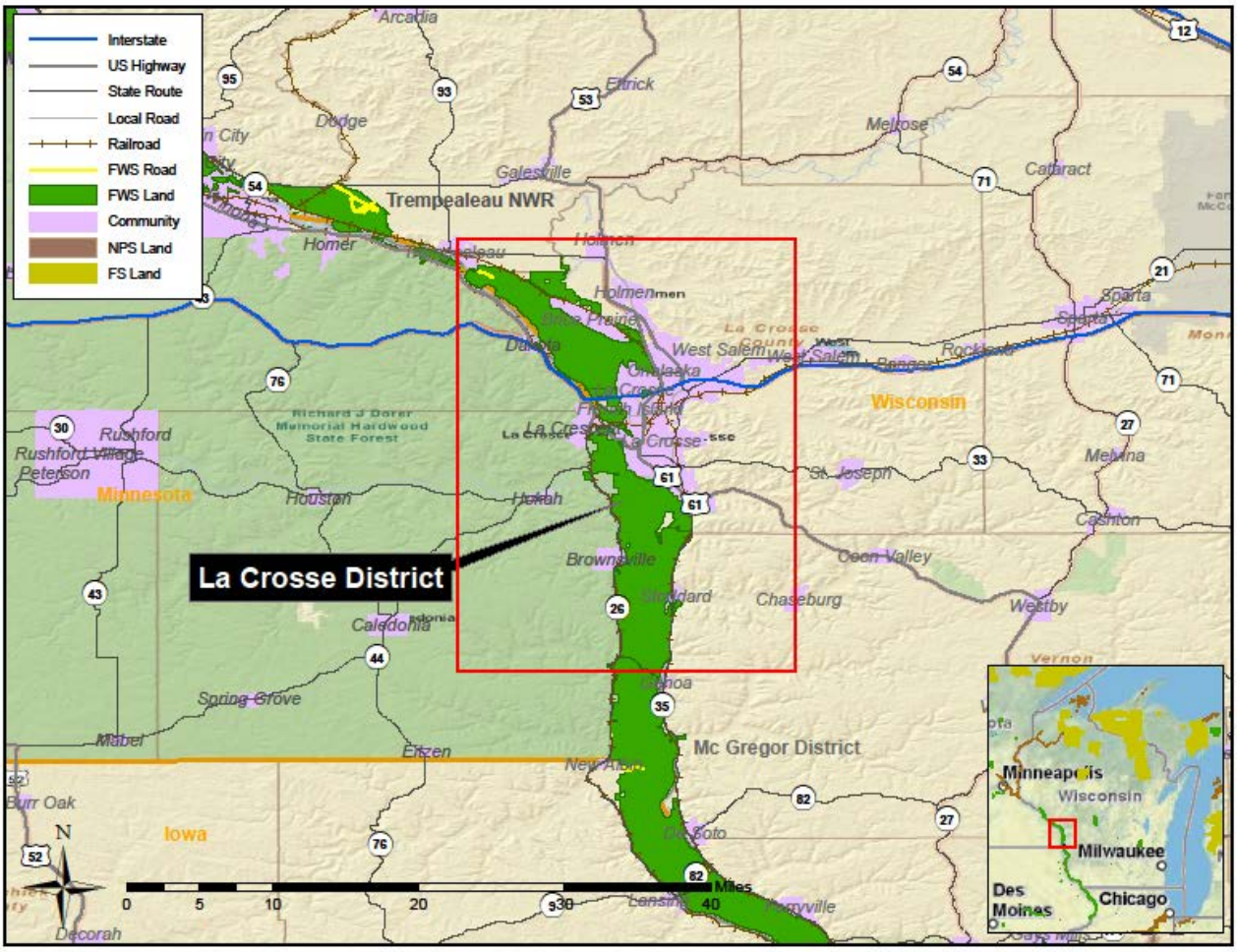
FACTS	Kirtlands Warbler WMA
Road Miles (TOTAL)	-
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	-
• **Gravel Road (Miles)**	-
• **Native Road (Miles)**	-

FACTS	Kirtlands Warbler WMA
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	-
Unit Acreage	-
Access Point	Area closed during nesting season (May-August)
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Huron National Forest (5-E); Sleeping Bear Dunes National Lakeshore (70-W)
Transportation Hub (miles away-as the crow flies)	Traverse City, MI
Gateway Community (miles away-as the crow flies)	Grayling, MI
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	Staff from Seney National Wildlife Refuge (Seney, Michigan) is responsible for land management at the refuge.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

La Crosse District



FACTS	La Crosse District
Road Miles (TOTAL)	0.81
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	0.81
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	1.15

FACTS	La Crosse District
Parking Lot (square feet)	110,159
Unit Acreage	183
Access Point	Lester Avenue
Main activities	Hunting, Fishing, Wildlife Observation, Photography and Interpretation
Special Events	Waterfowl Observation Day (November); IMBD (may) and Living Lands and Waters (June)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Effigy Mounds National Monument (35-S); Chequamegon National Forest (90-NE)
Transportation Hub (miles away-as the crow flies)	LaCrosse, WI (6)
Gateway Community (miles away-as the crow flies)	LaCrosse, WI (6)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	At grade railroad crossing
	Unsafe road conditions surrounding unit
	Connecting existing bike trails and expanding bike trails and new visitor center/office
Habitat Fragmentation	Halfway Creek Marsh; Along Highway 26 in Houston County, MN; "Pike" between La Crosse (WI) and La Crescent (MN); and others
Animal-Vehicle collisions	Yes, Many species of mammals, turtles, raptors, wading birds (non-endangered species) at roads paralleling the Upper MS River and those that cross the UMR or tributaries
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle and pedestrian trail to and within unit
	Water - access facilities
	Improved signage for orientation to unit
Most important enhancement priority	Bicycle trail for access to unit
Other	We are working on a number of projects with partners and need assistance with planning, funding, and implementation

Refuge	Transit Distance	Trail Distance	Priority
Upper Mississippi NWR, La Crosse District *La Crosse, WI*	More than 3 miles	1-3 miles	High

Existing or Planned ATS:

- There is a local transit service in La Crosse, but it is not used for refuge access nor is information available about its service area.
- There is an Amtrak station in La Crosse, located more than three miles from the refuge, but the train stops in La Crosse in the middle of the night.
- The Great River State Trail runs along the Mississippi River and is located within one to three miles of the refuge.
- Approximately ten percent of visitors access the station by bicycle or pedestrian modes. The refuge also maintains 10 to 15 boat launches and three canoe trails.

Opportunities for Future ATS:

- A new Visitor Center will be opening in 2012, with a planned multi-use trail connecting the Visitor Center with the Mississippi River shore and a boat launch. The greatest priority for the refuge is to connect this trail with existing regional trail networks. There may be an opportunity for bicycle rental or sharing.
- There may be an opportunity in the future to extend local bus lines to access the Visitor Center.
- Other improvements would include water access facilities, signage, and promotion and marketing of existing ATS. Signage has not yet been planned for the new Visitor Center.
- Refuge staff work closely with partners to plan for and fund transportation projects; they could benefit from additional technical assistance to further these partnerships and projects.
- The greatest challenges are in terms of limited funding and staff capacity, as well as unsafe road conditions.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Leopold Wetland Management District

FACTS	Leopold WMD
Road Miles (TOTAL)	1.58
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	1.27
• Native Road (Miles)	0.31
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	0.42
Parking Lot (square feet)	333,646
Unit Acreage	15,000
Access Point	Cascade Mountain Road
Main activities	Hunting and Wildlife Observation
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Madison, WI (36)
Gateway Community (miles away-as the crow flies)	Portage, WI (5)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Providing adequate off street parking for visitors
Habitat Fragmentation	Fragmentation of grassland habitats
Animal-Vehicle collisions	Deer, turkey, salamanders, small mammals and birds (non-endangered species)
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Bicycle and Pedestrian trails to and within unit
	Improved signage for orientation to and within unit
	Parking management solutions
Most important enhancement priority	Improve signage within unit

Refuge	Transit Distance	Trail Distance	Priority
Leopold WMD *Portage, WI*	More than 3 miles	1-3 miles	Low

Existing or Planned ATS:

- There is an Amtrak station located more than three miles from the station.
- The NPS Ice Age Trail (an auto-based interpretive trail) is located within three miles of Shoveler's Sink, one of the WMD's "flagship" units.
- Dane County, WI, received funding to build a trail that may run through Swan's Pond, which is two miles south of the Northrup King site and near Madison. FWS will build an observation deck at Swan's Pond when/if the trail is built.
- Approximately nine percent of visitors currently access the station via alternative transportation modes.

Opportunities for Future ATS:

- The station has no major transportation challenges but would like to concentrate on improvements to visitor orientation and roads to encourage safer and more reliable access to units.
- The most pressing need at the station is improved signage for orientation within the station.
- The station has a goal of adding small, 2-3 vehicle parking areas with grass or gravel surfaces and information kiosks for each of its 55 units.
- The station would like to add more pedestrian and bicycle trails to and within its units. Many visitors come from within 10 miles of the station units and may be likely to bicycle or walk.
- A few of the WMD units are located near Madison, WI, could benefit from connections to regional trails and transit service.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Litchfield Wetland Management District

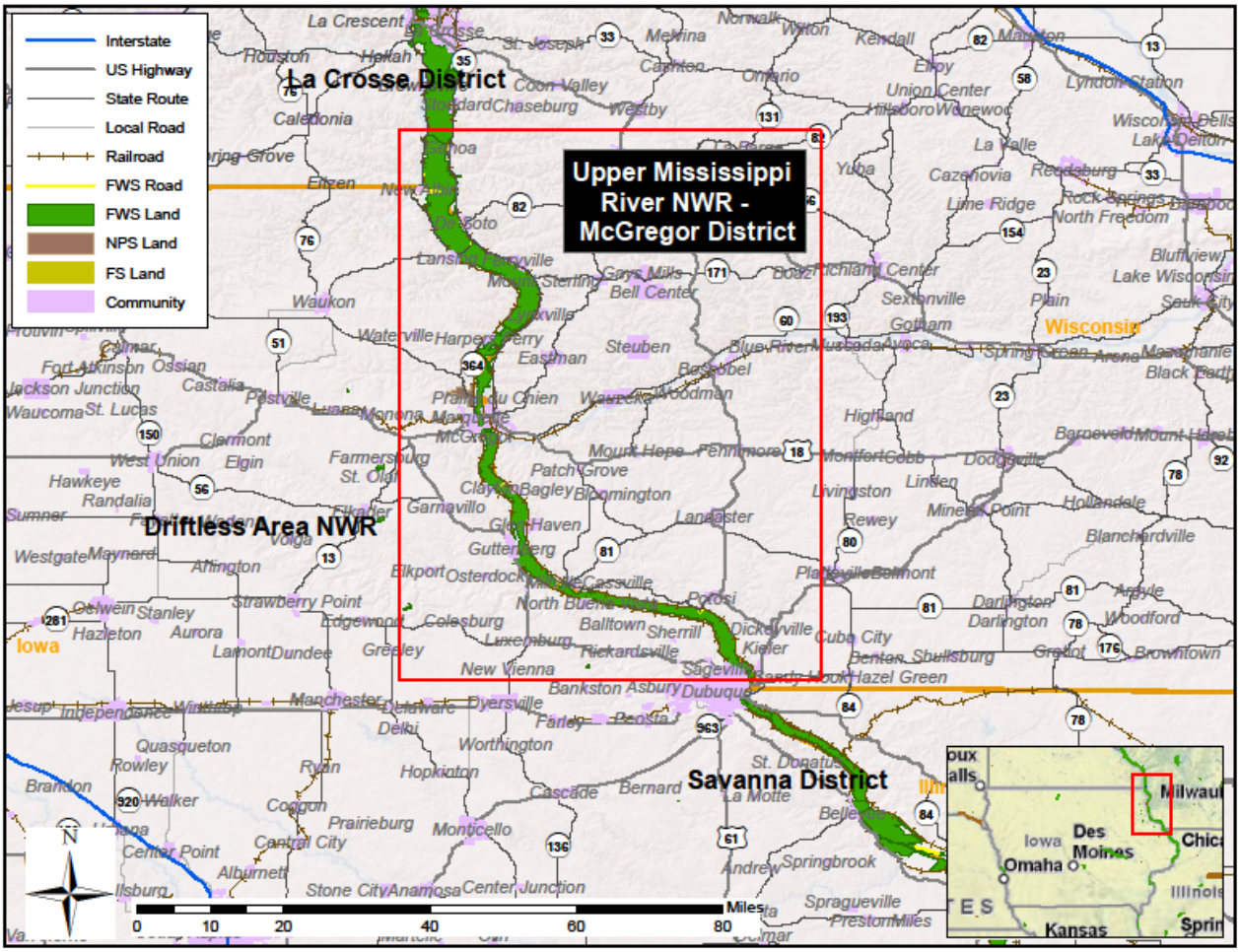
FACTS	Litchfield WMD
Road Miles (TOTAL)	3.42
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.11
• Gravel Road (Miles)	1.04
• Native Road (Miles)	2.04
• Primitive Road (Miles)	0.23
Trail Miles (TOTAL)	-
Parking Lot (square feet)	1,192,436
Unit Acreage	41,000
Access Point	615th Avenue
Main activities	Hunting
Special Events	Habitat Day (April)
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Litchfield, MN (4)
Gateway Community (miles away-as the crow flies)	Litchfield, MN (4)
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	Units fragmented
Animal-Vehicle collisions	Deer, turkey and smaller animals and birds (non-endangered species) on all public roads.
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Bicycle trails for access to unit
Other	Unit is three miles from Litchfield. It has over 150 WPAS scattered over a seven county area. Public transit is an option for a few of them.

Refuge	Transit Distance	Trail Distance	Priority
Litchfield WMD *Litchfield, MN*	More than 3 miles	More than 3 miles	Low
Existing or Planned ATS: • The WMD is located in a rural area, far from population centers and with no nearby transit service. • There may be public transit service near a few WPAs, but the majority of the 150+ WPAs are remote. **Opportunities for Future ATS:** • Some WPAs could benefit from bicycle paths for access to the units. • All visitors use private vehicles to access WPAs. If fuel costs continue to rise, visitation will decrease.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

McGregor District



FACTS	McGregor District
Road Miles (TOTAL)	4.93
• Concrete Road (Miles)	
• Asphalt Road (Miles)	0.22
• Gravel Road (Miles)	3.72
• Native Road (Miles)	-

FACTS	McGregor District
• Primitive Road (Miles)	0.98
Trail Miles (TOTAL)	1.28
Parking Lot (square feet)	412,047
Unit Acreage	-
Access Point	Business Hwy 18N
Main activities	Hunting, Fishing, Wildlife Observation, Photography and Environmental Education
Special Events	Mississippi River Adventure Day (Spring)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Effigy Mounds National Monument (1-W); Chequamegon National Forest (115-N)
Transportation Hub (miles away-as the crow flies)	La Crosse, WI (62)
Gateway Community (miles away-as the crow flies)	McGregor, IA (1)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Bus parking
	Resource conflicts with cars or bicycles
	Lack of safe pedestrian access
	Lack of safe vehicular access within unit
	At grade railroad crossings
Habitat Fragmentation	Forest
Animal-Vehicle collisions	Deer (non-endangered species) at access road to visitor center
Safety Concern for visitors accessing the unit/Visitor center	Right turn lane is needed
Enhancements identified to help visitor program	Bicycle trails
	Water access facilities
Most important enhancement priority	Pedestrian Trails within unit

Refuge	Transit Distance	Trail Distance	Priority
Upper Mississippi NWR, McGregor District *McGregor, IA*	More than 3 miles	More than 3 miles	Medium

Existing or Planned ATS:

- The Yellow River Forest Trail (upstream) and Heritage Trail (downstream) are within four miles of the refuge.
- Coulee Cab is a transit service but access is more than three miles from the station, and an Amtrak station is 50 miles from the station.
- The majority of visitors access the station through water-based modes.

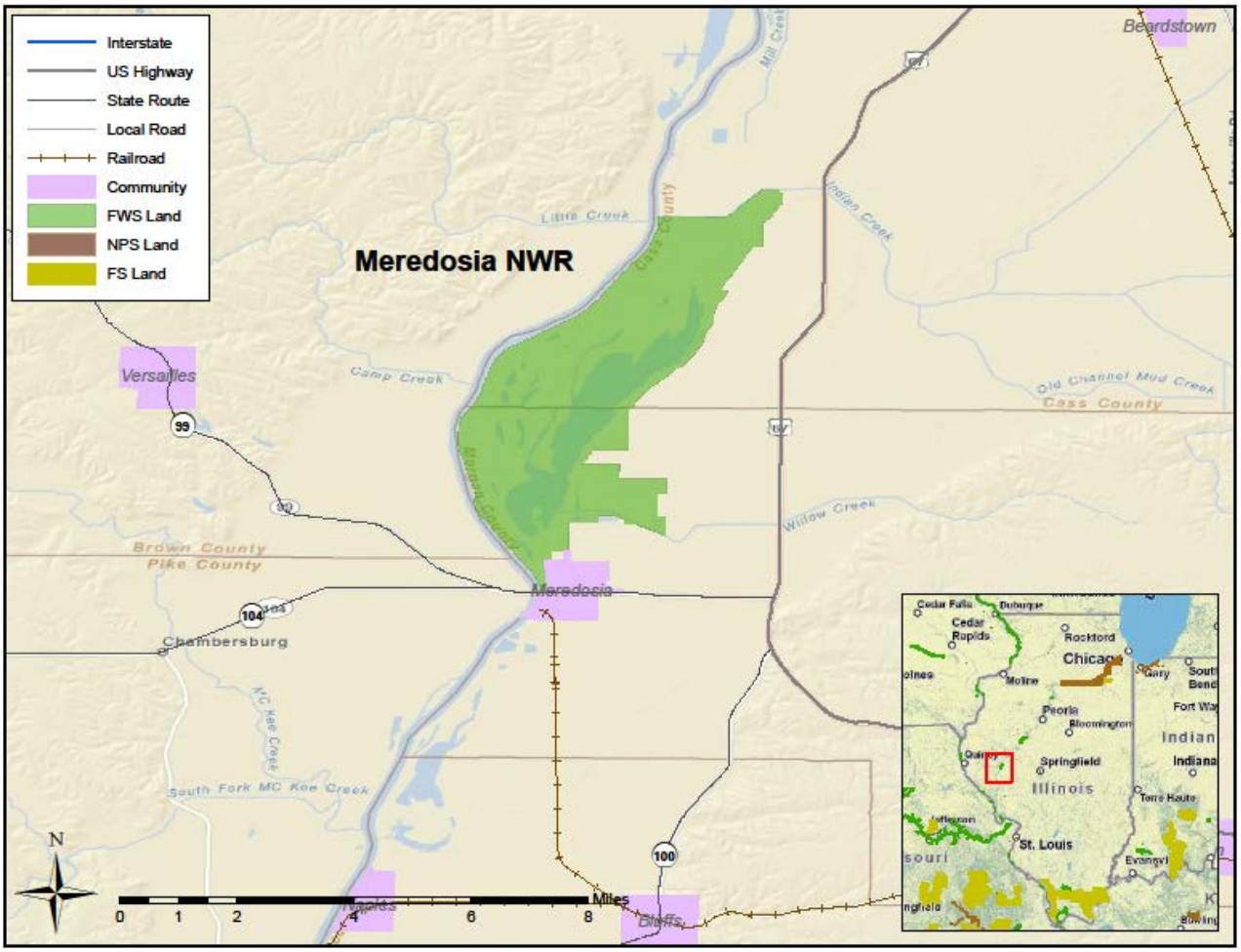
Opportunities for Future ATS:

- The refuge needs to address safe vehicle and pedestrian access to and within the station, bus parking, and road conditions.
- The refuge may benefit from seasonal internal transit, parking management solutions, pedestrian paths within the station, and bicycle paths to access the station.
- With improved water-access facilities, the refuge may enjoy greater visitation from water-based access.
- If the refuge gets a new visitor center and office complex, the planning and construction of the complex should be integrated with new transportation safety measures and ATS infrastructure.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Meredosia National Wildlife Refuge



FACTS	Meredosia NWR
Road Miles (TOTAL)	5.37
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	0.33

FACTS	Meredosia NWR
• Native Road (Miles)	5.04
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	0.15
Parking Lot (square feet)	32,453
Unit Acreage	3,582
Access Point	Beach Road
Main activities	Fishing, Interpretation, Wildlife Observation and photography and Environmental Education
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mark Twain National Forest (100-SW); Illinois and Michigan Canal National Heritage Corridor (120-NE)
Transportation Hub (miles away-as the crow flies)	Jacksonville, IL (21)
Gateway Community (miles away-as the crow flies)	Meredosia, IL (1)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	The refuge is part of the Illinois River National Wildlife Refuge Complex, with headquarters at Chautauqua Refuge

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Michigan Islands National Wildlife Refuge

FACTS	Michigan Islands NWR
Road Miles (TOTAL)	-
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	17,710
Unit Acreage	-
Access Point	The refuge is closed to the public
Main activities	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	-
Gateway Community (miles away-as the crow flies)	-
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Michigan Wetland Management District

FACTS	Michigan WMD
Road Miles (TOTAL)	0.27
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	-
• **Gravel Road (Miles)**	0.27
• **Native Road (Miles)**	-
• **Primitive Road (Miles)**	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	-
Unit Acreage	470
Access Point	Different locations for waterfowl production areas
Main activities	Hunting
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Lansing, MI (6)
Gateway Community (miles away-as the crow flies)	East Lansing, MI (3)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Pedestrian trail within unit
Habitat Fragmentation	Within the 5 WPAs
Animal-Vehicle collisions	Deer, raccoon and opossum (non-endangered species) adjacent main roads
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Relatively small WPAs away from population hubs, on rural roads. A maintained mowed (not paved) trail would increase access

Refuge	Transit Distance	Trail Distance	Priority
Michigan WMD *East Lansing, MI*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- Approximately 10 percent of visitors access the refuge by walking, but the distance from population centers and lack of transit deter most visitors from using ATS. Most visitors live within 10 miles of the station.

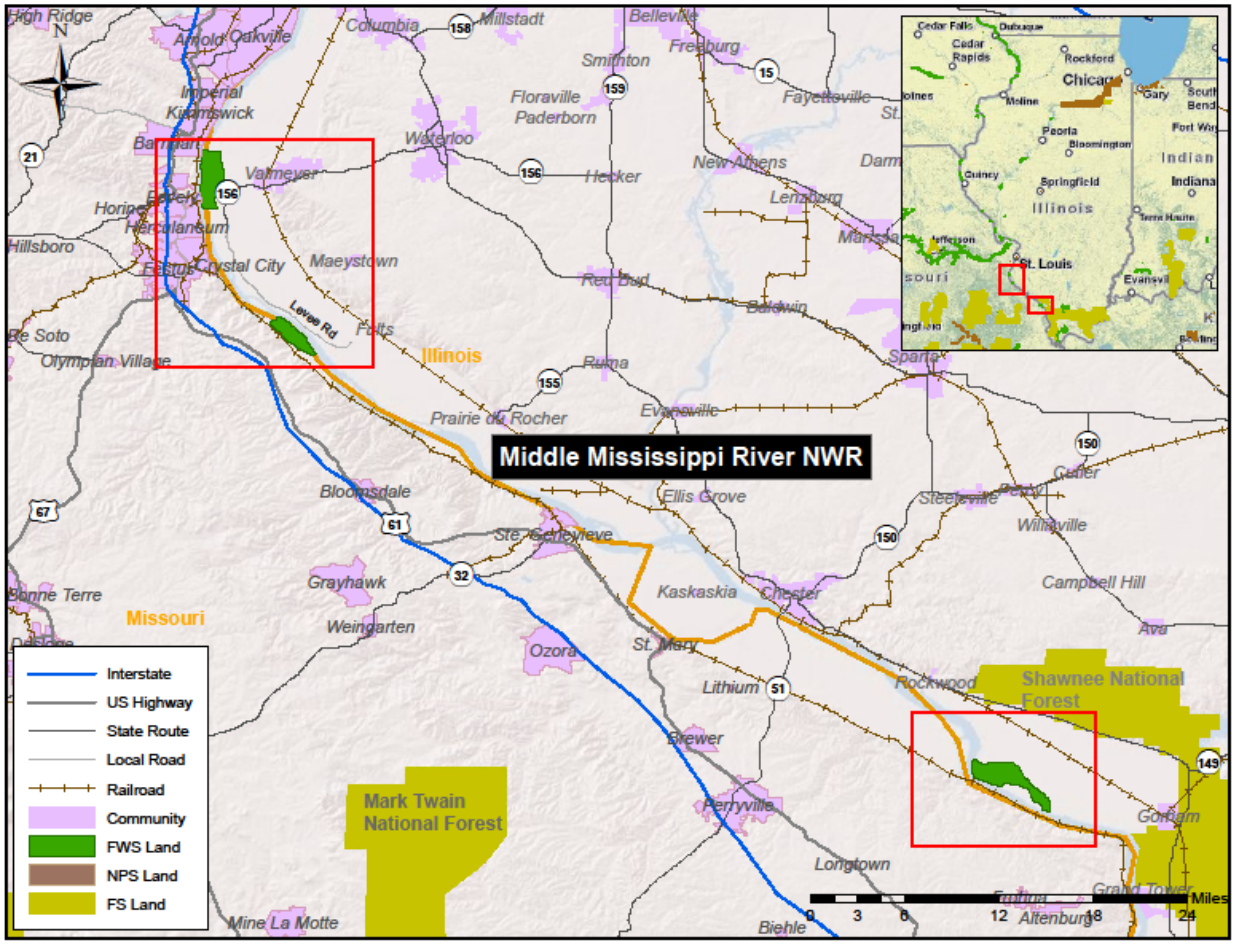
Opportunities for Future ATS:

- A well-maintained, natural surfaced trail (unpaved) would increase pedestrian access.
- The refuge would benefit most from promotion of existing ATS connections, improved pedestrian trails or paths to access the station and improved signage for visitor orientation.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Middle Mississippi River National Wildlife Refuge



FACTS	Middle Mississippi River NWR
Road Miles (TOTAL)	4.19
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	0.14
• Native Road (Miles)	2.29
• Primitive Road (Miles)	1.77
Trail Miles (TOTAL)	9.9
Parking Lot (square feet)	52,898

FACTS	Middle Mississippi River NWR
Unit Acreage	"Middle Miss" Refuge is part of the Mark Twain National Wildlife Refuge Complex
Access Point	Rocky Hollow Road
Main activities	Hunting, Fishing, and Wildlife Observation
Special Events	Annual Partnership Events
Proximity to nearest FLMAs (miles-direction as the crow flies)	Shawnee National Forest (10-E); Ulysses S. Grant National Historic Site (16-N)
Transportation Hub (miles away-as the crow flies)	Carbondale, IL (32)
Gateway Community (miles away-as the crow flies)	Chester, IL (7)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	PM-2.5.1997
Main transportation challenges identified	Congestion on roads leading to unit
	Lack of safe pedestrian access
	Condition of existing transportation assets
	Appropriate and effective signage
	At grade railroad crossing
	Visitor orientation to and within unit
	Need a left and right turn lane off of State Route 3 due to high coal truck traffic.
Habitat Fragmentation	More than 50% of land use around unit is farming
Animal-Vehicle collisions	Mammals and avian (not federally avian species) on state roads
Safety Concern for visitors accessing the unit/Visitor center	Right turn lane is needed
Enhancements identified to help visitor program	Pedestrian trails within unit
	Turning lanes for access to unit
	Improved signage for orientation to and within unit
Most important enhancement priority	Turning lane for access to unit
Other	The refuge headquarters is co-located with Crab Orchard National Wildlife Refuge

Refuge	Transit Distance	Trail Distance	Priority
Middle Mississippi NWR *Rockwood, IL*	More than 3 miles	Less than ½ mile	Low

Existing or Planned ATS:

- The Husky Bus Line offers service more than three miles from the refuge.
- The Great River Road is located less than ½ mile from the refuge. Approximately five percent of visitors access the refuge by bicycle.

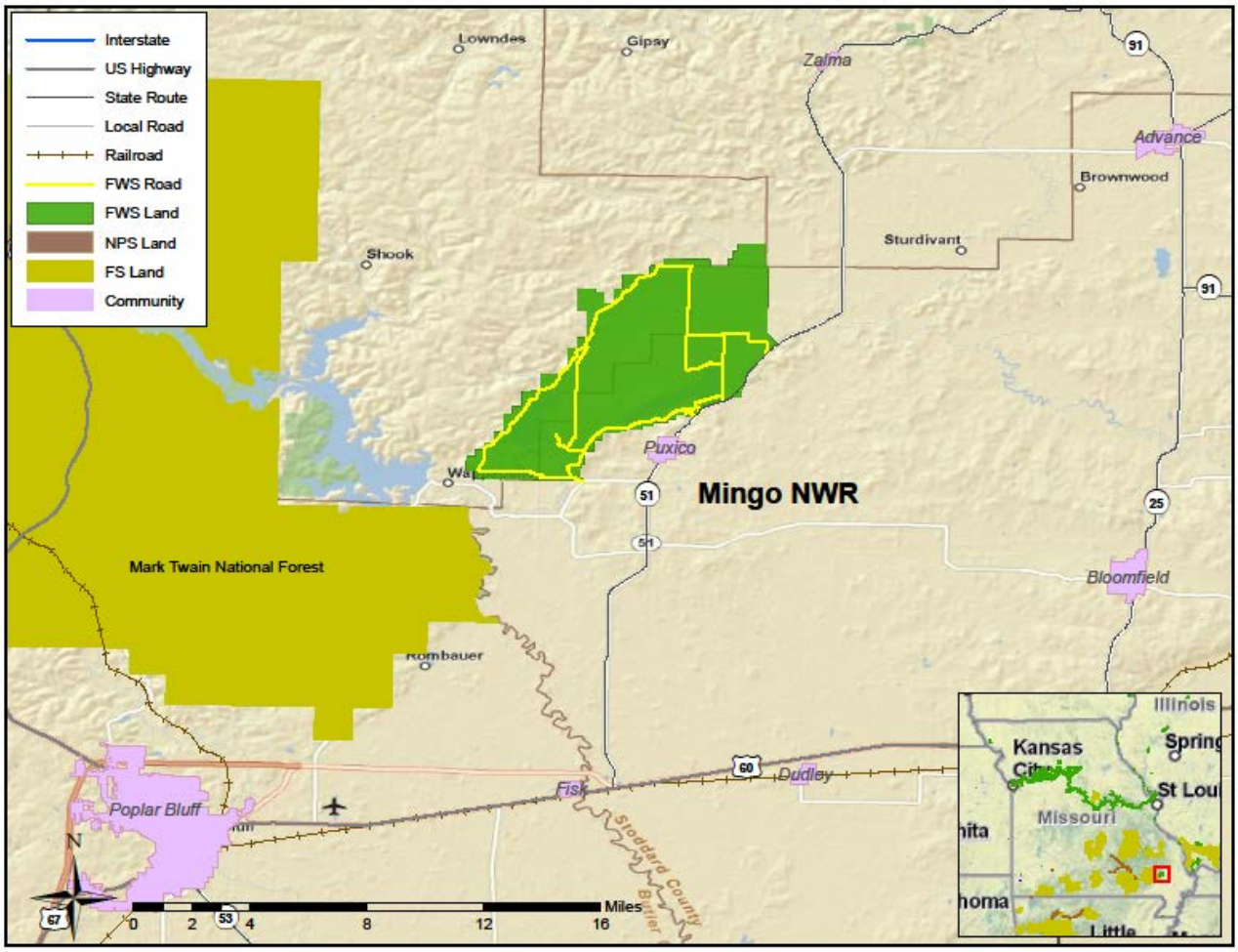
Opportunities for Future ATS:

- The refuge would benefit most from improved pedestrian trails or paths within the station and improved signage for visitor orientation.
- The stretch of S.R. 3 from Chester to S.R. 149 could benefit from a designated bicycle lane. There is a significant opportunity to enhance pedestrian and bicycle access, as many visitors live within 10 miles of the station and would bicycle.
- The proximity to St. Louis and Marion offer opportunities to enhance visitation, and the Great River Road provides an influx of potential visitors using bicycle or pedestrian access.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Mingo National Wildlife Refuge



FACTS	Mingo NWR
Road Miles (TOTAL)	53.18
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	8.44
• Gravel Road (Miles)	35.06
• Native Road (Miles)	6.59
• Primitive Road (Miles)	3.09
Trail Miles (TOTAL)	2.60
Parking Lot (square feet)	177,479

FACTS	Mingo NWR
Unit Acreage	21,592
Access Point	Highway 51
Main activities	Hunting, Fishing, Wildlife Observation and Photography
Special Events	Eagle Days (February)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mark Twain National Forest (5-W); Ozark National Scenic Riverway (35-W)
Transportation Hub (miles away-as the crow flies)	Poplar Bluff, MO (27)
Gateway Community (miles away-as the crow flies)	Puxico, MO (2)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	Bottomland hardwood forest species
Animal-Vehicle collisions	Reptiles and mammals (non-endangered species)
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Improved signage for orientation to and within unit
Most important enhancement priority	-
Other	Road Rehabilitations programmed for 2011 and 2012

Refuge	Transit Distance	Trail Distance	Priority
Mingo NWR *Puxico, MO*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- There is an Amtrak station located in Poplar Bluff, approximately 30 miles from the refuge.

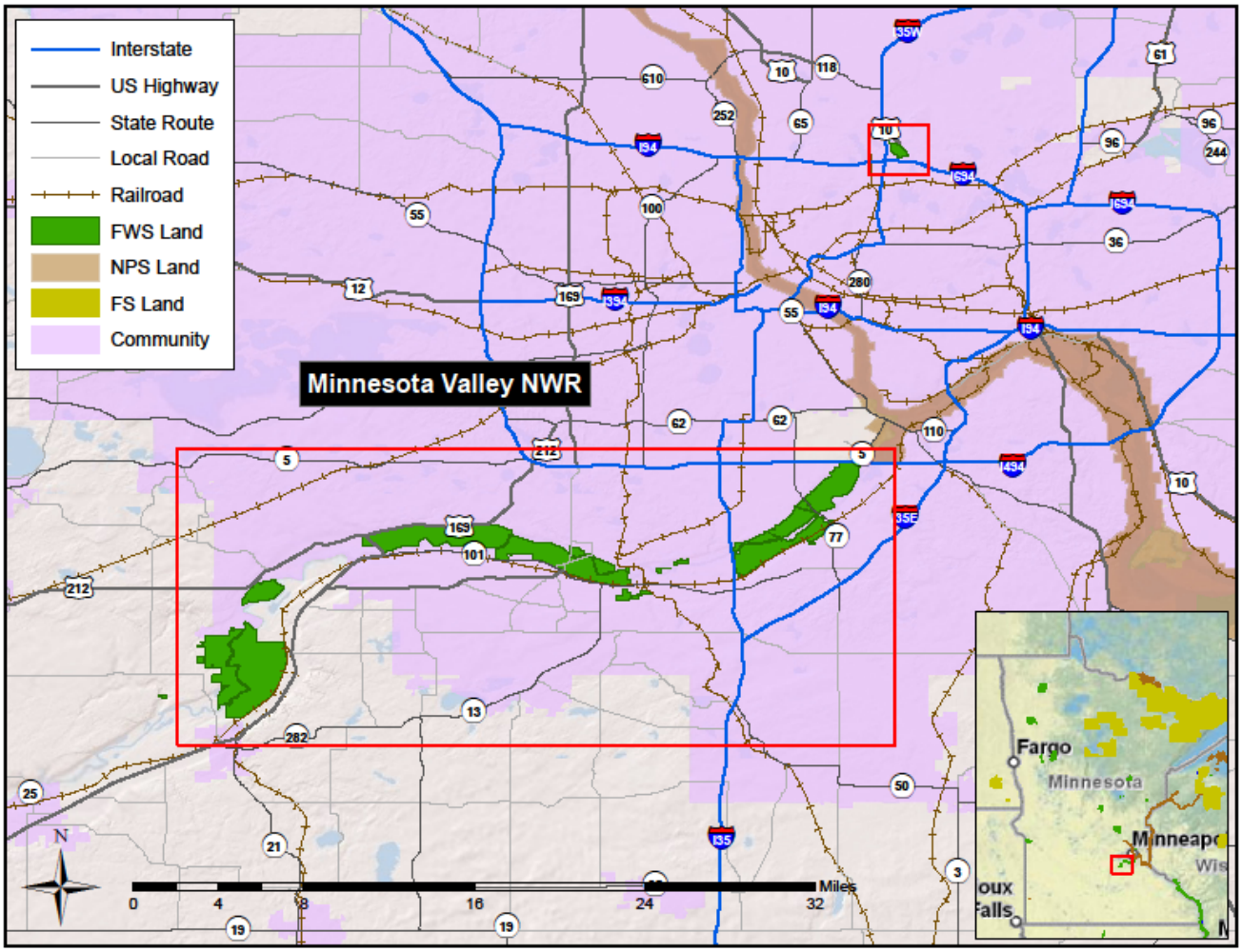
Opportunities for Future ATS:

- The station would benefit most improved signage for directions to the station and orientation within the station. They would also like to add bicycle trails.
- The refuge plans to rehabilitate its interior roads in 2011 and 2012. They plan to complete a new visitor center in 2012, which will increase visitation.
- The refuge does not have significant transportation problems, but they do note the distance from population centers, the condition of existing assets, and appropriate signage.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Minnesota Valley National Wildlife Refuge



FACTS	Minnesota Valley NWR
Road Miles (TOTAL)	37.70
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	2.83
• Gravel Road (Miles)	15.87
• Native Road (Miles)	18.28
• Primitive Road (Miles)	0.72

FACTS	Minnesota Valley NWR
Trail Miles (TOTAL)	27.51
Parking Lot (square feet)	4,733
Unit Acreage	14,000
Access Point	American Blvd East
Main activities	Fishing, Wildlife Observation, Photography, Environmental Education and Interpretation.
Special Events	Kids Birding Day (Early May); Fishing Day (Early May); Public Lands Day (September)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mississippi National River and recreation Area (1-E); Chequamegon National Forest (130-E)
Transportation Hub (miles away-as the crow flies)	Bloomington, MN (6)
Gateway Community (miles away-as the crow flies)	Bloomington, MN (6)
Scenic Byway	Great River Road, Grand Rounds and Minnesota River Valley Byways
Air quality Non-Attainment Area	None
Main transportation challenges identified	Congestion on roads to and within unit
Habitat Fragmentation	Yes by highways, railroads and urban development
Animal-Vehicle collisions	Deer (non-endangered species) throughout Minnesota River Valley
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle and pedestrian trail to and within unit
	Water-access facilities
	Improve signage for orientation to and within unit
Most important enhancement priority	Bicycle trail for access to unit

Refuge	Transit Distance	Trail Distance	Priority
Minnesota Valley NWR and WMD *Bloomington, MN*	Less than ½ mile	Direct connection	High

Existing or Planned ATS:

- Metro Transit's Blue Line Light Rail American Boulevard light rail station is located approximately one-half mile from the Long Meadow Lake Unit and Visitor Center. The light rail offers high-frequency service seven days per week to the downtown Minneapolis area. Metro bus service also runs nearby and near other units of the refuge (near Bloomington Ferry Road, the Bass Ponds Unit, and the Black Dog Unit). Refuge staff estimates that 15 percent of visitors come via public transit.
- The Minnesota River Trail, maintained by the Minnesota Department of Natural Resources, is a multi-use gravel trail that runs through the refuge and continues (though not perfectly connected) throughout the river valley.
- There are extensive trails throughout the units with strong connectivity to the region's bicycle and pedestrian network. Most trails within the refuge are packed gravel surface and subject to flooding.
- There is a paved bicycle trail in the Wilkie Unit, adjacent to CR 101. A local bicycle company plows the path during the winter, and it is heavily used by commuters.
- The Sand Creek Pedestrian Bridge in the Louisville Swamp Unit offers a vital connection for cyclists and pedestrians.
- The City or County will be converting the Black Dog Road (in the Black Dog Unit) to a paved bicycle/pedestrian trail in 2012 or 2013.
- The refuge occasionally rents 16- or 24-passenger shuttles or vans for special events.

Opportunities for Future ATS:

- Refuge staff has a strong partnership history with local governments, businesses, user groups, and the Minnesota Department of Transportation.
- The refuge held two Rail to Refuge tours, in which visitors come to refuge via light rail (with or without bicycles) and then tour the refuge by bicycle or foot.
- The refuge needs improved signage to direct visitors to amenities; signage has been constrained by local ordinances. Since the refuge units are adjacent to residential areas, improved signage may increase visitation by pedestrians.
- The refuge can identify better connections with light rail and bus transit and educate the public about these opportunities.
- Old Cedar Avenue Bridge is a missing connection for commuters from south and east residential areas to access the refuge and get to points north in the Twin Cities. The existing bridge is a safety hazard, but some commuters still use it despite hazardous conditions. The refuge has submitted a TRIP application for capital costs to supplement funds from the City of Bloomington and other sources.

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Minnesota Valley Wetland Management District

FACTS	Minnesota Valley WMD
Road Miles (TOTAL)	2.24
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	0.83
• Native Road (Miles)	1.19
• Primitive Road (Miles)	0.22
Trail Miles (TOTAL)	0.50
Parking Lot (square feet)	166,313
Unit Acreage	4,255
Access Point	American Blvd East
Main activities	Fishing, Wildlife Observation, Photography, Environmental Education and Interpretation.
Special Events	Kids Birding Day (Early May); Fishing Day (Early May); Public Lands Day (September)
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Bloomington, MN (6)
Gateway Community (miles away-as the crow flies)	Bloomington, MN (6)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Congestion on roads to and within unit
Habitat Fragmentation	-
Animal-Vehicle collisions	Deer (non-endangered species) throughout Minnesota River Valley
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle and pedestrian trail to and within unit
	Water-access facilities
	Improve signage for orientation to and within unit
Most important enhancement priority	Bicycle trail for access to unit

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Morris Wetland Management District

FACTS	Morris WMD
Road Miles (TOTAL)	11.33
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	5.65
• Native Road (Miles)	3.06
• Primitive Road (Miles)	2.62
Trail Miles (TOTAL)	2.42
Parking Lot (square feet)	1,432,357
Unit Acreage	50,000
Access Point	County Road 10
Main activities	Wildlife Observation
Special Events	Prairie Pioneer Day(2nd Sat in July);2nd Grade Field Day (Oct)
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Morris, MN (5)
Gateway Community (miles away-as the crow flies)	Morris, MN (5)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Resource conflicts with cars or bicycles
	Lack of safe pedestrian access
	Condition of existing transportation assets
	The highway bike trail does not have an adequate shoulder for safe biking and walking.
	The unit is quite rural so vehicle transportation is likely to remain as the primary mode of transportation
Habitat Fragmentation	Unit is a district in farm country
Animal-Vehicle collisions	Deer, raccoon, muskrat and pheasant (non-endangered species) where woods and grasslands are on both sides or road
Safety Concern for visitors accessing the unit/Visitor center	No

Refuge	Transit Distance	Trail Distance	Priority
Morris WMD *Morris, MN*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- There is an Amtrak station located more than three miles from the station.
- The Pomme de Terre County Park Trail is located more than three miles from some units.
- The station is located in a rural setting with no transit surface and most visitors come from more than 10 miles away, limiting the ATS access options.

Opportunities for Future ATS:

- The station's most pressing transportation challenges include resource conflicts with vehicles, safe pedestrian access, and condition of existing transportation assets.
- The station would benefit from pedestrian and bicycle trails for access to the station. In particular, they would like a wider shoulder on the highway between the city of Morris and the station office to accommodate safe bicycle and pedestrian travel.
- Station staff fears that visitation will decrease with rising fuel costs unless appropriate alternatives are identified and implemented.

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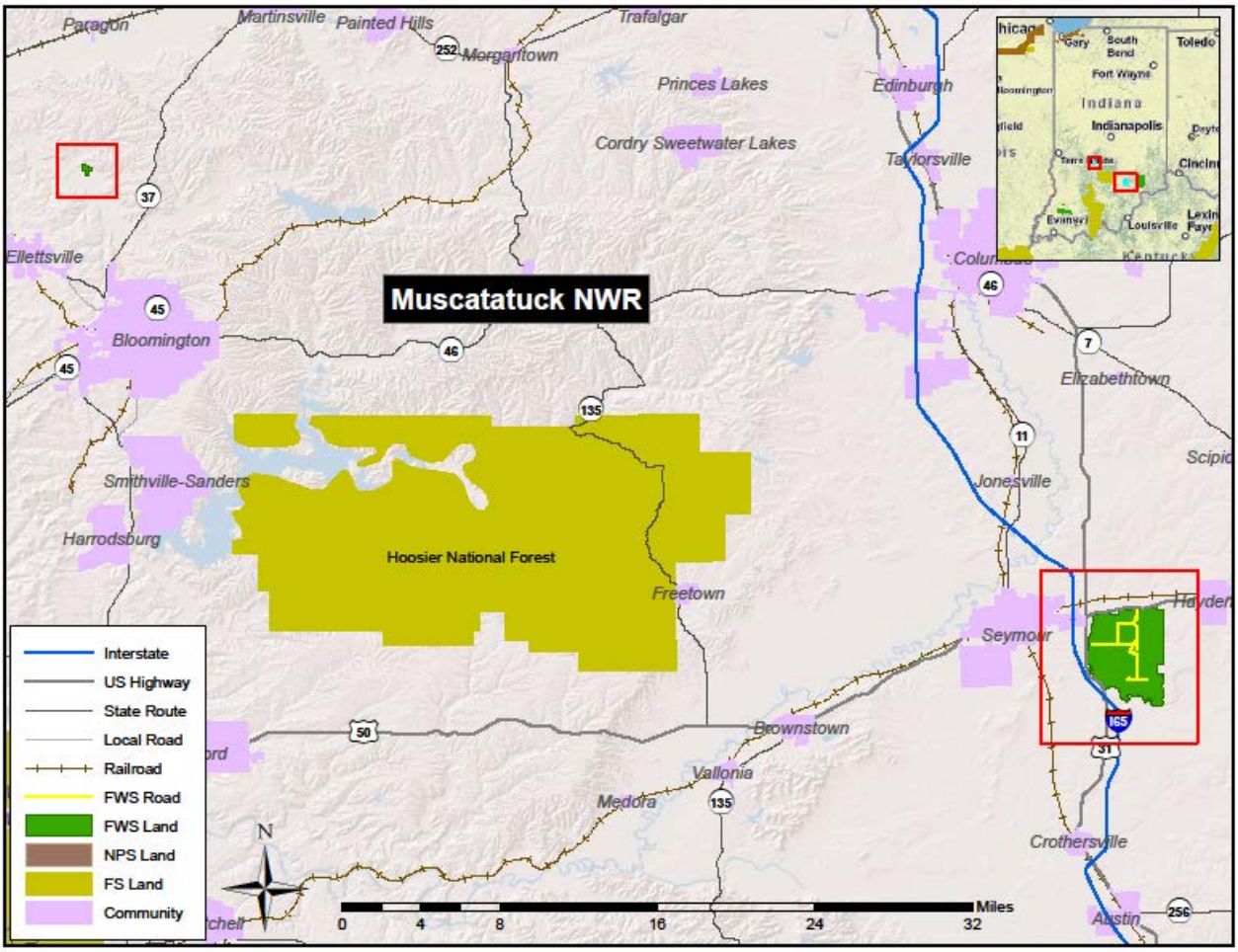
National Wildlife Refuge Fact Sheet

Muscatatuck National Wildlife Refuge



FACTS	Muscatatuck NWR
Road Miles (TOTAL)	21.21
• **Concrete Road (Miles)**	0.15
• **Asphalt Road (Miles)**	0.88
• **Gravel Road (Miles)**	11.72
• **Native Road (Miles)**	7.97
• **Primitive Road (Miles)**	0.50

FACTS	Muscatatuck NWR
Trail Miles (TOTAL)	9.95
Parking Lot (square feet)	202,198
Unit Acreage	7,880
Access Point	U.S. Highway 50
Main activities	Fishing, Wildlife Observation and Environmental Education
Special Events	Wings Over Muscatatuck Bird Festival (2nd Saturday in May); Wetland Day (mid-March); Log cabin Day (National WR week)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Hoosier National Forest (20-W); Mammoth Cave National Park (120-S)
Transportation Hub (miles away-as the crow flies)	Louisville, KY (55)
Gateway Community (miles away-as the crow flies)	Seymour, IN (6)
Scenic Byway	Indiana's Historic Pathway (State/National Scenic Byway)
Air quality Non-Attainment Area	PM-2.5.1997
Main transportation challenges identified	Congestion on roads leading to unit
	Lack of safe pedestrian access
	Unsafe road conditions surrounding the unit
	Access to the refuge is on high traffic and narrow road with no real shoulder- very dangerous for bikers and walkers. Currently transit does not come here. Gravel refuge roads are not good for biking.
	Funding for paving four miles of Auto Tour would be a great improvement.
Habitat Fragmentation	Migratory songbirds
Animal-Vehicle collisions	White-tailed deer (non-endangered specie) on Us Hwy 50 and 31
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Pedestrian trails to access unit
	Bicycle trails to and within unit
Most important enhancement priority	Bike paths on Refuge Auto Tour Route

Refuge	Transit Distance	Trail Distance	Priority
Muscatatuck NWR *Seymour, IN*	1- 3 miles	More than 3 miles	Medium

Existing or Planned ATS:

- Seymour Transit offers its Ride to Recycle service within three miles of the refuge.
- Approximately five percent of refuge visitors access the refuge by pedestrian or bicycle modes.

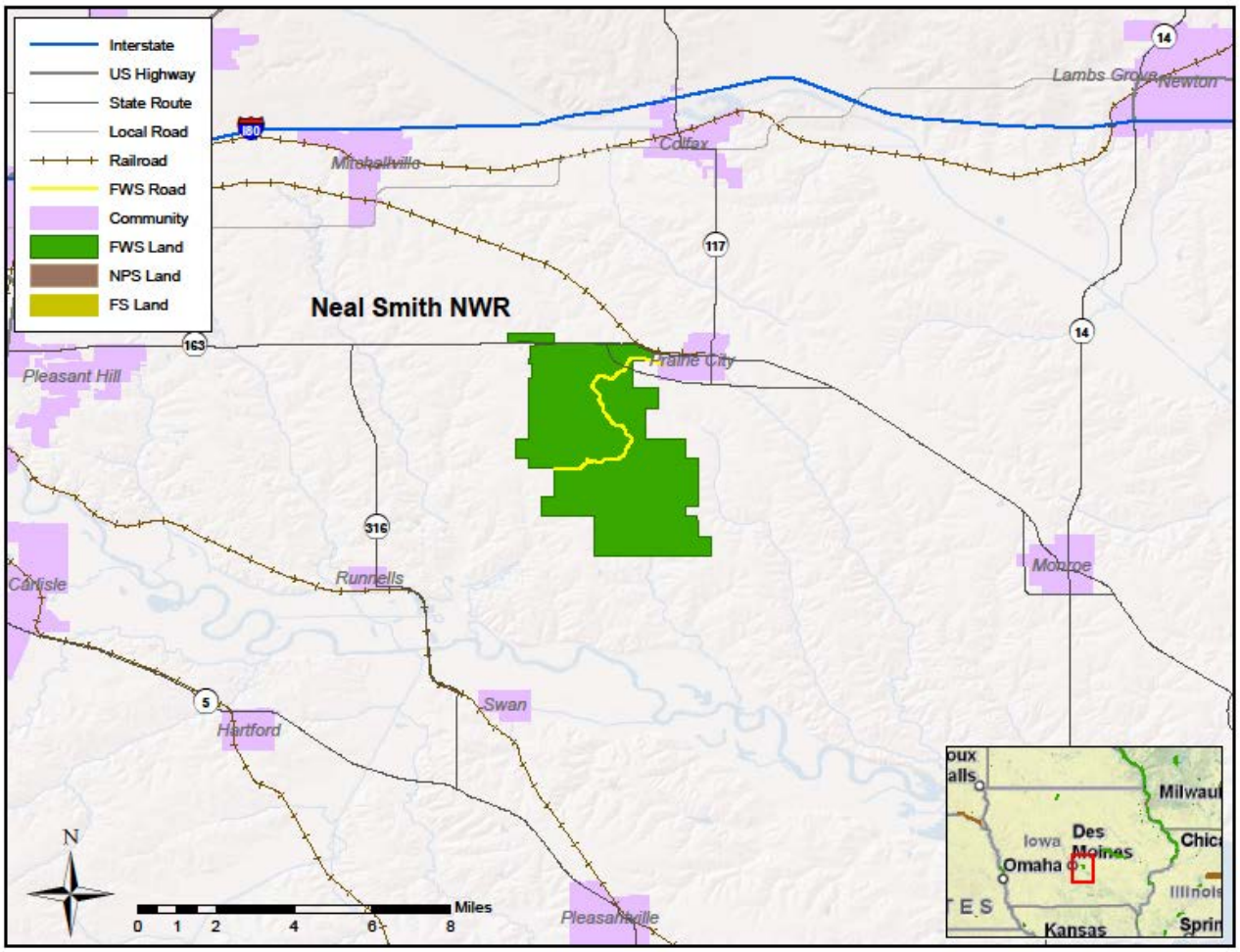
Opportunities for Future ATS:

- The current access road to the refuge has no shoulder, heavy traffic, and is hazardous for cyclists and pedestrians. Improvements are planned but no date is confirmed.
- The refuge would benefit most from the addition of bicycle paths or paving along the unpaved Auto Tour Route. Other ATS improvements that could benefit the refuge include internal seasonal transit, transit service for access to the station, and new bicycle and pedestrian paths for access to the station.
- Transit may be able to assist the refuge for special events, such as the Wings over Muscatatuck Bird Festival in May that attracts approximately 1,000 visitors. The Log Cabin Day in October attracts 800 visitors.
- A small transit vehicle may offer benefits to the refuge for its visitor programs or to access the Auto Tour Route.
- Challenges facing the refuge include unsafe pedestrian and road conditions, lack of transit service, and congestion on roads leading to the refuge. Other minor challenges include staff and funding shortages, resource conflicts, and condition of transportation assets.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Neal Smith National Wildlife Refuge



FACTS	Neal Smith NWR
Road Miles (TOTAL)	8.04
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	4.75
• Gravel Road (Miles)	1.88
• Native Road (Miles)	1.26
• Primitive Road (Miles)	0.15
Trail Miles (TOTAL)	3.15
Parking Lot (square feet)	196,445

FACTS	Neal Smith NWR
Unit Acreage	8,654
Access Point	Highway 117
Main activities	Hunting, Wildlife Observation, Environmental Education, photography and Interpretation
Special Events	Public Lands/Buffalo day (Last Saturday in September); Monarch Madness (First Saturday after labor day); Earth Day Celebration (April)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Herbert Hoover National Historic Site (28-E); Mark Twain National Forest (200-S)
Transportation Hub (miles away-as the crow flies)	Des Moines, IA (20)
Gateway Community (miles away-as the crow flies)	Prairie City, IA (4)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Resource conflicts with cars or bicycles
	Lack of safe pedestrian access
	County roads cross the refuge every mile (farm to market roads) power lines cross center of refuge.
Habitat Fragmentation	Prairie and oak savanna, county roads divide them
Animal-Vehicle collisions	Deer, pheasant, songbirds and rabbits (non-endangered species) on Hwy 163 (north boundary of refuge), entry road.
Safety Concern for visitors accessing the unit/Visitor center	On entry road bicyclists share the road with cars - there is no shoulder so this a major safety concern
Enhancements identified to help visitor program	Bicycle and Pedestrian trails to and within unit
	Bicycle racks
	Water - access facilities
Most important enhancement priority	Bicycle/pedestrian trail within unit

Refuge	Transit Distance	Trail Distance	Priority
Neal Smith NWR *Prairie City, IA*	More than 3 miles	More than 3 miles/Planned direct connection	Medium

Existing or Planned ATS:

- The Des Moines Area Regional Transit Authority (DART) offers transit service, approximately 20 miles from the refuge.
- The Plainsmen Trail, part of the Central Iowa trail network, runs directly to the refuge. Approximately 10 percent of refuge visitors access the refuge by bicycle or pedestrian modes.

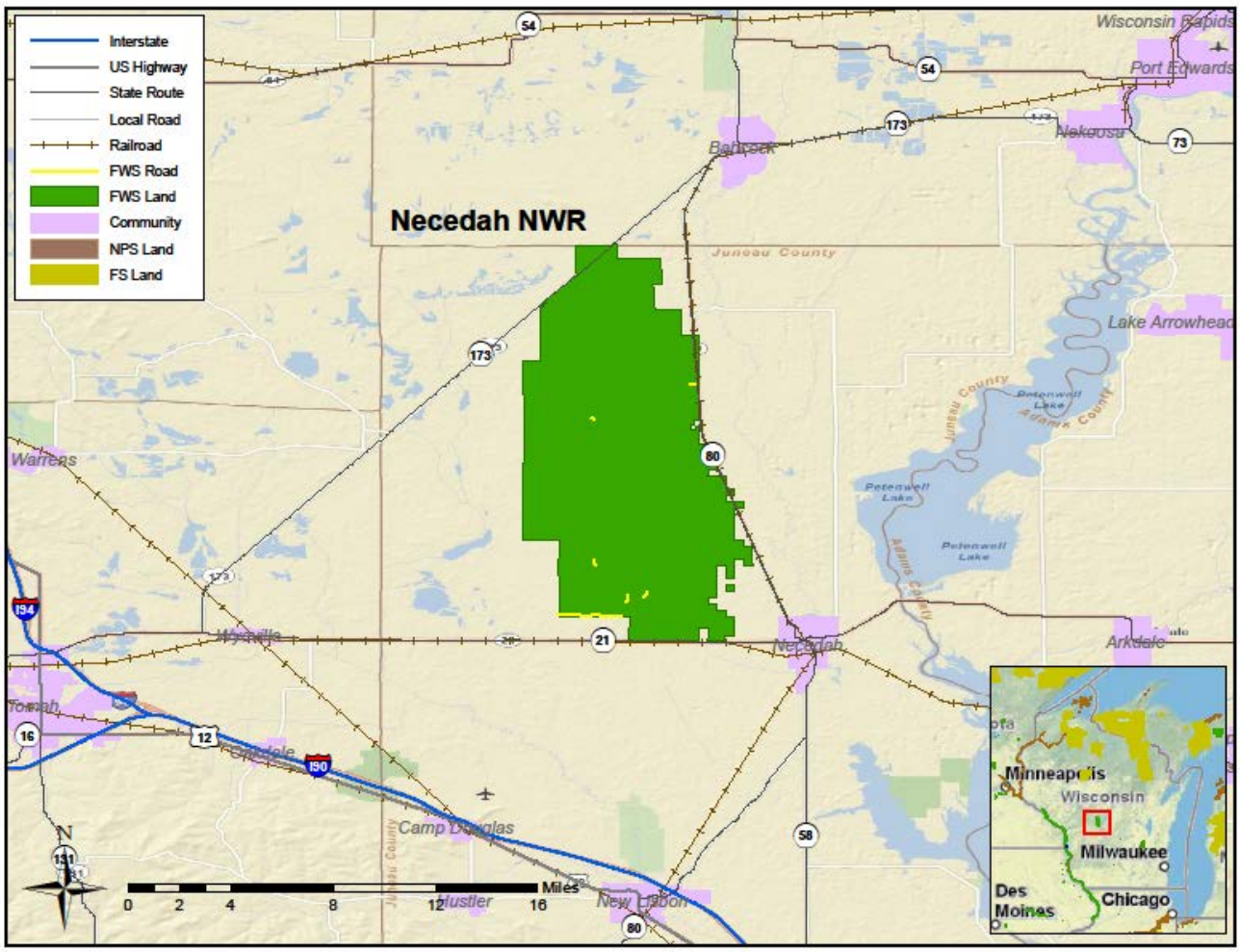
Opportunities for Future ATS:

- The refuge entry road is shared between vehicles and bicycles, and there is no shoulder for bicycles, causing a major safety hazard.
- The refuge is planning a bicycle/pedestrian trail that connects the Visitor Center with the Plainsmen trail in Prairie City. The refuge anticipates increasing visitation by bicycle.
- The refuge's greatest transportation challenges are lack of transit service, lack of safe pedestrian access, and resource conflicts with cars and bicycles.
- The refuge would like to consider internal transit and new bicycle infrastructure within and leading to the station.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Necedah National Wildlife Refuge



FACTS	Necedah NWR
Road Miles (TOTAL)	43.25
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	34.79
• Native Road (Miles)	5.86
• Primitive Road (Miles)	2.60
Trail Miles (TOTAL)	5.9

FACTS	Necedah NWR
Parking Lot (square feet)	353,276
Unit Acreage	43,656
Access Point	Headquarters Road
Main activities	Wildlife Observation and Photography
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chequamegon National Forest (5-W); Apostle Islands National Lakeshore (15-NE)
Transportation Hub (miles away-as the crow flies)	Tomah, WI (21)
Gateway Community (miles away-as the crow flies)	Necedah, WI (6)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Condition of existing transportation assets
	Appropriate and effective signage
Habitat Fragmentation	Karner Blue Butterfly
Animal-Vehicle collisions	No
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Pedestrian trails within unit
	Bicycle trails to unit
	Parking Management Solutions
	Improved Signage for orientation to and within unit
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Necedah NWR *Necedah, WI*	More than 3 miles	More than 3 miles	Medium

Existing or Planned ATS:

- Amtrak offers transit service more than three miles from the refuge.
- The Elroy Sparta trail is located more than three miles from the refuge.
- The refuge is located far from population centers and lacks transit service in close proximity.
- The refuge friends groups help subsidize transportation for an afterschool program at the refuge for students in the town of Necedah.

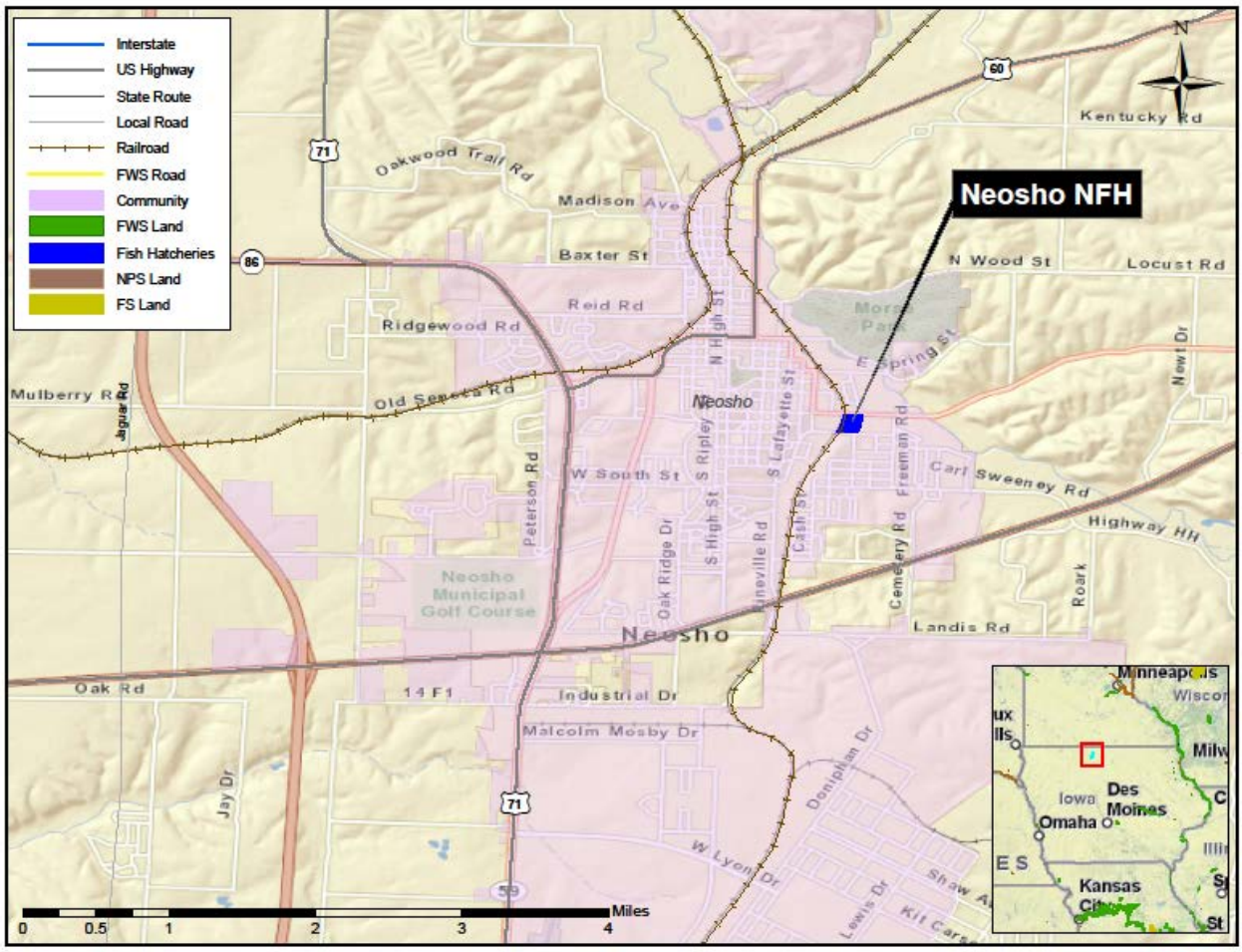
Opportunities for Future ATS:

- The refuge has a new visitor center, opened in 2011. Refuge staff expects an increase in visitation, especially among field trips and charter bus tour groups. A small transit vehicle may help the refuge in providing interpretive tours to small groups in restricted areas of the refuge.
- The refuge's greatest challenges are the condition of existing transportation assets and appropriate signage. They also are challenged by unsafe road conditions surrounding the station, congestion on roads to and within the station, funding and staffing shortages, and lack of transit service.
- The refuge would benefit from improved signage for orientation within the station and parking management for visitors at different amenity sites throughout the station.
- The refuge would like to add improved pedestrian access trails within the station and bicycle trails to the station. The refuge would also like to explore seasonal transit within the station.
- The station contains many miles of unpaved roads, owned and maintained by surrounding townships. The refuge must determine whether to allow all-terrain vehicles on these roads within the refuge, which is currently illegal.

U.S. Fish and Wildlife Service

National Fish Hatchery Fact Sheet

Neosho National Fish Hatchery



FACTS	Neosho NFH
Road Miles (TOTAL)	0.42
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	0.42
• **Gravel Road (Miles)**	-
• **Native Road (Miles)**	-
• **Primitive Road (Miles)**	-

FACTS	Neosho NFH
Trail Miles (TOTAL)	0.60
Parking Lot (square feet)	69,128
Unit Acreage	263
Access Point	Park Street
Main activities	Photography, Environmental Education and Interpretation
Special Events	Kids fishing derby, Elderly/Physically disabled fishing outing (April); Open House (June) and Friends picnic (October)
Proximity to nearest FLMAs (miles-direction as the crow flies)	George Washington Carver National Monument (8-N); Mark Twain National Forest (32-SE)
Transportation Hub (miles away-as the crow flies)	Joplin, MO (22)
Gateway Community (miles away-as the crow flies)	Neosho, MO (0)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Parking
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Turning lanes for access to unit

Refuge	Transit Distance	Trail Distance	Priority
Neosho NFH *Neosho, MO*	More than 3 miles	More than 3 miles	Medium
Existing or Planned ATS: • Greyhound bus offers service more than three miles from the hatchery. • The hatchery has a direct connection to a regional non-motorized trail, and approximately 20 percent of visitors access the site by walking or bicycling. **Opportunities for Future ATS:** • The hatchery's key challenges are staff capacity and signage. • The hatchery hosts several events in April and June that attract very high visitation (5,000 people or more). They could use assistance in identifying parking solutions during these high visitation periods. • The hatchery opened a new visitation center that will increase visitation to over 100,000 per year.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

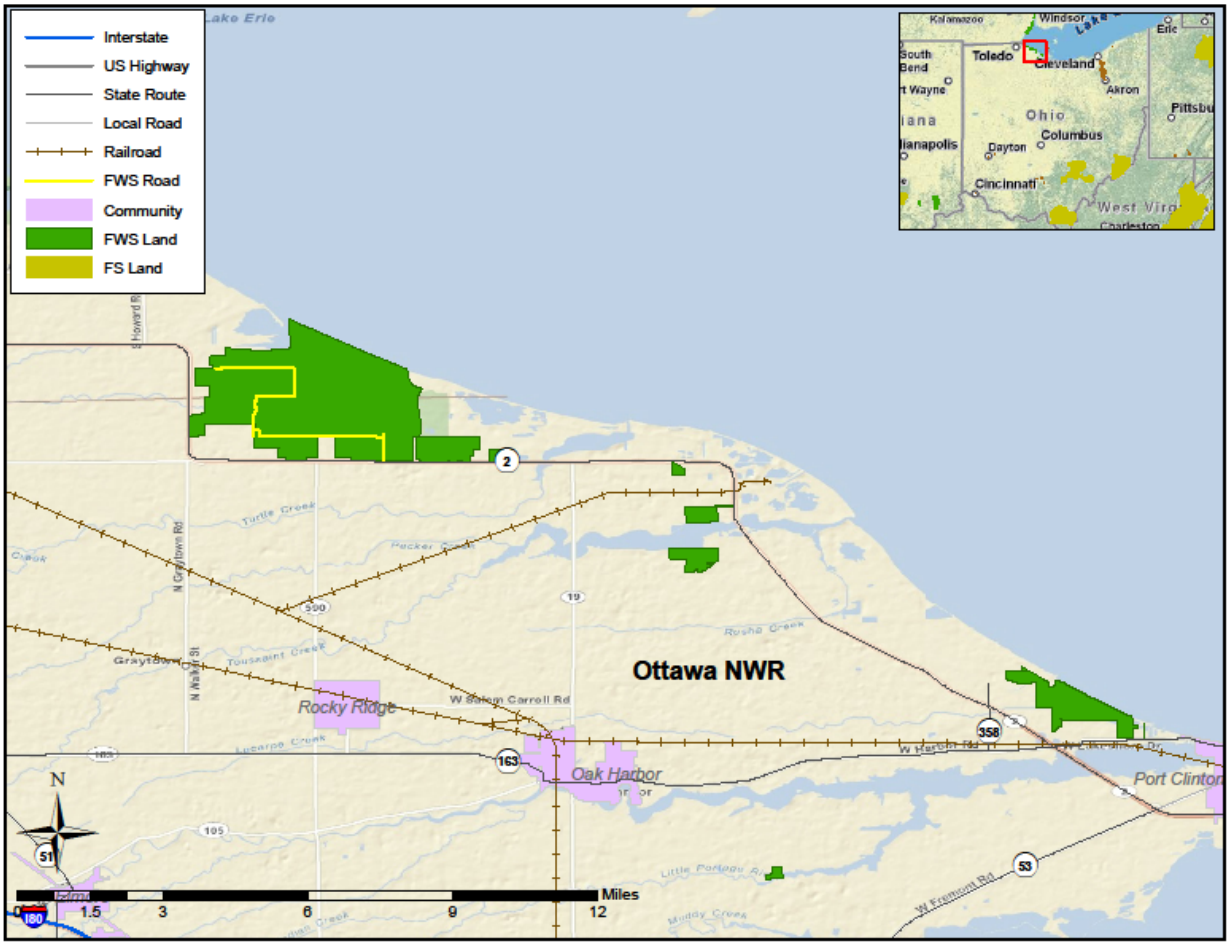
Northern Tallgrass Prairie National Wildlife Refuge

FACTS	Northern Tallgrass Prairie NWR
Road Miles (TOTAL)	Refer to managing refuge
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	Refer to managing refuge
Unit Acreage	752
Access Point	Big Stone County Road 19
Main activities	Hunting, Wildlife Observation, Photography and Environmental Education
Special Events	
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Ortonville, MN (7)
Gateway Community (miles away-as the crow flies)	Odessa, MN (1)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Ottawa National Wildlife Refuge



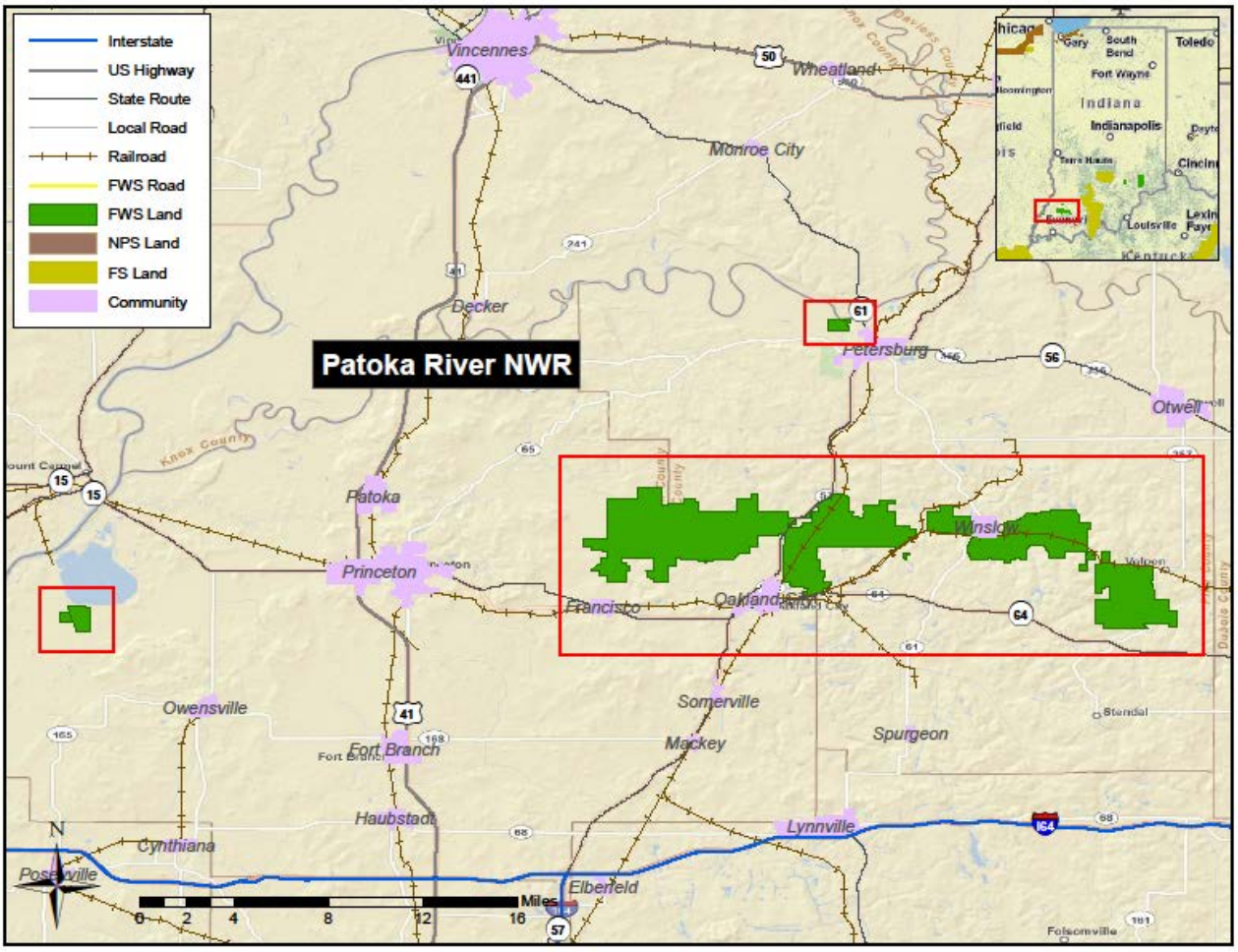
FACTS	Ottawa NWR
Road Miles (TOTAL)	48.22
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	1.41
• Gravel Road (Miles)	34.58
• Native Road (Miles)	11.29
• Primitive Road (Miles)	0.94
Trail Miles (TOTAL)	7.14
Parking Lot (square feet)	307,793

FACTS	Ottawa NWR
Unit Acreage	9,000
Access Point	SR 2
Main activities	Environmental Education, Hunting, Interpretation Photography and Wildlife Observation
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Perry's Victory and International Peace Memorial (16-E); Wayne National Forest (145-SE)
Transportation Hub (miles away-as the crow flies)	Toledo, OH (22)
Gateway Community (miles away-as the crow flies)	Oregon, OH (17)
Scenic Byway	Lake Erie Coastal Ohio Trail (State/National Scenic Byway)
Air quality Non-Attainment Area	PM-2.5.2006
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Patoka River National Wildlife Refuge



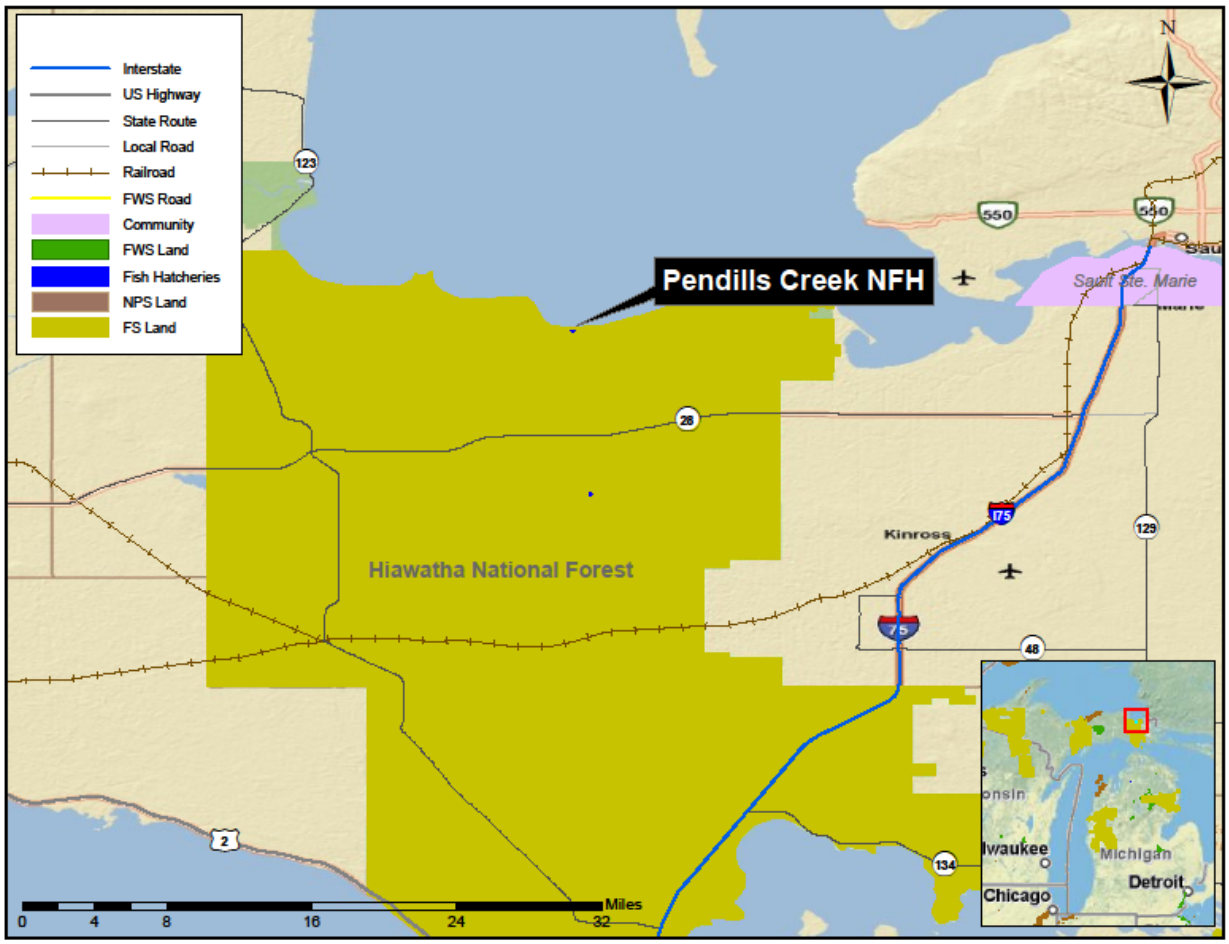
FACTS	Patoka River NWR
Road Miles (TOTAL)	5.41
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	1.53
• Native Road (Miles)	1.93
• Primitive Road (Miles)	1.94
Trail Miles (TOTAL)	1.07

FACTS	Patoka River NWR
Parking Lot (square feet)	83,306
Unit Acreage	5,587
Access Point	State Road 64
Main activities	Environmental Education, Fishing, Hunting, Photography and Wildlife Observation
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	George Rogers Clark National Historic Park (20-NW); Hoosier National Forest (23-E)
Transportation Hub (miles away-as the crow flies)	Evansville, IN (34)
Gateway Community (miles away-as the crow flies)	Oakland City, IN (1)
Scenic Byway	Ohio River Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

U.S. Fish and Wildlife Service

National Fish Hatchery Fact Sheet

Pendills Creek National Fish Hatchery



FACTS	Pendills Creek NFH
Road Miles (TOTAL)	0.82
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.23
• Gravel Road (Miles)	0.59
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	0.1

FACTS	Pendills Creek NFH
Parking Lot (square feet)	42,497
Unit Acreage	85
Access Point	Lake Shore Drive
Main activities	Fishing
Special Events	Children's Fishing Event (June), Open house events (varies)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Hiawatha National Forest (1-S); Pictured Rocks National Lakeshore (59-W)
Transportation Hub (miles away-as the crow flies)	Sault Ste. Marie, MI (35)
Gateway Community (miles away-as the crow flies)	Bay Mills Township, MI (1)
Scenic Byway	Whitefish Bay Scenic Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Lack of safe pedestrian access
	Visitor orientation to and within unit
Habitat Fragmentation	No
Animal-Vehicle collisions	Deer (non-endangered specie) on highway
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle trail to unit
	Parking Management Solutions
Most important enhancement priority	Bicycle trail to unit
Other	Need larger parking area

Refuge	Transit Distance	Trail Distance	Priority
Pendills Creek NFHs *Brimley, MI*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- The station is located far from population centers and lacks transit service in close proximity.

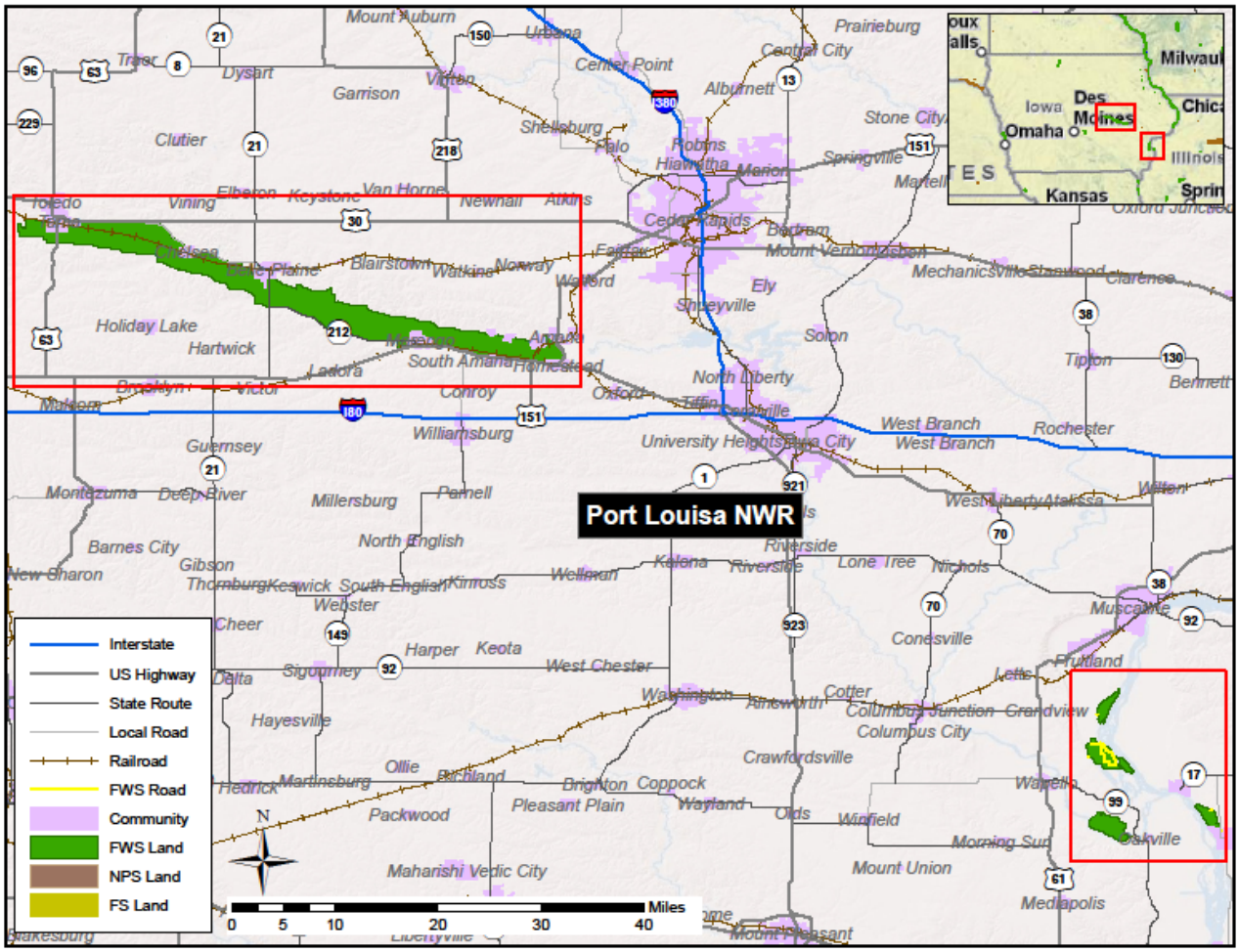
Opportunities for Future ATS:

- The hatcheries' greatest challenges funding and staffing shortages, lack of safe pedestrian access, and visitor orientation to and within the station. Other challenges include transportation infrastructure conditions, bus parking, and signage.
- The hatcheries would like to add bicycle trails for access to the station.
- The hatchery would also like to explore parking management solutions, including a larger parking area to handle some of its higher visitation events that attract up to 400 people.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Port Louisa National Wildlife Refuge



FACTS	Port Louisa NWR
Road Miles (TOTAL)	18.90
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	0.05
• **Gravel Road (Miles)**	10.07
• **Native Road (Miles)**	8.78
• **Primitive Road (Miles)**	-

FACTS	Port Louisa NWR
Trail Miles (TOTAL)	2.02
Parking Lot (square feet)	198,858
Unit Acreage	8,375
Access Point	County Hwy 62 to its end on X61
Main activities	Fishing and Wildlife Observation
Special Events	Running Wild (August); Migratory Bird day (May)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Herbert Hoover National Historic Site (28-E); Mark Twain National Forest (195-S)
Transportation Hub (miles away-as the crow flies)	Muscatine, IA (18)
Gateway Community (miles away-as the crow flies)	Wapello, IA (6)
Scenic Byway	Great River Road (National Scenic Byway)
Air quality Non-Attainment Area	None
Main transportation challenges identified	Improve hiking trails and auto tour road
Habitat Fragmentation	No
Animal-Vehicle collisions	Reptiles and amphibians (state listed species) along Louisa division roads
Safety Concern for visitors accessing the unit/Visitor center	Right turn lane is needed
Enhancements identified to help visitor program	Pedestrian trails to within unit
	Bicycle trail to and within unit
	Water - Access facilities
	Improved signage for orientation to and within unit
Most important enhancement priority	Pedestrian trails

Refuge	Transit Distance	Trail Distance	Priority
Port Louisa NWR *Wapello, IA*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- Due to its location and lack of transit service, most visitors do not use transit or trails to access the site.
- Ten percent of visitors access the site through water-based transportation modes.

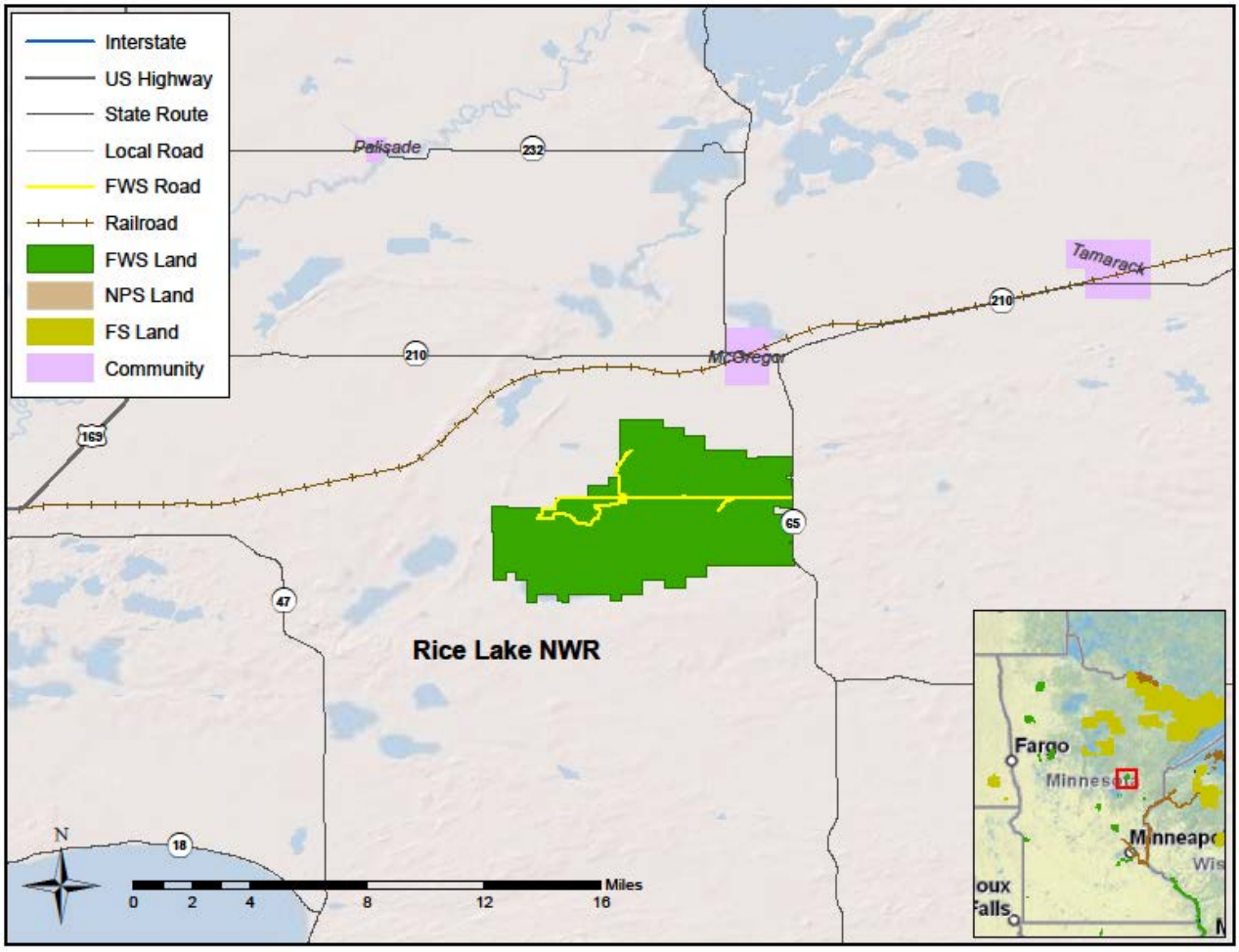
Opportunities for Future ATS:

- The greatest needs include pedestrian and bicycle trails for access to and travel within the refuge. Other improvements include improved signage, promotion and marketing, and water-access facilities.
- The refuge would benefit most from promotion of existing ATS connections, improved pedestrian trails or paths to access the station, and improved signage for visitor orientation.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Rice Lake National Wildlife Refuge



FACTS	Rice Lake NWR
Road Miles (TOTAL)	21.99
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.13
• Gravel Road (Miles)	17.56
• Native Road (Miles)	4.30
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	5.78

FACTS	Rice Lake NWR
Parking Lot (square feet)	132,703
Unit Acreage	18,300
Access Point	Hwy 65
Main activities	Hunting, Fishing Wildlife Observation, Photography and Interpretation
Special Events	Family Fun Day (2nd Friday in June); Disabled Access Deer Hunt (2nd Weekend in October)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chippewa National Forest (35-NW); Saint Croix National Scenic River (50-SE)
Transportation Hub (miles away-as the crow flies)	Brainerd, MN (57)
Gateway Community (miles away-as the crow flies)	McGregor, MN (6)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Lack of safe pedestrian access
	Orientation to the unit.
Habitat Fragmentation	Old crop fields needing reforestation
Animal-Vehicle collisions	White-tailed deer (non-endangered specie) on Hwy 65 adjacent to unit
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Parking Management Solutions
	Improved signage for orientation to and within unit
Most important enhancement priority	Improved signage to unit

Refuge	Transit Distance	Trail Distance	Priority
Rice Lake NWR *McGregor, MN*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- The refuge is located in a rural area, far from population centers and with no nearby transit service, limiting the ATS access options.

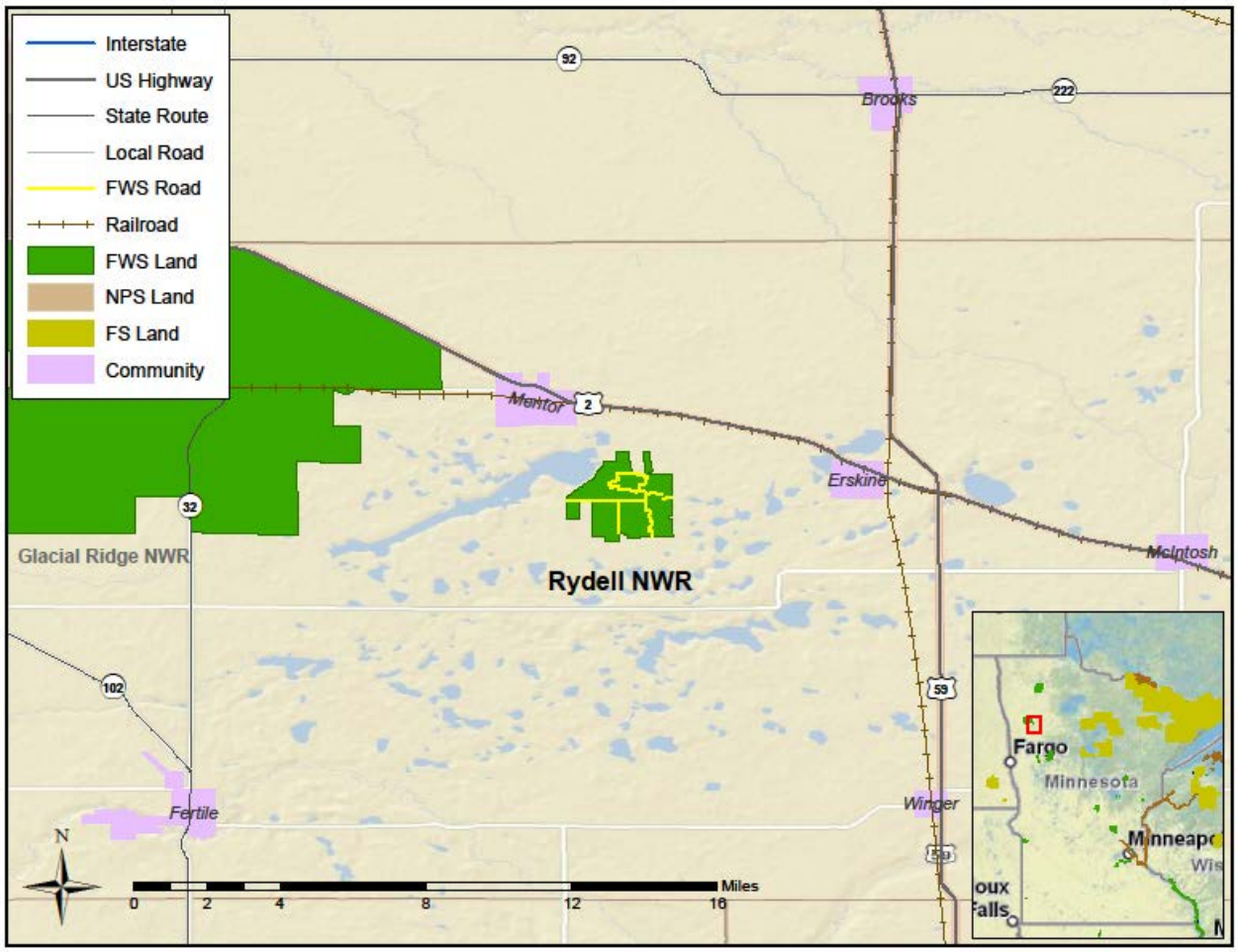
Opportunities for Future ATS:

- The refuge's greatest challenges are lack of safe pedestrian access and staff capacity shortages. They also face challenges of funding shortages, signage, and visitor orientation.
- The refuge may benefit from improved signage for orientation to and within the station, and parking management solutions.
- The refuge anticipates greater visitation in the future from school groups or organized birding groups. Transit may be able to assist these visitors on a program-by-program basis.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Rydell National Wildlife Refuge



FACTS	Rydell NWR
Road Miles (TOTAL)	9.47
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.14
• Gravel Road (Miles)	7.43
• Native Road (Miles)	0.70
• Primitive Road (Miles)	1.20

FACTS	Rydell NWR
Trail Miles (TOTAL)	4.93
Parking Lot (square feet)	118,663
Unit Acreage	800
Access Point	Polk County Road 210
Main activities	Wildlife Observation, Photography, Environmental Education and Interpretation
Special Events	Wolves and their habitat (2010); Live animals - Interesting facts (2010); Star lab (2009)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chippewa National Forest (67-E); Voyageurs National Park (155-NE)
Transportation Hub (miles away-as the crow flies)	Crookston, MN (30)
Gateway Community (miles away-as the crow flies)	Erskine, MN (8)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Road conditions surrounding unit
	Condition of roads leading to the unit
Habitat Fragmentation	Mature maple/Basswood Forest
Animal-Vehicle collisions	No
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Bicycle and Pedestrian Trails to the unit
	Bicycle racks
Most important enhancement priority	-
Other	County Road accessing the Refuge is graveled and is very dusty. During spring thaw road is nearly impassable.

Refuge	Transit Distance	Trail Distance	Priority
Rydell NWR *Erskine, MN*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- Greyhound bus service runs in the general vicinity of the refuge (with stations at least 3 miles away).
- The Tri-Valley Heartland Express Bus (T.H.E. BUS) provides subscription and dial a ride service around Crookston, Thief River Falls, and Bagley (all within 30 miles of the refuge).

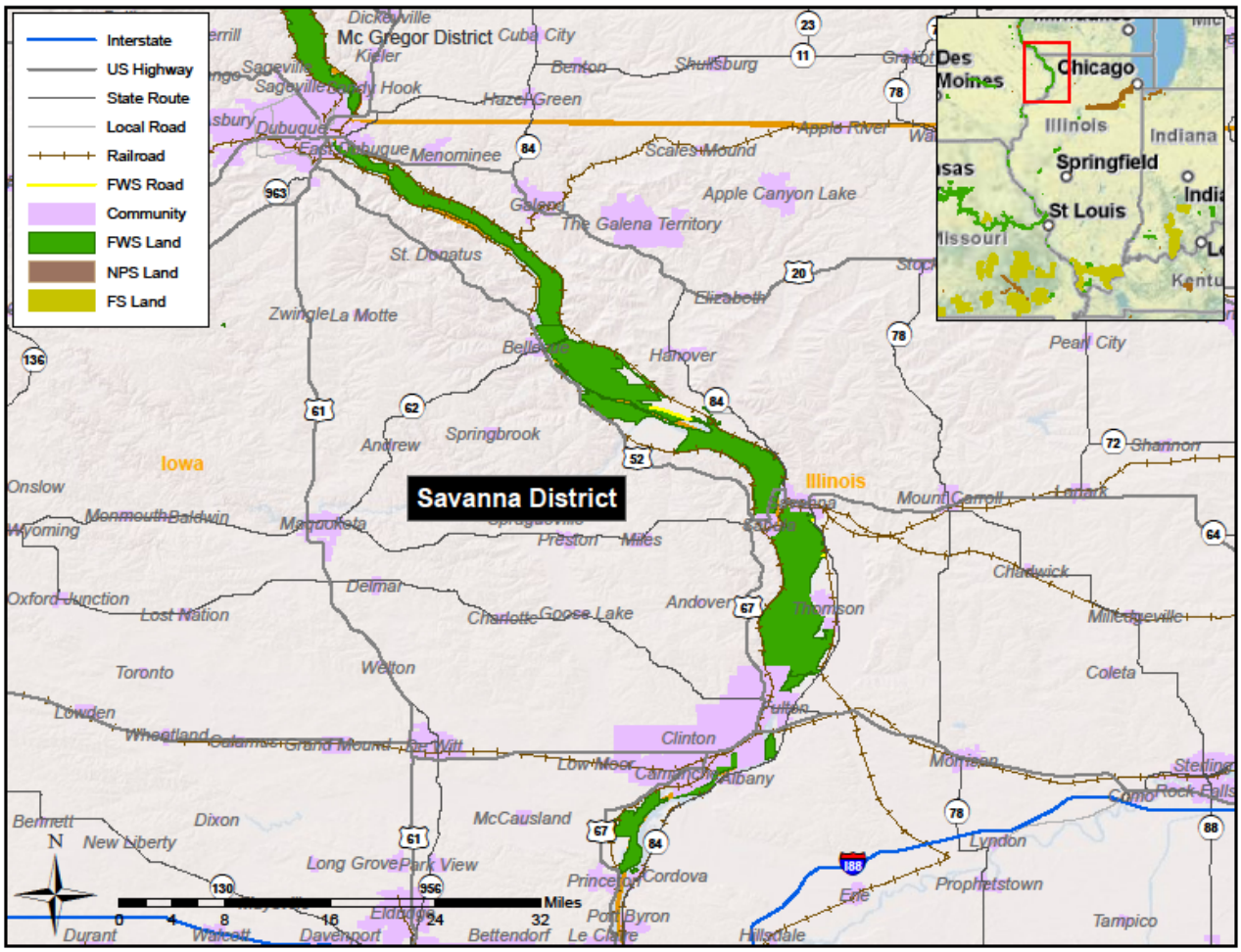
Opportunities for Future ATS:

- The station's most critical challenges are funding and staffing shortages and unsafe road conditions.
- Improvements to the county road leading to the refuge, including new pedestrian and bicycle paths, would benefit the station. The gravel road is very dusty and becomes impassable during the spring thaw. Road improvements must occur before ATS access would be feasible.
- The station would like to install bicycle racks to accommodate visitors who access the site by bicycle (approximately five percent).

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Savannah District



FACTS	Savanna District
Road Miles (TOTAL)	59.49
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	22.66
• Gravel Road (Miles)	25.27
• Native Road (Miles)	11.55
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	1.78
Parking Lot (square feet)	250,567

FACTS	Savanna District
Unit Acreage	-
Access Point	Riverview Road
Main activities	Hunting, Fishing, Wildlife Observation, Photography, Environmental Education and Interpretation
Special Events	Mig Bird Day (May); Kids Fishing Day (Sept); GeoCaching (March); Bird Tours (monthly); Golf cart tours (bi-monthly)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Illinois and Michigan Canal National Heritage Corridor (65-SE); Joilet Army Ammunition Plant (110-SE)
Transportation Hub (miles away-as the crow flies)	Clinton, IA (16)
Gateway Community (miles away-as the crow flies)	Savanna, IL (6)
Scenic Byway	Great River Road (National Scenic Byway)
Air quality Non-Attainment Area	None
Main transportation challenges identified	Condition of existing transportation assets
Habitat Fragmentation	Yes
Animal-Vehicle collisions	Deer, raccoon, skunk, opossum, turtles, birds, snakes (Some listed as state threatened species) along adjacent state and local highways
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-
Other	Rural area with no local public transportation. A short bus would allow the unit to provide greater opportunities for Refuge programs.

Refuge	Transit Distance	Trail Distance	Priority
Upper Mississippi NWR, Savanna District *Savanna, IL*	More than 3 miles	Direct connection	Low

Existing or Planned ATS:

- The Great River State Trail runs directly through the District.
- The refuge completed a bike trail in 2010 that has increased visitation by bicycle. Approximately 15 percent of visitors access the station by bicycle.

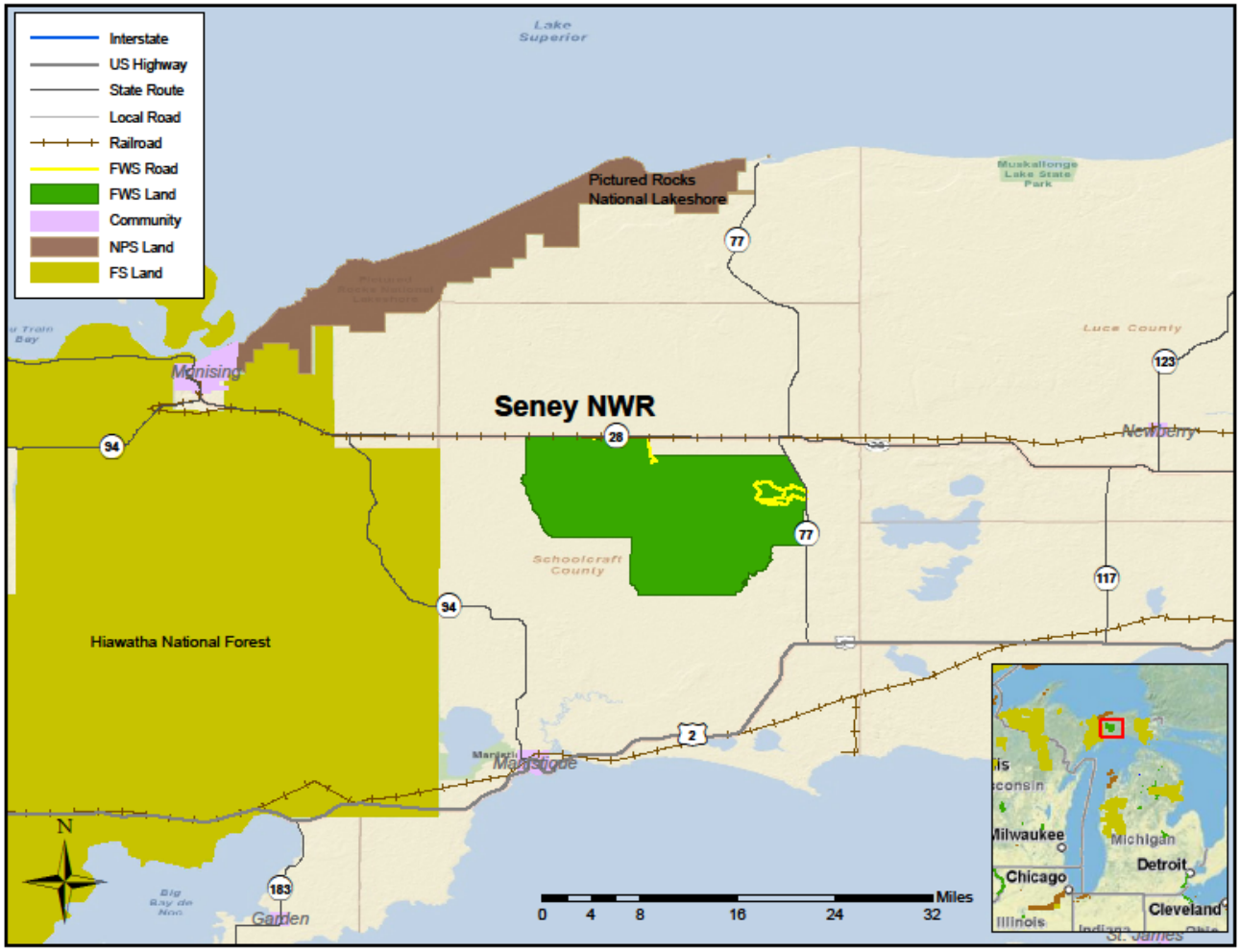
Opportunities for Future ATS:

- The refuge's greatest challenges stem from their rural location: the lack of transit service, the distance from population centers, and the condition of existing transportation infrastructure.
- There may be a future opportunity to further extend the bicycle trail.
- A small transit vehicle may offer benefits to the refuge for its visitor programs.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Seney National Wildlife Refuge



FACTS	Seney NWR
Road Miles (TOTAL)	94.25
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	1.41
• Gravel Road (Miles)	63.22
• Native Road (Miles)	25.57
• Primitive Road (Miles)	4.04

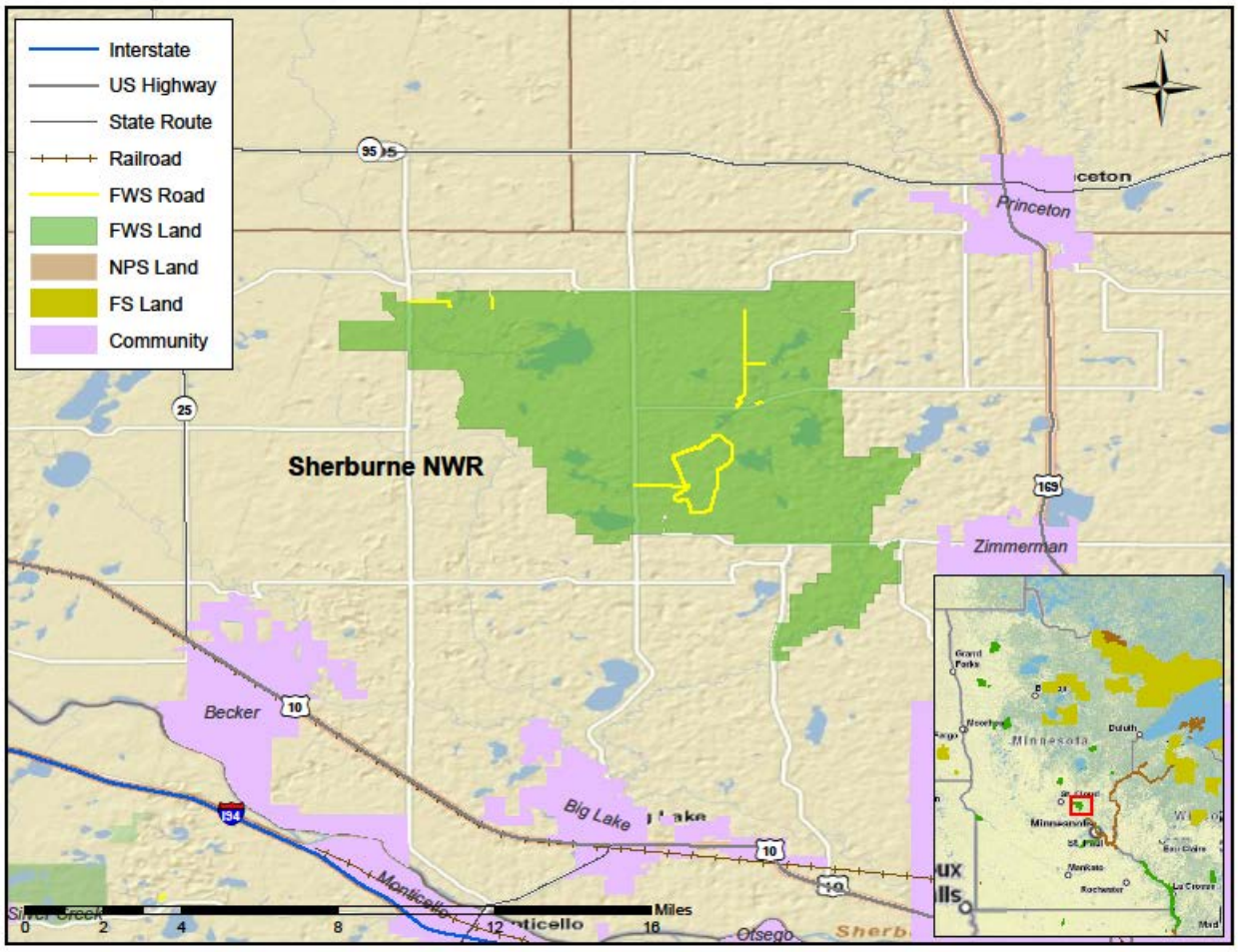
FACTS	Seney NWR
Trail Miles (TOTAL)	8.91
Parking Lot (square feet)	112,901
Unit Acreage	95,212
Access Point	Highway M-77
Main activities	Wildlife Observation
Special Events	Kids Fishing Day (2nd week in June); Scout Day (Sept)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Hiawatha National Forest (5-W); Pictured Rocks National Lakeshore (15-N)
Transportation Hub (miles away-as the crow flies)	Manistique, MI (36)
Gateway Community (miles away-as the crow flies)	Seney, MI (6)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Maintaining internal roads
Habitat Fragmentation	No
Animal-Vehicle collisions	Deer and some eagles (non-endangered species) on state highways outside unit
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Bicycle trails for access to the unit
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Seney NWR *Seney, MI*	More than 3 miles	More than 3 miles	Low
Existing or Planned ATS: • Due to its rural location and lack of transit service, there are no ATS options for access to this refuge. • The refuge offers some guided auto tours in which participants can ride in refuge vehicles; additional participants use their own vehicles and participate via radios. **Opportunities for Future ATS:** • The station would benefit most from bicycle trails for access to the station. • The refuge could further expand and promote the use of refuge vehicles for environmental education and interpretive programs. • Transportation challenges include lack of transit service, bus parking, funding and staffing shortages, and lack of safe pedestrian and vehicle access.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Sherburne National Wildlife Refuge



FACTS	Sherburne NWR
Road Miles (TOTAL)	48.98
Concrete Road (Miles)	-
Asphalt Road (Miles)	0.10
Gravel Road (Miles)	26.06
Native Road (Miles)	18.21
Primitive Road (Miles)	4.61
Trail Miles (TOTAL)	9.43

FACTS	Sherburne NWR
Parking Lot (square feet)	334,281
Unit Acreage	30,700
Access Point	County Road 9
Main activities	Wildlife Observation, Photography, Environmental Education and Interpretation.
Special Events	Wildlife Festival (September/October); Winter Fest (February)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mississippi National River and Recreation Area (15-SE); Chippewa National Forest (100-N)
Transportation Hub (miles away-as the crow flies)	St. Cloud, MN (31)
Gateway Community (miles away-as the crow flies)	Zimmerman, MN (10)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Unsafe road conditions surrounding unit
	Lack of bicycle lanes along County roads and access to the Northstar commuter rail
Habitat Fragmentation	Yes, deer (non-endangered species) along all roads
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	New transit service for access to the unit
	Pedestrian trails/paths for access to unit
	Bicycle trails
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Sherburne NWR *Zimmerman, MN*	More than 3 miles	More than 3 miles	Medium

Existing or Planned ATS:

- The Northstar Commuter Rail is located 15 miles from the refuge, with connections to the Twin Cities.
- Recreational trails in the town of Princeton are located approximately nine miles from the refuge. Approximately one percent of visitors currently come to the refuge by bicycle.

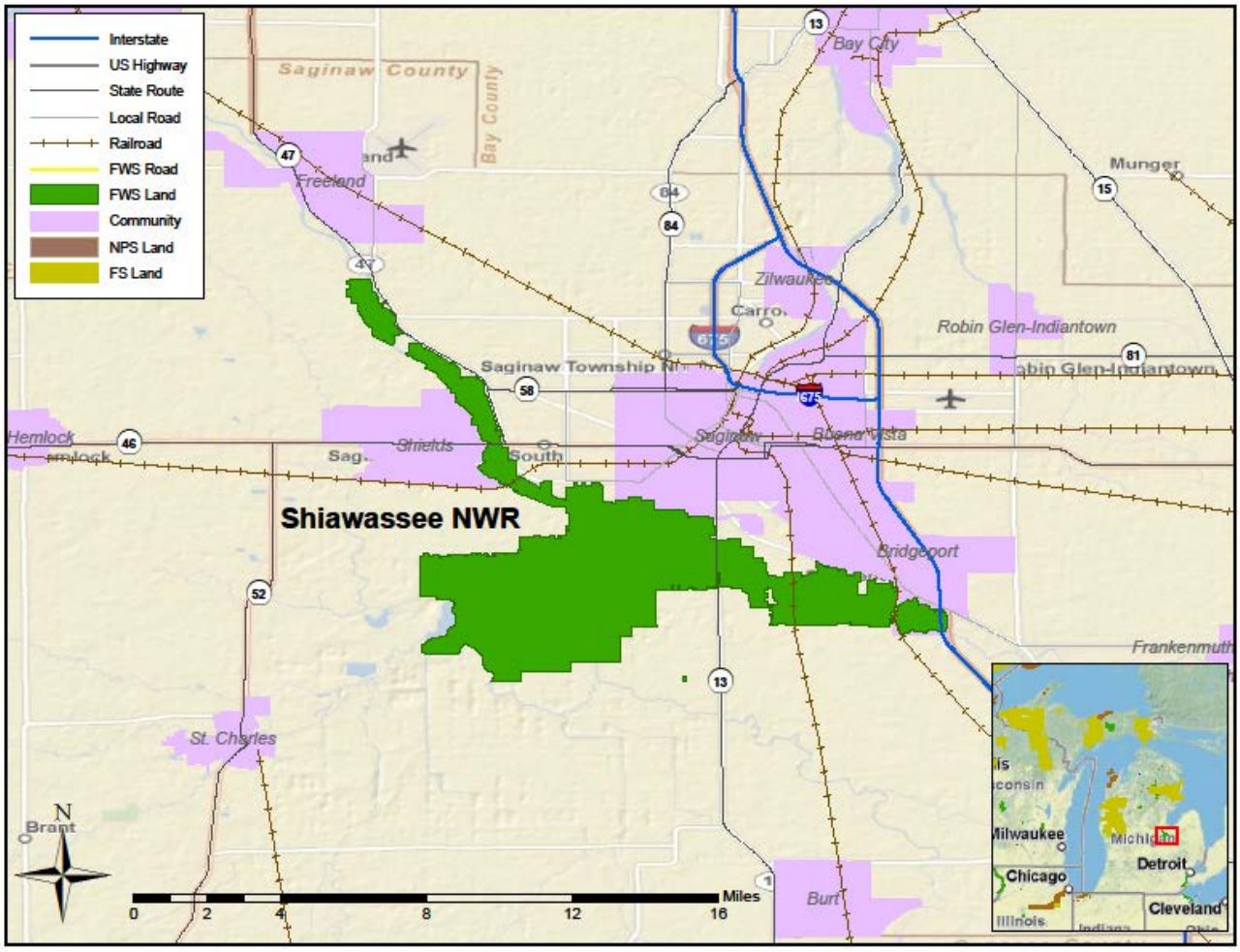
Opportunities for Future ATS:

- Transit assistance at special events, such as the Wildlife Festival and Winter Fest.
- There may be opportunities to run a shuttle from the commuter rail station to the refuge during special events or programs to allow access to the refuge without the use of a personal vehicle.
- Improve and ensure safety of non-motorized trails or bicycle lanes to access the station, such as from the town of Princeton. A significant number of the visitors originate from within 10 miles of the station.
- Refuge may benefit from enhanced study of transportation needs, transit connections, and addition of new bicycle lanes.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Shiawassee National Wildlife Refuge



FACTS	Shiawassee NWR
Road Miles (TOTAL)	32.64
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	16.08
• Native Road (Miles)	13.65
• Primitive Road (Miles)	2.91
Trail Miles (TOTAL)	13.61
Parking Lot (square feet)	153,616
Unit Acreage	5,000

FACTS	Shiawassee NWR
Access Point	Maple Street
Main activities	Hunting, Fishing, Wildlife Observation, Environmental Education and Interpretation
Special Events	Open House (September); Kids Free Fishing Day (June) and Wild Goose Chase 5K (September)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Huron National Forest (65-N); Sleeping Bear Dunes National Lakeshore (140-NW)
Transportation Hub (miles away-as the crow flies)	Saginaw, MI (8)
Gateway Community (miles away-as the crow flies)	Saginaw, MI (8)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Appropriate and effective signage
	Visitor orientation to and within unit
	Unsafe road conditions surrounding unit
	Severely degraded roads leading to refuge public use facilities.
	Most transportation issues are from poor or nonexistent infrastructure off refuge, deterring visitors from coming here.
Habitat Fragmentation	Blanding's turtle, eastern fox snake, many reptiles/amphibians
Animal-Vehicle collisions	Blanding's turtle, eastern fox snake, many reptiles/amphibians (State listed-threatened species) near bridges over rivers, roads with wetlands on both sides
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle and pedestrian trail to and within unit
	Improved signage for orientation to and within unit
Most important enhancement priority	Pedestrian trail for access to unit

Refuge	Transit Distance	Trail Distance	Priority
Shiawassee NWR *Saginaw, MI*	½ - 1 mile	Less than ½ mile	High

Existing or Planned ATS:

- Saginaw Transit Authority offers regional bus service near the refuge every 40 minutes, six days per week. The bus stop is 6-7 blocks from Green Point Environmental Learning Center (ELC).
- The Saginaw Valley Rail Trail is located approximately two to three miles from the refuge, and recent sidewalk improvements (by the County) have connected the trail to within 100 yards of a refuge trailhead. Visitation by walking and biking to the trailhead has increased over the past few years.
- The City of Saginaw and refuge friends groups have submitted several Public Lands Highway Discretionary applications for road improvements to a section of Gabriel Road/Maple Street for access to the ELC, but the applications have not been selected.
- Road conditions leading to the refuge are very poor and unsafe, which actively deters motorized and non-motorized visitors. Roads in the area are considered to be in poor condition for bicycling.
- The refuge has strong partnerships with the City of Saginaw and Saginaw County for transportation and non-transportation projects.

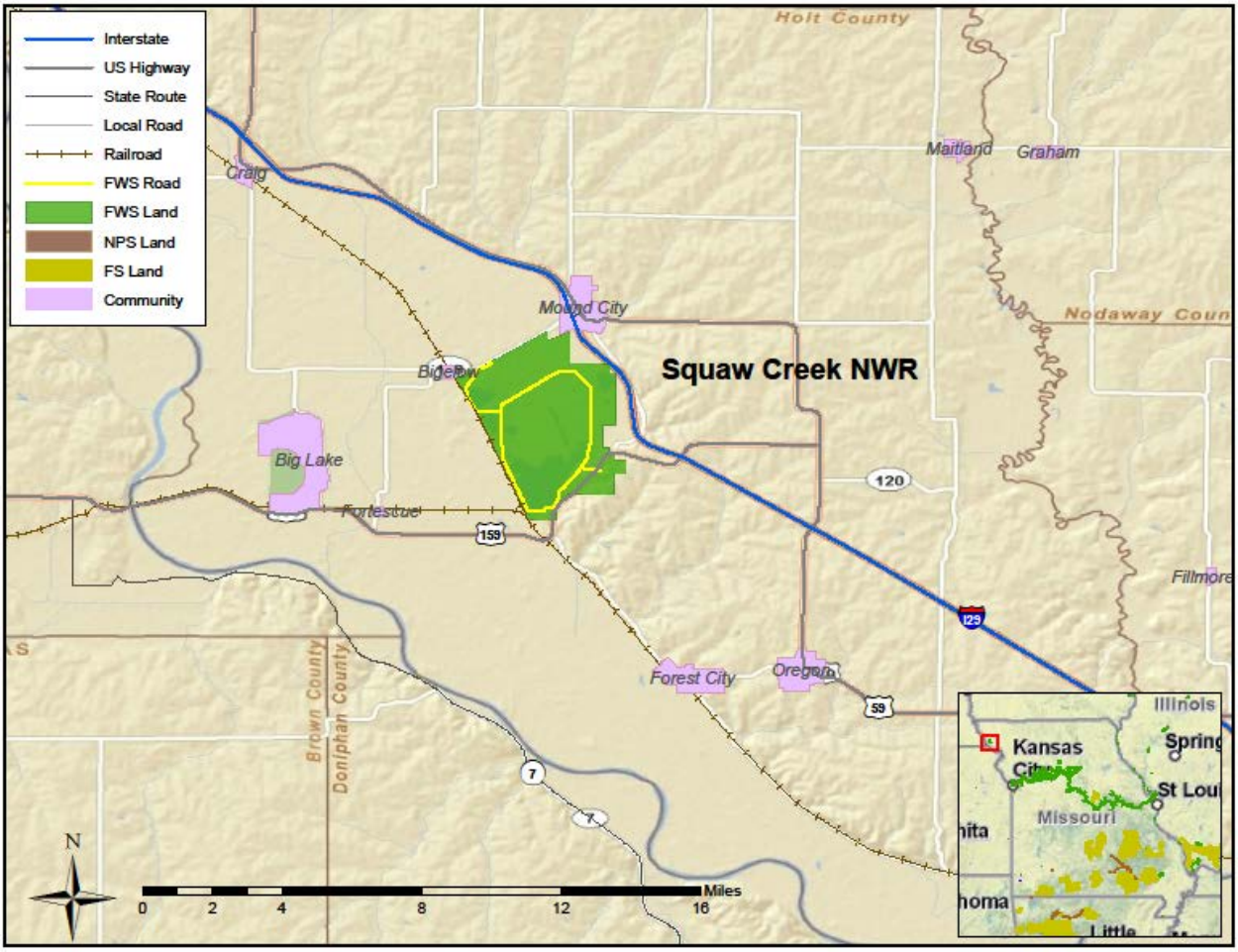
Opportunities for Future ATS:

- Visitors can currently use transit, pedestrian, or bicycle modes to access the refuge, but these connections may be unsafe, inconvenient, or inappropriate for some visitors. Several simple improvements, such as sidewalk extension near the bus stop and near the trailhead, would significantly increase non-motorized and transit access.
- To better connect existing transit to the refuge, partner with Saginaw Transit Authority to add bus stops closer to the ELC and promote the use of transit for refuge access.
- Connect the Saginaw Valley Rail Trail and Saginaw County sidewalks with the refuge trailhead (100 yards) and provide signage along the Rail Trail to orient users to the refuge trails.
- Several schools within one mile of the ELC have discontinued field trips in recent years, in part due to costs of buses. These schools may be able to walk to the refuge with improved infrastructure.
- Refuge staff would also like improved signage for orientation to and within the station.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Squaw Creek National Wildlife Refuge



FACTS	Squaw Creek NWR
Road Miles (TOTAL)	30.00
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.72
• Gravel Road (Miles)	13.26
• Native Road (Miles)	15.65
• Primitive Road (Miles)	0.37
Trail Miles (TOTAL)	1.54

FACTS	Squaw Creek NWR
Parking Lot (square feet)	99,802
Unit Acreage	7,350
Access Point	Highway 159
Main activities	Wildlife Observation, Photography, Environmental Education and Interpretation.
Special Events	Eagle Days (Early December); Family Day (October); Migratory Bird Day (May)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Homestead National Monument (84-W); Mark Twain National Forest (185-SE)
Transportation Hub (miles away-as the crow flies)	St. Joseph, MO (37)
Gateway Community (miles away-as the crow flies)	Mound City, MO (5)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Bus parking
	Condition of existing transportation assets
Habitat Fragmentation	No
Animal-Vehicle collisions	White tail deer (non-endangered specie) along Hwy 159, I-29 and Hwy 118
Safety Concern for visitors accessing the unit/Visitor center	Left turn lane is needed
Enhancements identified to help visitor program	Pedestrian trails to and within unit
	Bicycle trails within unit
	Turning lanes for access to unit
	Parking management solutions
Most important enhancement priority	New transit service
Other	Tour busses

Refuge	Transit Distance	Trail Distance	Priority
Squaw Creek NWR *Forest City, MO*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- There is an Amtrak station located more than 3 miles from the refuge.
- The refuge is located very far from population centers and has no transit service nearby, limiting the existing ATS.

Opportunities for Future ATS:

- Transportation challenges include bus parking, funding and staffing shortages, and condition of existing transportation assets.
- One of the most critical needs is parking management solutions, particularly for parking tour buses. There may be a need for better circulation of buses or internal transit within the site.
- The refuge could benefit from pedestrian and bicycle trails within the station and pedestrian trails for access to the station.
- The refuge has several large events that attract high visitation, such as Eagle Days in December with up to 7,500 visitors. The refuge uses partnerships to expand parking capacity, but they may be able to rent transit vehicles for use during these events.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

St. Croix Wetland Management District

FACTS	St. Croix WMD
Road Miles (TOTAL)	1.37
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	0.12
• **Gravel Road (Miles)**	0.45
• **Native Road (Miles)**	-
• **Primitive Road (Miles)**	0.80
Trail Miles (TOTAL)	0.87
Parking Lot (square feet)	232,010
Unit Acreage	6,760
Access Point	95th Street
Main activities	Hunting
Special Events	Boy Scout Invasive Species Event (October); Nature walks (Summer and Winter): Plant a Prairie Plug (May)
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	St. Paul, MN (35)
Gateway Community (miles away-as the crow flies)	New Richmond, WI (5)
Scenic Byway	-

FACTS	St. Croix WMD
Air quality Non-Attainment Area	None
Main transportation challenges identified	Resource conflicts with cars and bicycles
	Lack of safe pedestrian access
	Condition of existing transportation assets
	Appropriate and effective signage
	Unsafe road conditions surrounding unit
	Hazard mitigation. Public road system is not designed for foot or bike traffic
	Congestion problem on roads leading to unit
Habitat Fragmentation	All species. Public road crisscross district at 1 mile or less intervals
Animal-Vehicle collisions	Bear, deer and turkey (non-endangered species) on road right-of-way
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Parking Management Solutions
	Improved signage for orientation to unit
Most important enhancement priority	Bicycle and pedestrian safety
Other	Public roads cannot handle moderate to large traffic flows

Refuge	Transit Distance	Trail Distance	Priority
St. Croix WMD *New Richmond, WI*	More than 3 miles	Close connection	Low

Existing or Planned ATS:

- The Willow State Park Trail runs within close proximity to several WPAs.
- The station is located in a rural setting with no transit surface, limiting the ATS access options.
- The station currently uses transit for special events, such as Boy Scout Invasive Species Event in October and Plant a Prairie Plug in May, which attract up to 500 visitors.

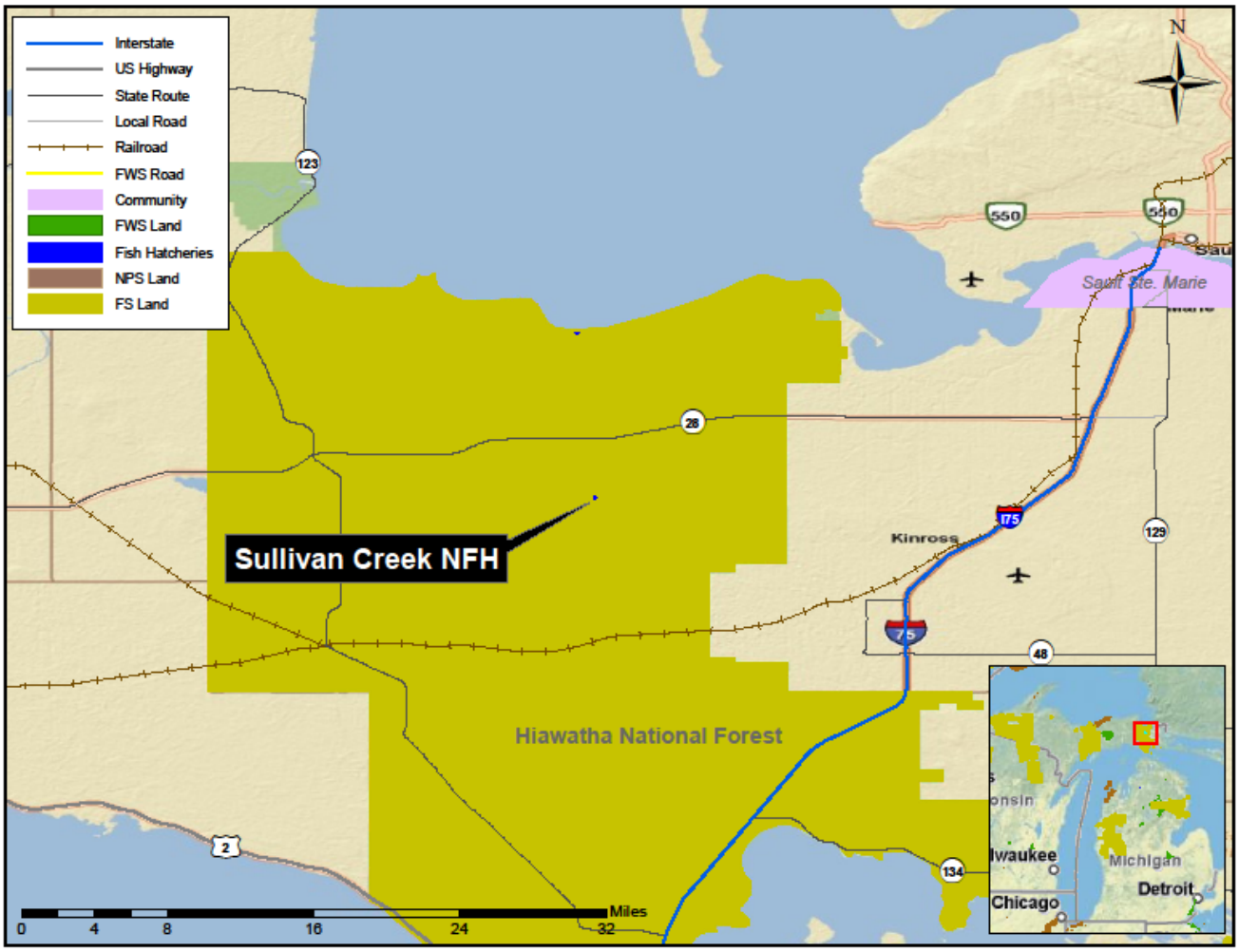
Opportunities for Future ATS:

- The station's most pressing transportation challenges include resource conflicts with vehicles, funding and staffing shortages, safe pedestrian access, road conditions within and near the station, and appropriate signage.
- The roads near the stations are not designed for pedestrian or bicycle traffic, and therefore hazard mitigation would be critical to increasing access by alternative modes. Widening roads to include a bike lane would be helpful.
- The station could benefit from parking management solutions and improved signage for orientation to the WPAs.
- As the WPAs host more public events, the station staff anticipate greater interest in the WPAs in general.

U.S. Fish and Wildlife Service

National Fish Hatchery Fact Sheet

Sullivan Creek National Fish Hatchery



FACTS	Sullivan Creek NFH
Road Miles (TOTAL)	0.42
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.21
• Gravel Road (Miles)	0.21
• Native Road (Miles)	-
• Primitive Road (Miles)	-

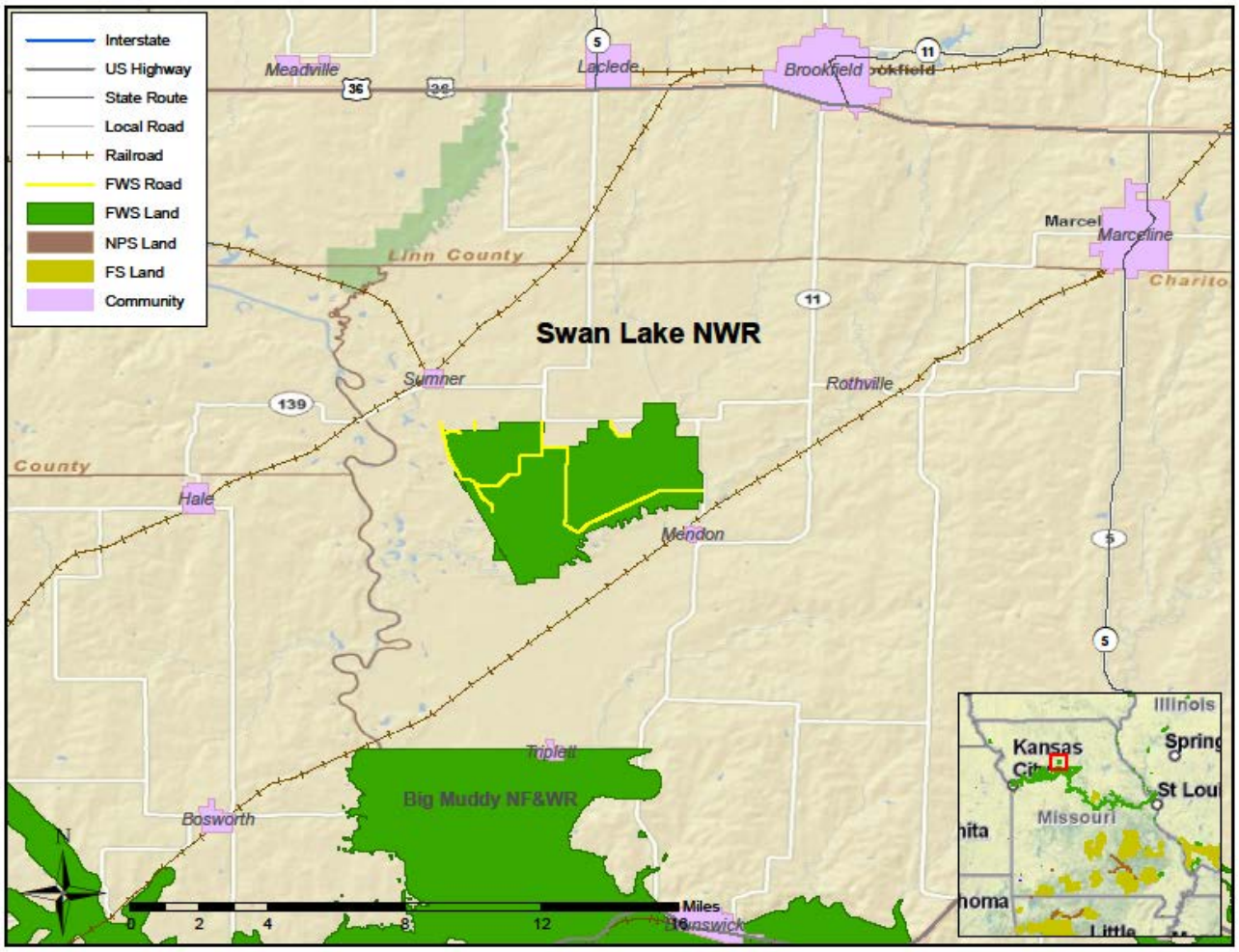
FACTS	Sullivan Creek NFH
Trail Miles (TOTAL)	-
Parking Lot (square feet)	25,373
Unit Acreage	7
Access Point	Forest Service Road 3131
Main activities	Hatchery Tours
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Hiawatha National Forest (1-S); Pictured Rocks National Lakeshore (62-W)
Transportation Hub (miles away-as the crow flies)	Sault Ste. Marie, MI (25)
Gateway Community (miles away-as the crow flies)	Superior Township, MI (1)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Sullivan Creek NFHs *Brimley, MI*	More than 3 miles	More than 3 miles	Low
Existing or Planned ATS: • The station is located far from population centers and lacks transit service in close proximity. **Opportunities for Future ATS:** • The hatcheries' greatest challenges funding and staffing shortages, lack of safe pedestrian access, and visitor orientation to and within the station. Other challenges include transportation infrastructure conditions, bus parking, and signage. • The hatcheries would like to add bicycle trails for access to the station. • The hatchery would also like to explore parking management solutions, including a larger parking area to handle some of its higher visitation events that attract up to 400 people.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Swan Lake National Wildlife Refuge



FACTS	Swan Lake NWR
Road Miles (TOTAL)	24.67
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	24.43
• Native Road (Miles)	-
• Primitive Road (Miles)	0.24

FACTS	Swan Lake NWR
Trail Miles (TOTAL)	0.40
Parking Lot (square feet)	136,661
Unit Acreage	10,670
Access Point	Route CC
Main activities	Hunting, Fishing and Wildlife Observation
Special Events	First Fridays (Spring and Summer); Green Wing Day (August); Swing the Gates Open (March)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mark Twain National (72-SE); Tallgrass Prairie National Preserve (198-SW)
Transportation Hub (miles away-as the crow flies)	Kansas City, MO (115)
Gateway Community (miles away-as the crow flies)	Sumner, MO (3)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Bicycle and pedestrian trails within unit
	Bicycle racks
	Improved signage for orientation to unit
	Bicycling
Habitat Fragmentation	No
Animal-Vehicle collisions	Deer, small mammals, reptiles (non-endangered species) along roadways
Safety Concern for visitors accessing the unit/Visitor center	No

Refuge	Transit Distance	Trail Distance	Priority
Swan Lake NWR *Sumner, MO*	More than 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- The station is located far from population centers and has no transit surface nearby, limiting the ATS access options.

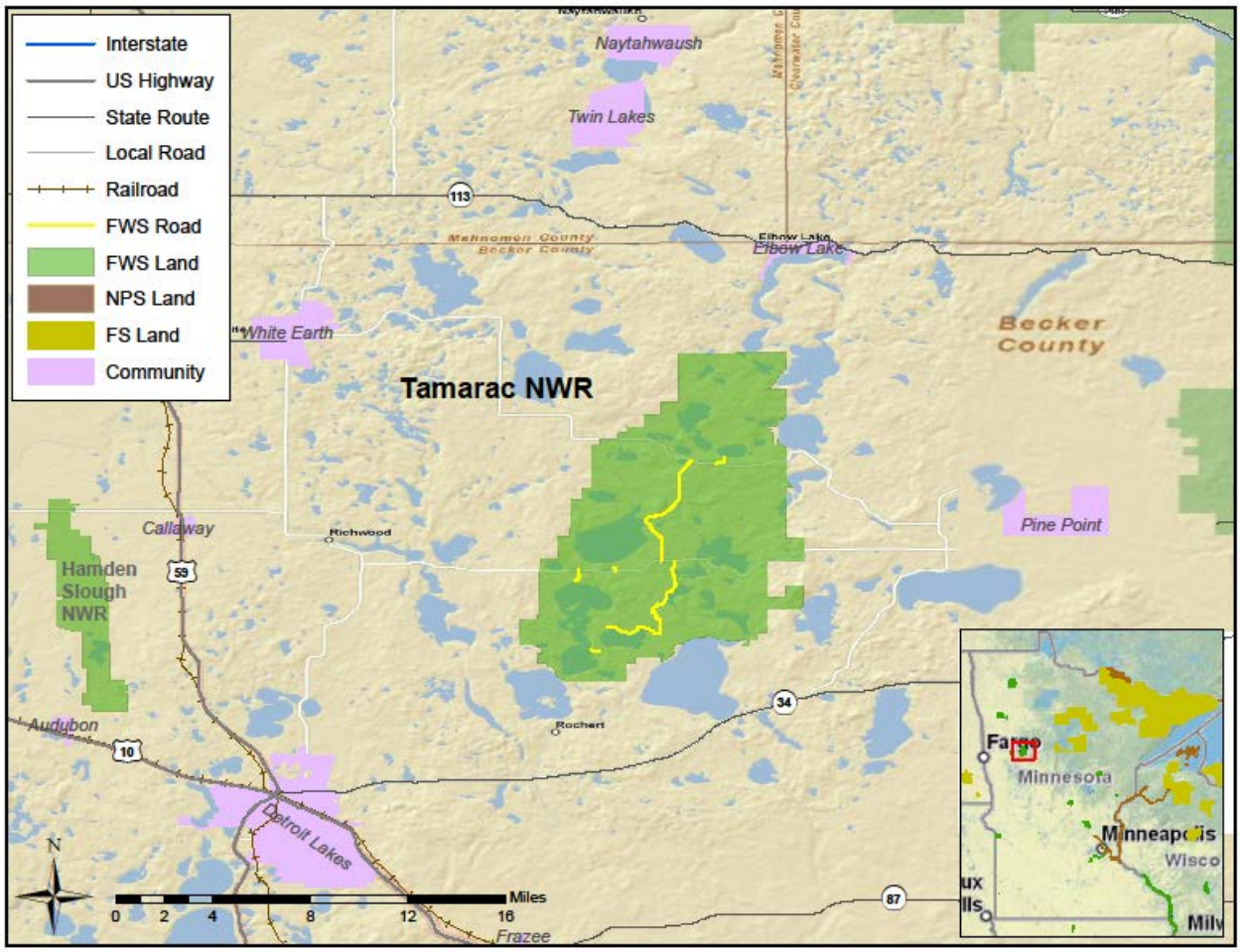
Opportunities for Future ATS:

- The station's most critical challenges are staff capacity and funding shortages and poor conditions of current transportation assets.
- The greatest opportunity for improved transportation assets would be infrastructure to accommodate bicyclists and horseback riders. The refuge would like to add new pedestrian and bicycle infrastructure within the station, such as trails and bicycle racks.
- The refuge could benefit from internal transit, new transit access to the station, and improved signage for orientation to the station.
- If there were a transit vehicle available at low or no cost, the refuge may be able to use it for special events throughout the spring and summer that attract up to 300 participants each.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Tamarac National Wildlife Refuge



FACTS	Tamarac NWR
Road Miles (TOTAL)	59.10
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.32
• Gravel Road (Miles)	31.65
• Native Road (Miles)	22.27
• Primitive Road (Miles)	4.86

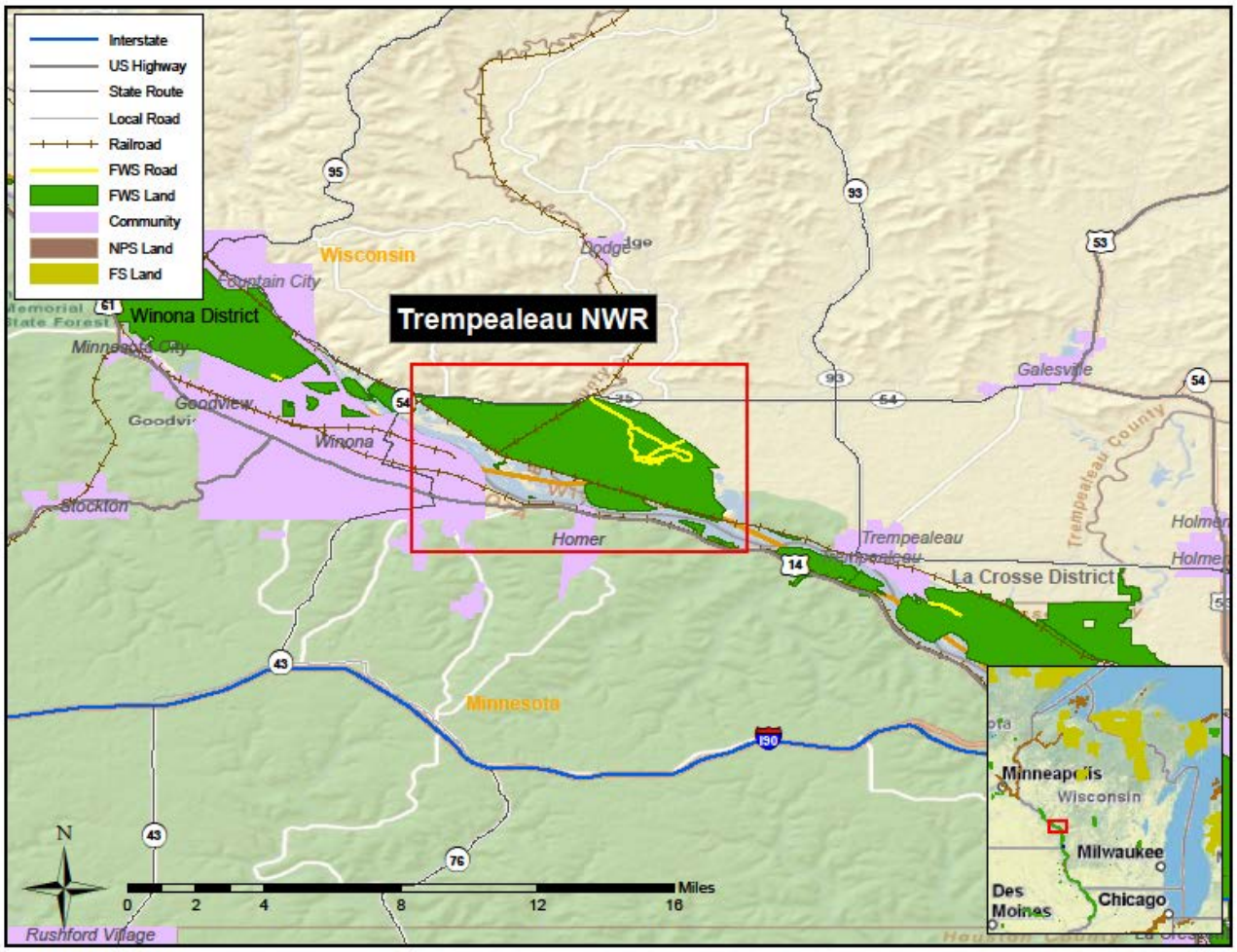
FACTS	Tamarac NWR
Trail Miles (TOTAL)	14.15
Parking Lot (square feet)	186,601
Unit Acreage	42,724
Access Point	County Road 26
Main activities	Hunting, Fishing and Wildlife Observation
Special Events	Fall Festival (October); Birding Festival (may)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chippewa National Forest (42-E); Voyageurs National Park (157-NE)
Transportation Hub (miles away-as the crow flies)	Detroit Lakes, MN (18)
Gateway Community (miles away-as the crow flies)	Detroit Lakes, MN (18)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	At-grade railroad crossing
	Road safety and maintenance issues.
Habitat Fragmentation	Wolves, migratory birds
Animal-Vehicle collisions	Deer, small mammals (non-endangered species) on main roadways
Safety Concern for visitors accessing the unit/Visitor center	None
Enhancements identified to help visitor program	Pedestrian trails within unit
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Tamarac NWR and WMD *Rochert, MN*	More than 3 miles	More than 3 miles	Low
Existing or Planned ATS: • The refuge currently uses transit for several large events, such as the Fall Festival in October and the Birding Festival in May. **Opportunities for Future ATS:** • The biggest challenges on the refuge are the distance from population centers, lack of transit service, and funding shortages. The refuge also faces road safety and maintenance issues. • The refuge could benefit from improved pedestrian paths or trails for access within the station.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Trempealeau National Wildlife Refuge



FACTS	Trempealeau NWR
Road Miles (TOTAL)	16.41
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	1.03
• Gravel Road (Miles)	12.68
• Native Road (Miles)	1.66
• Primitive Road (Miles)	1.04

FACTS	Trempealeau NWR
Trail Miles (TOTAL)	8.20
Parking Lot (square feet)	104,247
Unit Acreage	6,226
Access Point	West Prairie Road
Main activities	Wildlife Observation, Environmental Education and Interpretation
Special Events	River Education Days (mid-May); International Migratory Bird Day (Mid May); Hunt for people with disabilities (End of October)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mississippi National River and Recreation Area (75-NW); Chequamegon National Forest (85-NE);
Transportation Hub (miles away-as the crow flies)	Winona, MN (10)
Gateway Community (miles away-as the crow flies)	Trempealeau, WI (10)
Scenic Byway	Great River Road (National Scenic Byway)
Air quality Non-Attainment Area	None
Main transportation challenges identified	Road flooding issues and road maintenance costs
	The main entrance road to the refuge is subject to flooding several times a year. We need funds to construct a bridge.
Habitat Fragmentation	Yes
Animal-Vehicle collisions	Deer and songbirds (non-endangered species) along state Hwy 35/53 adjacent to the unit
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Improved signage for orientation to unit
Most important enhancement priority	Improved Highway signs

Refuge	Transit Distance	Trail Distance	Priority
Trempealeau NWR *Trempealeau, WI*	More than 3 miles	More than 3 miles	Medium

Existing or Planned ATS:

- La Crosse Transit offers bus service more than three miles from the refuge.
- The Great River State Trail has a direct connection to the refuge and offers access to a large number of visitors. Staff estimates that 20 percent of visitors walk or bicycle to the refuge, mostly along this trail.

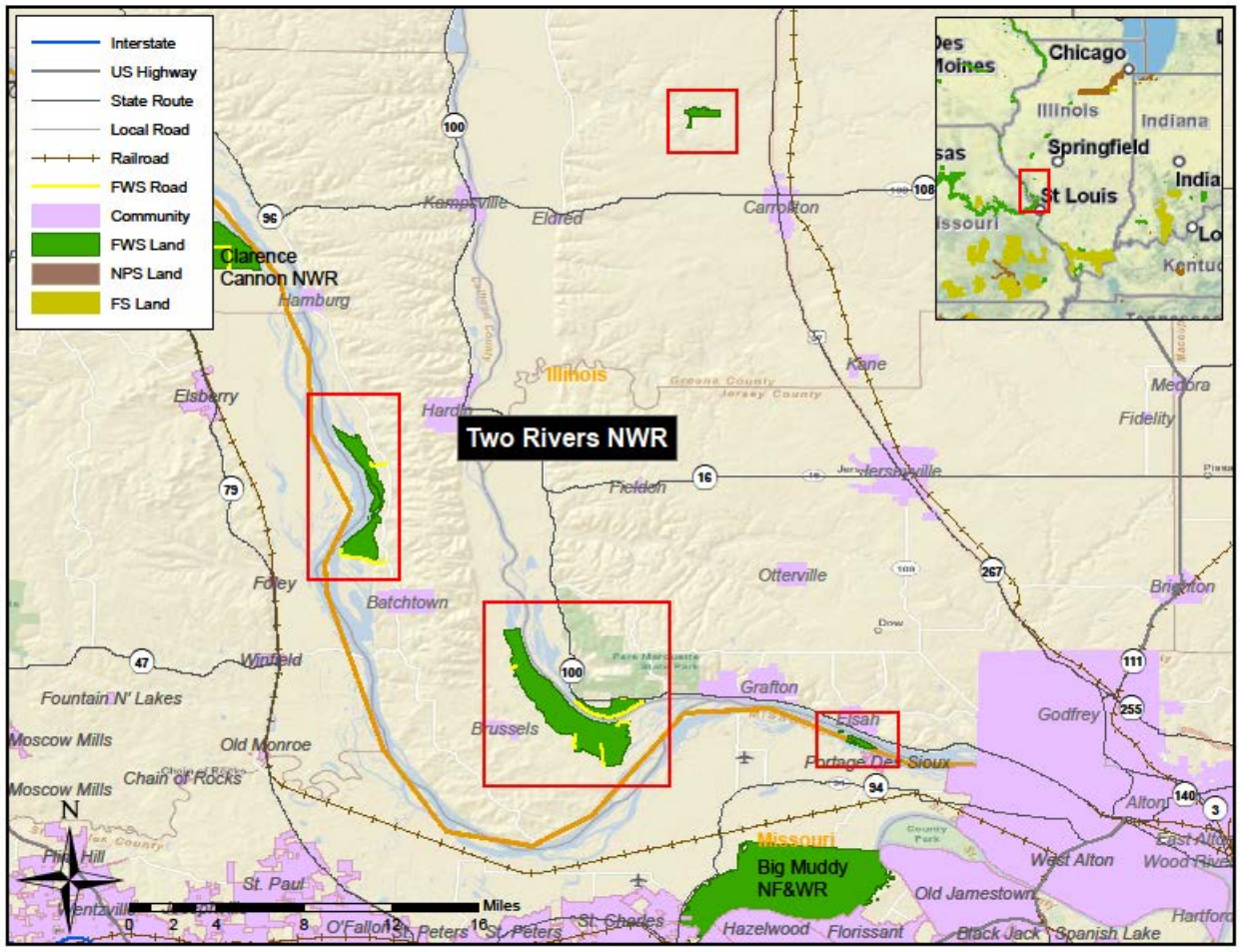
Opportunities for Future ATS:

- The refuge's greatest transportation challenges are road flooding and maintenance costs. Increased flooding is impacting refuge visitation, and they are considering a bridge along the entrance road if funds become available.
- The refuge faces a lack of transit service and distance from population centers. They also suffer from staff capacity shortages.
- The station's greatest priority for transportation improvements is improved signs along the highway for visitor orientation to the station. They could also benefit from promotion for existing ATS access (the Great River State Trail). The refuge would like to explore the use of an on-site bike sharing program.
- If there were a transit vehicle available at low or no cost (or shared with the nearby Upper Mississippi River Refuge), Trempealeau may be able to use it for special events throughout the year that attract up to 1,000 participants each.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Two Rivers National Wildlife Refuge



FACTS	Two Rivers NWR
Road Miles (TOTAL)	21.56
• **Concrete Road (Miles)**	-
• **Asphalt Road (Miles)**	0.67
• **Gravel Road (Miles)**	16.01
• **Native Road (Miles)**	4.49
• **Primitive Road (Miles)**	0.40

FACTS	Two Rivers NWR
Trail Miles (TOTAL)	0.10
Parking Lot (square feet)	145,262
Unit Acreage	8,501
Access Point	Hagen Road
Main activities	Fishing, Wildlife Observation and Photography
Special Events	Two Rivers Family Fishing Fair (Early June)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mark Twain National Forest (68-SW); Jefferson National Expansion Memorial (28-SE)
Transportation Hub (miles away-as the crow flies)	St. Louis, MO (39)
Gateway Community (miles away-as the crow flies)	Brussels, IL (4)
Scenic Byway	Meeting of the Great River Scenic Route (State/National Scenic Byway)
Air quality Non-Attainment Area	PM-2.5.1997
Main transportation challenges identified	roads & trails are negatively impacted by flooding of Mississippi and Illinois Rivers
	Primary refuge access across local river is by ferry boat. Ferries close during severe ice conditions & roads are inundated during flood events, making access to the Refuge difficult.
Habitat Fragmentation	Yes
Animal-Vehicle collisions	Deer, squirrel, raccoons, river otters, amphibians and various reptiles (non-endangered species) on county highway bisecting unit
Safety Concern for visitors accessing the unit/Visitor center	No
Enhancements identified to help visitor program	Pedestrian trails within unit
	Bicycle trails to and within unit
	Improved signage for orientation within unit
Most important enhancement priority	Pedestrian and bicycle trails within unit

Refuge	Transit Distance	Trail Distance	Priority
Two Rivers NWR *Brussels, IL*	More than 3 miles	Less than ½ mile	Medium

Existing or Planned ATS:

- There is an Amtrak station located in St. Louis, approximately 30 miles from the refuge.
- There is a regional bicycle and pedestrian trail located less than one-half mile from the refuge.

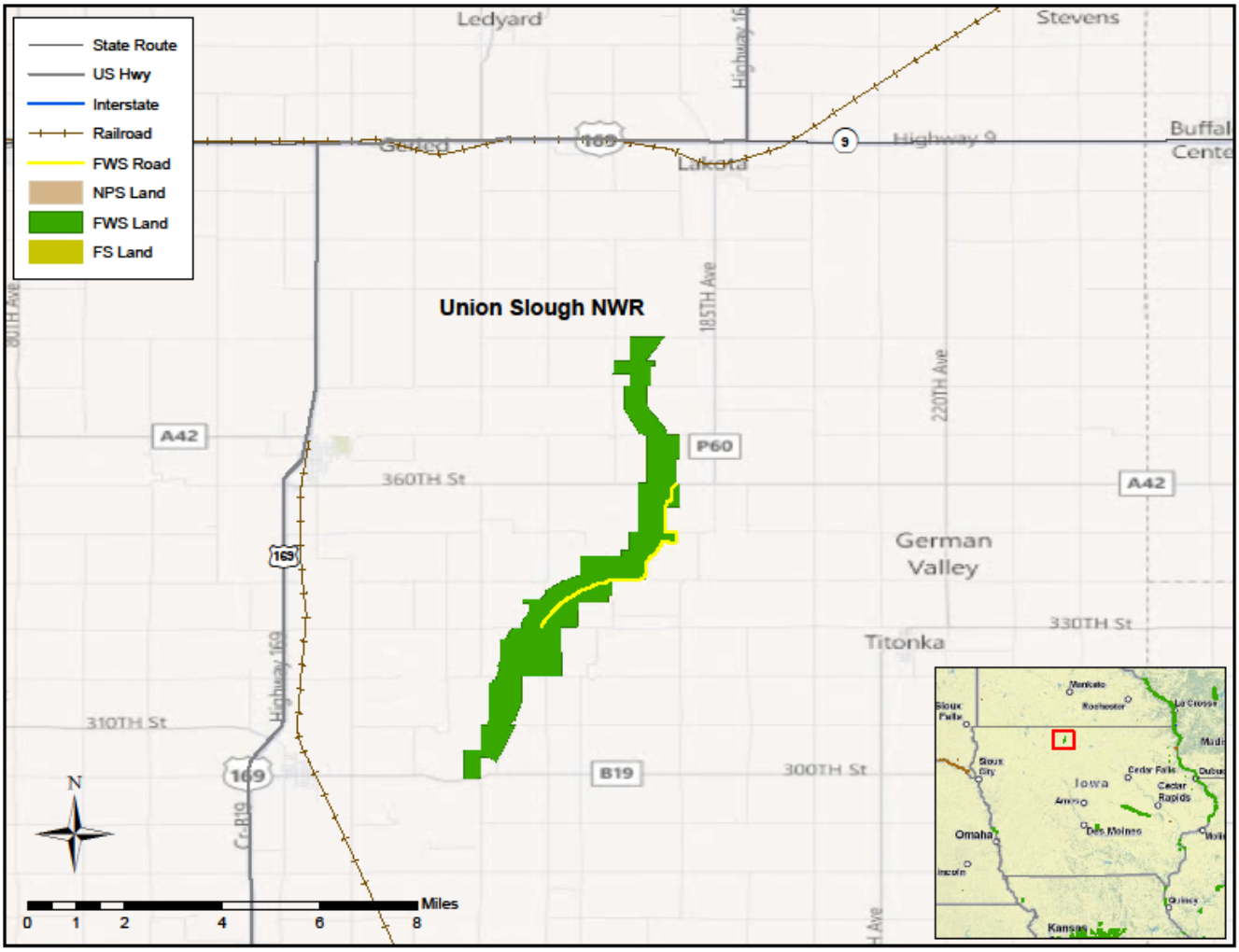
Opportunities for Future ATS:

- The refuge most needs paved pedestrian and bicycle trails within the station that would not be impacted from flooding. They also would like bicycle trails for access to the station.
- Primary refuge access occurs by ferry, and access is impeded during flood events and ice conditions. The most significant transportation challenge is road flooding by the Mississippi and the Illinois Rivers. Paving more roads within the station would help with flood impacts.
- Other transportation challenges include congestion on roads leading to station, road conditions, bus parking, funding shortages, visitor orientation, and pedestrian access.
- Promotion, marketing, and improved signage could help to promote the refuge and increase visitation.
- If there were a transit vehicle available at low or no cost, the refuge may be able to use it for special events such as the Two Rivers Family Fishing Fair, which attracts 4,500 visitors in June.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Union Slough National Wildlife Refuge



FACTS	Union Slough NWR
Road Miles (TOTAL)	5.83
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	4.60
• Native Road (Miles)	1.23

FACTS	Union Slough NWR
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	99,732
Unit Acreage	3,334
Access Point	County road A-42
Main activities	Hunting, Fishing and Interpretation
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mississippi National River and recreation Area (115-NE); Chequamegon National Forest (212-NE)
Transportation Hub (miles away-as the crow flies)	Mason City, IA (56)
Gateway Community (miles away-as the crow flies)	Bancroft, IA (6)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Very rural, located hours from the nearest population center.
Habitat Fragmentation	-
Animal-Vehicle collisions	Trumpeter swan (endangered species), Canada good, deer and pheasant (non-endangered species) along county highways crossing the refuge.
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Union Slough NWR *Titonka, IA*	More than 3 miles	More than 3 miles	Low
Existing or Planned ATS: • None **Opportunities for Future ATS:** • The distance from population centers and lack of transit offers challenges in improving access to the refuge. • Bicycle or pedestrian paths could allow greater access to the refuge from nearby towns, as a significant number of visitors come from within 10 miles of the station.			

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

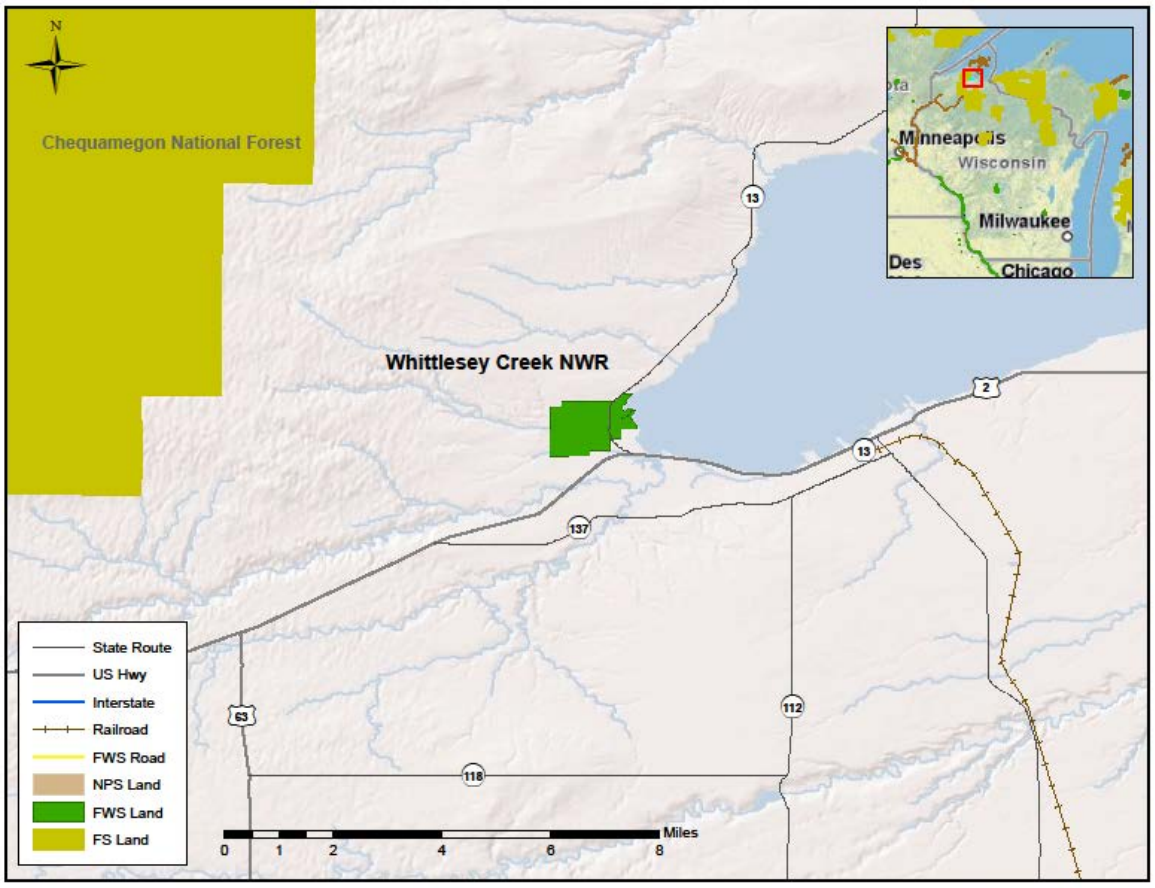
Whitefish Point National Wildlife Refuge

FACTS	Whitefish Point NWR
Road Miles (TOTAL)	Unit of Seney NWR
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	-
Unit Acreage	33
Access Point	Refuge Entrance Rd
Main activities	-
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Sault Ste. Marie, MI (73)
Gateway Community (miles away-as the crow flies)	Paradise, MI/ Whitefish Township, MI (11)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	-
Habitat Fragmentation	-
Animal-Vehicle collisions	-
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	-
Other	Part of Seney NWR

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Whittlesey Creek National Wildlife Refuge



FACTS	Whittlesey Creek NWR
Road Miles (TOTAL)	-
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	-
• Gravel Road (Miles)	-
• Native Road (Miles)	-
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	0.10
Parking Lot (square feet)	44,732

FACTS	Whittlesey Creek NWR
Unit Acreage	540
Access Point	Highway 2
Main activities	Wildlife Observation, Photography, Environmental Education and Interpretation
Special Events	Birding & Nature Festival (mid-May); Kid's Fishing Day (June); Northwoods Adventures Series (June-August)
Proximity to nearest FLMAs (miles-direction as the crow flies)	Chequamegon National Forest (5-W); Apostle Islands National Lakeshore (11-NE)
Transportation Hub (miles away-as the crow flies)	Duluth, MN (68)
Gateway Community (miles away-as the crow flies)	Ashland, WI (3)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	Lack of safe pedestrian access
	Lack of safe vehicular access within unit
	Unsafe road conditions surrounding unit
Habitat Fragmentation	Coastal wetlands fragmented with uplands by Hwy 13
Animal-Vehicle collisions	White tailed deer, turtles and migratory birds (non-endangered species) from the coastal side of lake superior to the upland side
Safety Concern for visitors accessing the unit/Visitor center	Right turn lane is needed
Enhancements identified to help visitor program	Bicycle and pedestrian trails to and within unit
	Bicycle racks
	Water- access facilities
	Improved signage to and within unit
Most important enhancement priority	Internal transit - year round
Other	Buses for students

Refuge	Transit Distance	Trail Distance	Priority
Whittlesey Creek NWR *Ashland, WI*	Less than ½ mile	½ to 1 mile	Low

Existing or Planned ATS:

- The refuge's Northern Great Lakes Visitor Center is located less than ½ mile from Bay Area Rural Transit (BART) service.
- The refuge is also located within 1 mile of the Tri-County Corridor Trail.
- A significant number of visitors are familiar with transit or bicycling as a transportation mode.

Opportunities for Future ATS:

- The station's most critical challenges are lack of safe pedestrian and vehicular access to the station and vehicular access within the station. The refuge also faces challenges with orientation and signage.
- The refuge could benefit from internal transit within the station year-round.
- The refuge would like to explore the following ATS options: bicycle and pedestrian paths for access to and within the station, bicycle racks, water-access facilities, signage for orientation, and promotion and marketing for existing ATS.
- The refuge could use transit for assistance at several special events in the spring and summer, such as Birding & Nature Festival and Kid's Fishing Day, which attract up to 2,500 visitors.
- The refuge would like additional options for busing students from nearby schools.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Windom Wetland Management District

FACTS	Windom WMD
Road Miles (TOTAL)	6.50
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.27
• Gravel Road (Miles)	2.24
• Native Road (Miles)	2.90
• Primitive Road (Miles)	1.09
Trail Miles (TOTAL)	1.22
Parking Lot (square feet)	442,001
Unit Acreage	13,000
Access Point	County Road 17
Main activities	Hunting, Wildlife Observation, Photography and Interpretation
Special Events	Wings on the Prairie (May)
Proximity to nearest FLMAs (miles-direction as the crow flies)	-
Transportation Hub (miles away-as the crow flies)	Windom, MN (2)
Gateway Community (miles away-as the crow flies)	Windom, MN (2)
Scenic Byway	-
Air quality Non-Attainment Area	None
Main transportation challenges identified	
Habitat Fragmentation	Yes
Animal-Vehicle collisions	Deer. Birds and mammals (non-endangered species) along roads adjacent to units
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle and pedestrian trail to and within unit
	Bicycle racks
	Water-access facilities
	Improved signage for orientation within unit

Refuge	Transit Distance	Trail Distance	Priority
Windom WMD *Windom, MN*	1- 3 miles	More than 3 miles	Low

Existing or Planned ATS:

- Cottonwood County Transit offers service within 3 miles of one or more units of the WMD.
- The Iowa Great Lakes Recreational Trail and the Casey Jones Trail are located within the region but are more than three miles from the station.

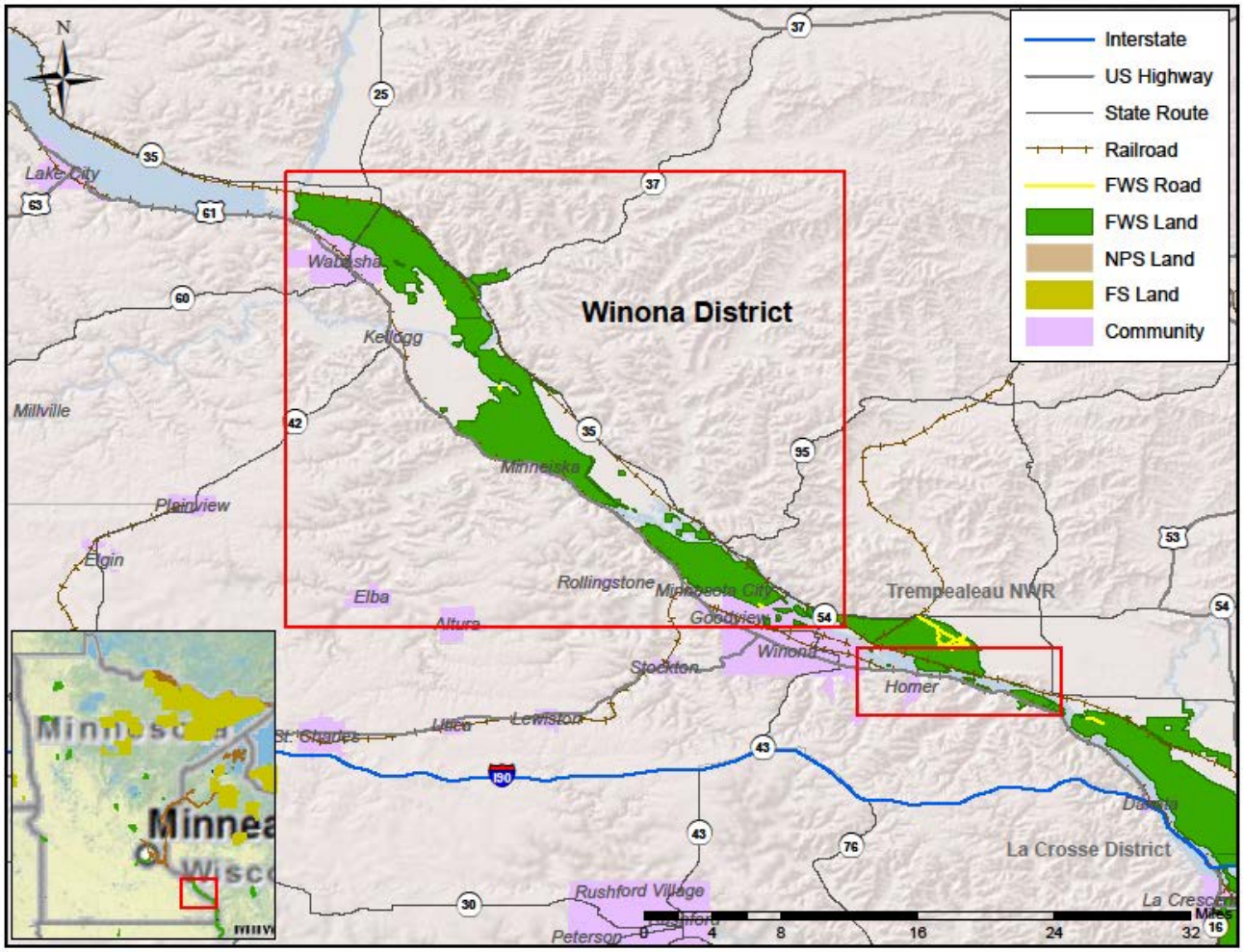
Opportunities for Future ATS:

- The WMD would benefit most from promotion and marketing for existing and potential ATS. Other strategies would be improved pedestrian and bicycle infrastructure, such as trails to and within the station and bicycle racks. They would also benefit from water access facilities and improved signage.
- A new visitor center and office complex may increase visitation in the future.

U.S. Fish and Wildlife Service

National Wildlife Refuge Fact Sheet

Winona District



FACTS	Winona District
Road Miles (TOTAL)	0.68
• Concrete Road (Miles)	-
• Asphalt Road (Miles)	0.47
• Gravel Road (Miles)	0.21
• Native Road (Miles)	-

FACTS	Winona District
• Primitive Road (Miles)	-
Trail Miles (TOTAL)	-
Parking Lot (square feet)	224,093
Unit Acreage	-
Access Point	East 4th Street
Main activities	Hunting, Fishing, Wildlife Observation and Photography.
Special Events	-
Proximity to nearest FLMAs (miles-direction as the crow flies)	Mississippi National River and recreation Area (37-NW); Chequamegon National Forest (80-NE)
Transportation Hub (miles away-as the crow flies)	Winona, MN
Gateway Community (miles away-as the crow flies)	Winona, MN (0)
Scenic Byway	Great River Road Byway
Air quality Non-Attainment Area	None
Main transportation challenges identified	Appropriate and effective signage
	Visitor orientation to and within unit
	Increasing use of canoes/kayaks on the river and the safety concerns that are associated with these users and other users like commercial barges
Habitat Fragmentation	Floodplain forest
Animal-Vehicle collisions	Deer, small mammal, turtle, birds (non-endangered species) on highway
Safety Concern for visitors accessing the unit/Visitor center	-
Enhancements identified to help visitor program	Bicycle trails
	Improved signage to and within unit
	Water access facilities
	Promotion and marketing
Most important enhancement priority	-

Refuge	Transit Distance	Trail Distance	Priority
Upper Mississippi NWR, Winona District *Winona, MN*	More than 3 miles	Direct connection	Medium

Existing or Planned ATS:

- The Great River State Trail is located within the station, and the Mississippi River Trail is located approximately one-half mile from the station.
- The nearest Amtrak station in Winona is located less than one mile from the station (Pool 6).
- Approximately one third of visitors access the station by boat, and five percent access the station by bicycles.

Opportunities for Future ATS:

- The refuge needs to address improved signage and promotion for orientation and ATS.
- Bicycle paths could allow greater access to the refuge from nearby towns, as a significant number of visitors come from within 10 miles of the station.
- Safety improvements for canoes and kayaks could lead to increased use of non-motorized watercraft for access to and within the refuge. The refuge would like to increase non-motorized watercraft users and minimize impacts from motorized users.

APPENDIX J

Alternative Transportation Priorities and Strategies

U.S. Fish and Wildlife Service
Regional Alternative Transportation Evaluation Report – Region 3
November 14, 2011

Prepared by the U.S. Department of Transportation
John A. Volpe National Transportation Systems Center
Haley Peckett and Benjamin Rasmussen

Contents

RATE Background

The U.S. Fish and Wildlife Service (FWS) and the U.S. Department of Transportation (DOT) Volpe Center (Volpe Center) conducted a regional alternative transportation evaluation (RATE) in Region 3, which is comprised of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin, to ensure effective consideration and integration of alternative transportation systems (ATS, Box 1) into the goals and recommendations of the Region 3 long-range transportation plan (LRTP). Staff from the Volpe Center, FWS Region 3, and Eastern Federal Lands Highways (EFLH) met in Bloomington, Minnesota, in June 2011, to discuss alternative transportation needs and constraints in the region and to develop an ATS Questionnaire. This RATE team then visited Minnesota Valley National Wildlife Refuge (NWR), Upper Mississippi NWR – La Crosse District, Necedah NWR, Genoa National Fish Hatchery, and Leopold Wetland Management District to identify specific opportunities for ATS in these stations. The RATE also provided insights and lessons on how ATS may be instituted more broadly across Region 3.

Box 1: What are Alternative Transportation Systems?

Alternative transportation systems generally include any travel means other than personal automobile, such as:

- Motorized transportation systems operating internally within stations
- Shuttles and van transit connecting stations with other destinations
- Regional transit connections (bus, light rail, trolley, commuter rail, passenger rail)
- Bicycle and pedestrian infrastructure (sidewalks, paths, bicycle lanes, regional trails)
- Water-based transportation
- Publicly and privately operated systems

FWS Headquarters and Regional staff approached the RATE with the understanding that increased ATS would benefit Region 3 stations and complement Service-wide goals, particularly those contained in the Region 3 LRTP. ATS addresses LRTP goals in several ways, including:

- The use of transit, non-motorized, and water-based modes supports natural resource protection. By reducing the use of personal automobiles, FWS can also reduce the impacts that these vehicles have upon natural resources. Vehicular resource impacts include wildlife collisions, invasive species, noise pollution, particulate emissions, erosion, and pollutants that can enter the soil or water.
- Over the long term, increasing ATS for stations with increasing visitation can minimize the need for new roads or parking, thus preserving more area for wildlife habitat.
- ATS can be a critical visitor management tool for station staff facing increasing visitor demands and limited resources.
- The use of transit can enhance visitors' understanding of the station's natural resources by facilitating interpretive tours or directing visitors for special events.
- Signage and orientation information directed at non-automobile modes can also help integrate these modes effectively into station transportation.
- ATS can reduce the Service's carbon footprint, reduce the use of carbon-based fuels, enhance accessibility, and reduce air pollutants emitted from vehicles.

Key Findings

Based on the station visits, results from the ATS Questionnaire, and discussions with the RATE team, the following are key findings and outcomes from the RATE:

1. Station staff tends to have relatively limited awareness of the benefits of ATS, and therefore they may be missing straightforward opportunities to enhance ATS as a means to travel to and within the station. Staff tends to have limited time to devote to transportation planning, except on an as-needed basis, and have not considered the use of alternative transportation as a potential means to manage visitation, resource protection, and special events in much depth, if at all. Education about the benefits of ATS is a key first step to increasing its use throughout the region.
2. With the exception of a few stations in urban settings, many Region 3 stations are located far from population centers. However, most stations expressed the need or desire for improved non-motorized infrastructure for access to and within stations. The inclusion of sidewalks, bicycle lanes, separated non-motorized paths, and similar infrastructure can enhance the visitor experience and reduce the number of vehicles at stations.
3. Several stations are successfully partnering with gateway communities to leverage funding for new trail connections or to use buses for special events. Through enhancing partnerships with gateway communities, stations can significantly increase the amount of visitors that access the station using ATS.
4. The region has limited funds for transportation that must be allocated between all Refuge roads, trails, and capital projects. Several measures can help Region 3 better emphasize ATS in its transportation program and budget. First, ensure stations are aware of the benefits of ATS, which will encourage them to seek partnerships and low-cost opportunities to improve ATS. Second, integrate ATS features into roads projects, such as through adding sidewalks or bike lanes. Third, prioritize projects that recognize co-benefits between ATS and other transportation needs, such as safety and wayfinding.

Region 3 Background and Trends

Refuges and hatcheries in Region 3 focus their conservation missions primarily on migratory birds and fish breeding. “String-of-pearl” refuges are located along major rivers, such as the Mississippi River, with multiple units stretching for many miles along the river’s banks. These refuges include the river itself and tend to have multiple uses, such as shipping, recreational boating, and fishing, within varied physical environments, including locks and braided river channels. River refuges also may contain or run adjacent to major railroad or highway corridors. Region 3 also has 12 Wetland Management Districts (WMDs), which consist of numerous small Waterfowl Production Areas (WPAs). The WPAs are pockets of land, such as prairie pothole lakes, among agricultural land, most of which are used for hunting and wildlife observation.

Region 3 visitation has been increasing in the past decade, and many stations in the region have been actively pursuing new visitor amenities to accommodate and attract new visitors. The recession that began in 2008 has slowed growth at the more rural stations, but it may also be responsible for increased growth at urban and suburban stations, as people look for outdoor experiences closer to home. Aligned with the FWS goal of increasing the number of urban refuges, Region 3 is working to acquire more land for refuges near urban areas, with the goal of having a refuge within an hour’s drive of each major city in the region.

Region 3 also has several urban refuges with new transit connections. In December 2009, Metro Transit’s Hiawatha Light Rail began offering service to American Boulevard Station in Bloomfield, Minnesota, one-quarter mile from the Minnesota Valley NWR Bloomington Visitor Center. Shiawassee NWR’s Green Point Environmental Learning Center in Saginaw, Michigan, is located approximately one-half mile from the Saginaw Transit Authority bus route. Whittlesey Creek NWR in Ashland, Wisconsin, has a Northern Great Lakes Visitor Center located less than one-half mile from Bay Area Rural Transit service. These stations have yet to show the full potential of transit connections, but they offer opportunities to

attract new and increased visitation. Other refuge areas that stretch along the Mississippi River and other waterways may also be ripe for transit access to points along the shorelines.

Wildlife observation, and bird watching specifically, are the primary visitor activities at stations. Historically, hunting and fishing were extremely popular in the region, and while they remain significant activities at many stations, hunters have decreased in recent years. Visitors are seeking more active recreation on NWRs in the region. Reports of hiking and bicycling on refuges have increased in the past few years; many residents of adjacent communities visit refuges regularly for walking, jogging, cycling, and other exercise. The increased active recreation use may be due to urban development approaching refuge boundaries, which puts the refuge in closer proximity to people's homes or workplaces.

Finally, the region has built six new visitor centers between 2006 and 2011, with three visitor centers under construction and one additional interpretive center planned and funded. The stations with new visitor centers expect to receive significant increases in visitation, especially from school groups, which will have implications for station management and staff capacity to run educational programs. Several of these stations that may not have had high visitation in the past may need to consider high visitation, and associated transportation challenges, in the near future.

Accessibility for Underserved Populations

Overview
The RATE team selected three metropolitan areas in Region 3 to assess ATS connectivity from locations with high densities of underserved populations to nearby NWRs. The team chose the communities of Minneapolis, MN (including the Minnesota Valley National Wildlife Refuge), Detroit, MI (including the Detroit River International Wildlife Refuge), and Carbondale, IL (including the Crab Orchard National Wildlife Refuge) for study. The team selected these metropolitan areas based on the presence of nearby refuges, the availability of alternative transportation services throughout the region, and the occurrence of underserved populations.

Methods
The team identified three demographic variables – median household income, car ownership per household, and percentage of non-white population – to represent underserved populations. The team classified median household income using the 2009 national poverty threshold ($21,954) and national median household income ($49,777) figures for reference. The yellow circles on each of the resulting maps denote target areas for improving access to refuges, based on high rates of underserved populations in those areas. Each of these demographic variables draws upon 2009 data from the American Community Survey at the Census block level.

In addition to thematic maps created for the three demographic variables, an additional map shows the transportation infrastructure present in each region. Regional metropolitan planning organizations (MPOs), local and state geographic information system (GIS) resources, and other local and state public agencies were sought out for each region as potential providers of this data. The RATE team used the best data available at the time of publication and at the appropriate regional scale, which may not include detailed or new transit routes and trails.

Detroit, MI (Detroit River IWR)
Positioned to the southwest of Detroit, the Detroit River IWR lies outside of the core area of Detroit's ATS infrastructure (Figure 1, left). Aside from its northern-most units, much of the refuge lies next to sparsely populated areas where ATS connections are limited, although the Eagle Island Unit at the

southern end is close to the city of Monroe. Additionally, the lack of bicycle infrastructure inhibits the use of bicycle to reach refuge attractions.

The Detroit area features some of the country's highest occurrences of underserved populations. Analysis shows that high rates of low-income (Figure 1, right) and minority populations (Figure 2, right) are prevalent throughout the metropolitan area, especially in those areas closest to downtown. Accessing the refuge without a personal vehicle (Figure 2, left) may be difficult for citizens that do not own a car, as it would require multiple transfers using a bus and/or bicycling on roads lacking bike infrastructure. Most importantly, however, most of these populations are 10 or more miles away from many of the refuge attractions, a significant obstacle in convincing potential visitors to utilize alternative transportation.

There is strong potential for regional or refuge staff to work with these communities and target expanded connections to the refuge. Strategies may include expanding transit service to stop closer to or at the refuge, improving connections to non-motorized networks or adding bike lanes, and offering a shuttle from underserved communities to the refuge for peak weekends or special events.

Figure 1: **Transportation infrastructure (left) and median household income (right) in the Detroit metropolitan area**

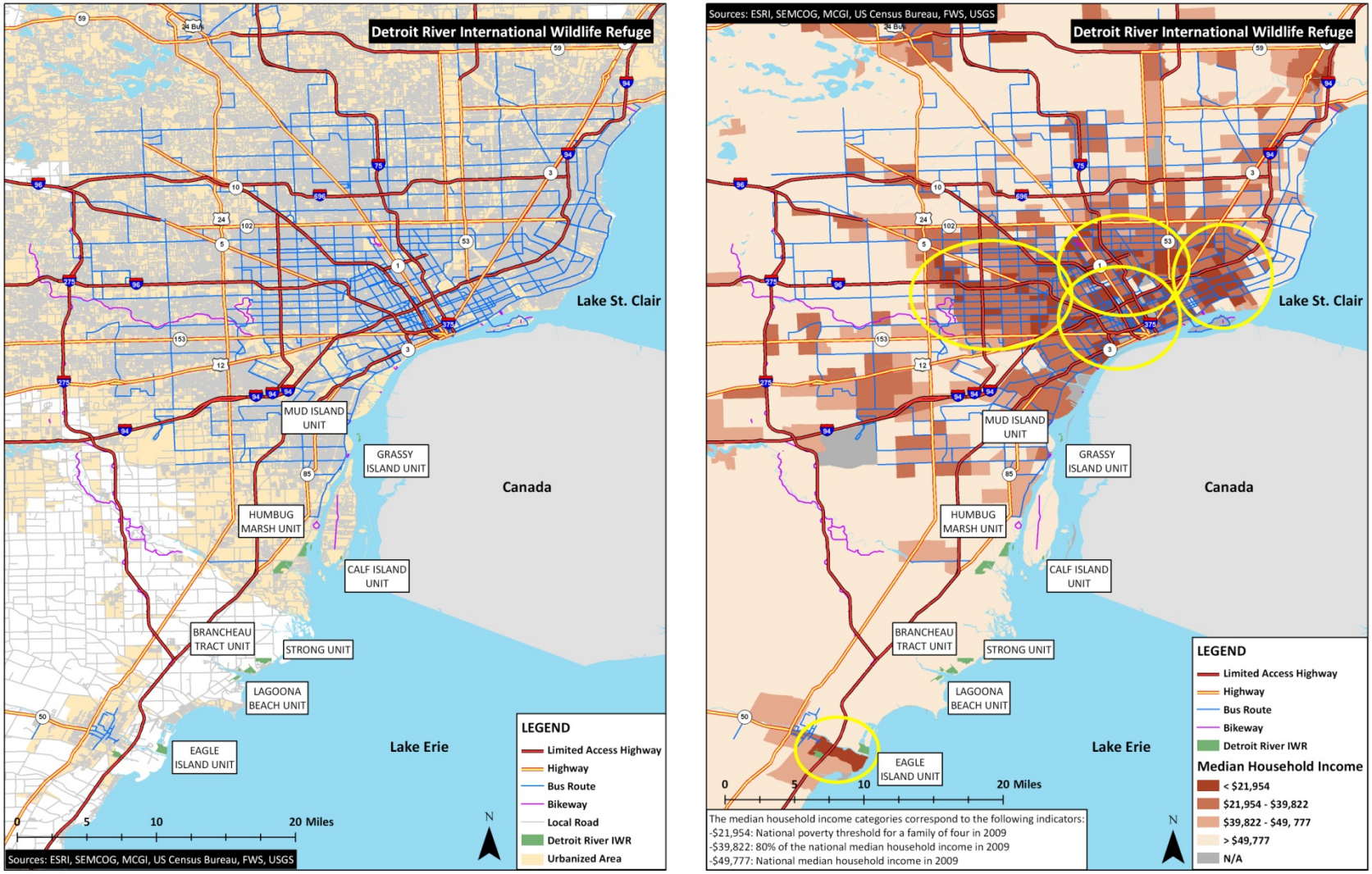
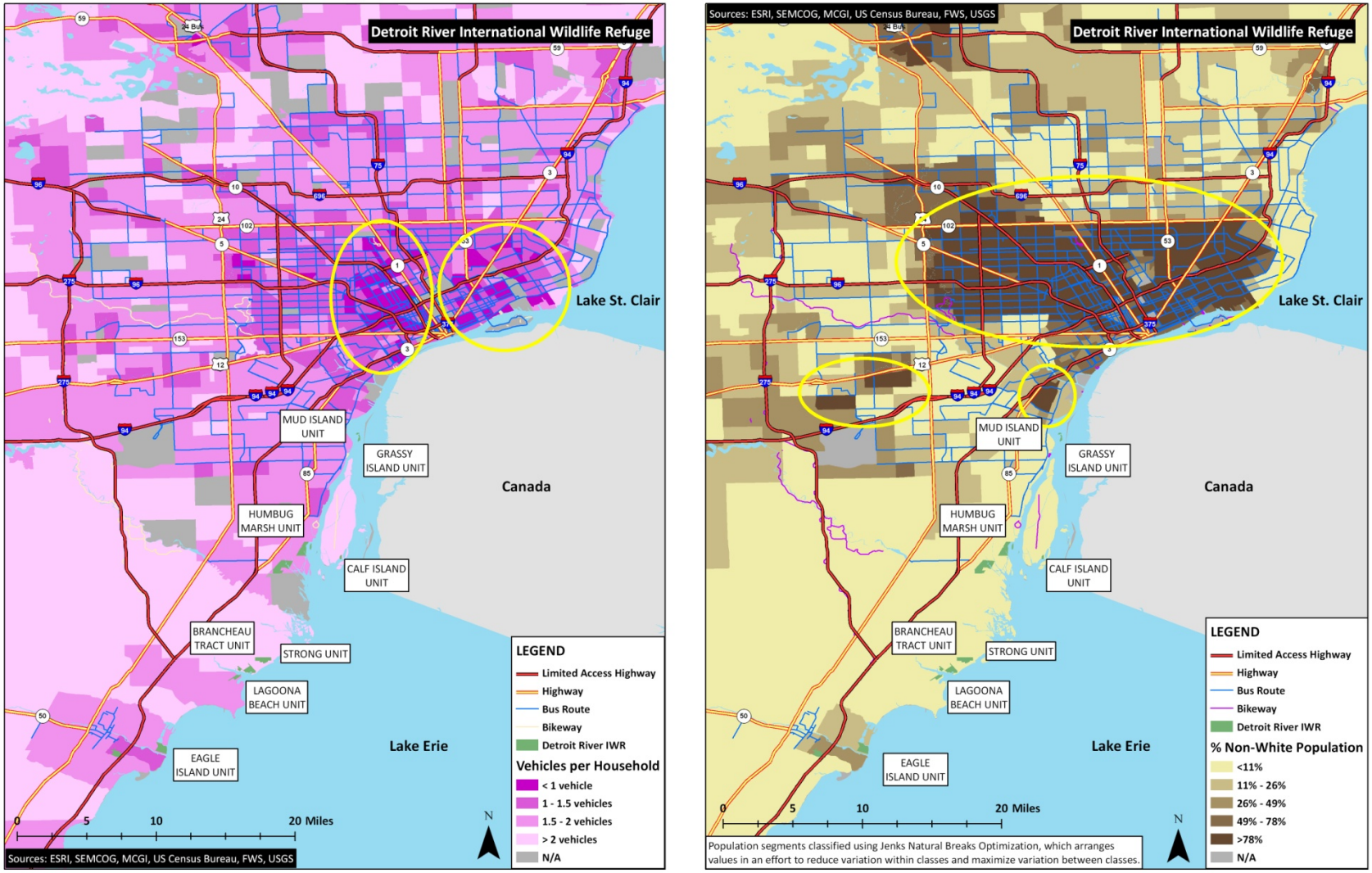


Figure 2: **Vehicle per household (left) and non-white population rates (right) in the Detroit metropolitan area.**



Minneapolis, MN (Minnesota Valley NWR)

The Minnesota Valley NWR is well-situated near Metro Transit's Hiawatha Line, as well as adjacent to bikeways along the Minnesota River. The refuge is therefore accessible via ATS to much of the Minneapolis-St. Paul area (Figure 3). ATS connections remain prevalent near the NWR's southern and western units towards the Rapids Lake Education and Visitor Center. Bike trails along the Minnesota River to the northeast provide high-quality access to Minneapolis and St. Paul.

The Hiawatha Line, which extends south from Minneapolis's downtown, is particularly well-suited to attract ridership from underserved populations. The high-frequency service offered by the light rail and the short, one-half mile walking distance between the Bloomington Visitor Center and the American Boulevard light rail station position it as an attractive means of accessing the refuge. The areas immediately south of downtown, as well as within the downtown and to its east and west, feature a high proportion of underserved populations for all three demographic variables (Figure 4, Figure 5, and Figure 6), many of which are within walking distance or a short bus connection away from a light rail station. Additional areas with underserved populations are dispersed within the communities of Bloomington and Richfield to the northwest of the Bloomington Visitor Center. Much of the population within these communities is connected to the refuge via bus or bikeways.

The connection between the light rail and the Bloomington Visitor Center and Long Meadow Lake Unit are relatively recent, as the American Boulevard light rail station opened in late 2009 and the Visitor Center re-opened in 2010. Refuge staff can focus on promotion of the strong ATS connections, focusing outreach efforts in geographic areas highlighted in Figure 4: Median household income in the Minneapolis metropolitan areaFigure 5: Vehicle per household in the Minneapolis metropolitan area, and Figure 6: Non-white population rates in the Minneapolis metropolitan area.

Figure 3: **Transportation infrastructure in the Minneapolis metropolitan area**

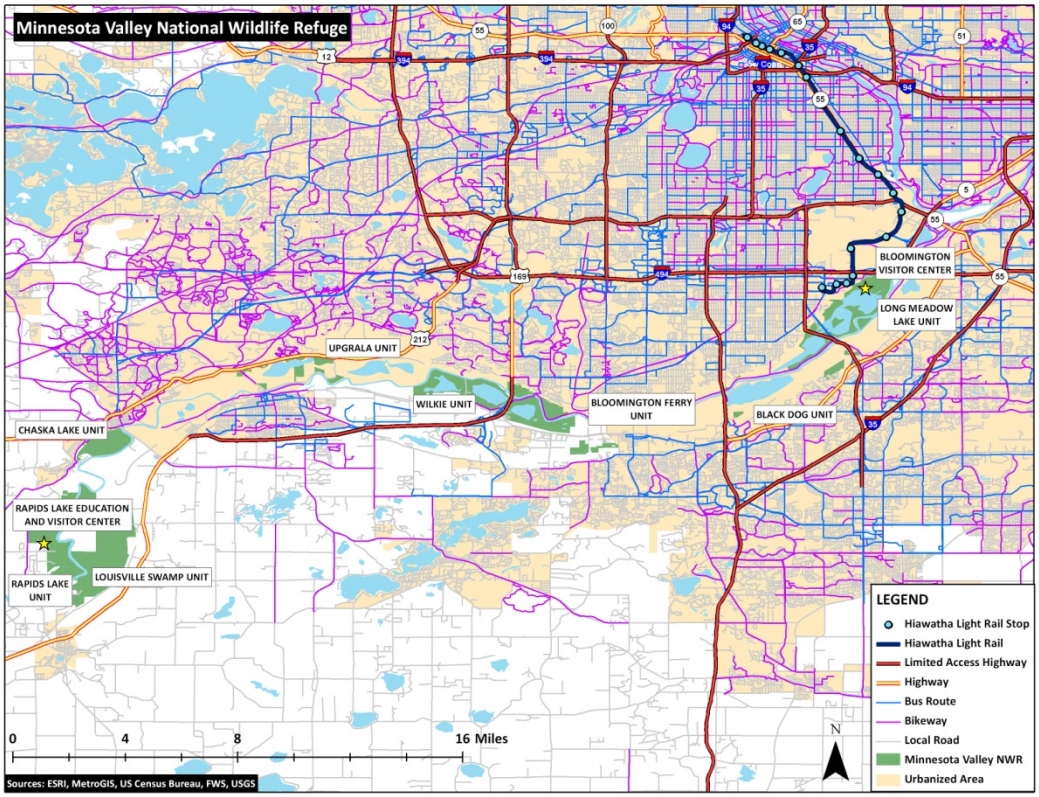

Minnesota Valley National Wildlife Refuge
BLOOMINGTON VISITOR CENTER
LONG MEADOW LAKE UNIT
UPGRALA UNIT
WILKIE UNIT
BLOOMINGTON FERRY UNIT
BLACK DOG UNIT
CHASKA LAKE UNIT
RAPIDS LAKE EDUCATION AND VISITOR CENTER
RAPIDS LAKE UNIT
LOUISVILLE SWAMP UNIT
0
4
8
16 Miles
N
Sources: ESRI, MetroGIS, US Census Bureau, FWS, USGS
LEGEND
Hiawatha Light Rail Stop
Hiawatha Light Rail
Limited Access Highway
Highway
Bus Route
Bikeway
Local Road
Minnesota Valley NWR
Urbanized Area

Figure 4: Median household income in the Minneapolis metropolitan area

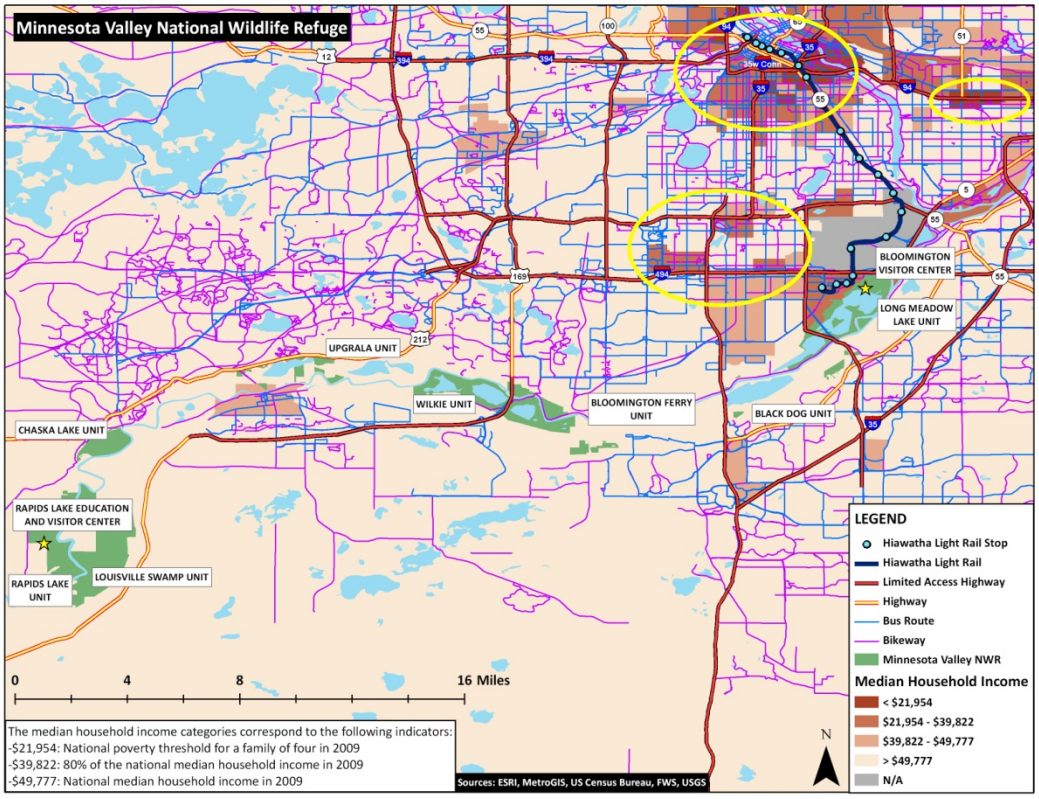


Figure 5: Vehicle per household in the Minneapolis metropolitan area

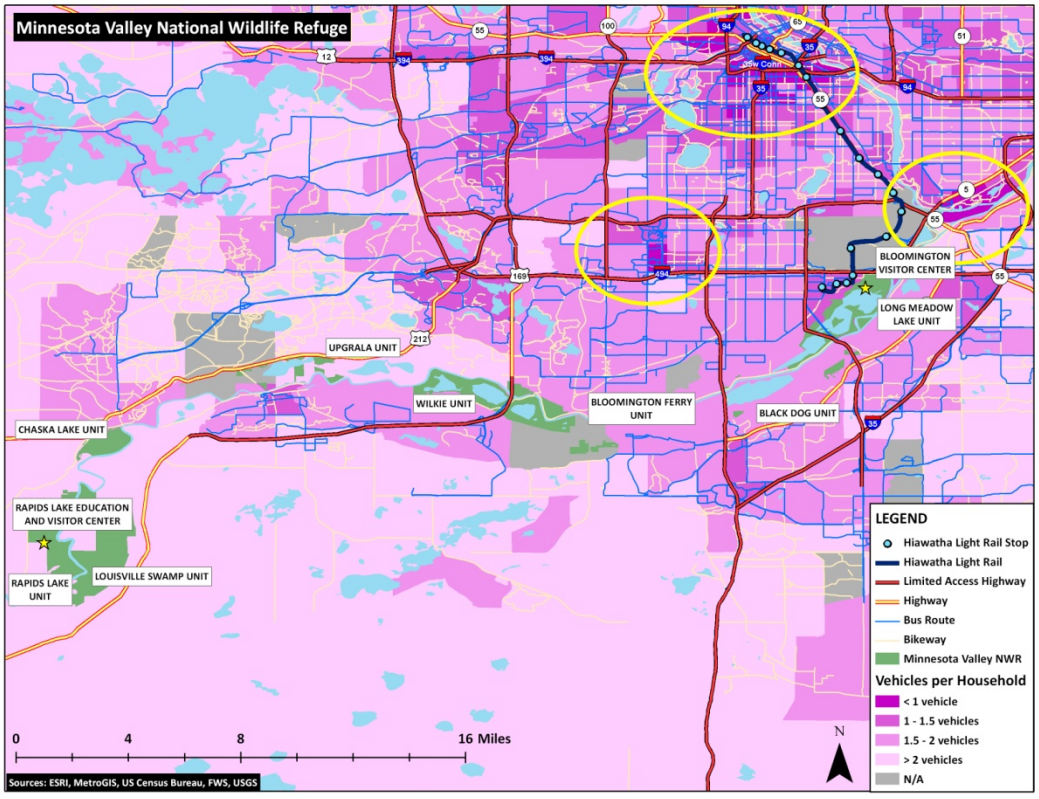
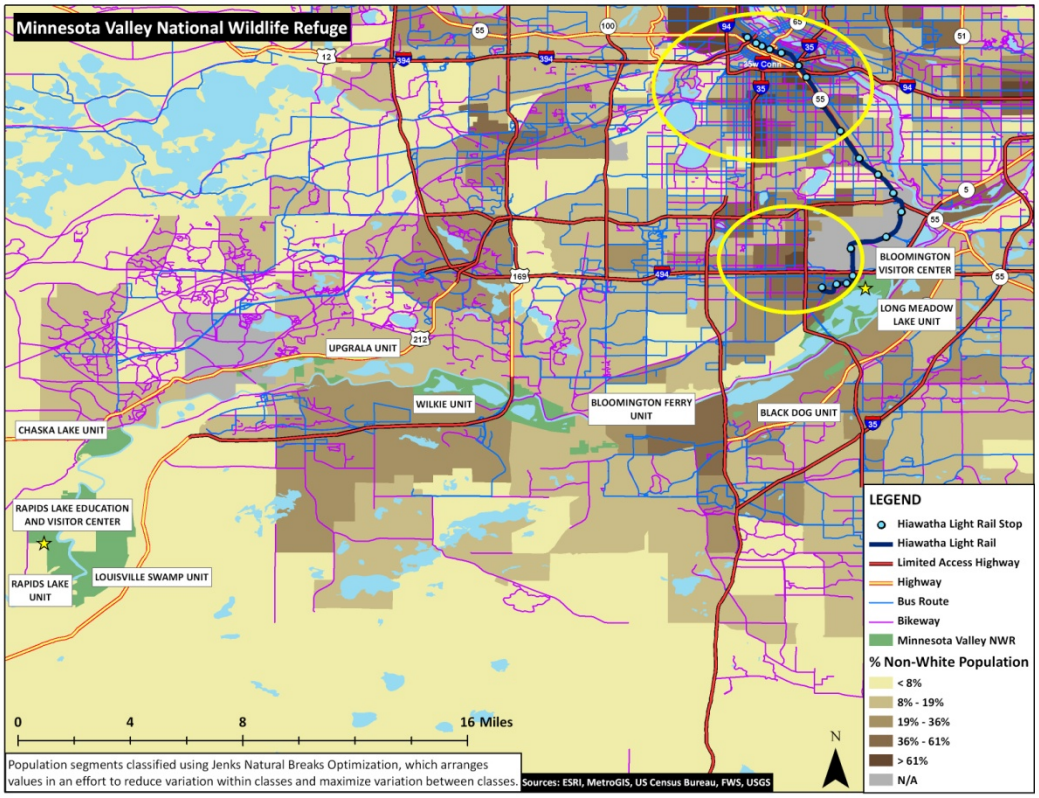


Figure 6: **Non-white population rates in the Minneapolis metropolitan area**



Jackson and Williamson Counties, IL (Crab Orchard and Middle Mississippi River NWRs)[1]
Jackson and Williamson Counties are significantly less populated and have fewer provisions for alternative transportation connections between population centers and the counties' two refuges (Figure 7). The Crab Orchard NWR is situated between the cities of Carbondale to its west and Marion to its east, but there is a lack of transit connections to the refuge from either of those two cities. The Mississippi River Trail extends through the Wilkinson Island Division of the Middle Mississippi River NWR, but connections to Carbondale and other nearby communities is limited to roadways, usually through designated bike routes without bike infrastructure such as bike lanes.

While the presence of ATS infrastructure is limited, the prevalence of underserved populations is decidedly less severe, relative to the other urban areas mapped. Jackson and Williamson Counties (Figure 8 and Figure 10) seem to have fewer low-income and non-white residents than larger metropolitan areas; they also have far fewer low-car-ownership households (Figure 9). Additionally, the presence of Southern Illinois University at the southern end of Carbondale may skew these demographic figures somewhat, as student populations may be less likely to own vehicles and feature lower median household incomes. The student population is less likely to be in town during the summer, which coincides with the most popular visitation season for the refuges. To better connect to nearby communities, the refuges in Jackson and Williamson Counties can pursue new non-motorized connections or provide transit for peak weekends and special events to help underserved populations access the refuges.

[1] Note: Information on transit lines within this area is not available.

Figure 7: **Transportation infrastructure in Jackson and Williamson Counties**

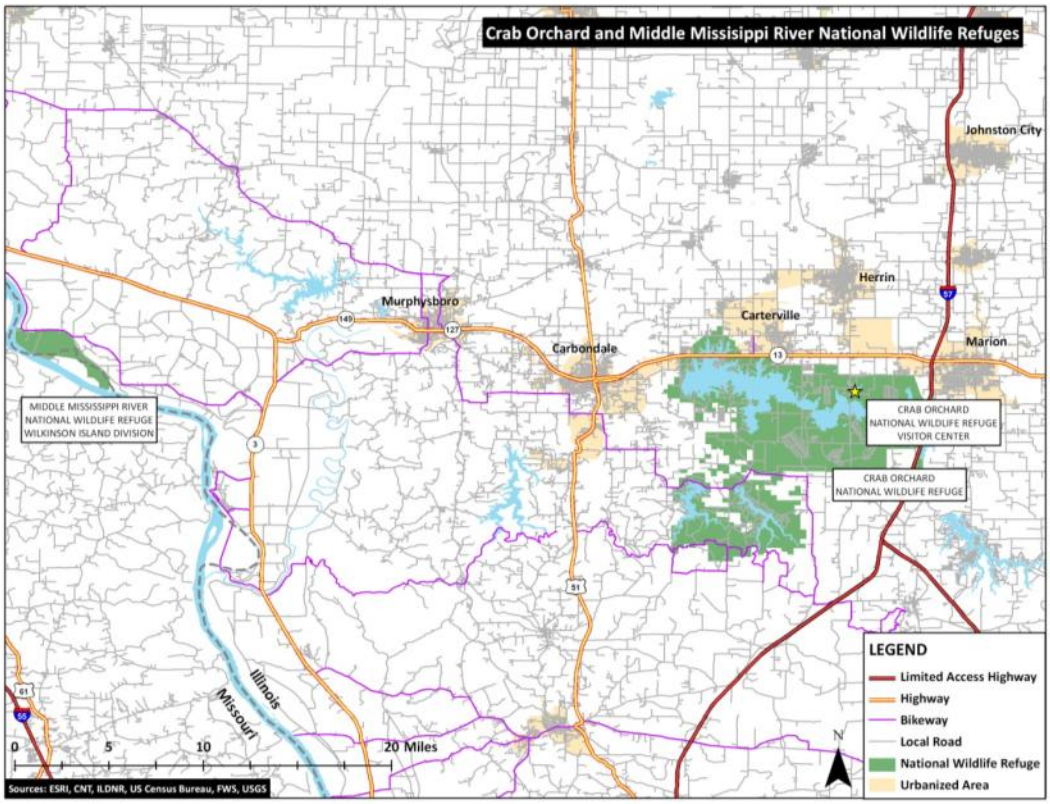


Figure 8: **Median household income in Jackson and Williamson Counties**

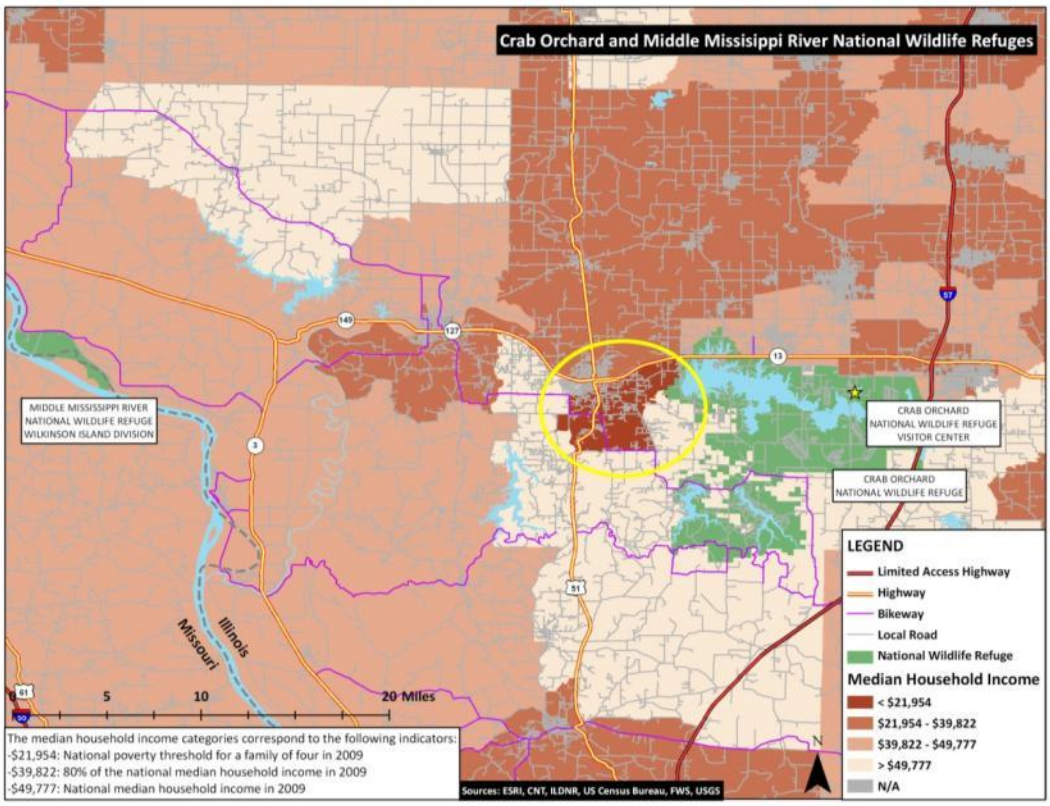


Figure 9: **Vehicle per household in Jackson and Williamson Counties**

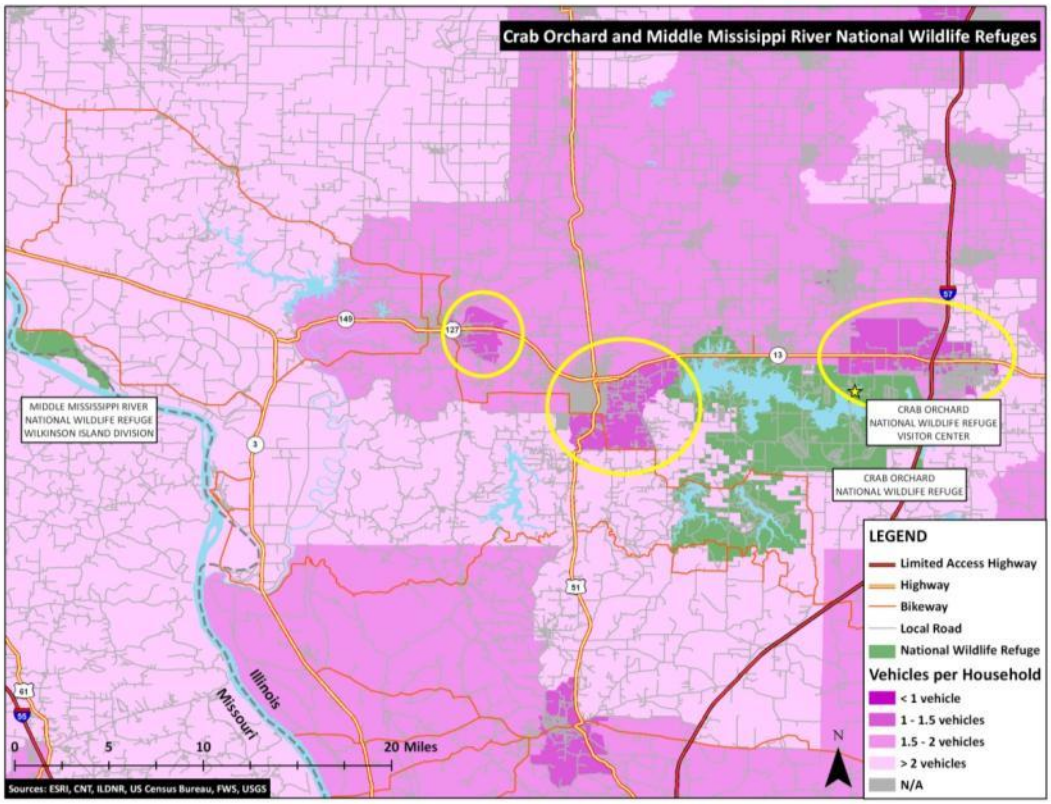
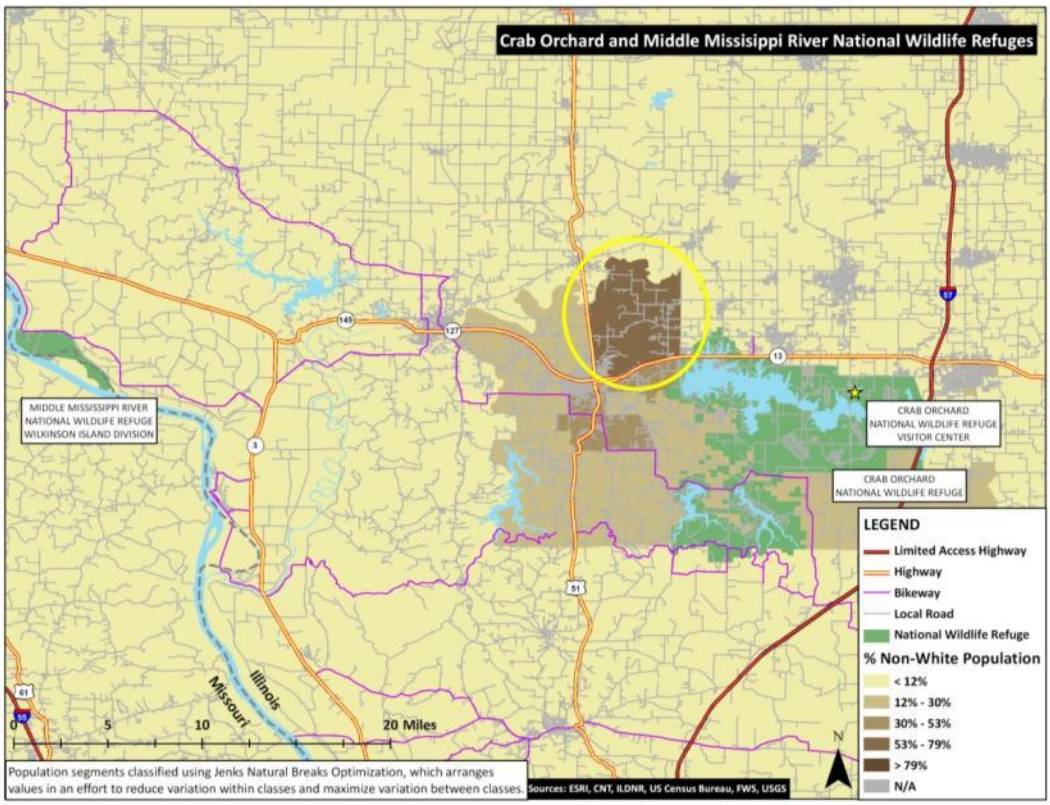


Figure 10: **Non-white population rates in Jackson and Williamson Counties**



Conclusions
Targeted outreach towards underserved areas can help promote refuge resources among these populations and provide enjoyable recreational and cultural experiences to those who may typically lack the means to visit. Promotion of ATS connections within these communities (as well as throughout the surrounding regions of all refuges) can serve to increase visitation among those without access to a personal vehicle. This can be carried out through marketing campaigns or partnering with local transportation or recreational advocacy groups. One method of targeted outreach that has been employed by the Minnesota Valley NWR is partnering with schools in underserved communities. Students visit the refuge on field trips, and refuge staff visits the schools to conduct related lessons. Positive experiences among school groups may convince families to visit refuges at a later time.

Effective ATS Strategies for Region 3

Conversations with FWS regional and station staff, as well as with EFLH staff, indicate several planning and management strategies that can help Region 3 and its stations increase the use of ATS. These strategies include types of ATS that would work well in specific stations and management and planning actions at the station and regional level that can increase ATS use.

For each of the stations included in the RATE, several key strategies would help effectively and appropriately increase ATS. These strategies are as follows:

- Provision of new or improved pedestrian and bicycle infrastructure, facilities, and connections: The construction or provision of non-motorized paths, trails, sidewalks, and bicycle lanes are necessary to connect stations with gateway towns, existing non-motorized trail networks, and local and regional amenities. In some cases, existing connections only need minor maintenance improvements or updates to increase their usability. These types of facilities can be added or enhanced/improved in stations to allow for non-motorized travel on or adjacent to auto tour or station roadways, where appropriate. Signage for non-motorized users, particularly bicyclists, can be added or improved in stations to help improve site access for existing and new bicyclists.
- Partnerships: Transit agencies, local governments, other state and federal agencies, and friends groups can help to enhance or add new transit service, fundraise for new or improved non-motorized infrastructure or bus/shuttle rentals, promote existing connections, and provide transit for special events. Partnerships with transit agencies are the first step to connect urban and suburban stations within transit service areas to local bus routes. Partnerships may also help station staff expand their capacity for the maintenance of trails within and leading to the station.
- Promotion: Stations can advertise existing and underutilized ATS connections through the station website, brochures, local media, station staff, and its partners' promotional materials. Promotional partnerships and materials can emphasize refuge access via non-motorized trails or transit, and they can also advertise the use of transit at special events. Signage along trails may be another means to promote non-motorized refuge access.
- Use of transit for special events and peak weekends: Refuge staff can use transit vehicles, such as buses and vans, during festivals, special events, or peak weekends when visitation is much higher than normal. During these events, refuges can use transit for wildlife observation tours, shuttles to on- or off-site parking, or transportation to public transit stations. Having a large van or small shuttle bus on-site or shared between stations would also enable station staff to accommodate school groups that are not able to use their school bus to access and/or tour the station.
- Consideration of ATS at early planning stages of new visitor facilities: Several stations are planning for or have recently completed construction on new visitor centers. These new centers will draw more visitors from nearby schools and communities. Stations slated for new visitor facilities in coming years should anticipate higher visitation and the potential for ATS service to address new transportation issues. Station staff can plan for parking lots that can accommodate

shuttles and buses and kiosks and entrances to their facilities that are proximate to drop-off areas for ATS passengers.

- Utilize water-based access: Many of the stations in Region 3 include or area adjacent to major rivers and lakes in the region. Accordingly, stations have the potential to utilize water-based access to bring visitors to and transport visitors within their lands. In some cases, private water-based tours and access exist; stations could potentially partner with these companies to explore more public operations.

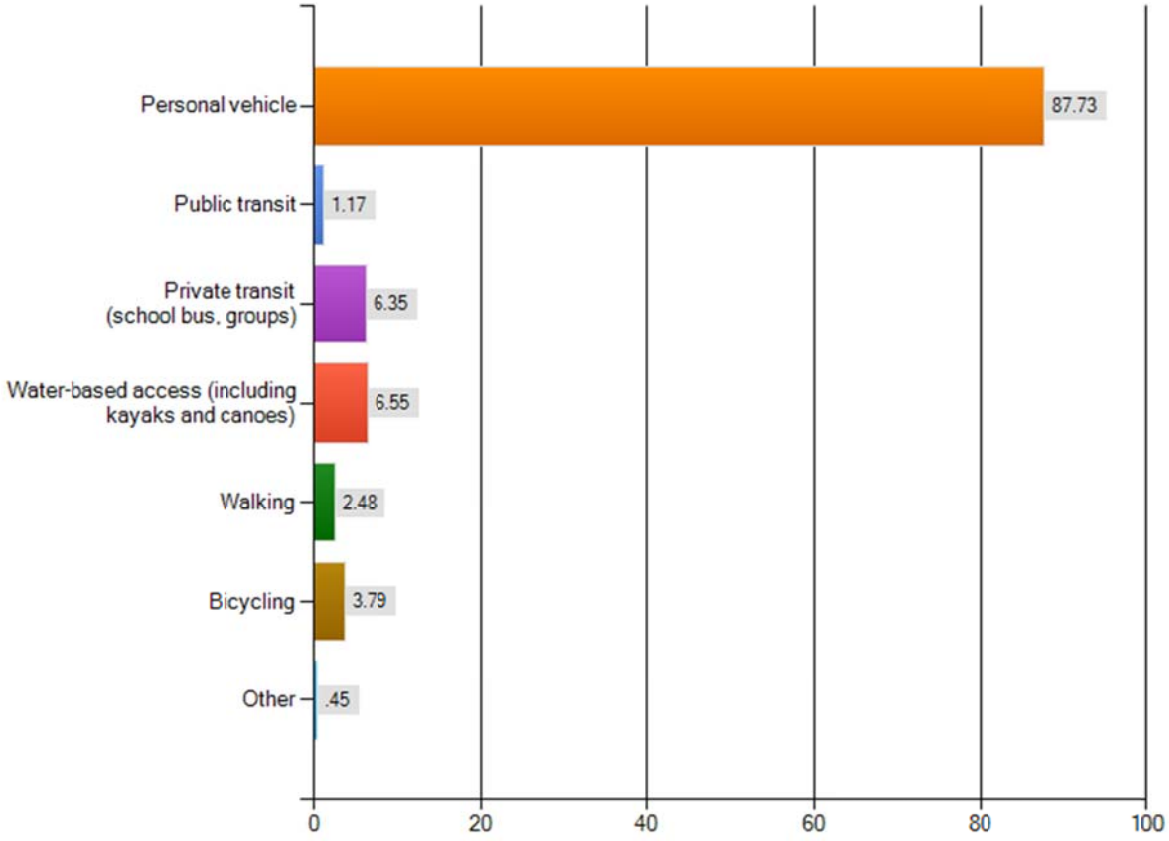
Alternative Transportation Questionnaire

The Volpe Center, FWS Region 3, and EFLH staff jointly developed the RATE Alternative Transportation Questionnaire to collect information comprehensively about the needs and opportunities for transportation among stations in Region 3. The questionnaire was available to station managers in an online format over a three-week period in July and August 2011.

Station and Visitation Background

A total of 51 stations responded to the survey (out of 72 stations in the region, representing a 71 percent response rate), and of these, 98 percent (50 stations) were open to public use. The questionnaire asked each station to estimate its visitors' access modes, as shown in Figure 11. Most visitors access stations by personal vehicle (87.7 percent), followed by water-based access (6.6 percent), private transit (6.4 percent), and bicycling (3.8 percent). There are a few users who access refuges through walking or public transit. The majority of stations (85.7 percent) note that school groups or friends groups provide transportation to the station via bus or van.

Figure 11: Visitor Access Mode (Average Percent)



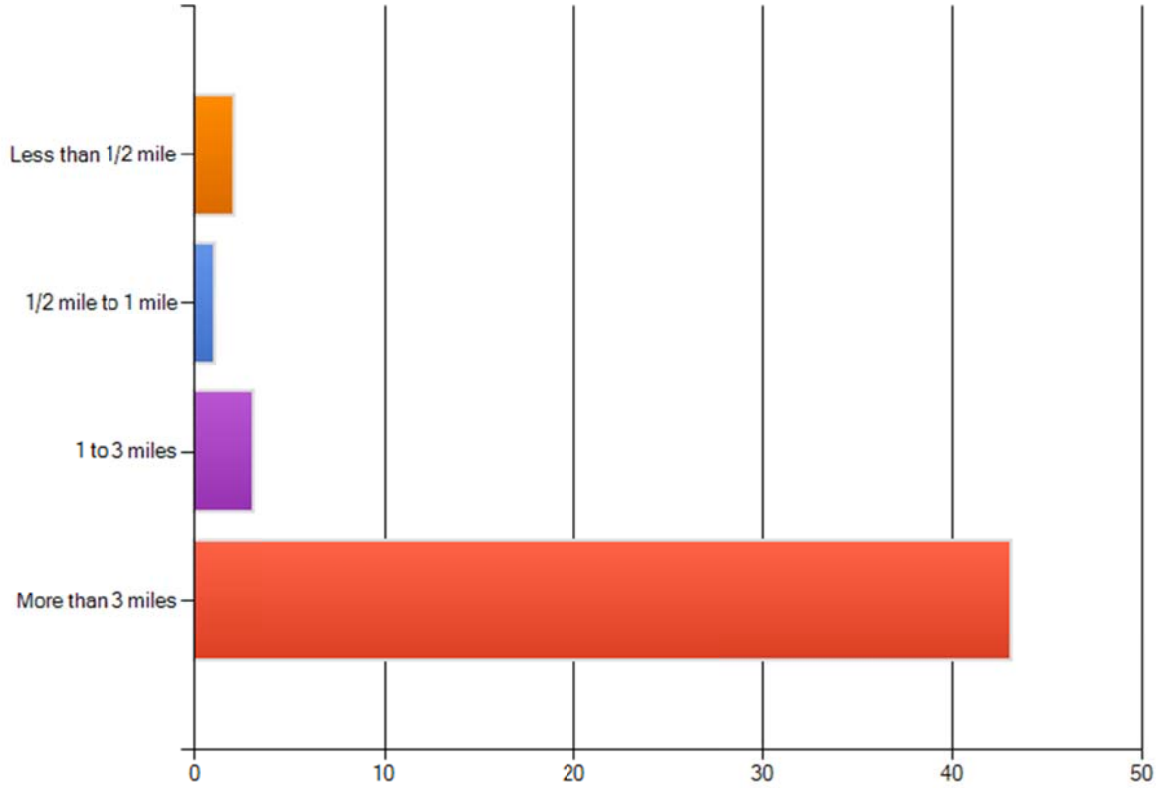
The questionnaire also asked for estimations of visitor demographics, origin, and activities. Families and senior citizens are the most prominent visitor demographic group, according to the respondents. Seventy-four percent of respondents noted a significant number of families, and 61 percent have a significant number of seniors. Approximately half of the stations have a significant number of youth/school groups. Most stations have some minority and low-income visitors, but not a significant number. Sixty-seven percent of stations responded that a significant number or some visitors would be comfortable with bicycling, but only 22 percent responded that their visitors would likely be familiar with transit. Just under half of respondents (45 percent) have some mobility impaired visitors while 47 percent have few or none.

Respondents estimated that a significant number of visitors came from within 10 miles of their station (57 percent) or from 10 to 50 miles from their station (83.7 percent) (note that respondents could note significant numbers of visitors from multiple distances). Most respondents also noted visitation from tourists from more than 50 miles away. Forty percent of respondents noted that they had some international visitors, but more than half of respondents noted that they had few or none. Almost all respondents noted a significant number of visitors engaged in wildlife observation (83 percent), followed by hunting (65 percent) and fishing (51 percent). Approximately 40 percent of respondents also noted significant numbers of photography, environmental education, and interpretation activities, although many respondents also noted a lesser level of participation in these activities.

Transit and Trail Connections

A significant part of the questionnaire focused on transit and trail connections to stations. Two stations have transit service within one-half mile, one station has transit service within a mile, and three stations have transit service between one and three miles from the station. Two of the stations with the most seamless transit access are Minnesota Valley NWR (Long Meadow Lake and Bass Pond Units) and Whittlesey Creek NWR (Northern Great Lakes Visitor Center). Many other stations listed transit services that operate in the region, but currently do not offer service near the station. Twenty-seven percent of respondents listed Amtrak stations and thirteen percent listed Greyhound stations, although the proximity between these transit stations and the FWS stations varies (some stations listed transit stations that are over 100 miles away). Figure 12 shows the distance of transit service from stations.

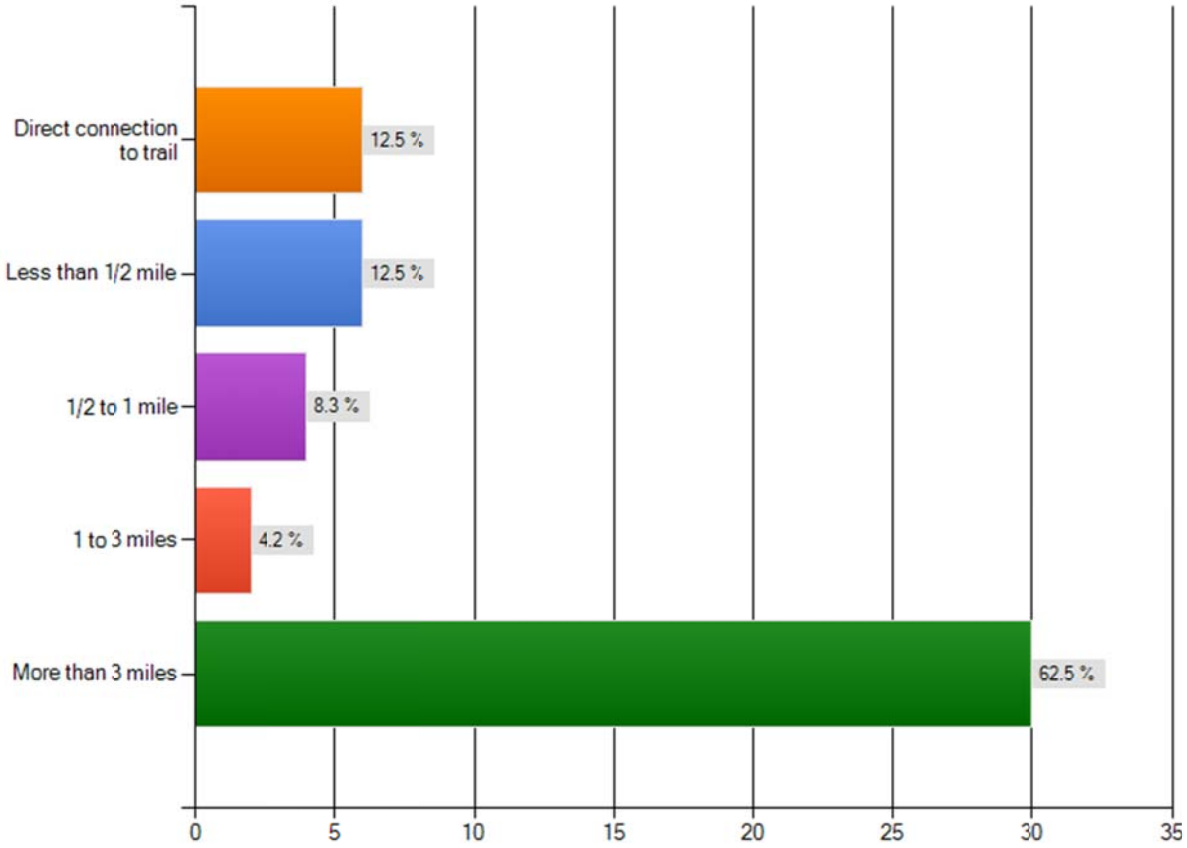
Figure 12: **Distance from Station to Nearest Transit Service**



The majority (73.5 percent) did not see an opportunity for transit to assist for special events. However, 13 respondents (26.5 percent) did see such an opportunity. A smaller minority (14.6 percent) believe their station has an opportunity for transit to provide access for the general visitor.

Trail connections are more prevalent than transit in Region 3. One-quarter of respondents have either a direct trail connection or are located less than one-half mile from a regional trail. An additional six respondents, or 12.5 percent, are located between one-half mile and three miles from a regional trail. The majority of respondents (62.5 percent) are located more than three miles from a regional trail. Figure 13 shows distance from stations to nearby regional trails. Information on specific trail names, types, and potential connections is available on each station fact sheet.

Figure 13: Distance from Station to Nearest Regional Trails

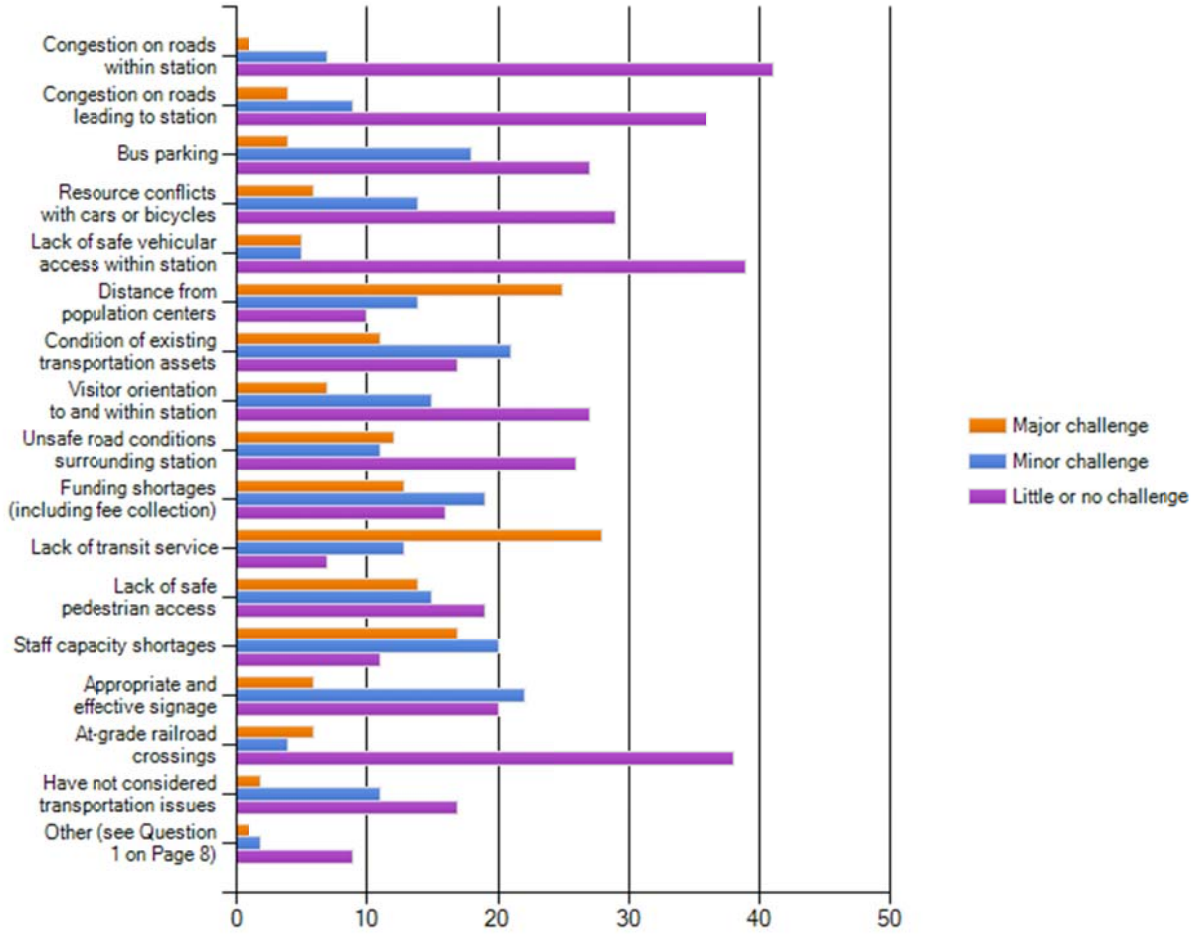


Transportation Challenges and Opportunities

The next section of the questionnaire asked station managers to self-evaluate transportation challenges and opportunities. Respondents rated a list of challenges as major, minor, or little to no challenge (Figure 14). There was a separate section to fill in challenges not listed in the questionnaire and to prioritize the station's greatest challenge. The biggest transportation challenges are often ones that are beyond the control of the USFWS. Station managers most frequently cited the lack of transit service and distance from population centers as major challenges, which make it difficult for many visitors to use alternative transportation. Other significant challenges include management capacity issues, such as funding shortages (67 percent), staff capacity shortages (77 percent), and condition of existing transportation assets (65 percent). Safe pedestrian access was a major concern for 29 percent of respondents, and a minor concern for 31 percent. Almost half of respondents also noted that unsafe road conditions surrounding the station were a challenge. Respondents also noted that signage and orientation could offer

challenges, with 58 percent expressing challenges with appropriate and effective signage, and 45 percent with visitor orientation to and within stations.

Figure 14: **Transportation Challenges**



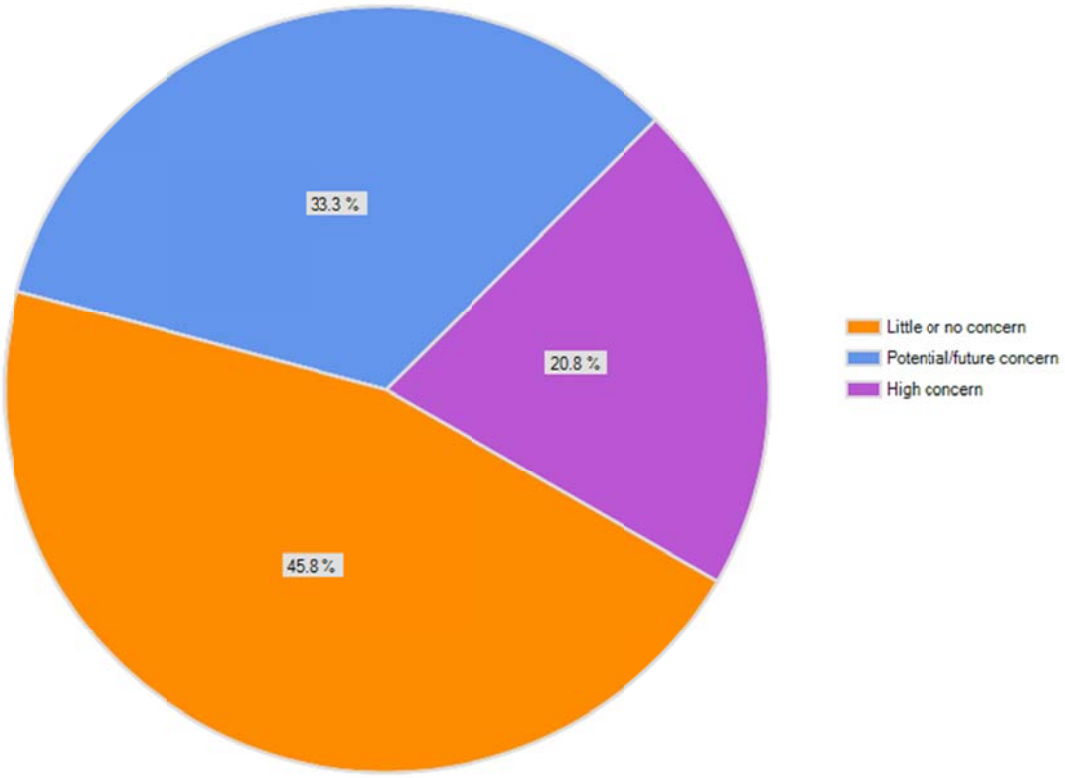
Respondents overwhelmingly called for non-motorized infrastructure improvements to enhance their visitor programs. The most popular transportation improvements were bicycle paths for access to the station (54 percent), pedestrian paths within the station (46 percent), pedestrian paths for access to the station (37.5 percent), and bicycle paths within the station (33 percent). Respondents also expressed a strong need for improved signage for orientation to the station (40 percent) and within the station (27 percent). An additional 27 percent called for new transit service to access the station, while 21 percent believed internal seasonal transit would benefit their station. Most respondents would prioritize the non-motorized improvements and signage, but a few also called for hazard mitigation, new transit service, water access, and promotion and marketing.

Ninety percent of respondents have special events with high visitation, with visitation ranging from 50 to 60,000. Many of these events focus on fishing, hunting, observing migratory birds and eagles, or public open houses. The most popular times of year for these events are May through October. Most station staff manage increased visitation through providing more parking, either through overflow lots on site (49 percent) or through off-site parking with partners (28 percent). Seven percent (three respondents) use transit. Some respondents noted that their current infrastructure can handle the increased visitation.

The stations in Region 3 overwhelmingly expect increased visitation, with 88 percent expecting increased visitation levels in the future, and 65 percent actively working to increase visitation. Only two respondents expected visitation to decrease or were actively seeking to decrease visitation.

Some respondents (21 percent) noted a high level of concern regarding transportation infrastructure that could meet the demands of growing visitation. A smaller number (33 percent) recognized the potential for concern in the future, but the greatest number (46 percent) had little or no concern (see Figure 15).

Figure 15: **Concern about Transportation and Increasing Visitation**



Analysis and Implications

The questionnaire responses indicate that most stations in Region 3 are well-suited to non-motorized forms of alternative transportation, rather than transit. Even stations located in rural or remote areas requested improvements in pedestrian and bicycle infrastructure on roads leading to and within the stations. This might reflect a broader trend in active transportation preferences for Region 3 visitors or a greater shift towards wildlife observation activities that may be well-suited to non-motorized modes. Regional staff can focus technical assistance efforts on funding programs and guidance for trails, sidewalks, bike lanes, and other bicycle and pedestrian facilities.

Many stations also requested assistance with wayfinding and orientation, which may be useful for both motorized and non-motorized access. Wayfinding improvements can often be made with inexpensive strategies such as improved signage and site or trail design. These strategies often require greater coordination with neighboring jurisdictions and transportation agencies.

The greatest barriers to alternative transportation use in Region 3 tend to be ones related to the remote locations of stations and limited funding availability. Stations may not be able to overcome challenges of long distances from population centers or a lack of transit service, but they can identify targeted visitors that may walk or bike to the station and plan to incorporate more non-motorized infrastructure into the station. Similarly, station staff can stretch limited resources by enlisting friends groups and leveraging

partnerships with local governments and transportation agencies. They can also work with regional staff to identify appropriate grant programs or other funding sources.

While almost all stations expected increasing visitation in the next few years, a much smaller number of stations voiced concern about transportation infrastructure meeting visitation demands. Regional staff may target these stations, particularly ones in which transit or trail access could be enhanced or promoted to minimize the need for costly improvements to the roadway and parking infrastructure.

Funding Sources for ATS

Chapter 3 of the Region 3 LRTP describes funding sources, and provides examples of projects funded by these sources, for transportation projects in the region. FWS stations can apply directly to these funding programs, which include (and are described in detail in Chapter 3):

- Eligible to receive:
  - Refuge Roads Program
  - Fish Hatchery Deferred Maintenance
  - Emergency Relief for Federally Owned Roads (ERFO)
- Can apply to:
  - Transportation Enhancements
  - Recreational Trails Program
  - Scenic Byways
  - Rivers, Trails, and Conservation Assistance Program
  - Public Lands Highway – Discretionary Program
  - High Priority Projects Program
  - Paul S. Sarbanes Transit in Parks (TRIP)

There exists a multitude of federal alternative transportation funding sources that local transit agencies and local governments are eligible to receive. Though the funds are federal in origin, application procedures for these funding sources differ by state and some states combine their allotment of federal funds with state funds. Information on the most relevant of these state programs is provided in Table 1. While FWS stations cannot apply directly for these funds, they can work with local transit authorities and/or local governments on project submittals, provided that the local agencies submit the application and are the funding recipients.

Table 1: Relevant Alternative Transportation Programs/Resources in Region 3 States*

State	Transit	Non-motorized
Illinois	Division of Public and Intermodal Transportation (right margin of page)	Federal and State Funding Sources for Bicycle and Pedestrian Facilities
Indiana	Transit	Bicycle and Pedestrian Program
Iowa	Office of Public Transit	Federal and State Recreation Trails
Michigan	Passenger Transportation	Michigan Bike and Pedestrian Funding Opportunities (non-DOT website)
Minnesota	Public Transit Participation Program	Guide to Funding Bicycle and Pedestrian Facilities
Missouri	Transit – Applications – Reports and Programs	Bicycle/Pedestrian Program
Ohio	Office of Transit	Bicycle and Pedestrian Information and Links
Wisconsin	Public Transportation	Bicycle and Pedestrian Facilities Program

*All links are to DOT websites, unless otherwise noted.

The U.S. DOT has several additional websites with links to resources on alternative transportation funding sources. Federal non-motorized transportation funding sources are listed at the following Federal Highway Administration website: http://www.fhwa.dot.gov/hep/bkepedtble.htm. Federal public transit funding sources are available at the following Federal Transit Administration website: http://www.fta.dot.gov/funding/grants_financing_263.html

Partnerships with friends groups, adjacent landowners, local governments, school districts, transportation and government agencies, and transportation providers can help stations expand their funding capacity. These partners may have access to additional funding sources, such as those from local, state, and federal government and private foundations, and can provide matching funds for projects of mutual benefit. They also may be able to share capital infrastructure, such as buses or overflow parking, and technical expertise, such as engineering services. Advanced planning and regular communication with partners allows station staff to identify more cost-savings strategies to reduce overall funding needs.

Project Selection

The Region 3 LRTP includes a new framework for project selection for funding under the Refuge Roads Program (RRP) and the fisheries deferred maintenance program; the framework includes evaluation criteria based on the LRTP goals. The evaluation criteria and weighting scheme reflect the region's priorities, as determined by the LRTP core team, and will guide future transportation projects and programming. Station and regional staff can propose projects, or projects can originate from a Service Asset Maintenance Management System (SAMMS) work order. A small Regional Refuge Transportation System Committee will evaluate all proposed projects. Projects are ranked through quantitative scores, with final funding decisions subject to additional factors such as funding availability and scheduling considerations.

Under this framework, ATS projects are evaluated according to the same criteria as other transportation projects, although ATS projects may be eligible for funding sources outside of the RRP. The evaluating Committee should consider ranking projects by eligible funding sources to open up opportunities for ATS, or communicate with station staff about relevant alternative funding sources for ATS projects that may not score well enough to obtain RRP funds.

ATS projects have the potential to score well in several evaluation criteria areas, due to the inherent benefits of ATS projects. The Committee should consider the following direct and indirect benefits of ATS projects, relative to evaluation criteria:

1. Resource protection:
    a. If ATS projects avoid the need for new or improved roads or parking, they can reduce the impact to wetlands, species habitat, streams, and water quality.
    b. ATS infrastructure should be designed to minimize impacts to natural resources.
2. Visitor Experience:
    a. ATS often enhances the visitor experience by providing fewer barriers between visitors and natural resources, thereby increasing the visual experience.
    b. Trails and transit offer multiple opportunities for interpretation that single-occupancy-vehicle-based transportation does not. These include interpretive kiosks and signs along trails and transit-based interpretive tours.
    c. ATS infrastructure should be designed to include signage for non-motorized and transit users that emphasizes safety and seamless connectivity.

d. The evaluation criteria do not address expanding visitor access to underserved groups or new visitors, including low-income or low-car-ownership populations. ATS projects may enhance the visitor experience for a greater diversity of visitors, which the Committee should also consider in their selection process.

3. System Performance:
    a. If ATS projects can reduce the number of vehicles traveling to and within the station, they will also help reduce wear-and-tear on roadways.
    b. If ATS projects can reduce the number of vehicles traveling to and within the station, they can reduce the risk of accidents caused by vehicle congestion. ATS facilities should be designed for maximum pedestrian and bicycle safety, considering adjacent motorized uses.
4. Partnering:
    a. Strong ATS projects, like strong roads projects, should be the result of collaborative planning with partner agencies and adjacent landowners.
    b. ATS projects are eligible for many alternative funding sources, as described in this report. Strong ATS proposals should consider these funding sources, and the Committee should refer proposal leads to eligible sources.
    c. The Committee should consider partnerships with a county or regional trail network and partnerships with a transit agency as fulfilling the criteria "Partnering with County Road."
5. Sustainability:
    a. All ATS projects will promote walking and biking and reduce the use of greenhouse gases. The Committee should consider the total net benefits of greenhouse gas emissions reductions, particularly if the ATS project could significantly encourage mode shift away from single-occupancy vehicles.
    b. Due to the lesser level of wear-and-tear from non-motorized users, non-motorized ATS infrastructure should have both longer service life and lower annual operations and maintenance costs than comparable infrastructure serving motor vehicles.
    c. ATS projects should be designed to use sustainable construction materials, be context-sensitive, and minimize long-term maintenance costs.
    d. Regional staff could suggest that project managers include ATS elements (such as sidewalks or bicycle lanes) in road project proposals to increase the sustainability evaluation score.
6. Planning:
    a. ATS projects should be coordinated with other management plans, such as Comprehensive Conservation Plans (CCPs). Since many CCPs do not include specific transportation projects, project proposals should also note regional, county, or local trail or transit plans that list the project.

Priority Refuges

Criteria

The Volpe Center developed criteria to rate and prioritize the potential and need for ATS at stations throughout Region 3 (Table 2). These criteria draw from the goals and objectives of the Region 3 LRTP, including focuses on natural resource protection, safety, planning, and partnerships. The criteria focus on assessing relative levels of needs and opportunities. This is accomplished through evaluating specific needs for visitor management, resource protection, and safety, and through determining capacity from existing planning efforts and partnerships. The Volpe Center also incorporated the broad goal areas from the National LRTP into these criteria, which include access, mobility, and connectivity, safety and security, visitor experience, environmental consideration, and organizational effectiveness and coordination.

Table 2: Criteria to Rate and Prioritize the Potential and Need for ATS in Region 3 Stations

	High	**Medium**	**Low**
Severity of Need	Station demonstrates urgent or critical need for ATS to address high visitation, safety, and/or resource protection issues.	Station has a demonstrated or strong future need for ATS, but the station could function effectively without improvements.	ATS is not needed in the short term; there may be a desire or long-term need for ATS.
Visitation	Station has high visitation or growing visitation that is exceeding facility and management capacity.	Station has relatively high visitation, high seasonal visitation, or high visitation during special events.	Station has low visitation.
Opportunity	New visitor infrastructure, partnerships, and/or nearby development provides a unique opportunity to add ATS improvements.	General visitation and development patterns present opportunities for ATS, but these opportunities may not be unique or time-sensitive.	Station has limited opportunities for ATS (due to remote location and lack of visitor amenities or partnerships).
Underserved Populations	The station is located near underserved populations, and ATS can help those potential visitors access the station.	There is some potential to offer ATS access to underserved populations.	The station has limited or no potential to offer ATS access to underserved populations.
Existing ATS Plans/Actions	Station staff are actively planning for and pursuing ATS.	Station staff have considered ATS and may have initiated some planning for ATS.	Station has little or no planning for ATS.

The station fact sheets contain priority ratings to help regional staff target technical assistance and funding efforts. The overall priority ranking of each station reflects the aggregated total of all criteria. For example, a station with a "medium" ranking may meet high priority criteria for one or two areas, but medium rankings for most criteria.

High Priority Stations

High priority stations and their ATS assets and needs are listed in this section (Tables 3 through 7). Ratings for all stations are included on station fact sheets. Low and medium priority stations may become eligible for unique opportunities to improve alternative transportation, such as the construction of a new regional trail that can include a spur to the refuge or a location-specific grant for funding. All station staff should stay connected to local partners to take advantage of these opportunities.

Table 3: Crab Orchard NWR

Refuge	Transit Distance	Trail Distance	Priority
Crab Orchard NWR *Carbondale, IL*	More than 3 miles	More than 3 miles	High

Existing or Planned ATS:

- Greyhound and Amtrak both serve Carbondale, which is located 14 miles from the refuge.
- Rides Mass Transit District offers weekday, on-demand transit service to Marion, Carbondale, Carterville, and other cities around southeastern Illinois.

Opportunities for Future ATS:

- Transit may be able to assist the refuge with the Southern Illinois Hunting and Fishing Days, a large event that attracts 80,000 people. Transit vehicles can help bring people from the community college parking lot to sites around the refuge.
- The greatest challenge is a lack of transit service, and the refuge would like to see better transit connections with the surrounding urbanized areas. While there is some transit available within Carbondale and Marion, there is little service available between the two cities and none with stops at the refuge. This may include a shuttle service on weekend days from central parking areas in Carbondale or Marion or expansion of their Eagle Tours (in FWS-owned vans) for refuge interpretive programs.
- There may be an opportunity to improve bicycle paths or trails leading to and within the station. Refuge staff report increased bicycle use on newly paved roads within the station. Roads surrounding the refuge are not safe for bicycles due to high speeds and narrow shoulders, but there may be long-term potential to add a bike path through the refuge on old rail beds and connect to a regional bike network.

Table 4: Detroit River IWR

Refuge	Transit Distance	Trail Distance	Priority
Detroit River IWR *Detroit, MI*	Less than 2 miles	Direct connection	High

Existing or Planned ATS:

- The SMART bus line has four routes that stop within two miles of the Humbug Marsh unit of the refuge. The bus routes range in frequency from 30 minutes to two hours and run six to seven days per week.
- The Kennedy Park and Elizabeth Park Trails are located within two miles of the refuge.
- A new, two-mile paved section of the North-South Connector Greenway Trail was recently completed within the Humbug Marsh unit, with sidewalk and bike trail connections to the community of Gibraltar and the Lake Erie Metro Park to the south. This is part of a 16 mile trail that will eventually connect to the City of Detroit.

Opportunities for Future ATS:

- The refuge would like to add bicycle trails to link some of the units with nearby communities.
- The refuge is constructing a new Visitor Center and completing a Visitor Services Plan; they expect visitation to increase.
- There are significant opportunities to improve access to underserved populations around the refuge through increase in transit and non-motorized access.

Table 5: Minnesota Valley NWR and WMD

Refuge	Transit Distance	Trail Distance	Priority
Minnesota Valley NWR and WMD *Bloomington, MN*	Less than ½ mile	Direct connection	High

Existing or Planned ATS:

- Metro Transit's American Boulevard light rail station is located approximately one-half mile from the Long Meadow Lake Unit and Visitor Center. The light rail offers high-frequency service seven days per week to the downtown Minneapolis area. Metro Transit bus service also runs nearby and near other units of the refuge (near Bloomington Ferry Road, the Bass Ponds Unit, and the Black Dog Unit). Refuge staff estimate that 15 percent of visitors come via public transit.
- The Minnesota River Valley State Trail, maintained by the Minnesota Department of Natural Resources, is a multi-use gravel trail that runs through the refuge and continues (though not perfectly connected) throughout the river valley.
- There are extensive trails throughout the units with strong connectivity to the region's bicycle and pedestrian network. Most trails within the refuge are packed gravel surface and subject to flooding.
- There is a paved bicycle trail in the Wilkie Unit, adjacent to CR 101. A local bicycle company plows the path during the winter, and it is heavily used by commuters.
- The Sand Creek Pedestrian Bridge in the Louisville Swamp Unit offers a vital connection for cyclists and pedestrians.
- The City or County will be converting the Black Dog Road (in the Black Dog Unit) to a paved bicycle/pedestrian trail in 2016.
- The refuge occasionally rents 16- or 24-passenger shuttles or vans for special events.

Opportunities for Future ATS:

- Refuge staff have a strong partnership history with local governments, businesses, user groups, and the Minnesota Department of Transportation.
- The refuge held two Rail to Refuge tours, in which visitors come to refuge via light rail (with or without bicycles) and then tour the refuge by bicycle or foot.
- The refuge needs improved signage to direct visitors to amenities; signage has been constrained by local ordinances. Since the refuge units are adjacent to residential areas, improved signage may increase visitation by pedestrians.
- The refuge can identify better connections with light rail and bus transit and educate the public about these opportunities.
- Old Cedar Avenue Bridge is a missing connection for commuters from south and east residential areas to access the refuge and get to points north in the Twin Cities. The existing bridge is a safety hazard, but some commuters still use it despite hazardous conditions. The refuge has submitted a TRIP application for capital costs to supplement funds from the City of Bloomington and other sources.

Table 6: Shiawassee NWR

Refuge	Transit Distance	Trail Distance	Priority
Shiawassee NWR *Saginaw, MI*	½ - 1 mile	Less than ½ mile	High

Existing or Planned ATS:

- Saginaw Transit Authority offers regional bus service near the refuge every 40 minutes, six days per week. The bus stop is 6-7 blocks from Green Point Environmental Learning Center (ELC).
- The Saginaw Valley Rail Trail is located approximately two to three miles from the refuge, and recent sidewalk improvements (by the County) have connected the trail to within 100 yards of a refuge trailhead. Visitation by walking and biking to the trailhead has increased over the past few years.
- The City of Saginaw and refuge friends groups have submitted several Public Lands Highway Discretionary applications for road improvements to a section of Gabriel Road/Maple Street for access to the ELC, but the applications have not been selected.
- Road conditions leading to the refuge are very poor and unsafe, which actively deters motorized and non-motorized visitors. Roads in the area are considered to be in poor condition for bicycling.
- The refuge has strong partnerships with the City of Saginaw and Saginaw County for transportation and non-transportation projects.

Opportunities for Future ATS:

- Visitors can currently use transit, pedestrian, or bicycle modes to access the refuge, but these connections may be unsafe, inconvenient, or inappropriate for some visitors. Several simple improvements, such as sidewalk extension near the bus stop and near the trailhead, would significantly increase non-motorized and transit access.
- To better connect existing transit to the refuge, partner with Saginaw Transit Authority to add bus stops closer to the ELC and promote the use of transit for refuge access.
- Connect the Saginaw Valley Rail Trail and Saginaw County sidewalks with the refuge trailhead (100 yards) and provide signage along the Rail Trail to orient users to the refuge trails.
- Several schools within one mile of the ELC have discontinued field trips in recent years, in part due to costs of buses. These schools may be able to walk to the refuge with improved infrastructure.
- Refuge staff would also like improved signage for orientation to and within the station.

Table 7: Upper Mississippi NWR, La Crosse District

Refuge	Transit Distance	Trail Distance	Priority
Upper Mississippi NWR, La Crosse District *La Crosse, WI*	More than 3 miles	1-3 miles	High
Existing or Planned ATS: • There is a local transit service in La Crosse, but it is not used for refuge access nor is information available about its service area. • There is an Amtrak station in La Crosse, located more than three miles from the refuge, but the train stops in La Crosse in the middle of the night. • The Great River State Trail runs along the Mississippi River and is located within one of the refuge visitor center (currently under construction). **Opportunities for Future ATS:** • A new Visitor Center will be opening in 2012, with a planned multi-use trail connecting the Visitor Center with the Mississippi River shore and a boat launch. The greatest priority for the refuge is to connect this trail with existing regional trail networks. There may be an opportunity for bicycle rental or sharing. • There may be an opportunity in the future to extend local bus lines to access the Visitor Center. • Other improvements would include water access facilities, signage, and promotion and marketing of existing ATS. Signage has not yet been planned for the new Visitor Center. • Refuge staff work closely with partners to plan for and fund transportation projects; they could benefit from additional technical assistance to further these partnerships and projects.			