LAKE LOWELL AREA

BICYCLE AND PEDESTRIAN ACCESS PLAN

SEPTEMBER 2016 | DRAFT

U.S. Department of Transportation
Federal Highway Administration

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alta PLANNING + DESIGN

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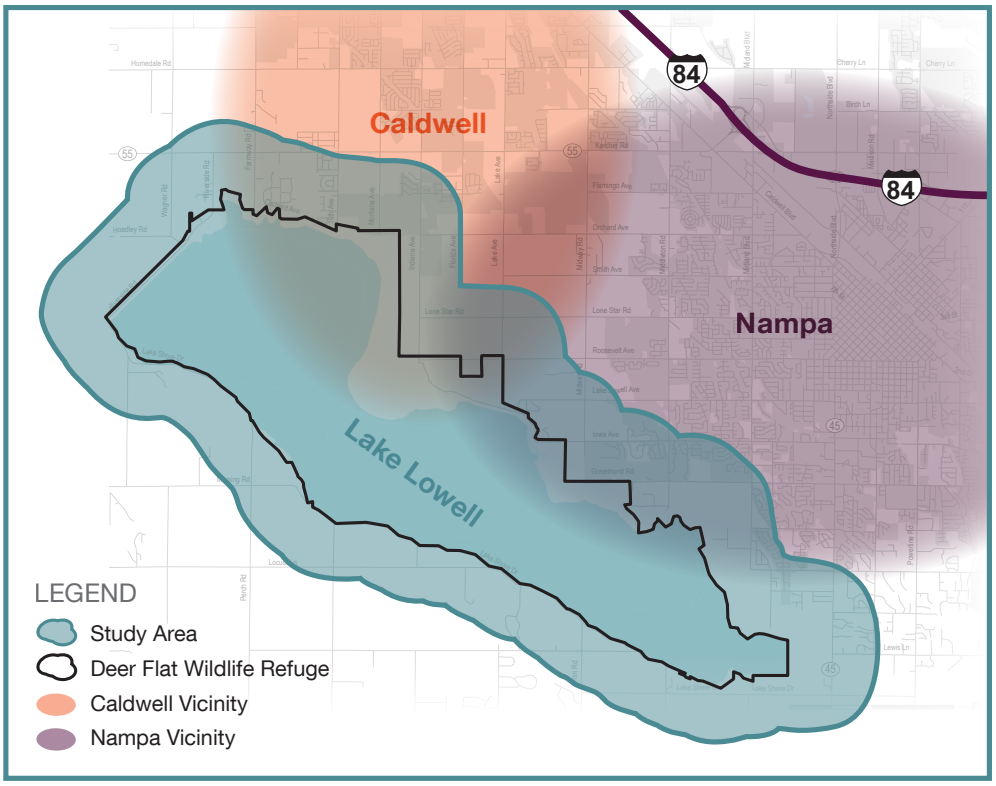
CHAPTER 1
EXECUTIVE SUMMARY

PURPOSE

The Lake Lowell Area and the Deer Flat National Wildlife Refuge (DFNWR or the Refuge) are critical natural resources. The DFNWR provides important habitat and safe haven for wildlife while Lake Lowell provides the water storage necessary for cropland irrigation. Together, they are also an economic resource helping to drive the recreational, tourism, and agricultural industries of Canyon County and the neighboring communities of Nampa and Caldwell.

Recognizing the value of these resources, a sustainable approach is required to both protect the natural resource and leverage the recreational and economic benefits. Accessibility for visitors is one element of an integrated approach to managing these sometimes conflicting objectives. Providing more robust mode choices for travel to and around the Lake Lowell area enhances sustainability and complements the area's value as a natural resource.



The Lake Lowell Area Bicycle and Pedestrian Access Plan identifies short- and long-range bicycle and pedestrian facilities that will provide the public with safer and more convenient access to the area around Lake Lowell and the Refuge, which is currently served by higher speed rural roads with narrow shoulders. The increased use of non-motorized transportation connections to the Lake Lowell area and recreation sites within the Refuge enhances the safety and visitor experience, while minimizing the need to widen rural roads. The plan also increases connectivity to and from the cities of Nampa and Caldwell and around Canyon County and provides real and effective travel mode choices.

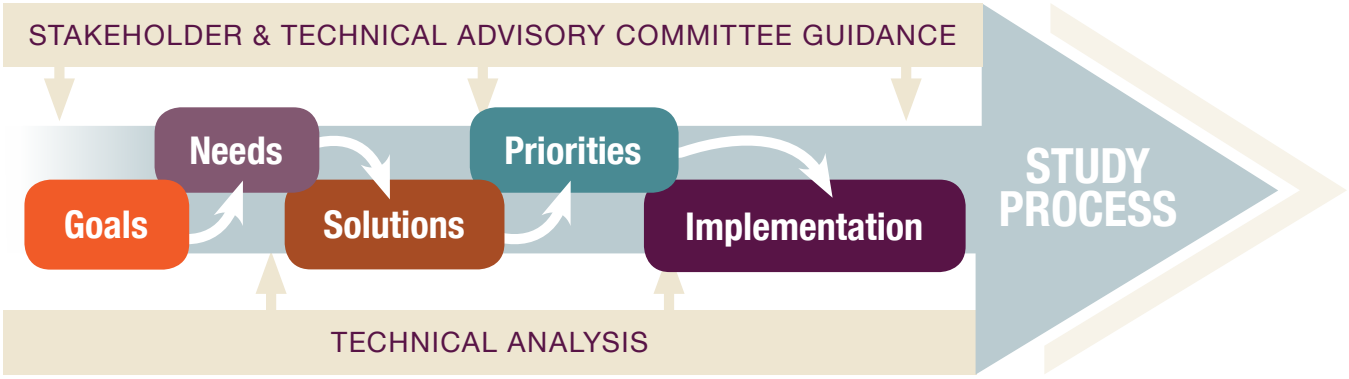
VISION STATEMENT

The Lake Lowell Area Bicycle and Pedestrian Access Plan will result in a long-range plan that will allow a coordinated effort between the various stakeholder agencies to develop bicycle and pedestrian facilities that will provide a safer environment for the growing number of users choosing non-motorized transportation modes within the Lake Lowell area.

STUDY PROCESS

The Lake Lowell Area Bicycle and Pedestrian Access Plan was:

- Developed through a goals-driven process
- Guided by a stakeholder engagement process
- Supported by technical analysis and a series of cascading decisions that connected goals to implementation priorities



PLAN GOALS

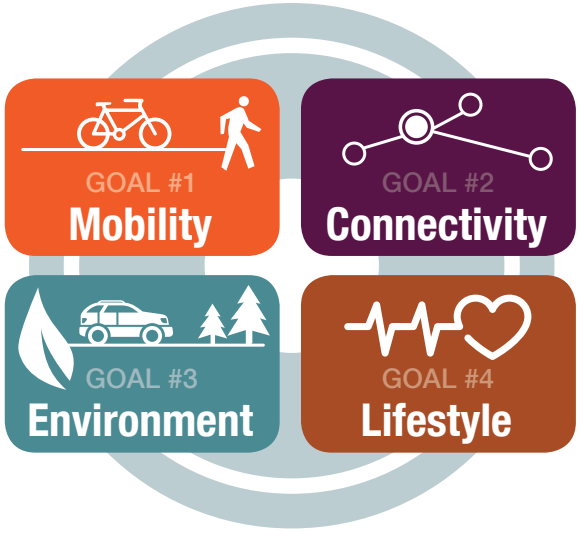
The following goals and objectives for the Lake Lowell Area Bicycle and Pedestrian Access Plan were developed through input from project stakeholders and the public.

Goal #1: Improve Bicycle and Pedestrian Mobility in the Lake Lowell Area

Goal #2: Improve Connectivity to the Lake Lowell Area from Canyon County and the cities of Nampa and Caldwell

Goal #3: Enhance Environmental Quality and Reduce Roadway Congestion

Goal #4: Promote Healthy Lifestyles



Specific objectives for each of these goals were also developed to guide the development of solutions and the steps necessary to achieve them.

NEEDS

The bicycle and pedestrian environment within the study area received an in-depth analysis of specific needs based on key findings from previously adopted and completed plans, public participation efforts, surveys, and maps from each participating agency.

Needs were evaluated in the areas of:

- Safety
- Mobility
- Environmental Sustainability
- Mode Choice
- Quality of Life

RECOMMENDATIONS AND PRIORITIES

RECOMMENDED NETWORK

Upon completion of the needs analysis, the identified needs were organized into two major categories. These categories included identified projects that provide:

- Access to the area
- Circulation within the area

Needs in the category of access to the area were further evaluated by looking at specific connections to the communities of Caldwell and Nampa. This evaluation provided insights to develop a recommended connection network.

Similarly, the needs for providing better circulation within the area were evaluated through a node and network analysis of use areas, use types, and their interconnections. This evaluation allowed for the development of a recommended circulation network.

PROJECT EVALUATION

The recommended bicycle and pedestrian networks were evaluated relative to existing infrastructure, connectivity, and ease of implementation to define a list of over 50 potential projects. Both networks were also evaluated considering the range of user types (bicycle and pedestrian) and skill level, and an appropriate variety of facility types were integrated into the recommended networks. The resulting specific projects were evaluated relative to project goals and cost effectiveness to develop a recommended list of projects.

PRIORITIZATION

The project list developed from the needs analysis and further refined by the project evaluation was then prioritized based on 14 criteria developed with input from the Technical Advisory Committee (TAC). These criteria reflect the goals for the plan, cost effectiveness, and support. The criteria are:

Total Points	Category	Point Value	Prioritization Criteria
31	Spatial/Gap/Termini	12	Fill Missing Bike/Ped Link
		11	Facility Within ¼ Mile of Residential/Commercial Land Use
		8	Facility Within ¼ Mile of Activity Center (Park, School)
27	Safety	14	Increase Comfort, Safety and Convenience For All Users
		13	Reduce Vehicle, Bike/Ped, Rec Visitor Conflicts
23	Readiness	10	Cost and Availability/Certainty of Funds
		9	Project Readiness & Delivery Schedule
		4	Ability to Serve Exist & Growing Population
13	Environmental	7	Impacts to Protected Species and Habitat
		3	Impacts to Natural or Historic Resources
		2	Improve Visual/Aesthetic
		1	Water Quality Impacts
11	Partnerships/ Support	6	Project Support
		5	Identified in Other Plans or Has Support

The resulting project priorities were then grouped into tiers with input from the TAC. The highest priority Tier 1 included the following 16 projects out of the 50+ projects initially identified.

Priority	Label*	Corridor	Facility Type	Facility Access	Miles
1	A	10th Ave	Shared-Use Path/Sidepath	Caldwell Access	2.98
1	B	Indiana Ave	Bicycle Lanes	Caldwell Access	4.51
1	C	Lake Ave	Bicycle Lanes	Caldwell Access	5.26
1	G	Upper Embankment Rd	Shared-Use Path	Lake Lowell Access	0.72
1	H	Lake Lowell Park Path	Shared-Use Path	Lake Lowell Access	0.72
1	I	Iowa Ave	Shared Roadway	Lake Lowell Access	0.97
1	M	Highway 45 Sidepath	Shared-Use Path	Lake Lowell Access	1.25
1	N	Lake Shore Dr	Paved Bicycle Shoulders	Lake Lowell Access	11.06
1	O	Riverside Rd	Paved Bicycle Shoulders	Lake Lowell Access	2.06
1	P	Orchard Ave	Shared Roadway	Lake Lowell Access	2.57
1	D	Midway Rd Sidepath	Shared-Use Path	Nampa Access	2.29
1	E	Roosevelt Ave	Bicycle Lanes	Nampa Access	4.95
1	F	Lake Lowell Ave	Shared Roadway	Nampa Access	3.92
1	J	Iowa Ave	Bicycle Lanes	Nampa Access	3.02
1	K	Greenhurst Rd	Shared Roadway	Nampa Access	1.02
1	L	Greenhurst Rd	Bicycle Lanes	Nampa Access	2.00

* Caldwell Access Lake Lowell Access Nampa Access

IMPLEMENTATION PLAN

The plan's ultimate success will be measured throughout the time frame of its implementation. It requires consideration of current and future decisions on funding, flexibility to meet future conditions or opportunities, and long-term maintenance.

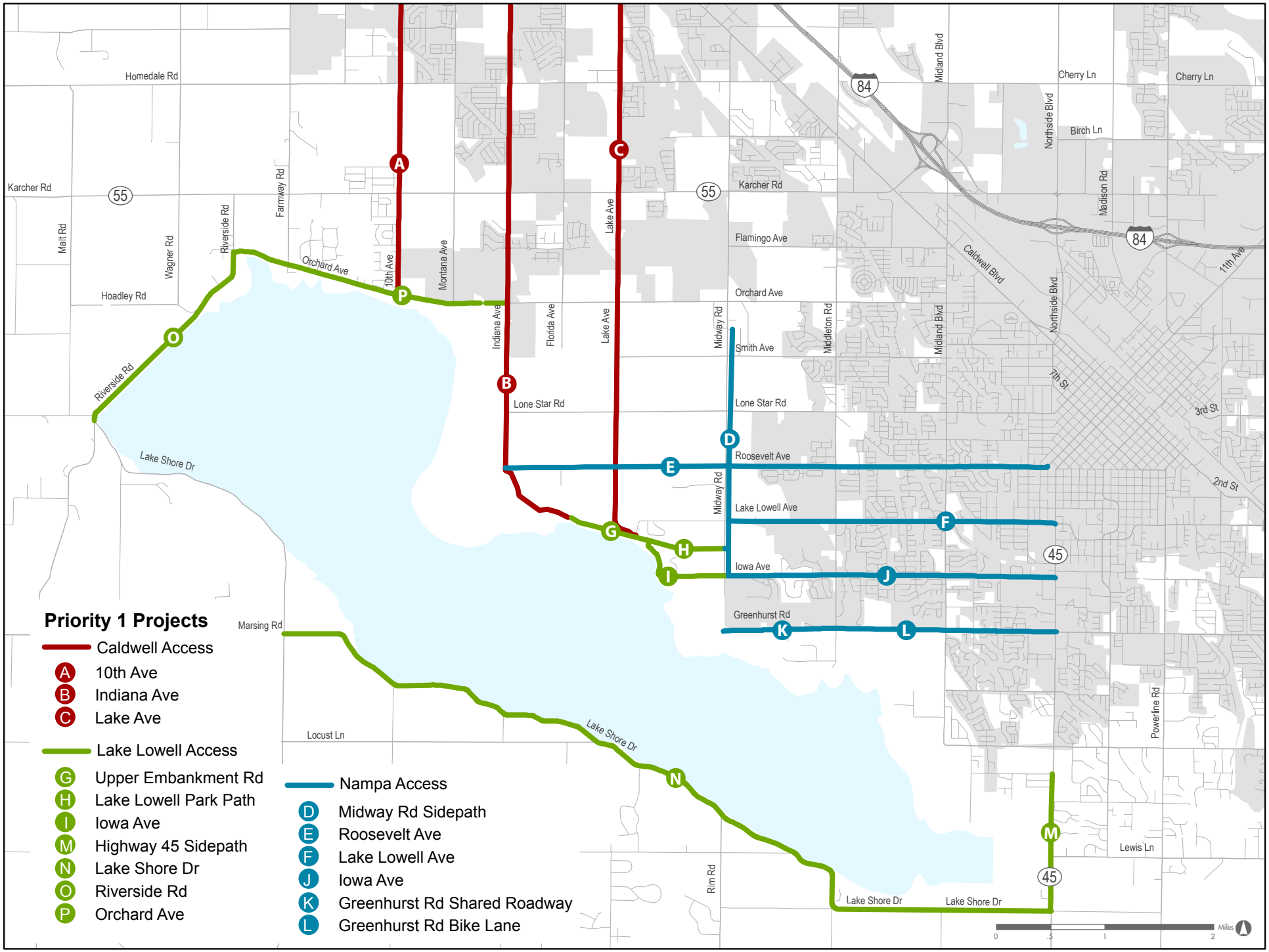
FUNDING OPTIONS

Potential funding sources include both transportation and recreational programs and grants. There are also emerging opportunities related to health organizations. A summary of these options is presented in Chapter 5 of the plan.

NEXT STEPS

There are numerous opportunities for stakeholders and agencies to advance the projects and priorities of the Lake Lowell Area Bicycle and Pedestrian Access Plan. These steps include:

- Incorporating priority projects into near-term project programming
- Collaborating to identify funding opportunities
- Implementing shared maintenance agreements or other collaborative approaches to enhance the sustainability of the network
- Reviewing, revising, and adapting the plan to future conditions through regular and ongoing TAC meetings


Priority 1 Projects
Caldwell Access
A 10th Ave
B Indiana Ave
C Lake Ave
Lake Lowell Access
G Upper Embankment Rd
H Lake Lowell Park Path
I Iowa Ave
M Highway 45 Sidepath
N Lake Shore Dr
O Riverside Rd
P Orchard Ave
Nampa Access
D Midway Rd Sidepath
E Roosevelt Ave
F Lake Lowell Ave
J Iowa Ave
K Greenhurst Rd Shared Roadway
L Greenhurst Rd Bike Lane
Homedale Rd
Karcher Rd
Hoadley Rd
Orchard Ave
Flamingo Ave
Smith Ave
Lone Star Rd
Roosevelt Ave
Lake Lowell Ave
Iowa Ave
Greenhurst Rd
Marsing Rd
Locust Ln
Lake Shore Dr
Lewis Ln
Cherry Ln
Birch Ln
Malt Rd
Wagner Rd
Riverside Rd
Farmway Rd
10th Ave
Montana Ave
Indiana Ave
Florida Ave
Lake Ave
Midway Rd
Middleton Rd
Midland Blvd
Northside Blvd
Caldwell Blvd
Madison Rd
11th Ave
7th St
3rd St
2nd St
Powerline Rd
Rim Rd
55
84
45
Miles
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1
2

THE PUBLIC PROCESS

A robust public involvement process guided this plan. Multiple approaches were applied to engage the public and stakeholders. Their input shaped project direction and outcomes including:

- Identifying goals and objectives
- Developing a complete list of needs relative to project goals
- Identifying and weighting of project prioritization criteria
- Selecting priority projects

Engagement approaches included:

- **TAC –** A Technical Advisory Committee (TAC) was developed to provide specific feedback on the goals of the plan, needed connectivity, and other opportunities and constraints. The TAC comprised stakeholders from COMPASS, Boise Project, local bicycle and pedestrian advocacy groups, and other organizations active within the Lake Lowell Area.
- **3P Visual Web Map/Survey –** An online survey and web map were used to obtain feedback from the general public on specific locations of concern. The online survey was highlighted on websites of Nampa and Caldwell, as well as distributed via email blasts by the TAC and Core Team members.
- **Listening Stations –** A listening station was set up at the Lake Lowell marathon to obtain feedback from users and visitors of DFNWR.
- **Public Review –** The draft plan was posted online for public review and comment.

The feedback obtained from the above outreach influenced the planned connectivity, priority projects, and implementation elements of the plan.

SUMMARY

The Lake Lowell Area Bicycle and Pedestrian Access Plan was developed through a collaborative process. The aspirational goals identified by the stakeholders and agencies of the TAC reflect the inherent value of the existing environmental resources and recreation destination of the Lake Lowell area. The plan is intended to help preserve and protect this resource while providing a complementary means of access for the benefit of visitors and residents, wildlife and water, economy, and environment.

OVERVIEW OF DOCUMENT

Chapter 1: Executive Summary

- Provides brief overview of Lake Lowell Area Bicycle and Pedestrian Access Plan.

Chapter 2: Goals and Objectives

- Summarizes goals and objectives of the Plan.

Chapter 3: Existing Conditions Summary and Needs Assessment

- Provides an overview summary of the area's existing conditions followed by a comprehensive Needs Assessment examining safety, mobility, environmental sustainability, mode choice, and overall quality of life considerations.

Chapter 4: Recommendations and Prioritization

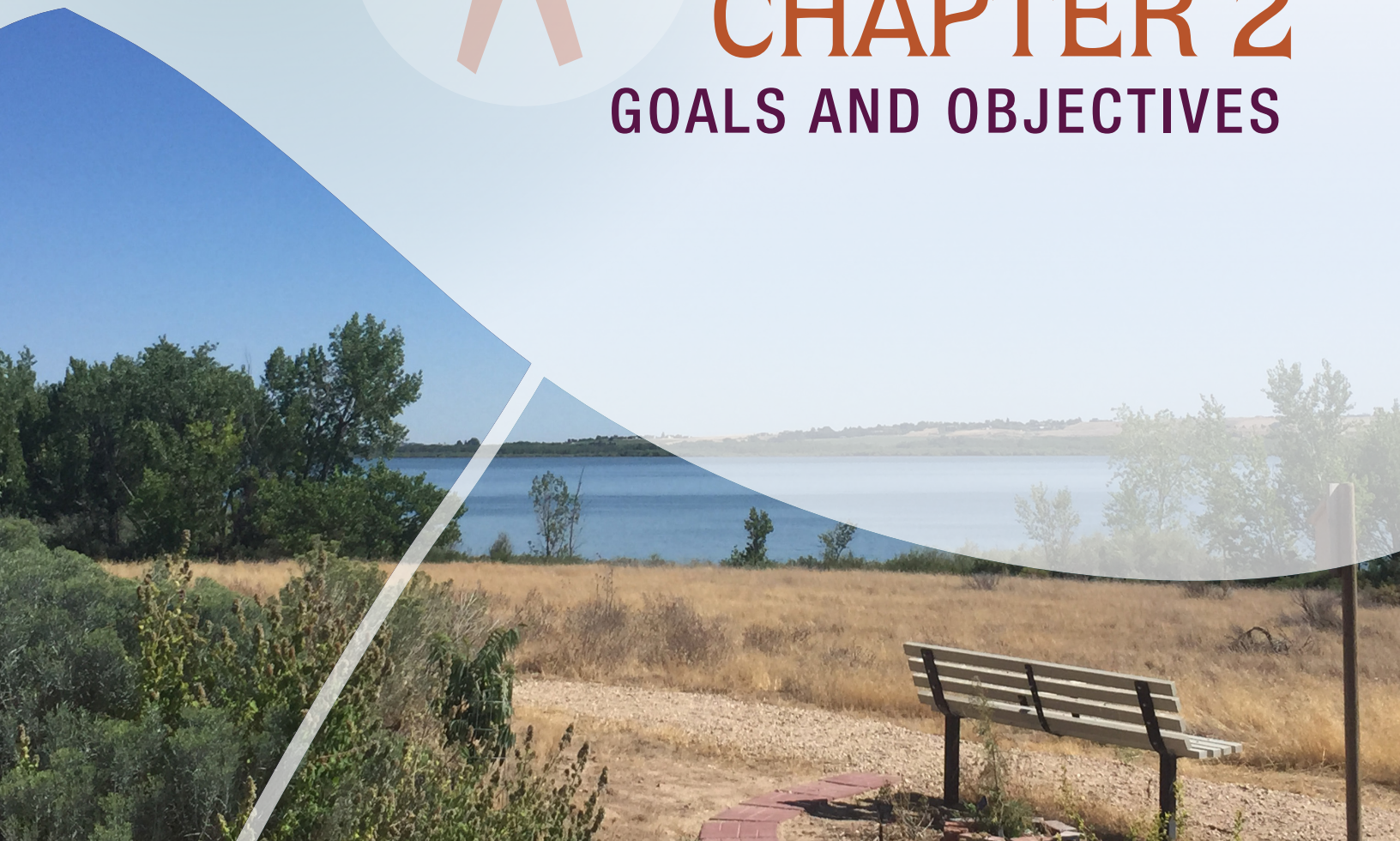
- Details the process and outcomes of identifying and prioritizing proposed projects to help provide access to and around Lake Lowell and the Refuge.

Chapter 5: Implementation Plan

- Provides an overview of grants and funding sources, methods to implement short-term (5 – 10 year) prioritized projects, phasing and maintenance recommendations, and Project Summary Sheets for prioritized projects.

CHAPTER 2

GOALS AND OBJECTIVES



INTRODUCTION

Lake Lowell and Deer Flat National Wildlife Refuge (DFNWR or the Refuge) are located in southwestern Idaho as shown in **Figure 1 – Study Area Vicinity Map**. Increased interest in non-motorized transportation connections from the cities of Nampa and Caldwell and around Canyon County to the Lake Lowell area and to recreation sites within the Refuge presents safety and visitor experience concerns due to rural roads with narrow shoulders.

The Lake Lowell Area Bicycle and Pedestrian Access Plan is a long-range plan for bicycle and pedestrian facilities that will provide the public with safer and more convenient access to the area around Lake Lowell and the Refuge. This study involved a coordinated effort between various stakeholder agencies including the Federal Highway Administration (FHWA) Western Federal Lands, City of Nampa, City of Caldwell, Canyon County, Canyon Highway District, Nampa Highway District, and the Refuge.

The plan developed by this study benefits the general public and does not focus on facilities geared toward any one user group.

Figure 1 – Study Area Vicinity Map

The study area extends approximately 4,000 feet in all directions beyond the Refuge boundaries as shown in **Figure 2 – Study Area.** The expanded study area reaches the cities of Caldwell and Nampa with the majority of the study area located in unincorporated Canyon County. According to the Deer Flat National Wildlife Refuge Comprehensive Conservation Plan (CCP), the DFNWR encompasses 10,500 acres including an approximately 9,000-acre overlay area on Lake Lowell.

VISION STATEMENT

The Lake Lowell Area Bicycle and Pedestrian Access Plan will result in a long-range plan that will allow a coordinated effort between the various stakeholder agencies to develop bicycle and pedestrian facilities that will provide a safer environment for the growing number of users choosing non-motorized transportation modes within the Lake Lowell area.

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

LEGEND

- Study Area
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact Boundary

Area Closed to All Entry Year Round
Fishing Areas A and B
East Side Recreation Area
Lower Dam Recreation Area
North Side Recreation Area
South Side Recreation Area

Lower Dam Recreation Area
Lower Dam / Fishing Area A
North Side Recreation Area
Upper Dam / Fishing Area B
South Side Recreation Area
East Side Recreation Area
Schaffer's Access
Gotts Point Access
Access No. 1
Access No. 2
Access No. 3
Access No. 4
Access No. 5
Access No. 6
Access No. 7
Access No. 8

CALDWELL
NAMPA
Lake Lowell

N

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Feet

Figure 2 – Study Area

GOALS AND OBJECTIVES

The following goals and objectives for the Lake Lowell Area Bicycle and Pedestrian Access Plan were developed through discussions with project stakeholders and the public. Each of these goals is supported with a series of objectives to assist in achieving the respective goals.

Goal #1: Improve Bicycle and Pedestrian Mobility in the Lake Lowell Area

Goal #1 Objectives:

- Develop bicycle and pedestrian facility projects that improve safety over existing conditions.
- Reduce vehicle, bicycle/pedestrian, and recreational visitor conflicts.
- Recommend projects that are supported by local agencies.
- Recommend projects considering cost and funding alternatives.
- Recommend projects considering delivery schedule and readiness (e.g., right-of-way availability, environmental compliance).

Goal #2: Improve Connectivity to the Lake Lowell Area from Canyon County and the Cities of Nampa and Caldwell

Goal #2 Objectives:

- Develop bicycle and pedestrian system connections to the Lake Lowell area from facilities planned and implemented by Canyon County and the cities of Nampa and Caldwell.
- Provide access to/from activity centers in the County and surrounding communities.
- Provide access to/from DFNWR public access points and facilities.

Goal #3: Enhance Environmental Quality and Reduce Roadway Congestion

Goal #3 Objectives:

- Provide alternative travel options to and within the Lake Lowell area.
- Reduce greenhouse gas emissions and environmental impacts.
- Reduce congestion on roadways.
- Mitigate impacts to natural resources and habitats.

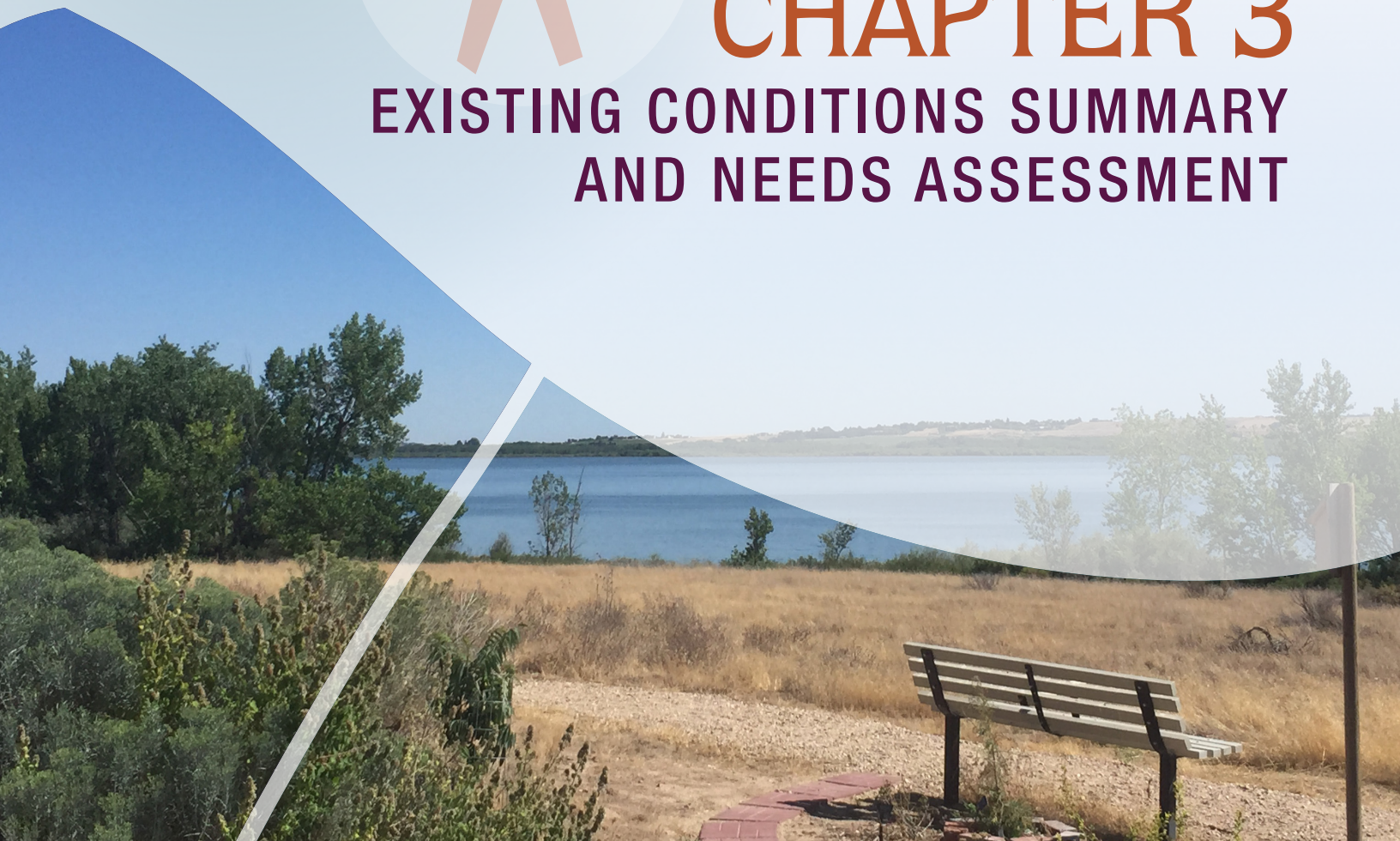
Goal #4: Promote Healthy Lifestyles

Goal #4 Objectives:

- Increase the number of bicyclists and pedestrians in the Lake Lowell area.
- Increase non-motorized recreational opportunities in the area to promote health and wellness and provide an overall health benefit.
- Provide bicycle and pedestrian facilities that balance the needs and skill levels of all user groups.
- Provide facilities that are accessible to and usable by individuals with disabilities.
- Provide facilities that support community goals and enhance quality of life in region.

CHAPTER 3

EXISTING CONDITIONS SUMMARY AND NEEDS ASSESSMENT



INTRODUCTION

This chapter begins with an overview summary of the Lake Lowell area's existing conditions followed by a comprehensive Needs Assessment examining the area's safety, mobility, environmental sustainability, mode choice, and overall quality of life considerations.

EXISTING CONDITIONS SUMMARY

A summary of the Existing Conditions technical memo is included in this chapter to provide background on the study area and its opportunities and constraints, including an inventory of existing bike and pedestrian facilities, recreation opportunities, roadway facilities, land ownership, and environmental resources. The complete Existing Conditions technical memo is included in **Appendix A**.

Sources used to develop this summary of Existing Conditions include:

- **Previously adopted plans** – City of Nampa Bicycle and Pedestrian Master Plan (2011), City of Caldwell Pathways and Bike Routes Master Plan (2010), Nampa Highway District Transportation Plan (2012), the Deer Flat National Wildlife Refuge Comprehensive Conservation Plan (CCP, 2015) and the National Wildlife Refuge Visitor Survey 2010/2011, and VRT Valley**connect** plan (2011).
- **Roadway information and traffic data** – Association of Canyon County Highway Districts (ACCHD) Standards; 2009-2013 Average Daily Traffic (ADT) data from Canyon County Highway District and Nampa Highway District; 2013 Average Annual Daily Traffic (AADT) data from ITD; and other information provided by agencies.
- **Land use** – Canyon County Zoning map and Future Land Use map, City of Nampa Zoning map and Future Land Use map, and City of Caldwell Zoning and Future Land Use map.
- **Public land ownership and easements** – Parcel ownership and easement data from the Bureau of Reclamation and Canyon County Assessor's office with a focus on publicly owned land (local, state, federal).
- **Environmental resources** – Various local, state, and federal agency databases and sources.

Existing Bicycle and Pedestrian Facilities

An inventory and assessment of the existing and planned bicycle and pedestrian facilities included sidewalks, shared-use paths, intersections, and bikeways within the study area. Planned and proposed facilities include the following:

- **Bicycle Facilities**
  - Bike lanes
  - Pathways
- **Pedestrian Facilities**
  - Sidewalks
  - Curb Ramps
  - Crosswalks
- **Transit Facilities**
  - VRT Flex-Route Service

Recreation Opportunities

According to the Deer Flat National Wildlife Refuge CCP, Section 5.3.2 (General Visitation Information), the Refuge offers six priority wildlife-dependent recreational opportunities: fishing, hunting, wildlife watching, wildlife photography, environmental education, and environmental interpretation. Access locations around the Refuge include the Lower Dam Recreation Area, which offers an existing boat ramp, parking area, and boat dock, and the Upper Dam Recreation Area, which is near the Visitor Center and offers two improved boat ramps, two docks, a wildlife viewing platform, a designated swimming area, and four parking lots with trail access.

Public Lands

Land ownership data was collected from Canyon County and the Bureau of Reclamation (BOR) to identify local, state, and federally owned properties and easements within the study area. Publicly owned lands and easements could present opportunities for coordination of future bicycle and pedestrian projects. A good portion of the Refuge property is owned by the U.S. Department of Interior (DOI)/BOR in fee title. Several properties that are part of the Refuge study area are owned by the BOR or U.S Fish and Wildlife Service. The Bureau of Land Management owns land north of the Refuge within the study area, north and west of the Upper Dam.

Land Use

The study area is located outside of Nampa's and Caldwell's city limits within unincorporated Canyon County. A portion of both Nampa's and Caldwell's Areas of Impacts (AOIs) are located within the study area. A mix of land uses and zoning classifications are represented within the study area including the following: commercial, agricultural, single-family residential, limited multiple-family residential, multiple-family residential, and community business.

Roadway Information

Roadway information collected and analyzed for this plan includes right-of-way, pavement width, shoulder width, average daily traffic (ADT) and annual average daily traffic (AADT) traffic volumes, and standards for federally funded projects. Information was provided by Canyon Highway District, Nampa Highway District, and Idaho Transportation Department (ITD).

Environmental Resources

Federal, state, and local databases and sources were reviewed to collect and analyze existing physical and human environmental resource conditions within the study area. A review of the physical environment included soil resources and farmland, air quality, hydrology (surface waters, floodplains, wetlands, and groundwater/sole source aquifers), hazardous materials, and biological resources (threatened and endangered species/State sensitive species). A review of the human environment involved components strongly influenced by or related directly to humans including demographics, environmental justice, cultural resources, visual impacts, section 4(f) and 6(f) resources, land use, and noise.

Environmental Concerns

Environmental "pathway concerns" were identified in specific areas around the Refuge. Areas where no issues would be encountered are intermittent on the south, southwest, and northwest areas of the Refuge. Areas where major issues would be encountered if a pathway or bike/pedestrian improvement were proposed are mainly located on the north, northeast, and southern tip of the Refuge. Areas where a pathway or bike/pedestrian improvement would evoke few issues are located on the southwest and northeast areas of the Refuge. Specific areas and their unique environmental issues include the following:

1. Shoreline and emergent vegetation heavily used by waterfowl and roosting eagles
2. Area immediately adjacent to historic grebe colonies and heron rookery
3. Long-standing sanctuary that has been closed to the public for decades
4. Immediately adjacent to a wetland areas that is heavily used by migrating waterfowl and hunters
5. Increases in cycling and pedestrian use will likely degrade hunting experience. Area may be near heavily contaminated site.
6. Increases in cycling and pedestrian use will likely degrade hunting experience at this location.

7/8. Area immediately adjacent to farming operation that successfully attracts and feeds large concentrations of migrating waterfowl.

NEEDS ASSESSMENT

The needs assessment conducted in the initial planning phase of this project began with a comprehensive review of needs and proposed projects identified in existing planning documents in and adjacent to the project's study area. The needs assessment was further enhanced with a summary of needs/potential projects identified by stakeholders, agencies, and the Technical Advisory Committee (TAC) in the early planning stages.

General needs considered include safety, mobility, environmental sustainability, mode choice, and overall quality of life. The bicycle and pedestrian environment within the study area received an in-depth analysis of specific needs based on key findings from previously adopted and completed plans, public participation efforts, surveys, and maps from each participating agency.

The agencies joining forces to develop this plan include the City of Nampa (Nampa), City of Caldwell (Caldwell), Canyon County Highway District 4, Nampa Highway District 1, FHWA Western Federal Lands, and DFNWR. This assessment provides an overview of information provided by agencies, input received from stakeholders in the early planning stages, and specific needs identified in the City of Nampa Bicycle and Pedestrian Master Plan, the City of Caldwell Pathways and Bike Routes Master Plan, Nampa Highway District's Transportation Plan, the Deer Flat National Wildlife Refuge CCP and the National Wildlife Refuge Visitor Survey 2010/2011 (conducted by the U.S. Fish and Wildlife Service and U.S. Geological Survey), and the Valley Regional Transit (VRT) Valley**connect** plan.

SAFETY

The study area is bordered by rural roadways with relatively narrow shoulders that largely prohibit safe bicyclist and pedestrian use and create further safety concerns for all commuters.

Available crash data from the ITD within the last five years (2009-2013) was collected and classified into five categories based upon the most severe injury that resulted from the crash: Fatal, A Injury (Serious Injuries), B Injury (Visible Injuries), C Injury (Possible Injuries), and Property Damage. Injury types are further described below:

- **Fatalities** – death occurred within one month of crash
- **A Injury (Serious Injuries)** – incapacitating injury (unconscious, transported to hospital)
- **B Injury (Visible Injuries)** – visible signs of injury (cuts, broken bones)
- **C Injury (Possible Injuries)** – no visible signs of injury (whiplash, soreness)
- **Property Damage** – collision with property damage of $751 or more to any one person but no injuries or fatalities

A visual representation of crash locations and types within the study area is shown on **Figure 3**. According to the Canyon County Sheriff's Office, the ITD crash data does not reflect all of the known crashes in the study area. With no additional Geographic Information System (GIS) file or crash database to reference in this report, ongoing collaboration with the Sheriff's Office will be paramount as bicycle and pedestrian projects are explored and alternatives are screened.

Crash Analysis

Of the 291 crashes reported within the last five years for the study area: 1 was classified as a Fatality; 20 as A Injury (Serious Injuries); 35 as B Injury (Visible Injuries); 58 as C Injury (Possible Injuries); and 177 as Property Damage Only. The fatality was located at the intersection of State Highway 45 and Lake Shore Drive in 2009. Two Visible Injury crashes involving bicyclists within the project area

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LEGEND

- Pedestrian Crash (2 Total)
- Domestic Animal Crash (7 Total)
- Wild Animal Crash (17 Total)
- Fatal Accident (3 Total)
- A Injury Accident - Serious Injuries (20 Total)
- B Injury Accident - Visible Injuries (35 Total)
- C Injury Accident - Possible Injuries (58 Total)
- Property Damage (177 Total)
- Study Area
- Refuge Visitor Center (1 Total)
- Improved Boat Ramp (3 Total)
- Unimproved Boat Ramp (2 Total)
- Dock (3 Total)
- Swimming (1 Total)
- Wildlife Viewing Platform/Blind (3 Total)
- Parking Facilities (15 Total)
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact Boundary

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Figure 3 – Crashes 2009-2013

occurred between 2009 and 2013: one on Riverside Road at the Lower Dam Recreation Area (2010), and the other at the intersection of State Highway 55 and Riverside Road (2011).

Due to the unique nature of the study area, animal-related crashes were also examined within the same time period. According to ITD's crash records, of the 58.4 average crashes per year, 4.8 crashes (8.2 percent) involved wild or domestic animals.

A total of 85 crashes (29 percent) occurred on weekends (Saturday and Sunday). Approximately one-third of crashes (31 percent) occurred in dark conditions due to minimal or no street lighting.

Crash Locations

Roadway segments with the highest crash rates were reviewed and are summarized below.

- **State Highway 45 (SH 45)** – 35 crashes (one fatal crash, three A Injury, one B Injury, nine C Injury, and 21 property damage reports). Fifteen crashes (33 percent) occurred at the intersection of SH 45 and Lake Shore Drive. One fatal crash (2009) occurred in daylight while attempting to pass another vehicle. Two animal-wild/domestic crashes were reported at SH 45 and Lewis Lane. Three crashes occurred while turning left. Reported contributing factors include angle turning and failure to yield to traffic.
- **Lake Shore Drive** – 51 crashes (two A Injury, eight B Injury, three C Injury, and 38 property damage reports). Of those, 38 were property damage-only reports and 11 were animal (wild) related. Crashes occurred 41.2 percent in daylight conditions and 43 percent in the dark. There were 14 crashes between Lake Shore Drive and Marsing Road, south of Access No. 6 with one A Injury, one B Injury, two C Injury, and 10 property damage reports. Reported contributing factors include negotiating a curve (65 percent), avoiding an obstacle, or starting/stopping in traffic.
- **State Highway 55 (SH 55)** – 39 total crashes (four A Injury, six B Injury, nine C Injury, and 20 property damage reports). Five crashes (13 percent) occurred at the intersection of Riverside Road— all property damage reports, with one animal (wild) related report. Ten crashes (26 percent) occurred at the intersection of Farmway Road. Twenty-nine crashes (74 percent) occurred on a two-way road with no divider; 82 percent of the crashes occurred in the daylight. Reported contributing factors include failure to yield, inattention and exceeding posted speed.
- **Riverside Road** – 25 total crashes (one A Injury, four B Injury, four C Injury, and 16 property damage reports). Twenty-two crashes occurred on a two-way road with no divider at the intersection of Riverside Road and Orchard Ave, of which 50 percent occurred in the dark. One crash involving a bicyclist (B Injury) was reported at Riverside Road and Orchard Avenue. Two animal (wild) crashes were reported, with one occurring at the intersection of Lowell Road and the other occurring at the intersection of Lake Shore Drive. Reported contributing factors include negotiating a curve (44 percent), turning left, and going straight.

Safety Issues Identified

The cities of Nampa and Caldwell collaborated during the development of their bicycle and pedestrian master plans to create an integrated trail and pathway system including bike lanes, sidewalks and multiuse pathways. However, the existing infrastructure does not adequately address the needs in the Lake Lowell area nor does it provide adequate linkages to the DFNWR. Currently the only means of accessing DFNWR is by using the local, rural road system. Improvements to the overall roadway system will benefit all modes of transportation traveling to and from the DFNWR and within the Lake Lowell area.

As part of Nampa and Caldwell's previous planning efforts, safety issues and concerns as well as future bicycle and pedestrian facilities and improvements were identified within the boundaries of each city. This needs assessment focuses on issues and concerns and planned facilities within the study area. Local input derived from public participation and surveys included in Nampa and

Caldwell's bicycle and pedestrian master plans were reviewed as part of this study and indicate an overwhelming support for improved access to Lake Lowell and the DFNWR.

The continued urban growth of Nampa and Caldwell has produced an increased desire for bicycling and walking facilities in both communities; however, there are limited existing bicycle and pedestrian facilities that connect these communities to Lake Lowell or create conectivity within the study area. As Nampa and Caldwell grow and the number of visitors to the DFNWR increases, so will the safety concerns and stress on the local roadway system as well as the need for adequate multi-modal facilities.

Safety issues identified by the Canyon County Sheriff's Office in the City of Nampa Bicycle and Pedestrian Master Plan, the City of Caldwell Pathways and Bike Routes Master Plan, Nampa Highway District Transportation Plan, and the National Wildlife Refuge Visitor Survey 2010/2011 are summarized below.

Safety Issues – Canyon County Sheriff's Office

As shown in **Appendix C**, Canyon County Sheriff's Office provided an Area Crime Report map that illustrates crime areas surrounding the DFNWR. While the development of a GIS map containing this data by the Sheriff's Office is ongoing, the map provided in **Appendix C** shows areas where crime has occurred in a five-year period (2010 to 2014). According to the Canyon County Sheriff's Office, they responded to 435 felony calls and 14,698 "other" calls ranging from misdemeanor offenses, calls for service, and public assists between 2010 and 2014.

In the northwest portion of the study area, the Area Crime Report map shows higher concentrations of crime along Wagner Road, Farmway Road, 10th Avenue, and Indiana Avenue. In the northeast portion of the study area, the map shows some crime activity surrounding Schaffer's Access and Gotts Point Access. In the south portion of the study area, the map shows overall lower concentrations of crime, with a good portion located along Lake Shore Drive, particularly west of Rim Road.

This information is helpful to understand where potential safety issues should be considered when planning for bicycle and pedestrian improvements and connections within the study area. Lighting, signage, and other safety measures should be considered as possible project features when new infrastructure projects are developed and evaluated.

Safety Issues – City of Nampa Bicycle and Pedestrian Master Plan

As described in the Nampa Bicycle and Pedestrian Master Plan, survey respondents cited an overall need for safe walking and biking facilities along Nampa's roadways. Sidewalk surface conditions are generally poor or missing within the study area, with noted obstructions including mailboxes in the sidewalk right-of-way creating obstacles and safety concerns for potential users. The Plan noted that sidewalks are missing southbound on Midland Boulevard between Lake Lowell Avenue and Locust Lane. Also, Greenhurst Road has intermittent sidewalks and completely lacks sidewalks on the segment of roadway between Midland Boulevard and the eastern boundary of the DFNWR. Sidewalks, pathways, and trail connections are missing along Locust Lane starting at Sunnyridge Road on the easternmost boundary of the DFNWR. Poor sidewalk surface conditions were noted in specific locations including Lake Lowell Avenue between S. Stanford Street and 12th Avenue and on 12th Avenue between W. Georgia Avenue and Lake Lowell Avenue. The presence of crosswalks and curb ramps in the study area are minimal. The Plan specifically notes that curb ramps are missing along Middleton Road, Lake Lowell Avenue, Midland Boulevard, and near Iowa Elementary within the study area.

The Plan reports that Nampa residents expressed a strong desire for sidewalks, crosswalks, and bike lanes. Survey respondents also indicated that improved connectivity to existing trails through on-street dedicated facilities (i.e., bike lanes and sidewalks) and closing trail gaps would encourage residents to walk or bike more. Surveyed bicyclists asked for roadway debris removal to increase

safety. Limited access to sidewalks and crosswalks along school routes was noted as the primary deterrent in parents allowing their children to walk or bike to school.

The Nampa Existing Conditions – Sidewalks, Area 1 Map from the Plan is provided in **Appendix D**.

Safety Issues – City of Caldwell Pathways and Bike Routes Master Plan

The southern portion of the City of Caldwell's AOI crosses into the study area roughly one-half mile north of Karcher Road.

The City of Caldwell Pathways and Bike Routes Master Plan cites its main purpose as providing its citizens with a means to choose alternate forms of transportation including walking and biking facilities, allowing them to safely navigate between destinations. The DFNWR and Lake Lowell are popular destinations for Caldwell residents who like to fish, boat, walk, bike, sightsee, and exercise. However, the existing network of bike routes, sidewalks, and pathways is limited especially near the Refuge. Visitors travelling to the DFNWR and Lake Lowell have to navigate narrow local roads, most of which lack proper shoulders.

Caldwell has identified four intersections within or near the study area that need to be improved:

- Orchard Avenue and S. Montana Avenue (Lake Lowell Corridor, proposed pathway)
- W. Karcher Road and Montana Avenue (Lake Lowell Corridor, proposed pathway)
- 10th Avenue and Moss Lane (along a proposed bike route on Moss Lane)
- Karcher Road between Lake and Florida avenues (East Karcher Corridor, proposed pathway)

The intersection improvements located along the Lake Lowell Corridor, which is the proposed multi-use pathway, will provide Caldwell residents with safer access to the DFNWR and Lake Lowell.

The Proposed Bike, Pedestrian and Transit Network and Proposed Pathways and Bike Routes Map from Caldwell's Plan are provided in **Appendix E**.

Safety Issues – Nampa Highway District Transportation Plan

The main goal of the Nampa Highway District Transportation Plan is to "Provide a safe, convenient, aesthetic and economically functional transportation system for the District and region, which includes pedestrians, automobiles, trucks, agricultural vehicles, and other modes of transportation for the safe and efficient movement of people, goods and services." The Plan identifies a need for improved signage to increase safety. The Plan further encourages a sign maintenance program because improved signage could have five times the improved safety cost/benefit ratio than other safety programs according to the Transportation Research Board. As a result, the District is working on a sign improvement program that will improve safety for all modes of transportation including bicyclists and pedestrians.

Safety Issues – Deer Flat National Wildlife Refuge Draft CCP and the National Wildlife Refuge Visitor Survey 2010/2011

The U.S. Fish and Wildlife Service contracted with the U.S. Geological Survey to conduct a national survey of visitors regarding their experiences on national wildlife refuges. The survey was conducted to better understand visitor needs and experiences and to design programs and facilities that respond to those needs. The survey results informed Service performance planning, budget, and communications goals. Results also informed the CCP, Visitor Services, and Transportation Planning processes.

According to the National Wildlife Refuge Visitor Survey completed in 2010/2011, approximately 180,000 people visit the DFNWR every year (based on 2008 RAPP database; U.S. Fish and Wildlife

Service, 2011) to enjoy opportunities such as fishing, auto tours, biking, canoeing, kayaking, birding, hiking, boating, horseback riding, wildlife observation, photography, use of the Visitor Center, environmental education, as well as waterfowl, upland, big game, and other migratory bird hunting.

Input from the surveys indicates a desire for safe pedestrian and bicyclist access to the Refuge. It was also noted that bicycle lanes are narrow or non-existent along the local roads, making it difficult for users to share the road and to arrive at the Refuge safely.

Source: http://www.fws.gov/deerflat/pdf/usgsvisitorsurveydeerflatnwr.pdf

MOBILITY

Bicyclists and pedestrians have common needs such as safety, connectivity, and accessibility. When considering bicyclist and pedestrian mobility, it is very important to consider persons with disabilities. Some of the most notable critical needs of bicycle and pedestrian mobility include: visibility and signage and striping at crossings, continuous facilities, standard design guidelines, decreased traffic speeds, and direct connections that reduce walking and biking distances.

Access to transit is another important aspect of mobility. Transit improves mobility for people who can no longer physically operate a motor vehicle. Bicyclists and pedestrians and/or persons with disabilities often rely on transit to get them from one place to another. The most notable needs of transit mobility include: transit service to transport people from populated areas to the DFNWR, and signage and lighting in strategic locations where bicycle and pedestrian facilities exist (crosswalks, sidewalks, bike lanes, widened shoulders, etc.).

Mobility Issues Identified

The cities of Nampa and Caldwell have both developed bicycle and pedestrian master plans that identify future opportunities to connect to the Lake Lowell area and the DFNWR. Currently, the existing infrastructure available to reach the Refuge safely lacks connectivity, including insufficient or non-existent sidewalks, bike lanes and multi-use trails. There is strong support and desire to create a bicycle and pedestrian network that promotes safe travel to and from the DFNWR and between the two cities.

In order to provide a viable means of bicycle and pedestrian access to the Lake Lowell area and DFNWR, the cities of Nampa and Caldwell should link Refuge access locations with the existing bicycle and pedestrian system.

Mobility issues were identified in the City of Nampa Bicycle and Pedestrian Master Plan, the City of Caldwell Pathways and Bike Routes Master Plan, Nampa Highway District's Transportation Plan, and the National Wildlife Refuge Visitor Survey 2010/2011.

Mobility – City of Nampa Bicycle and Pedestrian Master Plan

Mobility improvements have been identified as a key feature in Nampa's Bicycle and Pedestrian Master Plan. Nampa's existing and proposed bicycle and pedestrian facilities are shown in **Figures 4 and 5** and on Nampa's Proposed Bikeway and Off-Street Pathway Network map in **Appendix D**. Currently, Nampa's bike lanes, bike routes and pathways fall short of connecting directly to the study area creating mobility difficulties and safety concerns. Nampa has proposed a north/south pathway along Midway Road, which would eventually connect to existing trails located at Gotts Point. The pathway would continue along Greenhurst Road to Middleton Road and Midland Road, creating additional connections within the study area. A proposed extended pathway off Midway Road heading west along the Edwards Drain would allow users to access the Upper Dam Recreation Area, Lake Lowell Park and Visitor Center, which are some of the Refuge's most popular fishing and boating destinations. The existing trail system between Gotts Point, Visitor Center, and Upper Dam Recreation Area is disconnected, preventing users from easily navigating between them.

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

LEGEND

City Bike and Pedestrian Network

- Bridge
- Needed Crossing Improvements
- Needed Intersection Improvements
- Existing Bike Lane
- Existing Bike Route
- Existing Pathway
- Proposed Bike Lane
- Proposed Bike Route
- Proposed Pathway
- Existing Sidewalks
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind

Refuge Bike and Pedestrian Network

- Murphy's neck trail
- Proposed Multiuse Path
- Proposed Docks
- Proposed Vehicle Trail (Gott's Point)
- Nature Play
- Proposed dock
- Proposed observation blind; Proposed photo blind
- Proposed swimming area
- Proposed visitor contact station
- Proposed Walking Trail
- Study Area
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact

Area Closed to All Entry Year Round
Fishing Areas A and B
East Side Recreation Area
Lower Dam Recreation Area
North Side Recreation Area
South Side Recreation Area

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U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division

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Figure 4 – Proposed Bike, Pedestrian, and Transit Network (Nampa's Bicycle and Pedestrian Master Plan)

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

LEGEND

- Valley Connect Routes
- Flex Route Service
- Existing Bike Lane
- Existing Bike Route
- Existing Pathway
- Existing Sidewalks

Pavement Width

- 14 Ft
- 20 - 24 Ft
- 25 - 28 Ft
- 29 - 33 Ft
- 34 - 37 Ft

Shoulder Type

- Curb & Gutter
- Gravel Shoulder
- Study

Note: Shoulder type information available only for Canyon Highway District

Current Use

- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle
- Minor
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact

Area Closed to All Entry Year Round
Fishing Areas A and B
East Side Recreation Area
Lower Dam Recreation Area
North Side Recreation Area
South Side Recreation Area

Lower Dam Recreation Area
Lower Dam Fishing Area A
North Side Recreation Area
Upper Dam / Fishing Area B
South Side Recreation Area
East Side Recreation Area
Schaffer's Access
Scotts Point Access
Access No. 1
Access No. 2
Access No. 3
Access No. 4
Access No. 5
Access No. 6
Access No. 7
Access No. 8

Lake Lowell
CALDWELL
NAMPA

Ustick Rd
Lonkey Ln
Homedale Rd
Karcher Rd
Hoadley Rd
Orchard Ave
Lone Star Rd
Roosevelt Ave
Lake Lowell Ave
Iowa Ave
Greenhurst Rd
Dooley Ln
Locust Ln
Lewis Ln
Deer Flat Rd
Marsing Rd
Lake Shore Dr
Flamingo Ave
Moss Ln
Cherry Ln
Birch Ln
Smith Ave
Davis Ave
Garrity Blvd
Victory Rd
Amity Ave
Colorado Ave
Cleveland Blvd
Middleton Rd
Midland Blvd
Madison Rd
Northside Blvd
Franklin Blvd
Caldwell Blvd
Karcher Bypa
Laster St
Florida Ave
Midway Rd
Montana Ave
Lake Ave
Indiana Ave
Wagner Rd
Farmway Rd
Bear Ln
Weitz Rd
Chicken Dinner Rd
Pride Ln
Malt Rd
Riverside Rd
Perch Rd
Rim Rd
Powerline Rd
Southside Blvd
Chicago St
Kings Rd
Holly St
Yale St
Sunnyslope Rd
Surrey Ln
Williamson Ln
Scotts Ln
Lloyd Ln
Lewis Ln
Elbow Ln
Deer Flat Rd
Mountain Hawk Dr
Emerald Rd
Santa Rita Rd
Crescent Dr
Locust Ln
Orchard Ave
Lone Star Rd
Roosevelt Ave
Lake Lowell Ave
Iowa Ave
Greenhurst Rd
Dooley Ln
Locust Ln
Lewis Ln
Deer Flat Rd
Lake Shore Dr
Flamingo Ave
Moss Ln
Cherry Ln
Birch Ln
Smith Ave
Davis Ave
Garrity Blvd
Victory Rd
Amity Ave
Colorado Ave
Ustick Rd
Lonkey Ln
Homedale Rd
Karcher Rd
Hoadley Rd
Orchard Ave
Lone Star Rd
Roosevelt Ave
Lake Lowell Ave
Iowa Ave
Greenhurst Rd
Dooley Ln
Locust Ln
Lewis Ln
Deer Flat Rd
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Lake Shore Dr

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Federal Highway Administration
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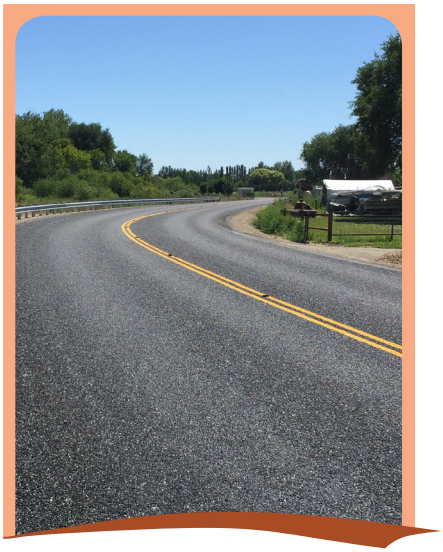
Figure 5 – Existing Bike and Pedestrian Network (Nampa's Bicycle and Pedestrian Master Plan)

Nampa's proposed bicycle and pedestrian facilities identified in **Figure 4** illustrate key connections needed for users to reach the study area. Summarized below are major roadways, canals, and creeks that connect within the study area and adjacent areas of Nampa.

PROPOSED BIKE LANES:

- Iowa Avenue (between Midland Blvd. and Middleton Rd.)



PROPOSED BIKE ROUTES:

- Middleton Road (north from Moss Ln. to Greenhurst Rd.)
- Iowa Avenue (between 12th Ave. Rd. and Midway Rd.)
- Greenhurst Road (between Sunnyridge Rd. and Midland Blvd.)
- Lake Lowell Avenue (between 12th Ave. Rd. and Middleton Rd.)
- Dooley Lane (between Sunnyridge Rd. and Midland Blvd.)

PROPOSED PATHWAYS:

- Midway Road (from north Moss Ln. to Greenhurst Rd.)
- Edwards Drain (between Midway Rd. and Midland Blvd.)
- Roosevelt Avenue (between Midland Blvd. and Midway Rd.)
- Weston Creek (between Roosevelt Ave. and Lake Lowell Ave.)
- Greenhurst Road (between Middleton Rd. and Midway Rd.)
- Midland Boulevard (from Greenhurst Rd. south to the East Side Recreation Area, west of Shaffer's Access)
- Greenhurst Road (south to the East Side Recreation Area at the DFNWR)

Nampa has identified proposed sidewalk gap in-fill priorities within or in close proximity to the study area as shown in its Proposed Bikeway and Off-Street Pathway Network map, provided in **Appendix D**.

PROPOSED SIDEWALKS:

- Middleton Road (between Lake Lowell Ave. and Iowa Ave.)
- Greenhurst Road (between Middleton Rd. and Midland Blvd. on both sides)
- Midland Road (between Greenhurst Rd. and Locust Ln.)
- Locust Lane (between Midland Blvd. and 12th Ave. Rd.)
- Dooley Lane (between Midland Blvd. and 12th Ave. Rd. on both sides)
- Greenhurst Road (between Midland Blvd. and 12th Ave. Rd. on both sides)

Mobility – City of Caldwell Pathways and Bike Routes Master Plan

Caldwell's Pathways and Bike Routes Master Plan identifies three corridors that would improve mobility by connecting high-use destinations and areas of the City with pathways, bike routes, and trails. The YMCA Corridor proposes a mix of bike routes and multi-use pathways that connect to the Lake Lowell Corridor. The Lake Lowell Corridor as shown in **Appendix E**, on the Proposed Pathways and Bike Routes map, is a proposed multi-use pathway that connects the Treasure Valley YMCA, Lake Lowell, and the DFNWR. According to the Plan, a grade separation is needed at the pathway's intersection with Karcher Road. The East Karcher Corridor, a proposed eight-foot-wide multi-use pathway, approximately 1.05 miles long, starts at Moss Lane and runs between Florida Avenue and

Lake Avenue until it reaches Lakevue Elementary School. A grade-separated crossing at Karcher Road between Florida Avenue and Lake Avenue is proposed along this corridor.

Caldwell's proposed bicycle and pedestrian facilities are identified in **Figure 4**, the Proposed Bike, Pedestrian, and Transit Network map. The key proposed bike routes and pathways needed to connect users to the study area are summarized below.

PROPOSED BIKE ROUTES:

- Moss Lane, an undeveloped roadway between Middleton Road beyond 10th Avenue
- Florida Avenue, south to Lone Star Road
- Orchard Avenue (between Lake Ave. and 10th Ave.)
- Smith Avenue (between Lake Ave. and Indiana Ave.)
- Parallel east and west route between Karcher Road and Orchard Avenue, approximately one-half mile east of Lake Avenue to Montana Avenue

PROPOSED PATHWAYS:

- Lake Lowell Corridor (see description above)
- East Karcher Corridor (see description above)
- Smith Avenue (between Indiana Ave. and Lake Lowell Corridor)
- Upper Embankment Drain (north from Orchard Ave. to Upper Dam Recreation Area/Lake Lowell Park)
- Edwards Drain (from Midway Rd. to Upper Dam Recreation Area/Lake Lowell Park)

Mobility – Nampa Highway District Transportation Plan

According to the Nampa Highway District Transportation Plan, the Nampa Highway District maintains 367 miles of roadway in the southeast section of Canyon County. These roadways serve different functions, accessibility and mobility and should be designed to accommodate different traffic conditions. The District's Plan primarily focuses on maintaining and improving existing and deteriorating roads and does not discuss building new roads and/or facilities.

Both the Nampa and Canyon County Highway Districts have collaborated with the DFNWR to implement several transportation projects that aim to improve overall access to the Refuge including planned road upgrades at the new Visitor Center road and on Lake Avenue. A strengthened partnership among these participating agencies will help to provide an opportunity to create a unified bicycle and pedestrian plan within the study area.

Mobility – National Wildlife Refuge Visitor Survey 2010/2011

According to the National Wildlife Refuge Visitor Survey 2010/2011, visitors use a variety of transportation means to access and enjoy the DFNWR. While most visitors arrive at the Refuge in a private vehicle, alternatives modes such as walking and bicycling are increasingly becoming a part of the visitor experience. A few trails exist on the north side of the Refuge, but they are primarily intended for wildlife observation and lack the necessary infrastructure to properly accommodate bicyclists.

Parking near the water was cited as difficult for those with mobility issues. Visitors would like to have parking access for the walking trails while the Refuge is open and after the Visitor Center is closed. Many respondents would like to see a developed network of trails and pathways around the entire lake. The south side of Lake Lowell has very limited access and no trails connecting to the other side. Local schools from Nampa and Caldwell have expressed an interest in utilizing an enhanced trail system for track/cross country training and meets.

Mobility – Deer Flat National Wildlife Refuge Comprehensive Conservation Plan (CCP)

The final CCP determined that noncompetitive jogging, bicycling, and horseback riding were allowable uses for groups of 10 or fewer. Bicycling or jogging in a group of more than 10 individuals may be allowed under special conditions provided in a special use permit (SUP).

PROPOSED MULTI-USE PATHWAYS:

- Upper Embankment Road (from the Visitor Center to Roosevelt Ave./South Indiana Ave.)
- Loop connection west of the Visitor Center

A visual representation of proposed bicycle and pedestrian facilities within and adjacent to the study area is represented on **Figure 4**.

Mobility – VRT 2011 Valleyconnect Plan

VRT is the official transit authority serving Ada and Canyon counties. The VRT Valley**connect** plan identifies transportation options, other than driving alone, that are currently available in Ada and Canyon counties, as well as future transportation options. VRT currently only serves a small portion of the study area with its Flex-Route Service.

VRT has not identified any future transit centers, stations, or park-and-ride lots within the study area.

According to the Valley**connect** Plan, the closest existing park-and-ride lot is located at Jefferson Middle School at 10th Avenue and services the South Caldwell area. An existing transit center is located near Karcher Mall in Nampa, but it does not provide service to the study area.

Source: http://www.valleyregionaltransit.org/PROJECTSSTUDIES/REGIONALOPERATIONS/VALLEYCONNECT. aspx

ENVIRONMENTAL SUSTAINABILITY

Bicycle and pedestrian travel is a healthy, sustainable mode of transportation. It helps reduce dependence on vehicles and promotes an active lifestyle. An expanded network of trails, sidewalks and bike lanes could promote increased bicycle and pedestrian usage, which can help reduce the emission of vehicle pollutants into the air. Bicycle and pedestrian modes of transportation can also offer a less intrusive means of travel for the Refuge wildlife, given the proper accommodations and facilities.

Installing pathways and bicycle lanes can reduce air pollutants. Canyon County is designated as an Area of Concern for $PM_{2.5}$ and O3, meaning that it has exceeded the threshold of the National Ambient Air Quality Standards in the past, but has not violated those standards (David Luft, Airshed Manager, Idaho Department of Environmental Quality). $PM_{2.5}$ and O3 is ozone in the lower atmosphere created by chemical reactions between air pollutants from vehicle exhaust, gasoline vapors, and other emissions (see Existing Conditions Section, **Appendix K**: Idaho Department of Environmental Quality Non-attainment map). Promoting non-motorized forms of transportation will improve air quality in the valley.

Environmental Sustainability Issues Identified

Environmental sustainability issues identified in the City of Nampa Bicycle and Pedestrian Master Plan, the City of Caldwell Pathways and Bike Routes Master Plan, Nampa Highway District Transportation Plan, and the Deer Flat National Wildlife Refuge CCP and the National Wildlife Refuge Visitor Survey 2010/2011 are summarized in the following sections.

Environmental Sustainability – City of Nampa Bicycle and Pedestrian Master Plan

According to Nampa's Bicycle and Pedestrian Master Plan, seasonal temperature inversions can result in high levels of pollutants during the winter time (PM2.5) and ozone levels in the summer. However, the overall air quality in Nampa is considered good. Nampa anticipates continued population growth and as a result, CO2 emissions from motor vehicles will eventually negatively impact air quality in the region.

Nampa identifies potential air quality benefits that could be realized by increasing the walking and biking transportation network. The Plan states that by the year 2030, "developing the bicycle and pedestrian network will replace 15,687 weekday vehicle trips, eliminating more than 9 million vehicle miles traveled per year." Pedestrian and bikeway network enhancements are expected to generate more walking and bicycling trips in the future. This growth is expected to improve air quality by further reducing the number of vehicle trips, vehicle miles traveled, and associated vehicle emissions. Commuteride, Ada County Highway District's public vanpool rideshare program that serves both Ada County and Canyon County, and the development of an effective transportation corridor can also help mitigate future air pollution concerns.

Environmental Sustainability – City of Caldwell Pathways and Bike Routes Master Plan

The Caldwell Pathways and Bike Routes Master Plan recognizes the desire among homebuyers and today's population for increased non-motorized facilities partially due to health and environmental benefits. The City of Caldwell further recognizes that maintenance of pathways and bike routes throughout the city will improve non-motorized pedestrian safety, residential and business uses, and the environmental, recreational, and aesthetic aspects of Caldwell.

Environmental Sustainability – Nampa Highway District Transportation Plan

The Nampa Highway District Transportation Plan recognizes that as the District's population grows, the traffic volume will as well, worsening traffic conditions for all users. This can also have negative impacts on the environment in the form of increased congestion, emissions, and pollutants.

Environmental Sustainability – National Wildlife Refuge Visitor Survey 2010/2011

The Deer Flat National Wildlife Refuge Comprehensive Conservation Plan (CCP) public involvement effort demonstrates overwhelming support to maintain Lake Lowell and the DFNWR as a recreational destination. Overall, most of the 210 visitors surveyed agreed that a healthy wildlife habitat could coexist with those utilizing the Refuge and Lake for recreational purposes. However, some of the respondents cited concerns for the wildlife habitat and overall issues resulting from an increase in motor boats, jet skis and other recreational vehicles causing excessive wake and noise in the area. These types of compatibility issues should be considered when identifying future bicycle and pedestrian facilities leading to certain destinations at the DFWNR.

The survey results suggest a concern over Lake Lowell's water quality and the effects it could have on the wildlife and on those using the lake for recreational purposes. Some respondents worry that the water quality is being degraded due to exposure to chemicals, silt, and mercury. Others would like to see better management of the nutrients discharged into the lake from nearby agricultural uses. Some responses demonstrated concern that high populations of certain bird species are also contributing added pollutants into the Lake.

Responses to the National Wildlife Refuge Visitor Survey regarding climate change indicated that 48 percent felt that it was important to consider economic costs and benefits to local communities when addressing the effects of climate change on fish, wildlife, and their habitats. 33 percent agreed that future generations would benefit if the effects of climate change on fish, wildlife, and their habitats are addressed. The impacts to wildlife in the DFNWR need to be quantified and further studied to accurately determine the level of concern and precautions necessary to protect the wildlife.

MODE CHOICE

Encouraging alternate modes of travel around Lake Lowell and to/from the DFNWR is a key component of this project. Developing a comprehensive transportation network that is accessible and safe for bicyclists and pedestrians will stimulate and empower alternate modes of travel.

Mode Choice Issues Identified

Mode choice issues identified in the City of Nampa Bicycle and Pedestrian Master Plan, the City of Caldwell Pathways and Bike Routes Master Plan, Nampa Highway District Transportation Plan, and the National Wildlife Refuge Visitor Survey 2010/2011 are summarized below.

Mode Choice – City of Nampa Bicycle and Pedestrian Master Plan

Nampa's Bicycle and Pedestrian Master Plan identifies a wide range of users including pedestrians, bicyclists, and persons with mobility impairments. According to Nampa's Plan, a total of 178 miles of gaps exist in the sidewalk network and approximately five miles of gaps exist in the pathway system.

In order to encourage increased walking and biking to and from Lake Lowell and the DFNWR, the City of Nampa will need to improve the overall infrastructure and safety on the roadways. Pathway connections would need to be increased and the sidewalk network would need to be expanded to appeal to users. Major trailheads around the Refuge should include automobile and bicycle parking, trail information including maps, user guides and wildlife information, garbage receptacles, and restrooms.

Nampa solicited input from the public as part of its Bicycle and Pedestrian Master Plan to determine local needs and attitudes towards bicycling and walking. Of the 132 surveys completed, 86 percent of respondents indicated they would use a greenbelt if it was available, and 79 percent of respondents indicated that they were interested in commuting or recreational bicycling.

Area 1 is the closest geographical area to Lake Lowell as shown in the Bicycle and Pedestrian Master Plan (See **Appendix D**). Area 1 is bound by Middleton Road to the west, Locust Lane to the south, Lake Lowell Avenue/Amity Avenue to the north, and Southside Boulevard to east. As identified in the Bicycle and Pedestrian Master Plan, the City has identified proposed trails as well as existing trails. Trailheads are needed in Area 1 to provide essential access to the shared-use path system.

Mode Choice – City of Caldwell Pathways and Bike Routes Master Plan

Caldwell's Pathways and Bike Routes Master Plan proposes 35 miles of publicly-owned pathways located within ten (10) transportation corridors. The development of these corridors will provide Caldwell residents with alternate routes and modes of travel throughout the city. Development of the Lake Lowell Corridor will provide a much-needed connection between the Treasure Valley YMCA, Lake Lowell, and the DFNWR. When completed, the Lake Lowell Corridor will feature 5.10 miles of 10-foot-wide asphalt pathways that connect bike routes 11, 12, 13, 14, 26, 31, and 35 (see **Appendix E,** Proposed Pathways and Bike Routes map). However, these routes are currently undeveloped and the existing roadway infrastructure shared by motor vehicles, bicycles, and pedestrians creates safety hazards and prohibits alternate modes of transportation to the Refuge.

Mode Choice – National Wildlife Refuge Visitor Survey 2010/2011

According to the National Wildlife Refuge Visitor Survey 2010/2011, most respondents (96 percent) lived in the local area (within 50 miles of the DFNWR), whereas four percent were non-local visitors. Respondents traveling around the Refuge by bicycle made up 14 percent of visitors while walking or hiking represented 23 percent. The most common transportation mode used to visit and navigate around the Refuge was private vehicles representing 73 percent of respondents.

Respondents were asked to identify transportation-related items and needs at the Refuge. Access to the water's edge was noted as being difficult, and parking was identified as being limited, especially for persons with disabilities. Respondents also indicated that the boat access points are increasingly busy around the Refuge, and bike paths and trails are somewhat limited. Most respondents expressed an interest in adding bike lanes to enhance safety and their experience at the Refuge. Additionally, respondents showed interest in providing additional trails around the Refuge and Lake Lowell for exploring, animal watching, or simply enjoying a relaxing outing.

QUALITY OF LIFE

Increased walking and bicycling facilities from the surrounding populated areas to the Lake Lowell Area would improve the quality of life of residents and visitors alike. Opportunities for navigating the DFNWR by bicycle or by foot provide an enhanced opportunity to explore and experience the Refuge. It provides a more intimate opportunity to view, listen, and appreciate the plants and wildlife surrounding the Refuge.

Alternative forms of transportation including walking and biking help promote an active and healthy lifestyle. A well designed pathway system also provides an aesthetic quality within the community that can have positive impacts on future growth. The community's image is enhanced and it may even have a positive impact on the local economy including property values and business attraction.

Quality of Life Issues Identified

Quality of life issues identified in the City of Nampa Bicycle and Pedestrian Master Plan, the City of Caldwell Pathways and Bike Routes Master Plan, Nampa Highway District Transportation Plan, and the National Wildlife Refuge Visitor Survey 2010/2011 are summarized below.

Quality of Life – City of Nampa Bicycle and Pedestrian Master Plan

Bicycle and pedestrian facilities and amenities can play a large role in a community's quality of life. The "Community Design" section of Nampa's plan acknowledges the importance of greenways and open spaces. Historically, citizens have openly supported urban open space and pathways to improve their overall quality of life. Greenways and more open space offer the benefits of improved air quality, reduced dependency on the automobile, promotion of community health and fitness, and a balanced commuter network.

Quality of Life – City of Caldwell Pathway and Bike Routes Master Plan

Per the Caldwell Pathway and Bike Routes Master Plan, the public pathway system in Caldwell is designed to provide safe routes for pedestrians and cyclists and to increase recreational opportunities within the community. Improved infrastructure and better public access to the Boise River, Lake Lowell, and Indian Creek will improve the overall quality of life for Caldwell residents.

Quality of Life – Nampa Highway District Transportation Plan

The Nampa Highway District Transportation Plan acknowledges that the condition and management of the transportation system within a community can be directly related to the quality of life. Well-maintained facilities are needed to support personal businesses and commercial activities and to promote alternate forms of transportation including walking and biking.

Quality of Life – National Wildlife Refuge Visitor Survey 2010/2011

According to the surveyed Refuge visitors, the top three preferred activities include freshwater fishing, wildlife observation, and hiking. Of the fourteen (14) activities surveyed, bicycling represented 16 percent and ranked number seven (7) among popular uses of the Refuge. Survey respondents indicated that biking and walking trails around the Refuge would create a unique experience for users to exercise and enjoy nature in a way not available from a vehicle. Some respondents noted that the restrooms needed to be maintained more often and excessive noise and wake from boaters decreased their opportunity to view and enjoy wildlife. Increased access to the southern portion of the lake would create additional opportunities to enjoy the Refuge.

The DFNWR provides a unique opportunity to view wildlife and to enjoy nature. Its close proximity to major urban centers gives families and visitors a break from the hustle and bustle of everyday life. One survey taker called it an “oasis in a metropolitan area.” It’s a non-commercialized place to get away and relax.

TECHNICAL ADVISORY COMMITTEE (TAC) INPUT – MEETING NO. 1

A TAC was formed and tasked with providing input throughout the Lake Lowell Area Bicycle and Pedestrian Plan planning process. The TAC comprises a diverse group of stakeholders that includes representatives from Caldwell, Nampa, Nampa and Canyon Highway Districts, Ada County, ITD, Idaho Fish and Game, Bureau of Reclamation (BOR), the Canyon County Sheriff’s Department, COMPASS, irrigation districts, and cyclist advocates. At the first of three TAC meetings (TAC Meeting No. 1), input was solicited from the TAC to identify projects and needs to improve bicycle and pedestrian access from surrounding populated areas to the DFNWR. Below is a list of specific ideas and needs identified by the TAC early in the planning process at TAC Meeting No. 1.

TAC-Identified Ideas and Needs

- Restroom on south side loop, improved restrooms, restrooms at viewpoints, restrooms at Access no. 6 or 7
- Kid-friendly bike paths that provide access to both sides of the lake
- Means of getting around east end of lake that is not on Hwy 45
- Bike route wayfinding signage for route around lake including mileage markers
- Possible loop trails into refuge for single bike track recreation users
- Drinkable water, information kiosk, picnic table at Access no. 6 or 7 (good halfway point for persons riding around the lake)
- Riverside Road – Shoulder (high-speed gravel road parking area makes it dangerous for on-road riding); fishing destination for recreationalists (should be included and considered as a destination)
- Wider roadway across Lower Dam for bike safety
- Alternate route (bike/walk pathway) around east end of Lake Lowell
- Share roads as the quickest means of establishing routes to Lake Lowell from Caldwell and Nampa

TAC-Identified Ideas and Needs, cont.

- Utilize Mallard Park at 10th Ave. and Orchard Ave. as an access point (great access from Caldwell)
- Identify possible bike repair station locations
- New pathway viewing areas for wildlife
- Wider road from Roosevelt down to Visitor Center (popular for cycling exercise up and down)
- Identify proposed pathway base materials options
- On-ground Department of Transportation (DOT) mileage signs for pathway users
- Benches at viewpoints
- Share the road signage
- Scenic bike-ways
- Consider mosquito abatement
- Bike Racks
- Parallel, separated route to 45
- Widen road across Lower Dam
- Improve the east end of the lake
- Provide mileage markings
- Improve wayfinding
- Implement shared road signs
- Water is at road edge when full (Riverside Rd. between Lowell Rd. and Hoadley Rd.)
- Water is at road edge when full (near Access No. 5 to past Access No. 1)
- Proposed pathway starting near the intersection of Montana Ave. and Orchard Ave. runs through a closed area of the Refuge
- Add bike route along Indiana Ave. in between Smith Ave. and Roosevelt Ave.
- Bike route/wider shoulder along Lake Shore Drive near Access No. 3
- Add a parallel pathway west of HWY 45 near Schaffer's Access
- Widen shoulder and increase signage near Roosevelt Ave. and Upper Embankment
- Proposed Caldwell/Nampa bike route – heavy cycling use (Lone Star Rd. and Lake Ave.; Lone Star Rd. to Orchard Ave; Orchard Ave. to Indiana Ave.)
- Utilize Iowa Avenue as a route for less skilled cyclists

These ideas and needs, along with additional input through stakeholder interviews, two additional TAC meetings, and public input received at open houses/listening stations, were reviewed, vetted, and considered for inclusion in the Lake Lowell Area Bicycle and Pedestrian Access Network Plan.

CHAPTER 4

RECOMMENDATIONS AND PRIORITIZATION

RECOMMENDATIONS

This section identifies recommended bicycle and pedestrian projects to help address the issues identified in the planning process. The recommended improvements are aimed at providing improved access to and around Lake Lowell and the Refuge. The process began with understanding the users of the community and developing an overall network plan. The projects identified to complete the network plan were prioritized utilizing a point system and TAC input. These items are described in more detail below.

PLAN DEVELOPMENT METHODOLOGY

In developing a recommended bicycle and pedestrian network, it is important to identify the different types of bicyclists and pedestrians that might use the system to provide, where possible, facilities that will attract and retain those users. The methodology utilized to develop the network started with an understanding of the types of users and facility types anticipated for the Lake Lowell Bicycle and Pedestrian Access Plan.

Types of Pedestrians

Everyone is a pedestrian at some stage in their daily travel. This means pedestrians are a highly diverse road user group, which includes children, adults, senior citizens, teenagers, joggers, the disabled and mobility impaired, transit riders, and people using wheeled toys or recreational devices such as skateboards, rollerblades, and foot scooters.

Pedestrians have a variety of characteristics so the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults walk. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing.

Types of Bicyclists

It is important to consider bicyclists of all skill levels when creating a non-motorized plan. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people. A variety of bicyclists of all skill levels bike in the Treasure Valley. Expanding on the bicyclist groupings in the Roadway Design Manual, a framework for understanding the characteristics, attitudes, and infrastructure preferences of different bicyclists in the US population as a whole is described below and in **Exhibit 1**. This plan seeks to meet the needs of the "Strong and Fearless," "Enthused and Confident," and "Interested but Concerned."

Strong and fearless bicyclists (approximately 1% of population) will typically ride anywhere regardless of road or weather conditions, ride faster than other user types, prefer direct routes, and will typically choose to ride on the road, even if shared with vehicles, over separate bikeways like shared-use paths.

Enthused and confident bicyclists (approximately 5-10% of population) are fairly comfortable riding in dedicated bikeways but usually choose low traffic streets or shared-use paths when available. This group can include many kinds, including commuter and recreational bicyclists.

Interested but concerned bicyclists (approximately 60% of population) comprise the majority of the population and are typically those who only ride on low-traffic streets or shared-use paths in fair weather. These people perceive traffic, safety, and other issues as significant barriers to bicycling.

No way, no how encompasses approximately 30% of population. They are not bicyclists and will not ride a bicycle under any circumstances. Some may eventually try bicycling with time, education, and training.

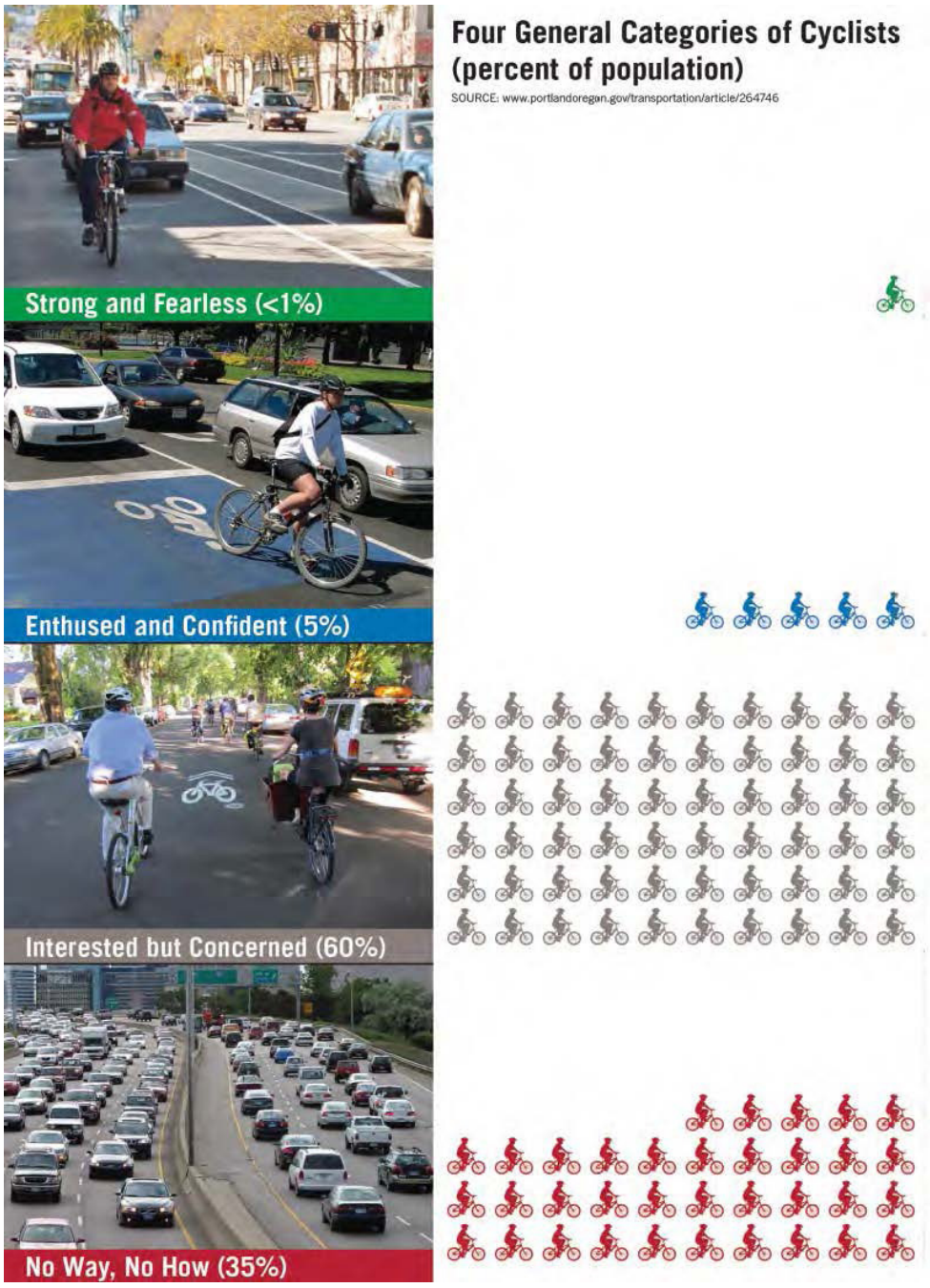


Exhibit 1 – Four General Types of Bicyclists

FACILITY DEFINITIONS

Bicycle and Pedestrian Facilities

Below are brief explanations and visual examples of bicycle and pedestrian facilities recommended for the Lake Lowell Study Area. Detailed information on these facilities is located in **Appendix M**: Design Guidelines.

Shared-Use Paths are completely separated from motorized vehicular traffic and are constructed in their own corridor, often within parks, open spaces, or alongside utility corridors. Shared-use paths include bicycle paths, rail-trails, or other facilities built for bicycle and pedestrian traffic. See **Exhibit 2**.

Exhibit 2 – Typical Shared-Use Path

Shared-Use Sidepaths are located within the roadway corridor right-of-way, or adjacent to roads. Sidepaths are most appropriate in corridors with few driveways and intersections and should be at least 10' wide. Bicycle routes where sidepaths are recommended should also have adequate on-road bicycle facilities (such as paved shoulders or bicycle lanes) wherever possible. Many times, sidepaths are used in place of a sidewalk and can be used by bicyclists and pedestrians. See **Exhibit 3**.

Exhibit 3 – Typical Shared-Use Sidepath

Marked Shared Roadways are indicated by "Bicycle Route" signs and may be accompanied by shared-lane markings (sharrows). Sharrows make motorists more aware of the potential presence of bicyclists, direct bicyclists to ride in the proper direction, and remind bicyclists to ride further from parked cars to avoid 'dooring' collisions. Marked Shared Roadway routes are designed for Strong and Fearless / Enthused and Confident bicyclists. See **Exhibit 4** and **Exhibit 5**.

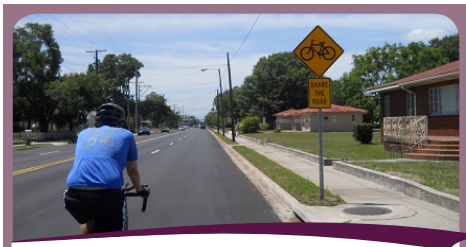


Exhibit 4 – Typical Signed Route Roadway

Bicycle Boulevards are low-volume and low-speed streets that have been optimized for bicycle travel. Bicycle boulevard treatments can be applied at several different intensities, which should be identified in detail during project design. Wayfinding signs, pavement markings, traffic calming, and intersection treatments are potential elements of these facilities. Bicycle boulevards are designed to attract bicyclists of all ages and abilities, especially those in the Interested but Concerned group.

Exhibit 5 – Typical Shared Roadway

Bicycle Lanes / Protected Bicycle Lanes are a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. Bicycle lanes can be striped on existing roadways, sometimes with modifications to travel lane widths and configuration. As a general practice, any local arterial or collector that is widened should incorporate bicycle lanes with speed limit reduction considerations. A protected bicycle lane has additional buffer space between the edge of the bicycle lane and the auto lane. Protected bicycle lanes increase separation and comfort on high-volume or high-speed roads, especially those with large-vehicle traffic, and are designed to attract bicyclists of all ages and abilities. See **Exhibit 6**.

Exhibit 6 – Typical Bicycle Lane

Shoulder Bikeways are paved roadways with striped shoulders (4'+) wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Shoulder bikeways should be considered a temporary treatment, with full bike lanes planned for construction when the roadway is widened or completed with curb and gutter. This type of treatment is not typical in urban areas and should only be used where constraints exist. See **Exhibit 7**.

Exhibit 7 – Typical Shoulder Bikeway

RECOMMENDED PROJECTS

In developing the recommendations, the project types were divided into two major categories:

- Access to the Refuge
- Circulation around the Refuge

Access to the Refuge includes and builds upon the recommendations from the Nampa and Caldwell bicycle and pedestrian master plans. Circulation around the Refuge strives to connect to neighboring proposed facilities while building upon the existing conditions and needs assessment of the Refuge itself as summarized in the Needs Assessment and Existing Conditions sections.
The projects identified were later prioritized utilizing a point system with input from the TAC. **Figure 6** shows the recommended bicycle and pedestrian network for the Lake Lowell region. Individual projects are identified in **Tables 1, 2,** and **3** in the following sections.

Access to the Wildlife Refuge

Access to the Refuge will occur primarily from the cities of Nampa and Caldwell. Both cities have existing bicycle and pedestrian plans that include facility recommendations leading towards Lake Lowell and the Refuge. This plan incorporates those connections where appropriate and extends those recommendations to provide bicyclists and pedestrians with safe and efficient access to Refuge facilities around Lake Lowell. These and previous plan recommendations aim to tie together a comprehensive transportation and recreation network for bicyclists and pedestrians to improve the visitor experience.

Access from Caldwell

Figure 7 shows the recommended bicycle and pedestrian network providing access from Caldwell. **Table 1** identifies the recommended facility type and the beginning and end points.

Table 1 – Recommended Bicycle and Pedestrian Facilities from Caldwell

Facility ID	Roadway/Trail	Facility Type	From / To	Source
A	Lake Lowell Corridor	Shared-Use Path	Homedale Rd / Orchard Ave	Caldwell Pathways and Bike Routes Master Plan 2010
B	Indiana Avenue	Short-term: Marked Shared Roadway Long-Term: Bicycle Lanes	Ustick Rd / Lake Lowell Visitor Center	Lake Lowell Area Bicycle and Pedestrian Access Plan 2015
C	East Karcher Corridor	Shared-Use Path	Moss Lane / Cirrus Dr	Caldwell Pathways and Bike Routes Master Plan 2010
D	Moss Street / Bear Lane	Marked Shared Roadway	Bear Lane / Lake Ave	Caldwell Pathways and Bike Routes Master Plan 2010
E	Cirrus Drive	Marked Shared Roadway	Montana Ave / Lake Ave	Caldwell Pathways and Bike Routes Master Plan 2010
F	Lake Avenue	Marked Shared Roadway	Ustick Rd/ Orchard Ave	Caldwell Pathways and Bike Routes Master Plan 2010
G	10th Avenue	Shared-Use Path/Sidepath	Ustick Rd/Orchard Ave	Lake Lowell Area Bicycle and Pedestrian Access Plan 2015

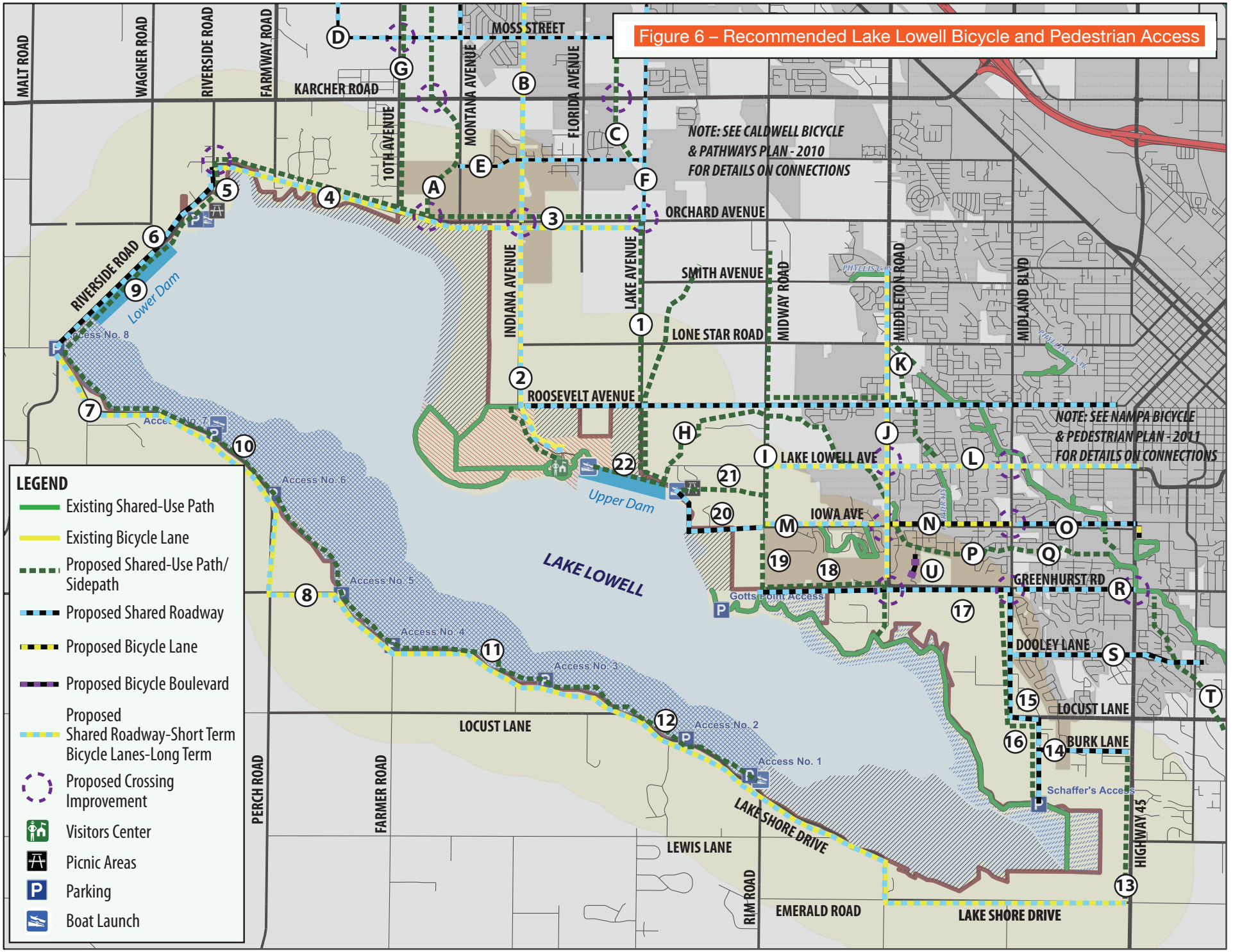


Figure 6 – Recommended Lake Lowell Bicycle and Pedestrian Access
MALT ROAD
WAGNER ROAD
RIVERSIDE ROAD
FARMWAY ROAD
KARCHER ROAD
MOSS STREET
10TH AVENUE
MONTANA AVENUE
FLORIDA AVENUE
NOTE: SEE CALDWELL BICYCLE & PATHWAYS PLAN - 2010 FOR DETAILS ON CONNECTIONS
ORCHARD AVENUE
INDIANA AVENUE
LAKE AVENUE
SMITH AVENUE
MIDWAY ROAD
MIDDLETON ROAD
MIDLAND BLVD
LONE STAR ROAD
ROOSEVELT AVENUE
RIVERSIDE ROAD
Lower Dam
Upper Dam
LAKE LOWELL AVE
IOWA AVE
NOTE: SEE NAMPA BICYCLE & PEDESTRIAN PLAN - 2011 FOR DETAILS ON CONNECTIONS
GREENHURST RD
DOOLEY LANE
LOCUST LANE
BURK LANE
LAKE LOWELL
Gotts Point Access
Schaffer's Access
Access No. 1
Access No. 2
Access No. 3
Access No. 4
Access No. 5
Access No. 6
Access No. 8
LOCUST LANE
PERCH ROAD
FARMER ROAD
LEWIS LANE
LAKE SHORE DRIVE
RIM ROAD
EMERALD ROAD
HIGHWAY 45
LEGEND
Existing Shared-Use Path
Existing Bicycle Lane
Proposed Shared-Use Path/ Sidepath
Proposed Shared Roadway
Proposed Bicycle Lane
Proposed Bicycle Boulevard
Proposed Shared Roadway-Short Term Bicycle Lanes-Long Term
Proposed Crossing Improvement
Visitors Center
Picnic Areas
Parking
Boat Launch

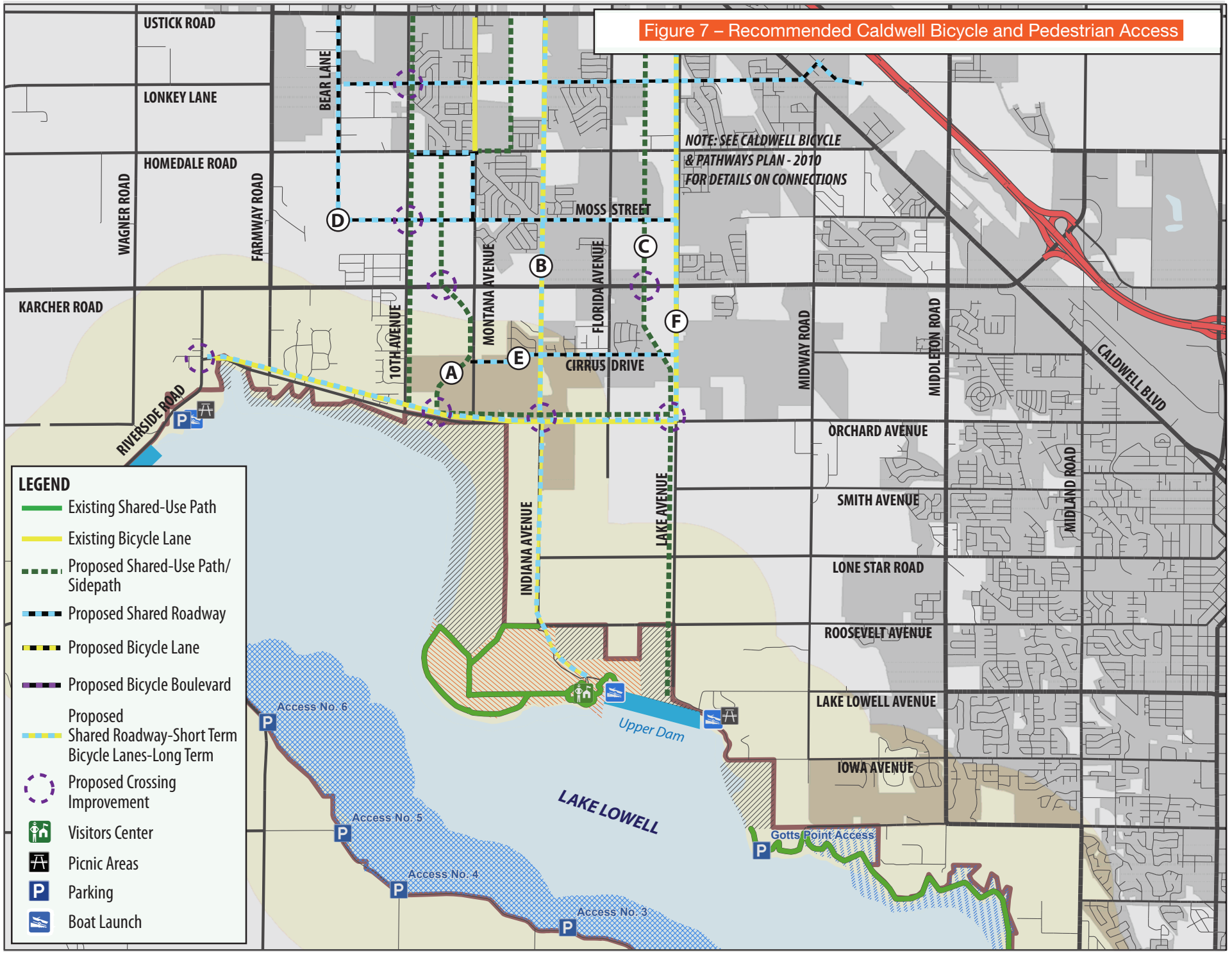


Figure 7 – Recommended Caldwell Bicycle and Pedestrian Access
USTICK ROAD
LONKEY LANE
HOMEDALE ROAD
KARCHER ROAD
BEAR LANE
WAGNER ROAD
FARMWAY ROAD
10TH AVENUE
MONTANA AVENUE
FLORIDA AVENUE
MOSS STREET
CIRRUS DRIVE
INDIANA AVENUE
LAKE AVENUE
MIDWAY ROAD
MIDDLETON ROAD
CALDWELL BLVD
MIDLAND ROAD
ORCHARD AVENUE
SMITH AVENUE
LONE STAR ROAD
ROOSEVELT AVENUE
LAKE LOWELL AVENUE
IOWA AVENUE
RIVERSIDE ROAD
A
B
C
D
E
F
NOTE: SEE CALDWELL BICYCLE & PATHWAYS PLAN - 2010 FOR DETAILS ON CONNECTIONS
LAKE LOWELL
Upper Dam
Access No. 6
Access No. 5
Access No. 4
Access No. 3
Gotts Point Access
LEGEND
Existing Shared-Use Path
Existing Bicycle Lane
Proposed Shared-Use Path/ Sidepath
Proposed Shared Roadway
Proposed Bicycle Lane
Proposed Bicycle Boulevard
Proposed Shared Roadway-Short Term Bicycle Lanes-Long Term
Proposed Crossing Improvement
Visitors Center
Picnic Areas
Parking
Boat Launch

Access from Nampa

Figure 8 shows the recommended bicycle and pedestrian network from Nampa. **Table 2** identifies the recommended facility type and the beginning and end points.

Table 2 – Recommended Bicycle and Pedestrian Facilities from Nampa

Facility ID	Roadway/Trail	Facility Type	From / To	Source
G	Upper Embankment Drain Shared-Use Path	Shared-Use Path	Lake Lowell Park / Flagstone St	Nampa Bicycle and Pedestrian Plan 2011
H	Edwards Drain Shared-Use Path	Shared-Use Path	Lake Lowell Park / Middleton Rd	Nampa Bicycle and Pedestrian Plan 2011
I	Midway Road Urban Connector Shared-Use Path	Shared-Use Path	Homedale Rd / Greenhurst Rd	Nampa Bicycle and Pedestrian Plan 2011
J	Middleton Road	Short-term: Marked Shared Roadway Long-term: Bicycle Lanes	Moss Ln / Greenhurst Rd	Nampa Bicycle and Pedestrian Plan 2011
K	Orr Drain Shared-Use Path	Shared-Use Path	Lone Star Rd / Lake Lowell Ave	Nampa Bicycle and Pedestrian Plan 2011
L	Lake Lowell Avenue	Short-term: Marked Bicycle Route Long-term: Bicycle Lanes	Middleton Rd / Highway 45	Nampa Bicycle and Pedestrian Plan 2011
M	Iowa Avenue	Short-term: Marked Bicycle Route Long-term: Bicycle Lanes	Midway Rd / Middleton Rd	Nampa Bicycle and Pedestrian Plan 2011
N	Iowa Avenue	Bicycle Lanes	Middleton Rd / Midland Rd	Nampa Bicycle and Pedestrian Plan 2011
O	Iowa Avenue	Marked Bicycle Route	Midland Rd / Highway 45	Nampa Bicycle and Pedestrian Plan 2011
P	Edwards Drain Shared-Use Path	Shared-Use Path	Middleton Rd / Midland Rd	Nampa Bicycle and Pedestrian Plan 2011
Q	Edwards Drain Shared-Use Path	Shared-Use Path	Midland Rd / Iowa Ave	Nampa Bicycle and Pedestrian Plan 2011
R	Greenhurst Road	Marked Bicycle Route	Midway Rd / Highway 45	Nampa Bicycle and Pedestrian Plan 2011
S	Dooley Lane	Marked Bicycle Route	Midland Rd / Sunnyridge Rd	Nampa Bicycle and Pedestrian Plan 2011
T	12th Avenue Drain Shared-Use Path	Shared-Use Path	Greenhurst Rd / Lake Shore Dr	Nampa Bicycle and Pedestrian Plan 2011
U	Herron Drive	Bicycle Boulevard	Edwards Drain / Greenhurst Rd	Nampa Bicycle and Pedestrian Plan 2011

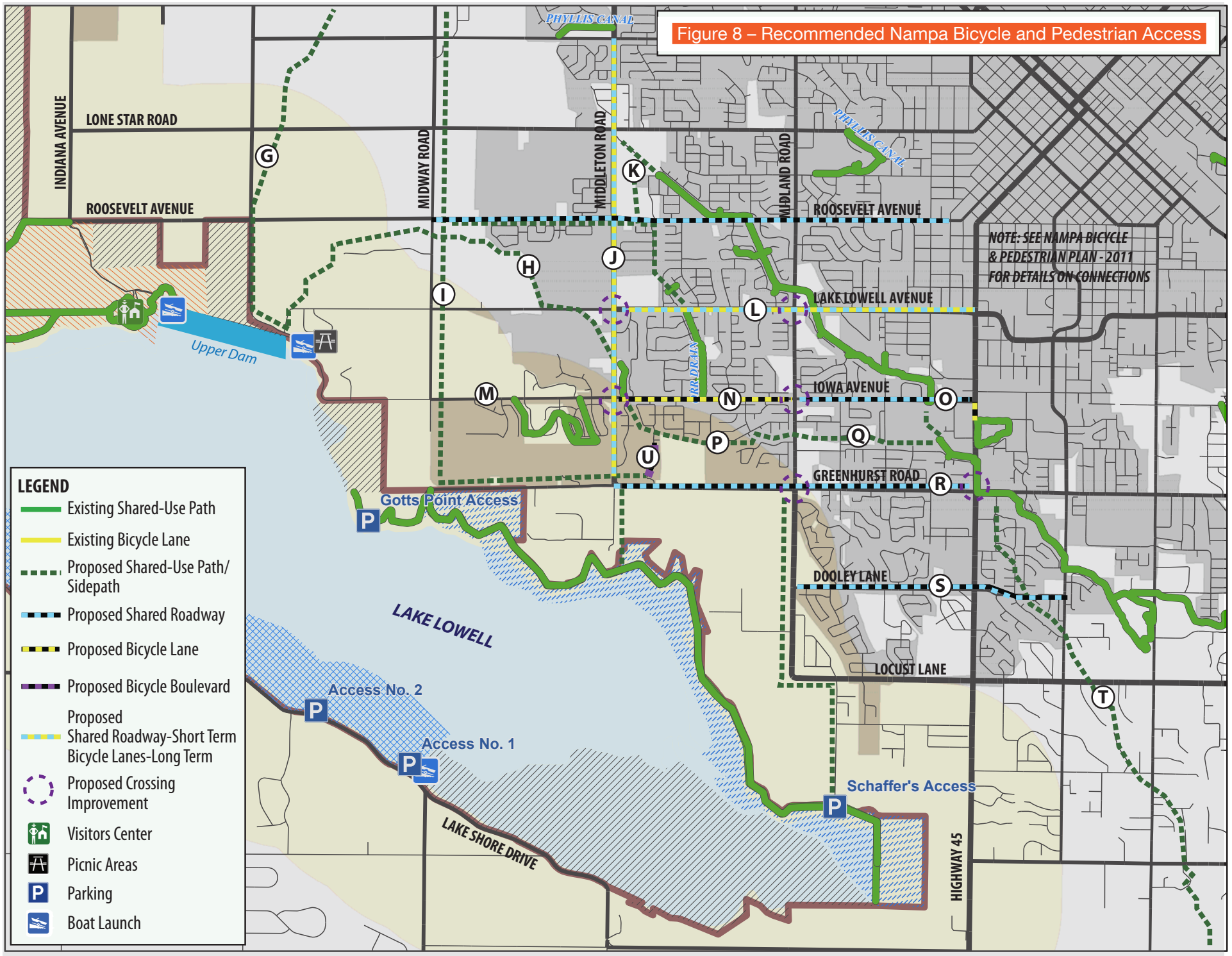


Figure 8 – Recommended Nampa Bicycle and Pedestrian Access
INDIANA AVENUE
LONE STAR ROAD
ROOSEVELT AVENUE
MIDWAY ROAD
MIDDLETON ROAD
MIDLAND ROAD
PHYLLIS CANAL
LAKE LOWELL AVENUE
IOWA AVENUE
GREENHURST ROAD
DOOLEY LANE
LOCUST LANE
HIGHWAY 45
LAKE SHORE DRIVE
LAKE LOWELL
Upper Dam
Gotts Point Access
Access No. 2
Access No. 1
Schaffer's Access
NOTE: SEE NAMPA BICYCLE & PEDESTRIAN PLAN - 2011 FOR DETAILS ON CONNECTIONS
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
LEGEND
Existing Shared-Use Path
Existing Bicycle Lane
Proposed Shared-Use Path/ Sidepath
Proposed Shared Roadway
Proposed Bicycle Lane
Proposed Bicycle Boulevard
Proposed Shared Roadway-Short Term Bicycle Lanes-Long Term
Proposed Crossing Improvement
Visitors Center
Picnic Areas
Parking
Boat Launch

Circulation around the Wildlife Refuge

A few trails exist on the Refuge, which are intended primarily for wildlife observation. These facilities do not currently provide a bicycle/pedestrian network around Lake Lowell. The atmosphere created by the Refuge is desirable to bicyclists, which results in bicycle use on these rural roads. As noted previously, Caldwell and Nampa have both developed bicycle and pedestrian master plans that extend to the Refuge; however, they do not address the needs immediately surrounding the Refuge. In examining circulation around the lake and the Refuge, the area was organized by locations with similar (or unique) characteristics for ease in facility recommendation.

Segment Identification

The identified segments are described in more detail below.

Lake Shore Drive

Eight designated parking facilities are located along Lake Shore Drive on the south side of the Refuge. Lake Shore Drive is a two-lane roadway with 25- to 37-foot widths. Lake Shore Drive has predominantly narrow paved shoulders, with additional unpaved shoulders in most locations. Adjacent to the parking facilities are a few existing, unimproved trails that lead to Lake Lowell and are primarily walk-through access only. Lakeshore Drive presents an opportunity to provide paved shoulder bikeways (ultimately bicycle lanes upon development of curb and gutter) for both Strong and Fearless bicyclists as well as Enthused and Confident bicyclists. Additionally, Refuge land could provide a dedicated corridor for construction of a paved shared-use path on the north side of Lake Shore Drive from Riverside Drive to Access Point #1. A shared-use path along this segment of the network will provide a facility suitable for pedestrians, runners, and less experienced bicyclists.

Indiana Avenue / Orchard Avenue / Riverside Road

These roadways have slightly higher traffic volumes than Lake Shore Drive while providing a connection from the Visitor Center to Mallard Park, continuing on to the Lower Dam Recreation Area. The rural to suburban nature of this environment warrants construction of a dedicated bicycle facility for each user group to connect to the Refuge. As development expands along these roadways, bicycle lanes will provide a facility for both Strong and Fearless bicyclists as well as Enthused and Confident bicyclists. Paved shared-use paths and sidepaths will provide facilities suitable for pedestrians, runners, and less experienced bicyclists.

Iowa Avenue Curves

Within the study area, this short section of roadway (~ 3/10 of a mile) has no shoulders and limited visibility for roadway users. This section of roadway will rely on shared marked roadways due to lack of useable width. Future reconstruction or easement acquisition along this section of Iowa Avenue should provide bicycle lanes and a paved shared-use sidepath.

Highway 45

Highway 45 is located at the eastern edge of the study area and is a unique segment based on traffic speeds, volumes, and roadway cross-section. A shared-use sidepath would provide a crucial link for bicyclists and pedestrians between the south and north sides of Lake Lowell.

Upper Dam Recreation Area

The Upper Dam Recreation Area offers an improved boat ramp, two docks, a wildlife viewing platform, two parking lots with trail access, and a designated swimming area. The East Upper Dam boat ramp is located directly across the roadway from the county owned and operated Lake Lowell Park. This area also provides access to the boat ramp on the west end of the Upper Dam and the nearby Visitor Center.

Lower Dam Recreation Area

One of the major access locations around the Refuge is the Lower Dam Recreation Area. It is located along Riverside Road on the northwest side of Lake Lowell. This area includes an existing boat ramp, parking area, and boat dock. Southwest of the Lower Dam Recreation Area is the Lower Dam. A 14-foot-wide (approximately) gravel shoulder runs along Riverside Road on the Lower Dam. Visitors often temporarily park in this area to view Lake Lowell and fish. The other side of Riverside Road is bound by a guardrail with no shoulder. Riverside Drive presents an opportunity to provide paved shoulder bikeways for both Strong and Fearless bicyclists as well as Enthused and Confident bicyclists. Additionally, the large gravel shoulder on the south side of Riverside Drive, along the Lower Dam, could provide a corridor for construction of a paved shared-use path that would connect the Lower Dam Recreation Area to the proposed shared-use path along the south side of Lake Lowell. This shared-use path would provide a safe facility suitable for pedestrians and less experienced bicyclists, linking the north and south sides of Lake Lowell.

East Side Recreation Area

The East Side Recreation Area has two identified existing trails—the Kingfisher Trail and the Gotts Point Trail. Both trails are unpaved internal Refuge roads. Upgrading these facilities to paved shared-use paths would increase access for expanded user groups and help mitigate tire punctures for bicyclists from natural hazards. This portion of the study area is in close proximity to an existing and future high concentration of residential development. Connections to bicycle and pedestrian facilities from Nampa will provide residents with direct access to the Refuge.

Intersection Crossing Improvements

Numerous intersection crossing improvement sites were identified by the 2010 Caldwell Pathways and Bike Routes Master Plan and the 2011 Nampa Bicycle and Pedestrian Plan. These projects, along with the additional crossing improvements recommended in this plan, should be bundled together as part of bicycle and pedestrian projects. Details on intersection crossing improvements are included in **Appendix M**: Design Guidelines.

Recommended Network

Figure 9 shows the recommended bicycle and pedestrian network providing circulation around the Refuge. **Table 3** identifies the recommended facility type and the beginning and end points. The implementation of these projects is discussed in Chapter 5: Implementation Plan. Each project will undergo its own development process in which it will be further evaluated and assessed for implementation.

Table 3 – Recommended Bicycle and Pedestrian Network around Lake Lowell

Facility ID	Roadway/Trail	Facility Type	From / To	Source
1	Lake Avenue	Shared-Use Path	Lake Lowell Park / Orchard Ave	Lake Lowell Area Bike/ Ped Access Plan 2015
2	Indiana Avenue	Short-term: Marked Shared Roadway Long-Term: Bicycle Lanes	Visitor Center / Orchard Ave	Lake Lowell Area Bike/ Ped Access Plan 2015
3	Orchard Avenue	Shared-Use Path	Lake Avenue / Riverside Rd	Lake Lowell Area Bike/ Ped Access Plan 2015
4	Orchard Avenue	Short-term Marked Shared Roadway Long-Term: Bicycle Lanes	Indiana Ave / Riverside Rd	Lake Lowell Area Bike/ Ped Access Plan 2015
5	Lower Dam Connector	Shared-Use Path	Orchard Ave / Lower Dam Recreation Area	Lake Lowell Area Bike/ Ped Access Plan 2015

Table 3 – Recommended Bicycle and Pedestrian Network around Lake Lowell, cont.

Facility ID	Roadway/Trail	Facility Type	From / To	Source
6	Riverside Road	Paved Shoulder Bikeway	Orchard Ave / Lake Shore Dr	Lake Lowell Area Bike/ Ped Access Plan 2015
7	Lake Shore Drive	Paved Shoulder Bikeway	Riverside Rd / Marsing Rd	Lake Lowell Area Bike/ Ped Access Plan 2015
8	Lake Shore Drive	Short-Term: Marked Shared Roadway Long-Term: Paved Shoulder Bikeway	Perch Rd / Highway 45	Lake Lowell Area Bike/ Ped Access Plan 2015
9	Lake Lowell Path (Segment 1)	Shared-Use Path/ Sidepath	Lower Dam Recreation Area / Access #8	Lake Lowell Area Bike/ Ped Access Plan 2015
10	Lake Lowell Path (Segment 2)	Shared-Use Path	Access #8 / Access #5	Lake Lowell Area Bike/ Ped Access Plan 2015
11	Lake Lowell Path (Segment 3)	Shared-Use Path	Access #5 / Access #3	Lake Lowell Area Bike/ Ped Access Plan 2015
12	Lake Lowell Path (Segment 4)	Shared-Use Path	Access #3 / Access #1	Lake Lowell Area Bike/ Ped Access Plan 2015
13	Highway 45	Shared-Use Path	Lake Shore Dr / Burk Ln	Lake Lowell Area Bike/ Ped Access Plan 2015
14	Burk Lane	Marked Shared Roadway	Highway 45 / Tio Ln	Lake Lowell Area Bike/ Ped Access Plan 2015
15	Tio Lane / Mid-lands Blvd	Marked Shared Roadway	Schaffer's Access / Greenhurst Rd	Lake Lowell Area Bike/ Ped Access Plan 2015
16	Tio Lane / Mid-lands Blvd	Shared-Use Path	Schaffer's Access / Greenhurst Rd	Lake Lowell Area Bike/ Ped Access Plan 2015
17	Greenhurst Road	Shared-Use Path	Midland Blvd / Gotts Point Access	Lake Lowell Area Bike/ Ped Access Plan 2015
18	Greenhurst Road	Marked Shared Roadway	Midland Blvd / Gotts Point Access	Lake Lowell Bicycle/Ped Access Plan 2015
19	Midway Road (ROW)	Shared-Use Path	Gotts Point Access / Iowa Ave	Lake Lowell Bicycle/Ped Access Plan 2015
20	Iowa Avenue	Marked Shared Roadway	Midway Rd / Lake Lowell Park	Lake Lowell Bicycle/Ped Access Plan 2015
21	Lake Lowell Park Path	Shared-Use Path	Lake Lowell Park / Midway Road	Lake Lowell Area Bike/ Ped Access Plan 2015
22	Upper Dam Path	Shared-Use Path	Lake Lowell Park / Visitor Center	Lake Lowell Area Bike/ Ped Access Plan 2015

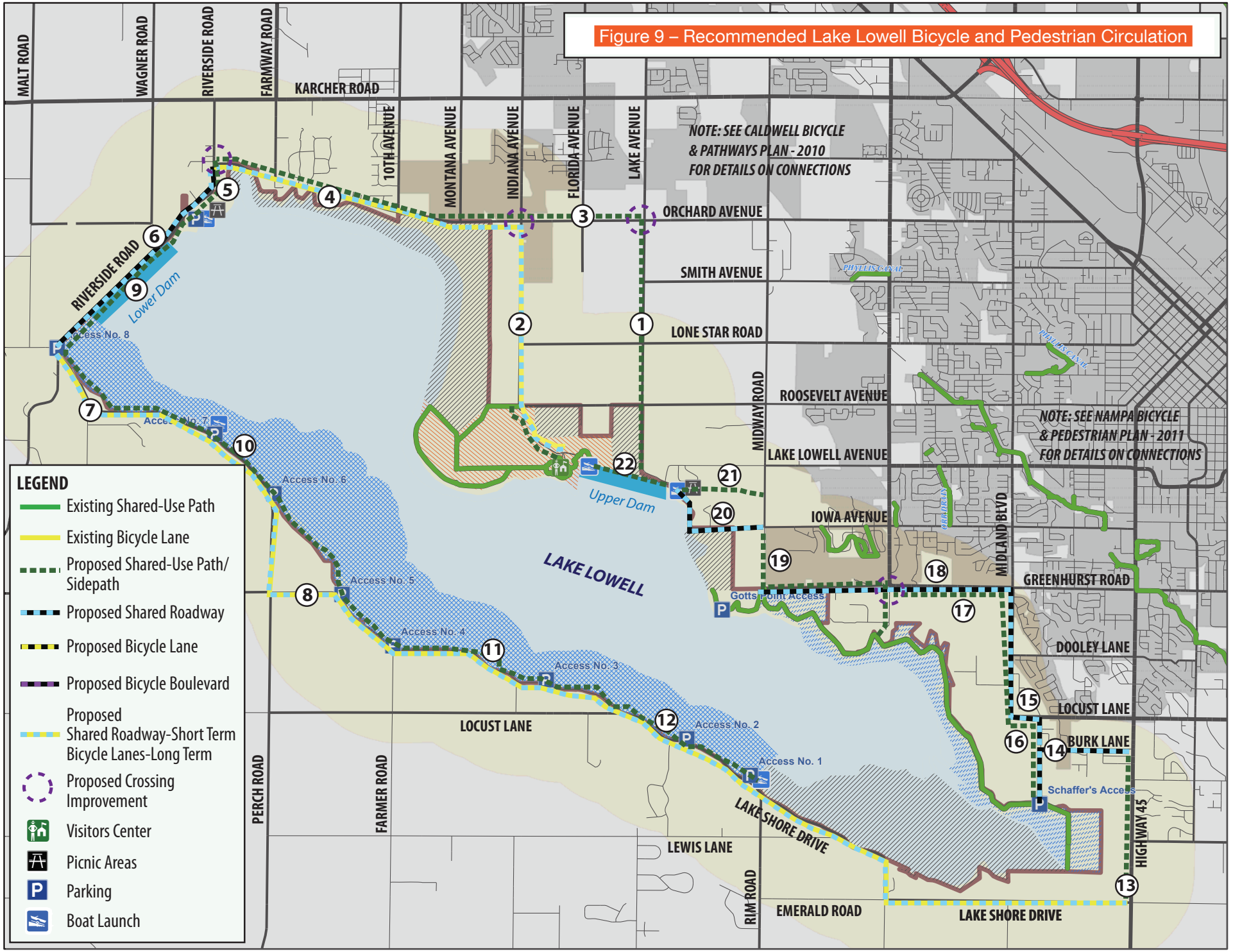


Figure 9 – Recommended Lake Lowell Bicycle and Pedestrian Circulation
MALT ROAD
WAGNER ROAD
RIVERSIDE ROAD
FARMWAY ROAD
KARCHER ROAD
10TH AVENUE
MONTANA AVENUE
INDIANA AVENUE
FLORIDA AVENUE
LAKE AVENUE
ORCHARD AVENUE
SMITH AVENUE
LONE STAR ROAD
ROOSEVELT AVENUE
LAKE LOWELL AVENUE
IOWA AVENUE
MIDWAY ROAD
MIDLAND BLVD
GREENHURST ROAD
DOOLEY LANE
LOCUST LANE
BURK LANE
HIGHWAY 45
LAKE SHORE DRIVE
EMERALD ROAD
RIM ROAD
LEWIS LANE
FARMER ROAD
PERCH ROAD
RIVERSIDE ROAD
NOTE: SEE CALDWELL BICYCLE & PATHWAYS PLAN - 2010 FOR DETAILS ON CONNECTIONS
NOTE: SEE NAMPA BICYCLE & PEDESTRIAN PLAN - 2011 FOR DETAILS ON CONNECTIONS
Lower Dam
Upper Dam
LAKE LOWELL
Access No. 8
Access No. 7
Access No. 6
Access No. 5
Access No. 4
Access No. 3
Access No. 2
Access No. 1
Gotts Point Access
Schaffer's Access
PHYLLIS CANAL
LEGEND
Existing Shared-Use Path
Existing Bicycle Lane
Proposed Shared-Use Path/ Sidepath
Proposed Shared Roadway
Proposed Bicycle Lane
Proposed Bicycle Boulevard
Proposed Shared Roadway-Short Term Bicycle Lanes-Long Term
Proposed Crossing Improvement
Visitors Center
Picnic Areas
Parking
Boat Launch

PROJECT EVALUATION

This section provides an overview of the evaluation methodology and features the results of the prioritization of the bicycle and pedestrian network. The prioritization results are presented for rough guidance only. While it is ideal to develop facilities in order of priority, it is best to also construct facilities as opportunities arise. Some of the most cost-effective opportunities to provide bicycle facilities are during routine roadway construction, reconstruction, and repaving projects. A new development or a roadway widening project, for instance, would provide the means to build facilities as a component of an existing effort, regardless of priority ranking through this process.

EVALUATION METHODOLOGY

Project evaluation began by breaking down infrastructure recommendations into discrete segments at logical points, such as major intersections. These segments were then evaluated with scores based on the weighted criteria listed below, which was custom designed for this plan based on Core Team input, public input, existing conditions, and as identified in the Goals and Objectives section.

Measures of Effectiveness

Specific quantitative and qualitative evaluation criteria, or Measures of Effectiveness (MOEs), were defined to evaluate the project alternatives based on the study's goals and objectives. The MOEs were utilized in a screening and evaluation process to refine and screen each project alternative. The criteria were generally organized within the following three categories:

- Effectiveness – the extent to which the alternative would address needs while meeting the project goals and objectives;
- Impact Measures – the extent to which the alternative would address mobility constraints while minimizing environmental and community impacts; and
- Cost-Effectiveness – the relationship between costs relative to benefits and the feasibility of implementation.

Table 4 on the following page lists the MOEs used to evaluate the alternatives. The evaluation was both qualitative and quantitative. Additionally, the evaluation incorporated an assessment of likely performance benefits and related impacts for each alternative.

Table 4 – Measures of Effectiveness

Goals	Measures of Effectiveness
#1 – Improve bicycle and pedestrian mobility in the Lake Lowell area	• Increases safety for bicyclists and pedestrians compared to existing conditions through same corridor • Support from local agencies • Cost and availability/certainty of funds • Project readiness and delivery schedule (i.e., right-of-way availability, environmental compliance) • Reduces vehicle, bicycle/pedestrian, and recreational visitor conflicts
#2 – Improve connectivity to the Lake Lowell Area from Canyon County and the cities of Nampa and Caldwell	• Ability to serve existing and proposed population in cities of Nampa and Caldwell • Need identified within existing County, Nampa, and Caldwell plans or ties into existing plans • Fills missing link in network • Provides sole access to area or access point • Location of facility start or end point within ¼-mile of an activity center such as a park, school, or public access to the DFNWR
#3 – Enhance environmental quality and reduce roadway congestion	• Contributes to improved environmental quality (e.g., green-house gas reductions) • Mitigates impacts to natural or historic resources • Mitigates impacts to protected species and habitat • Reduces congestion levels on roadways (measured by level of service [LOS] at key intersections and roadway segments) • Enhances water quality
#4 – Promote healthy lifestyles	• Potential for visual and aesthetic changes within the area to affect community context and identity • Increases comfort and convenience for all user groups • Improves mode choices • Location of facility relative to population (facility access point(s) within ¼-mile of residential land use) • Promotes health and wellness

PROJECT PRIORITIZATION

The 50+ projects to be completed within the project area were divided into corridors with connections to Caldwell, Nampa, Lake Lowell, activity centers, and then individual projects. This allowed for projects to be prioritized by corridor and potentially increase opportunities for future funding. Projects can move up in priority if an opportunity becomes available. Wayfinding was also determined to be a priority that should be considered with each project throughout the network.

PRIORITIZATION CRITERIA

Criteria

A Prioritization matrix was created using criteria discussed extensively at a TAC meeting. Each TAC member was asked to individually rank 14 criteria based on what he or she felt was the most important (#1) to the least important (#14). As shown in **Table 6** on the following page, the rankings were collected and tallied to create the following final list of criteria in order of importance:

1. Increase comfort, safety, and convenience for all user groups
2. Reduce vehicle bike/pedestrian and recreational visitor conflicts
3. Fill in missing bike/pedestrian link
4. Location of facility close enough to population center to promote health and wellness
5. Cost and availability of funds
6. Project readiness and delivery schedule
7. Location of facility start or end point is within a quarter mile of an activity center
8. Impacts to protected species and habitat
9. Project support
10. Identified in other plans/supports previous planning efforts
11. Ability to serve existing and growing population in Nampa/Caldwell
12. Impacts to natural or historic resources
13. Improves the visuals/aesthetics in line with the locality
14. Impacts to water quality

This list of 14 items was then combined into a condensed list defined by category and point value, as shown in **Table 5**.

Table 5 – Prioritization Criteria with Point Value

Total Points	Category	Point Value	Prioritization Criteria
31	Spatial/Gap/Termini	12	Fill Missing Bike/Ped Link
		11	Facility Within ¼ Mile of Residential/Commercial Land Use
		8	Facility Within ¼ Mile of Activity Center (Park, School)
27	Safety	14	Increase Comfort, Safety and Convenience For All Users
		13	Reduce Vehicle, Bike/Ped, Rec Visitor Conflicts
23	Readiness	10	Cost and Availability/Certainty of Funds
		9	Project Readiness & Delivery Schedule
		4	Ability to Serve Exist & Growing Population
13	Environmental	7	Impacts to Protected Species and Habitat
		3	Impacts to Natural or Historic Resources
		2	Improve Visual/Aesthetic
		1	Water Quality Impacts
11	Partnerships/ Support	6	Project Support
		5	Identified in Other Plans or Has Support

Table 6 – Prioritization Matrix

The projects were scored initially within the following matrix to determine the order of priority and then discussed with the TAC to determine the appropriateness of each project as compared to its ranking in the matrix.

			Prioritization Criteria														
			Safety		Spatial/Gap/Termini			Readiness			Environmental				Partnerships/ Other Support		
Roadway/Trail	Facility Type	From/To	Increase Comfort, safety and for All User Groups	Reduce Vehicle, Bike/Ped, Rec Visitor Conflicts	Fills Missing Bike/Ped Link	Location of Facility Relative to Population Facility access within 1/4 mile Res or Comm Land Use	Location of Facility Start or End Point, within 1/4 mile of an activity center (park, school, Lake Lowell)	Cost and Availability/ Certainty of Funds	Project Readiness & Delivery Schedule (ROW Availability & Environmental Compliance)	Ability To Serve Exist & Growing Population in Nampa/Caldwell	Impacts to Protected Species an Convenience d Habitat	Impacts to Natural or Historic Resources	Improve Visual/Aesthetic	Water Quality Impacts	Project Support	Identified in Other Plans/ Supports Previous Planning Efforts	Total
			14	13	12	11	8	10	9	4	7	3	2	1	6	5	
Lake Lowell Corridor	Shared-Use Path	Homedale Rd / Orchard Ave	14	13	0	11	8	5	0	4	7	3	2	0	3	5	75
Indiana Avenue	Short-term: Marked Shared Roadway / Long-Term: Bicycle Lanes	Linden St / Lake Lowell Visitor Center	14	13	12	11	8	5	4.5	4	0	3	0	0	0	5	80
East Karcher Corridor	Shared-Use Path	Moss Lane / Cirrus Dr	14	13	0	11	8	5	0	4	7	3	2	1	3	5	76
Moss Street / Bear Lane	Marked Shared Roadway	Bear Lane / Lake Ave	14	13	12	11	0	5	0	4	7	3	2	0	3	5	79
Cirrus Drive	Marked Shared Roadway	Montana Ave / Lake Ave	14	13	12	11	0	5	4.5	4	7	3	0	0	3	5	82
Florida Avenue	Maked Shared Roadway	Ustick Rd / Orchard Ave	14	13	12	11	8	5	4.5	4	7	3	0	0	3	5	90
Upper Embankment Drain Pathway	Shared-Use Path	Lake Lowell Park / Flagstone St	14	13	0	11	0	5	0	4	7	3	2	0	3	5	67
Edwards Drain Pathway	Shared-Use Path	Lake Lowell Park / Middleton Rd	14	13	0	11	8	5	0	4	7	3	2	0	3	5	75
Midway Road Urban Connector	Shared-Use Path	Homedale Rd / Greenhurst Rd	14	13	0	11	8	5	0	4	7	3	2	0	3	5	75
Middleton Road	Short-term: Marked Shared Roadway / Long-Term: Bicycle Lanes	Moss Ln / Greenhurst Rd	14	13	0	11	8	5	0	4	7	3	0	0	3	5	73
Orr Drain Pathway	Shared-Use Path	Lone Star Rd / Lake Lowell Ave	14	13	0	11	8	5	0	4	7	3	2	0	3	5	75
Lake Lowell Avenue	Short-term: Marked Bicycle Route / Long-Term: Bicycle Lanes	Middleton Rd / Highway 45	14	13	12	11	8	5	4.5	4	7	3	0	1	6	5	93.5
Iowa Avenue	Short-term: Marked Bicycle Route / Long-Term: Bicycle Lanes	Midway Rd / Middleton Rd	14	13	12	11	8	5	9	4	7	3	0	0	6	5	97
Iowa Avenue	Bicycle Lanes	Middleton Rd / Midland Rd	14	13	12	11	8	5	9	4	7	3	0	0	6	5	97
Iowa Avenue	Marked Bicycle Route	Midland Rd / Highway 45	14	13	12	11	8	5	9	4	7	3	0	0	6	5	97
Edwards Drain Pathway	Shared-Use Path	Middleton Rd / Midland Rd	14	13	0	11	0	5	0	4	7	3	2	0	3	5	67
Edwards Drain Pathway	Shared-Use Path	Midland Rd / Iowa Ave	14	13	0	11	0	5	0	4	7	3	2	0	3	5	67
Greenhurst Road	Marked Bicycle Route	Midway Rd / Highway 45	14	13	12	11	8	5	0	4	7	3	0	0	3	5	85
Dooley Lane	Marked Bicycle Route	Midland Rd / Sunnyridge Rd	14	13	12	11	8	5	0	4	7	3	0	0	3	5	85
12th Avenue Drain Pathway	Shared-Use Path	Greenhurst Rd / Lake Shore Dr	14	13	0	11	8	5	0	4	7	3	2	0	3	5	75
Herron Drive	Bicycle Boulevard	Edwards Drain / Greenhurst Rd	14	13	6	11	0	5	9	4	7	3	0	1	3	5	81
Lake Avenue	Shared-Use Path	Lake Lowell Park / Orchard Ave	14	13	12	11	8	5	0	4	0	0	2	0	3	0	72
Indiana Avenue	Short-term: Marked Shared Roadway / Long-Term: Bicycle Lanes	Visitors Center / Orchard Ave	14	13	12	11	8	5	0	4	0	0	0	0	3	0	70
Orchard Avenue	Shared-Use Path	Lake Avenue / Riverside Road	14	13	12	11	8	5	0	4	0	0	0	0	6	5	78
Orchard Avenue	Short-term: Marked Shared Roadway / Long-Term: Bicycle Lanes	Indiana Ave / Riverside Rd	14	13	12	11	8	5	0	4	0	0	0	0	6	5	78
Lower Dam Connector	Shared-Use Path	Orchard Ave / Lake Shore Dr	14	13	12	11	8	5	0	4	0	0	0	0	6	5	78
Riverside Road	Paved Shoulder Bikeway	Orchard Ave / Lake Shore Dr	14	13	12	0	8	5	4.5	4	3.5	0	0	0	6	5	75
Lake Shore Drive	Paved Shoulder Bikeway	Riverside Rd / Marsing Rd	14	13	12	0	8	5	4.5	4	3.5	0	0	0	6	5	75
Lake Shore Drive	Short-term: Marked Shared Roadway / Long-Term: Paved Shoulder Bikeway	Perch Rd / Highway 45	14	13	12	0	8	5	4.5	4	3.5	0	0	0	6	5	75
Lake Lowell Path (Segment 1)	Shared-Use Path/Sidepath	Lower Dam Recreation Area / Access #8	14	13	12	0	8	5	4.5	4	3.5	0	0	0	6	5	75
Lake Lowell Path (Segment 2)	Shared-Use Path	Access #8 / Access #5	14	13	12	0	8	5	4.5	4	3.5	0	0	0	6	5	75
Lake Lowell Path (Segment 3)	Shared-Use Path	Access #5 / Access #3	14	13	12	0	8	5	4.5	4	3.5	0	0	0	6	5	75
Lake Lowell Path (Segment 4)	Shared-Use Path	Access #3 / Access #1	14	13	12	0	8	5	4.5	4	3.5	0	0	0	6	5	75
Highway 45	Shared-Use Path	Lake Shore Dr / Burk Ln	14	13	12	11	8	5	0	4	7	3	0	0	0	0	77
Burk Lane	Marked Shared Roadway	Highway 45 / Tio Ln	14	13	12	11	8	5	0	4	7	3	0	0	0	0	77
Tio Lane / Midland Blvd	Marked Shared Roadway	Schaffer's Access / Greenhurst Rd	14	13	12	11	8	5	4.5	4	3.5	0	0	0	6	5	86
Tio Lane / Midland Blvd	Shared-Use Path	Schaffer's Access / Greenhurst Rd	14	13	12	11	8	5	4.5	4	3.5	0	0	0	6	5	86
Greenhurst Road	Shared-Use Path	Midland Blvd / Gotts Point Access	14	13	12	11	8	5	4.5	4	0	0	2	0	3	5	81.5
Greenhurst Road	Marked Shared Roadway	Midland Blvd / Gotts Point Access	14	13	12	11	8	5	4.5	4	0	0	0	0	3	5	79.5
Midway Road (ROW)	Shared-Use Path	Gotts Point Access / Iowa Ave	14	13	12	0	0	5	0	4	0	0	2	1	3	5	59
Iowa Avenue	Marked Shared Roadway	Midway Rd / Lake Lowell Park	14	13	12	11	8	5	0	4	0	0	0	0	6	5	78
Lake Lowell Park Path	Shared-Use Path	Lake Lowell Park / Midway Road	14	13	12	0	8	5	0	4	0	0	2	0	3	0	61
Upper Dam Path	Shared-Use Path	Lake Lowell Park / Visitors Center	14	13	12	0	0	5	0	4	0	0	2	0	3	0	53
Roosevelt Ave	Bike & Ped Facilities	Midland Blvd/ Midway Ave	14	13	6	11	4	5	0	4	7	3	0	0	6	5	78
Wilson pathway	Connect Pathway to Lake Lowell	Various Locations in Nampa	14	13	6	11	4	5	0	4	7	3	2	0	6	5	80
10th Ave	Bike & Ped Facilities	Linden St/ Orchard Ave	14	13	12	11	8	5	0	4	0	3	0	0	6	0	76
Karcher Road	Bike Lanes	Middleton Rd/Riverside Rd	14	13	12	11	8	5	0	4	7	3	0	0	6	0	83

LEGEND: Indicates public support through online 3P visual survey Low Med High

Priority Projects

The existing Nampa and Caldwell bicycle and pedestrian master plans identify improvements to be made on specific corridors, while the highway districts do not have bicycle and pedestrian master plans. The city master plans generally only provide for areas within the incorporated city limits for that jurisdiction, and the highway districts do not have a list of prioritized bicycle and pedestrian projects. For the Lake Lowell Area Bicycle and Pedestrian Access Plan, an initial project list was generated from Nampa's and Caldwell's network maps. Through many TAC discussions, it became apparent that many corridors that connect directly to Lake Lowell continue outside the city limits for Caldwell and Nampa, and therefore were not shown in their plans and were not included in the initial project list developed for the Lake Lowell Area Bicycle and Pedestrian Access Plan. Through additional discussions, TAC members determined that some additional projects needed to be added to the project list because of their direct connectivity.

The 16 projects selected as Priority 1 projects by the TAC are listed in **Table 7** below and shown in **Figure 10** on the following page. These 15 priority projects are located on major arterials included in either a city or highway district asset management plan and will be addressed within the next 7-10 years. To allow for each jurisdiction to apply for funding or prepare their budget for improvements, a few projects were chosen for the priority project list from each of the three identified areas, Caldwell, Nampa and Lake Lowell. It should be noted that this "priority" list does not create a complete loop around the lake. However, once complete, the priority projects plus a few additional projects will provide a full loop, as well as multiple connections from each jurisdiction to the Refuge.

Table 7 – Prioritization Results

Priority	Label	Corridor	Facility Type	Bike Access	Miles
1	A	10th Ave	Bicycle Lanes	Caldwell Access	2.98
1	B	Indiana Ave	Bicycle Lanes	Caldwell Access	4.51
1	C	Lake Ave	Bicycle Lanes	Caldwell Access	5.26
1	G	Upper Embankment Rd	Shared-Use Path	Lake Lowell Access	0.72
1	H	Lake Lowell Park Path	Shared-Use Path	Lake Lowell Access	0.72
1	I	Iowa Ave	Shared Roadway	Lake Lowell Access	0.97
1	M	Highway 45 Sidepath	Shared-Use Path	Lake Lowell Access	1.25
1	N	Lake Shore Dr	Paved Bicycle Shoulders	Lake Lowell Access	11.06
1	O	Riverside Rd	Paved Bicycle Shoulders	Lake Lowell Access	2.06
1	P	Orchard Ave	Shared Roadway	Lake Lowell Access	2.57
1	D	Midway Rd Sidepath	Shared-Use Path	Nampa Access	2.29
1	E	Roosevelt Ave	Bicycle Lanes	Nampa Access	4.95
1	F	Lake Lowell Ave	Shared Roadway	Nampa Access	3.92
1	J	Iowa Ave	Bicycle Lanes	Nampa Access	3.02
1	K	Greenhurst Rd	Shared Roadway	Nampa Access	1.02
1	L	Greenhurst Rd	Bicycle Lanes	Nampa Access	2.00

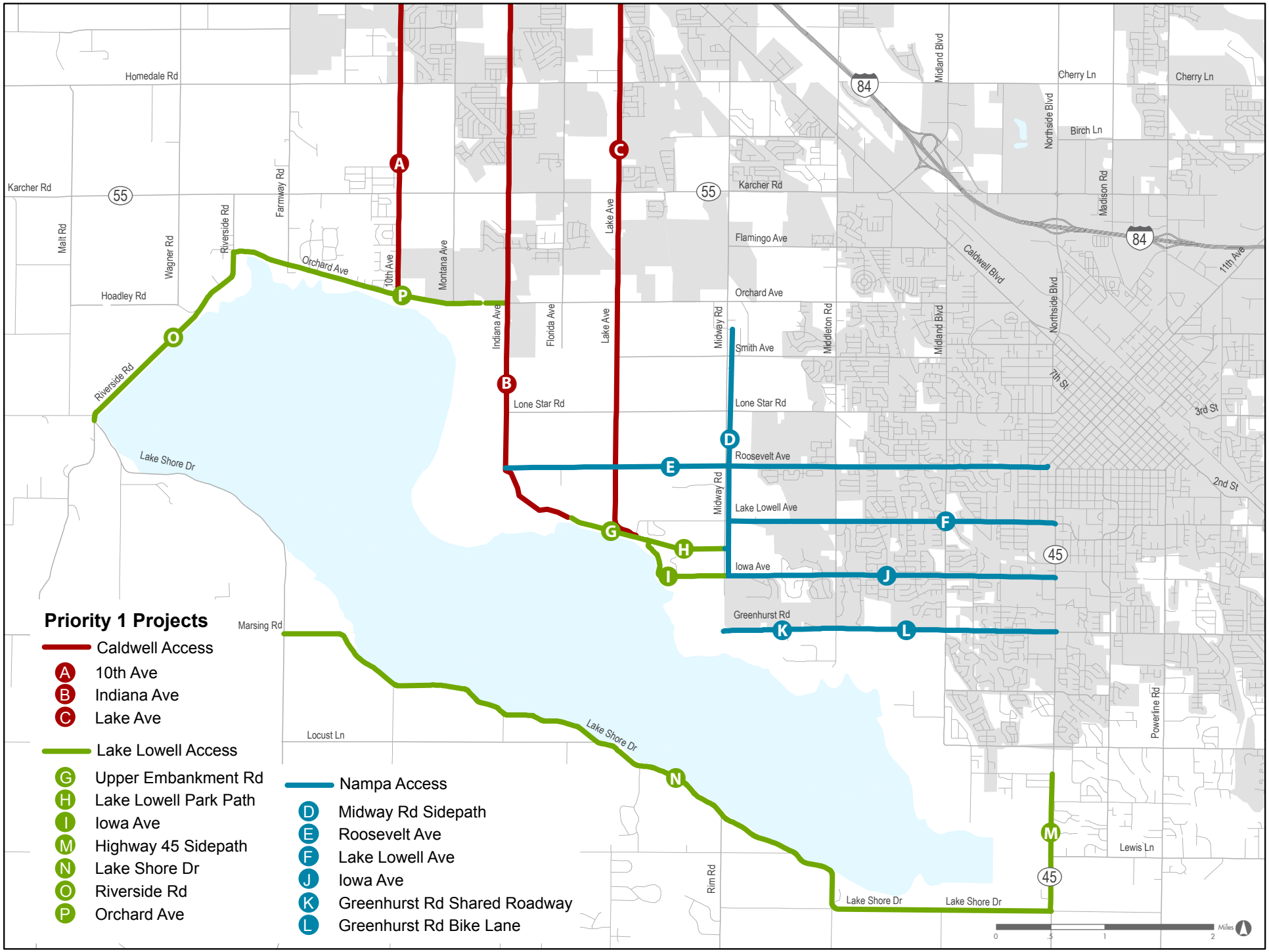


Figure 10 – Priority 1 Projects

CHAPTER 5
IMPLEMENTATION PLAN

IMPLEMENTATION PLAN

This Implementation Plan provides an overview of grants and funding sources, methods to implement short-term (5 – 10 year) prioritized projects, phasing and maintenance recommendations, and lead agency involvement. This Implementation Plan also includes an approach for continued monitoring and evaluation of the plan over the long term.

GRANTS AND FUNDING

Grants are an important aspect of implementation since it takes funding to complete projects. Projects will be funded on an ongoing basis with a mix of grants, local matching dollars, and in-kind labor/use of equipment.

Transportation funding programs are determined by the latest transportation bill passed by the U.S. Congress. The current transportation bill, Fixing America's Surface Transportation (FAST) Act, was passed in December 2015. Due to the newness of the transportation bill, it is not entirely known how the funding will be utilized/distributed/administered. It is likely that the various grant programs that were in place through the past transportation bill will continue, but the amount of funds in each program, as well priorities and criteria will likely be different. Funding programs resulting from the past transportation bill are summarized below.

Transportation Funding

- **Federal Lands Access Program (FLAP) Funding** – The purpose of FLAP funding is to provide safe and adequate transportation access to and through Federal Lands for visitors, recreationists, and resource users. In Idaho, approximately $17 million is funded each year, and the Local Highway Technical Assistance Council (LHTAC) facilitates the funding application process. Western Federal Lands (WFL) issues Request for Proposals every two years, and agencies may request $100,000 or more in funding. A minimum match of 7.34 percent is required; although a higher local match amount typically results in a higher-ranked application. The Federal Land Management Agency (FLMA) must support and sign the application. The next funding cycle is likely to occur in late 2016. FLAP has funded an improvement project to widen shoulders on Lakeshore Drive.
- **Transportation Alternatives Program (TAP)** – This program provides funding for infrastructure and non-infrastructure including planning, design, construction for pedestrian, bicyclist, rails to trails, historic preservation facilities, trails, sidewalks. There is a $500,000 maximum amount that can be applied for and a non federal 7.34 percent match requirement. It is anticipated that the Idaho Transportation Department (ITD) will issue a request for funding applications in early 2017 for FY20 and FY21 projects. A portion of TAP funds funnel through the Community Planning Association of Southwest Idaho (COMPASS), the Metropolitan Planning Organization (MPO) for Ada and Canyon Counties. Annually, COMPASS member agencies may request TAP funding to implement bicycle/pedestrian projects.
- **Idaho Americans with Disabilities (ADA) Pedestrian Curb Ramp Program** – This program, administered by ITD, funds construction costs only (no engineering or administration funds) for curb ramps along Idaho State Highways. Applications are typically due in the Spring of each year.
- **LHTAC Federal-Aid (STP- Rural)** – This program provides funding for reconstruction, rehabilitation, corridor studies, and transportation planning projects for populations below 5,000, classified roadways by the Federal Highway Administration (through ITD's process) as collectors, requires a 7.34% non-federal match, and is ultimately included in the Idaho Transportation Investment Program (ITIP) when the project is awarded.

- **LHTAC Local Rural Highway Investment Program (LRHIP)** – The funding limit for LRHIP grants is $100,000 for construction/maintenance projects and $30,000 for sign replacement projects. This program does not require a local match; however, providing a local match typically makes LRHIP applications more competitive. Applications for these funds are accepted once a year (usually in December) and funds are typically distributed within one year.
- **LHTAC Local Highway Safety Improvement Program (LHSIP)** – The Highway Safety Improvement Program (LHSIP) is a federally funded program aimed at reducing Fatal and Serious Type A Injury crashes on the roadway system. Eligibility for LHSIP is based on the number of Fatal and Type A Serious Injury crashes per jurisdiction using five years of crash data. Eligible jurisdictions will be notified in the fall of each year to begin the application process. This federally funded program requires a 7.34 percent local match.
- **Transportation Investment Generating Economic Recovery (TIGER) Funding** – TIGER is a competitive federal discretionary grant program that funds planning and construction projects including roads, bicycle and pedestrian facilities, trail transit and port improvements. For rural areas, there is typically a minimum grant amount of $1 million for construction projects and no minimum match requirement. In order to be competitive, a minimum match of 20 percent is recommended. The Notice of Funding Availability (NOFA) typically comes out in February each year with an application due date in late April. The last round of TIGER funding was $600 million with a minimum of 20 percent ($120 million) dedicated to rural areas.

Recreation Facility Funding

- **Idaho Parks and Recreation (IDPR) Funding** – The IDPR provides a variety of funding programs and grants to government entities for the purchase of equipment and for the creation and renovation of outdoor recreational facilities. IDPR grant applications are typically due in late January of each year. IDPR grant programs that are likely to be a fit to implement bicycle and pedestrian projects include:
  - **Recreational Trails Program (RTP)** – This program funds projects including maintenance and restoration of existing recreational trails; development and rehabilitation of trailside and trailhead facilities and trail linkages for recreational trails; purchase and lease of recreational trail construction and maintenance equipment; and construction of new recreational trails. There is approximately $1.5 million statewide available through this program annually. A minimum local match of 20 percent is required.
  - **Recreational Road and Bridge** – This program funds projects that develop, construct, maintain, and repair roads, bridges and parking areas within and leading to parks and recreation areas. There is approximately $300,000 statewide available through this program annually. There is no minimum match but it is recommended to provide a match in order to be competitive.
  - **Land and Water Conservation Fund (LWCF)** – This program funds projects to acquire, develop, and maintain outstanding property into perpetuity for outdoor recreation purposes. The goal of the program is to develop quality recreation facilities for the people in the community and state for future generations. Approximately $400,000 is available statewide through this program annually. A minimum local match of 50 percent is required.
- **Blue Cross High Five! Children's Health Collaborative Grant** – This foundation grant provides funding to cities and counties to build or renovate playgrounds or parks and create or improve walking and biking paths, community gardens, and safe routes to school expansion projects. Grant funds range from $50,000 to $300,000. It is anticipated that an announcement for another round of funding will come out sometime in 2016.

Idaho Community Foundation Grant – This foundation grant funds projects involving arts and culture, conservation/environment, education, emergency services, libraries, public projects, recreation, and social services. Eligible applicants are government agencies and 501(C)3 entities. The grant cycle opens in May and closes in July of each year. The maximum award amount is $5,000 and there is no minimum match requirement.

SHORT-TERM (5-10 YEARS) PRIORITIZED PROJECTS

The short-term (5-10 years) Lake Lowell Area Bicycle and Pedestrian Access Plan projects were prioritized by the Lake Lowell TAC and the established Core Team (Deer Flat National Wildlife Refuge, Western Federal Lands, City staff, and Highway District staff). Projects listed in **Table 8** reflect estimated costs and potential grant/funding sources for projects that provide improved bicycle and pedestrian access from Caldwell, Nampa, and around Lake Lowell.

It is recommended that each agency add the projects to their current or future master improvement plans. To provide flexibility in the programming and budgeting process, projects may be split into phases or grouped together as one project when or if necessary. The order in which improvements occur will depend on availability of grants and funding sources. Some improvements will require a long term funding strategy, while other improvements may be funded and completed earlier.

Table 8 – Short-term (5-10 years) Prioritized Projects

Project Description	*Estimated Construction Costs	**Potential Grant/ Funding Sources
CALDWELL		
10th Avenue – Ustick Rd to Orchard Ave – Sidepath – 3.95 mi.	$1,806,489	FLAP, TAP, RTP, Development, Local
Indiana Avenue – Ustick Rd to Deer Flat Visitor's Center – Bike Lanes – 5.51 mi.	$3,182,764	
Lake Avenue – Ustick Rd to Lake Lowell – Bike Lanes – 5.62 mi.	$2,018,484	
NAMPA		
Iowa Avenue – Hwy 45 to Midway Rd – Bike Lanes – 3.02 mi.	$1,073,733	FLAP, TAP, RTP, Development, Local
Roosevelt Avenue – 11th Ave S to Indiana Ave – Bike Lanes - 4.95 mi.	$1,504,719	
Lake Lowell Avenue – Hwy 45 to Midway – Shared Roadway – 3.92 mi.	$550,725	
Greenhurst Rd – Hwy 45 to Middleton Rd – Share Roadway – 1.02 mi. Greenhurst Rd – Middleton Rd to Midway Rd – Bike Lanes – 2.0 mi.	$917,487	
Midway Rd – Sidepath – Orchard Ave to Iowa Ave – Shared Use Path – 2.29 mi.	$1,583,693	

Table 8 – Short-term (5-10 years) Prioritized Projects , cont.

Project Description	*Estimated Construction Costs	**Potential Grant/ Funding Sources
LAKE LOWELL CIRCULATION		
Lake Shore Dr - Hwy 45 to Riverside Rd. – Paved Shoulders – 11.06 mi.	$4,904,123	FLAP, TAP, RTP, Development, LHSIP, LRHIP, STP, Local
Iowa Avenue – Midway Rd to Lake Lowell (Park) – Shared Roadway - 0.97 mi.	$490,490	FLAP, TAP, RTP, High Five, LWCF, LHSIP, LRHIP, STP, Local
Upper Embankment Rd – Lake Ave to Indiana Ave - Shared-Use Path - 0.72 mi.	$515,128	
Lake Lowell Park Pathway – Inside Lake Lowell Park – Shared-Use Path - 0.72 mi.	$515,128	
Highway 45 – Sidepath – Lake Shore Dr to Burke Ln – Shared-Use Path – 1.25 mi.	$871,157	FLAP, TAP, RTP, ADA Pedestrian Curb Ramp Program, LHSIP, LRHIP, STP, Development, Local

**Cost estimates are planning-level only. Estimated costs are limited to construction, mobilization, and contingency. Estimated costs do not include right-of-way costs or engineering.*

***For all projects, it is recommended that agencies initiate specific planning efforts to further develop concepts and obtain community input and support. Once specific concepts are developed, detailed cost estimates/funding applications can be prepared.*

PROJECT IMPLEMENTATION

Implementation Overview

To successfully implement this Access Plan, available funding opportunities should be discussed by the Core Team on an annual, bi-annual, or quarterly basis. These discussions should be strategically timed around grant funding and member agency budget cycles. The Core Team should make efforts to seek outside funding through grants and funding programs that align with projects identified in this plan. It is recommended that an agency take the lead on scheduling Core Team meetings, inviting participants, and developing an agenda. In doing so, discussion topics can be focused and discussed efficiently. Meeting notes should also be maintained to provide a transparent and ongoing record of agency collaboration efforts. The lead agency for the Core Team may rotate periodically to share responsibility and diversify experience of Core Team members. As discussed in this section, the Core Team may initiate specific strategies to increase the likelihood of successful implementation.

Implementation Strategies

Attend annual grant and funding workshops and federal funding webinars - Funding agencies such as LHTAC, ITD, WFL, IDPR, etc. typically hold funding workshops annually or periodically to educate eligible applicants on upcoming funding opportunities, scoring criteria, and program changes. This will help Core Team Members establish and maintain a solid knowledge base on the availability and status of various state and federal grant and funding programs.

The Core Team should update relevant/pertinent sections of this overall plan every five years, or as projects are completed or priorities change. This will keep information up-to-date, help the Core Team member agencies qualify for grant funding (by having an up-to-date plan vs an out-of-date plan), and provide guidance as development is proposed.

Continuing Education on Roadway Maintenance

Funding agencies typically encourage roadway agency staff to be educated on roadway maintenance and roadway safety. Through LHTAC's Training and Technical Assistance (T2) program, Road Department personnel can attend courses and earn certifications. If the agencies can demonstrate to LHTAC that their personnel have attended and/or earned certifications through this program, the agency's proposed project and grant application would rank higher.

Contact Funding Agencies Early and Often, Well Before the Deadline

It is good practice to inform funding agencies of a potential upcoming project well in advance of a grant application deadline. If an agency desires to submit a grant application that is due in the fall or winter, it is recommended that City staff contact funding agencies as early as the beginning of the year. Grant agency staff can offer invaluable advice on how to put a successful application together as well as specific ideas about the project.

Project Development

For projects that agencies want to implement in the near future, it is recommended to identify next steps. A typical next step towards implementation would involve taking a project from the planning phase to the project development phase. Depending on the type and location of the project, project development may involve site investigation, survey, environmental evaluation, or a specific study, etc. For projects that overlap with other jurisdictions, it is recommended that the lead agency work closely with those partner agencies to determine the next step to move to project development. It could be a matter of working with another agency that may ultimately want to sponsor and program the project.

Project Follow-up

Many advocates, the public, and agency staff members and citizens provided significant input into this Plan. It is important to maintain ongoing communication with one another, as well as with the public as the Plan is implemented. Demonstrating projects that were completed in the manner identified in the Plan is important for continued and future support of the Plan and its objectives. Forms of communicating with the public may include press releases, newsletters, social media, web links, etc.

MAINTENANCE RECOMMENDATIONS, IMPLEMENTATION PLAN CHECKLIST, AND PROJECT SUMMARY SHEETS

Maintenance Recommendations

Simpler projects such as striping (shared lane markings), signage, and some ADA improvements that do not require significant widening or costs may be completed by agencies as part of their normal business practices for completion. For example, if a roadway is recommended for shared lane markings in this Plan and an agency plans on chip-sealing or resurfacing that roadway, the new painting scheme may or could be included in the maintenance project.

As projects are implemented, the underlying roadway jurisdiction would be responsible for the upkeep and ongoing maintenance of the bicycle and pedestrian facilities. A maintenance agreement is an option if the Core Team and/or relevant agencies find that it would be more convenient, save costs, time, etc. Another option is to develop an annual maintenance schedule on a rotation basis. These options may be discussed through ongoing communication and during Core Team meetings.

Implementation Plan Checklist

The checklist in **Table 9** represents a summary of the recommendations made in the Lake Lowell Access Plan. The purpose of the checklist is to provide clear guidance on implementation of this Plan.

Table 9 – Plan Implementation Checklist

Relevant Plan Section	Recommendations	Timing
Chapter 2 – Goals and Objectives **Chapter 3 – Needs Assessment**	• Core Team should review Goals, Objectives, and Needs Assessment to re-evaluate goals and objectives and assess progress and needs	Annually
Chapter 4 – Recommendations and Prioritization **Chapter 5 – Implementation Plan**	• Staff from participating agencies should maintain a presence on the Core Team • Meet regularly to discuss projects and update the plan • Identify available funding opportunities/budget and grant funding cycles • Identify opportunities to partner on projects • Identify new projects • Update the plan • Apply for funding • Incorporate grant fund matching into agency budgets • Continue communication with public as projects are developed/ implemented	Quarterly/ Bi-annually

Project Summary Sheets

Included on the following pages are project summary sheets and planning-level cost estimates developed as part of this plan for the short-term (5-10 years) top-priority projects. Core Team members can use these sheets to assist with project planning, scoping, and applying for grant funds. These sheets can be updated to reflect changing costs, scope of work, etc.

PRIORITIZED PROJECT SUMMARY

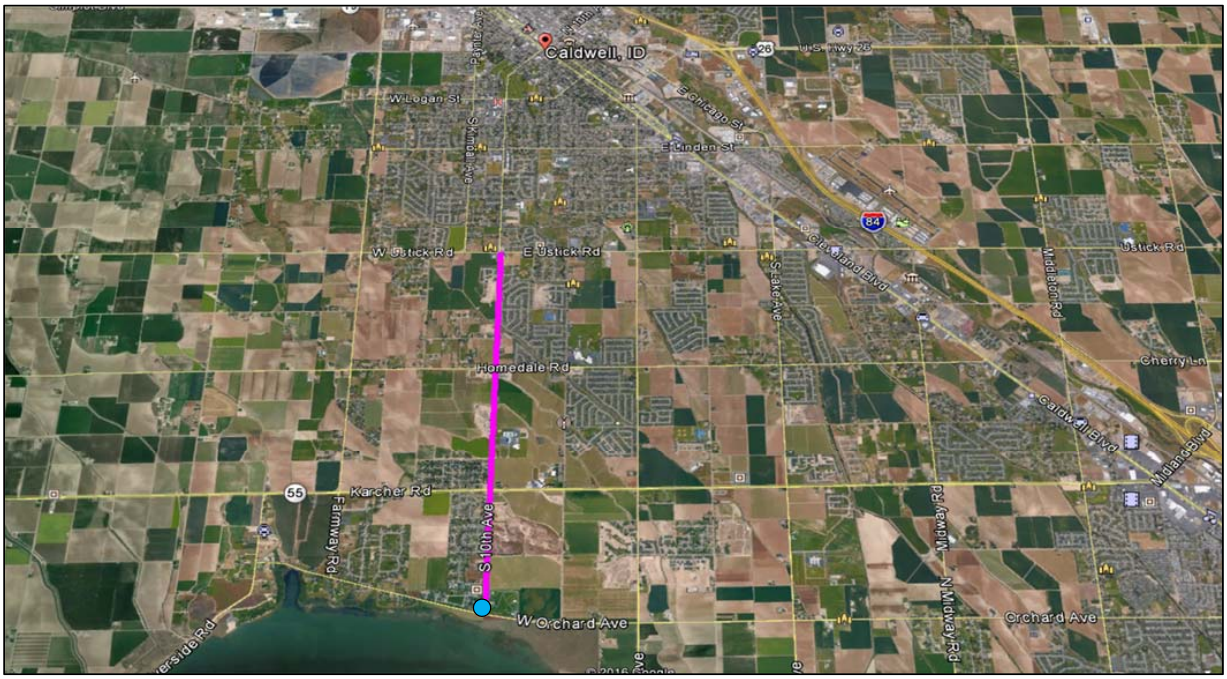
Project Name	10th Avenue						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently 10th Avenue is a paved road, approximately 24 feet wide with no paved shoulders, sidewalks, ADA ramps, and inadequate lighting. Small segments of 10th Ave just south of Ustick Road are improved with sidewalks and curb ramps.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Caldwell and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)

Technical Information	
ADT	6,198 north of Karcher Road, 1,950 south of Karcher Road
Crash Info	Reports of property damage and accident causing possible injuries south of Karcher Road on 10th Ave
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	2.98 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Caldwell City Limits and Surrounding Impact Areas

Cost Estimate	
Concept	$21,977
Design	$54,942
ROW	TBD
Landscaping	$54,942
Traffic Maintenance	$54,942
Drainage and Erosion Control	$109,884
Utilities	$109,884
Construction	$1,098,837
Contingency	$301,082
Project Total	**$1,806,489**

Project Scope of Work	Action Plan and Timing
Approximately 2.98 miles of paved 12-ft-wide side paths will be constructed on 10th Avenue between Ustick Road and Orchard Avenue. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



10th Ave & Ustick Road (south)

10th Ave & Homedale Road (south)

10th Ave & Karcher Road (south)

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
10th Avenue

Single Bike Lane - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	10560	$4.50	$47,520
Thermoplastic Pavement Marking Symbol	EA	11	$500.00	$5,280
High Visibility Crosswalk	EA	1	$1,200.00	$1,200
New Traffic Signs	EA	5	$414.00	$2,186
			Markings Subtotal	**$56,186**

Shared Use Side Path

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	7760	$15.00	$116,395
Concrete	SF	157133	$5.00	$785,664
Aggregate Base Course	CY	2328	$50.00	$116,395
Thermoplastic Pavement Marking (all widths up to 6")	LF	168	$4.50	$756
High Visibility Crosswalk	EA	7	$1,200.00	$8,400
New Sign	EA	3	$414.00	$1,242
Bench	EA	3	$800.00	$2,400
Bike Rack	EA	3	$400.00	$1,200
Trash Can	EA	3	$400.00	$1,200
Large Map or Interpretive Sign Panel	EA	3	$3,000.00	$9,000
			Construction Subtotal	**$1,098,837.25**

Lump Sum Items				
Landscaping (5%)	LS	1	$54,942.00	$54,942
Drainage and E&S (10%)	LS	1	$109,884.00	$109,884
Maintenance of Traffic (5%)	LS	1	$54,942.00	$54,942
Utility Adjustments (10%)	LS	1	$109,884.00	$109,884
Conceptual Plans (2%)	LS	1	$21,976.75	$21,977
Design (5%)	LS	1	$54,941.86	$54,942
			Subtotal	**$406,571**

Summary		**Amount**
Site improvements include striping of new bike lanes, construction of new 12ft concrete multi-use path	Sub-Total	$1,505,407.86
	20% Contingency	$301,081.57
	Total	**$1,806,489.43**

This OPC is not intended for basing financial decisions, or securing funding. Since Kimley-Horn and Associates, Inc. has no control over the cost of labor, materials, equipment, or services furnished by others, or over methods of determining price, or over competitive bidding or market conditions, any and all opinions as to the cost herein, including but not limited to opinions as to the costs of construction materials, shall be made on the basis of experience and best available data. Kimley-Horn and Associates, Inc. cannot and does not guarantee that proposals, bids, or actual costs will not vary from the opinions on costs shown herein. Contractor shall be responsible for their own take off and bid numbers. The quantities shown herein shall not be used for bidding purposes and may not be all inclusive.

Basis for Cost Projection:

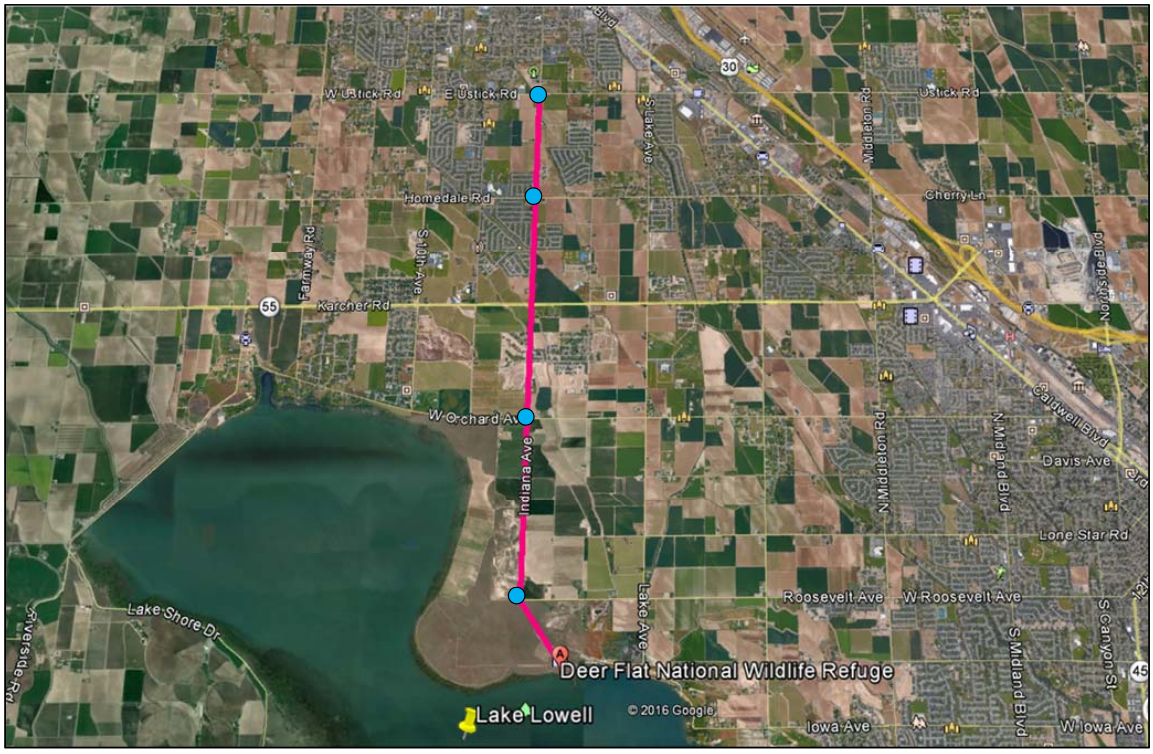
- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

Project Name	Indiana Avenue						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently Indiana Avenue is a paved road, approximately 24 feet wide with no sidewalks, ADA ramps, and inadequate lighting. Small segments of Indiana Ave between Heritage Street and Orchard Avenue are improved with a ranges of approximately 44 ft – 64 ft of pavement with sidewalks and curb ramps.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Caldwell and Highway District Staff						

Project Funding		Technical Information	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)	ADT	1,166
		Crash Info	Report of fatal accident at Orchard and Roosevelt, reports of property damage, possible injuries, visible injuries, and serious injuries between Lone Star and Orchard.
		Environmental Aspects	Details provided in Appendix B
		Safety Issues	No ADA Access
Cost Estimate		Facility Info	
Concept	$38,720	Length	5.36 miles
Design	$96,799	ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
ROW	Modifications to ROW anticipated Cost TBD		
Landscaping	$96,799	Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Traffic Maintenance	$96,799		
Drainage and Erosion Control	$193,599	Jurisdiction	Caldwell City Limits and Surrounding Impact Areas
Utilities	$193,599		
Construction	$1,935,988		
Contingency	$530,461		
Project Total	**$3,182,764**		

Project Scope of Work	Action Plan and Timing
Construction of approximately 4.35 miles of 12-ft-wide side path along Indiana Avenue between Ustick Road to Deer Flat Visitor's Center. Construction of approximately 1.01 miles of designated bike lanes between Heritage Street and Karcher Road. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Indiana Ave & Ustick Road (south)

Indiana Ave & Heritage Street (south)

Indiana Ave & Orchard Ave (south)

Indiana Ave & Roosevelt Ave (south)

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Indiana Avenue

Single Bike Lane - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	21120	$4.50	$95,040
Thermoplastic Pavement Marking Symbol	EA	21	$500.00	$10,560
High Visibility Crosswalk	EA	5	$1,200.00	$6,336
New Traffic Signs	EA	11	$414.00	$4,372
			Markings Subtotal	**$116,308**

Shared Use Path

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	13700	$15.00	$205,500
Concrete	SF	275616	$5.00	$1,378,080
Aggregate Base Course	CY	4083.2	$50.00	$204,160
High Visibility Crosswalk	EA	4	$1,200.00	$4,800
New Sign	EA	10	$414.00	$4,140
New Signal Heads	EA	0	$5,000.00	$0
Split Rail Fence	LF	0	$20.00	$0
Bench	EA	5	$800.00	$4,000
Bike Rack	EA	5	$400.00	$2,000
Trash Can	EA	5	$400.00	$2,000
Large Map or Interpretive Sign Panel	EA	5	$3,000.00	$15,000
			Construction Subtotal	**$1,935,987.84**

Lump Sum Items				
Landscaping (5%)	LS	1	$96,799.00	$96,799
Drainage and E&S (10%)	LS	1	$193,599.00	$193,599
Maintenance of Traffic (5%)	LS	1	$96,799.00	$96,799
Utility Adjustments (10%)	LS	1	$193,599.00	$193,599
Conceptual Plans (2%)	LS	1	$38,719.76	$38,720
Design (5%)	LS	1	$96,799.39	$96,799
			Subtotal	**$716,315**

Summary		**Amount**
Site improvements include striping of new bike lanes, construction of new 12ft concrete multi-use path	Sub-Total	$2,652,302.99
	20% Contingency	$530,460.60
	Total	**$3,182,763.59**

This OPC is not intended for basing financial decisions, or securing funding. Since Kimley-Horn and Associates, Inc. has no control over the cost of labor, materials, equipment, or services furnished by others, or over methods of determining price, or over competitive bidding or market conditions, any and all opinions as to the cost herein, including but not limited to opinions as to the costs of construction materials, shall be made on the basis of experience and best available data. Kimley-Horn and Associates, Inc. cannot and does not guarantee that proposals, bids, or actual costs will not vary from the opinions on costs shown herein. Contractor shall be responsible for their own take off and bid numbers. The quantities shown herein shall not be used for bidding purposes and may not be all inclusive.

Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

Project Name	Lake Avenue						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently Lake Avenue is a paved road varying in width. It is approximately 35 feet wide from Ustick to Homedale Road. It is approximately 30 ft wide (including a paved shoulder) for a half mile south of Homedale Road. The remainder of Lake Avenue to Lake Lowell is approximately 24 ft wide with no paved shoulder, sidewalks, or ADA ramps.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Caldwell, Deer Flat National Wildlife Refuge, and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)

Cost Estimate	
Concept	$24,556
Design	$61,389
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$61,389
Traffic Maintenance	$61,389
Drainage and Erosion Control	$122,779
Utilities	$122,779
Construction	$1,227,789
Contingency	$336,414
Project Total	**$2,018,484**

Technical Information	
ADT	Increases from 797 to 2,354 from Lake Lowell to Ustick Road
Crash Info	Reports of accidents causing possible and visible injuries south of Orchard Ave
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	Approx 5.26 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	There is a minimum of 2 irrigation canals that must be crossed.
Jurisdiction	Caldwell City Limits, Deer Flat National Wildlife Refuge, and Surrounding Impact Areas

Project Scope of Work	Action Plan and Timing
Approximately 5.26 miles of marked bike lanes from Ustick Road to Lake Lowell. Portions of the proposed marked bike lane will only require striping the existing paved shoulder. The proposed bike lane for the majority of Lake Ave south of Homedale will require the addition of a 5-ft paved shoulder and bike lane. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.

Lake Ave & Ustick Road (south, 35ft wide)

Lake Ave & Homedale Road (south,30ft wide)

Lake Ave & Karcher Road (south, 24ft wide)

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Lake Avenue

Single Bike Lane - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	10560	$4.50	$47,520
Thermoplastic Pavement Marking Symbol	EA	11	$500.00	$5,280
High Visibility Crosswalk	EA	5	$1,200.00	$6,000
New Traffic Signs	EA	5	$414.00	$2,186
			Markings Subtotal	**$60,986**

Widen Roadway to Add Bike Lane

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	11170	$15.00	$167,552
Aggregate Base Course for Pavement	CY	5585	$50.00	$279,253
Asphalt Surface Course	TON	1428	$85.00	$121,380
Asphalt Base Course	TON	5712	$85.00	$485,520
Thermoplastic Pavement Marking (all widths up to 6")	LF	25133	$4.50	$113,098
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$1,227,788.85**

Lump Sum Items				
Landscaping (5%)	LS	1	$61,389.00	$61,389
Drainage and E&S (10%)	LS	1	$122,779.00	$122,779
Maintenance of Traffic (5%)	LS	1	$61,389.00	$61,389
Utility Adjustments (10%)	LS	1	$122,779.00	$122,779
Conceptual Plans (2%)	LS	1	$24,555.78	$24,556
Design (5%)	LS	1	$61,389.44	$61,389
			Subtotal	**$454,281**

Summary		**Amount**
Site improvements include roadway widening and striping of new bike lanes	Sub-Total	$1,682,070.07
	20% Contingency	$336,414.01
	Total	**$2,018,484.09**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

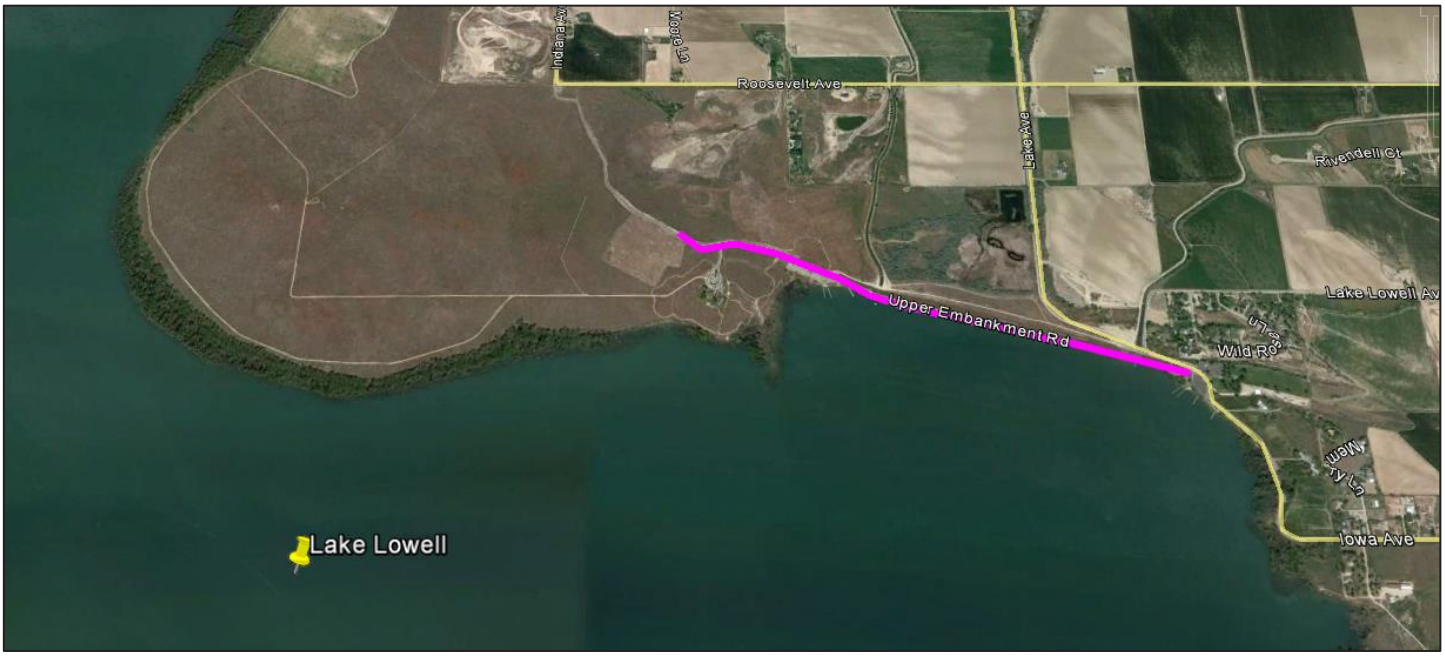
Project Name	Upper Embankment Road						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently, Upper Embankment Road is approximately 24 feet wide with no shoulders, pedestrian ramps or lighting. The path will connect the two docks on either side of the Upper Dam, providing access to two recreational parking/dock areas and a side path that leads to Lake Lowell.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	Deer Flat National Wildlife Refuge, City of Nampa, City of Caldwell, and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%), LHSIP, LRHIP, STP, Local

Cost Estimate	
Concept	$6,267
Design	$15,667
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$15,667
Traffic Maintenance	$15,667
Drainage and Erosion Control	$31,334
Utilities	$31,334
Construction	$313,338
Contingency	$85,855
Project Total	**$515,128**

Technical Information	
ADT	N/A
Crash Info	N/A
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	0.72 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Deer Flat National Wildlife Refuge, Nampa & Caldwell City Limits and Surrounding Impact Areas

Project Scope of Work	Action Plan and Timing
Construction of a 12-ft-wide shared-use path along Upper Embankment Road between Lake Ave and Indiana Ave (approx. 0.72 miles) providing access to Lake Lowell park and the Visitors Center. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Upper Embankment Road at Indiana Ave

Parking/Dock Areas

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Upper Embankment Road

Shared Use Path

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	2253	$15.00	$33,792
Concrete	SF	45619	$5.00	$228,096
Aggregate Base Course	CY	676	$50.00	$33,792
Thermoplastic Pavement Marking (all widths up to 6")	LF	48	$4.50	$216
High Visibility Crosswalk	EA	2	$1,200.00	$2,400
New Sign	EA	3	$414.00	$1,242
Bench	EA	3	$800.00	$2,400
Bike Rack	EA	3	$400.00	$1,200
Trash Can	EA	3	$400.00	$1,200
Large Map or Interpretive Sign Panel	EA	3	$3,000.00	$9,000
			Construction Subtotal	**$313,338.00**

Lump Sum Items				
Landscaping (5%)	LS	1	$15,667.00	$15,667
Drainage and E&S (10%)	LS	1	$31,334.00	$31,334
Maintenance of Traffic (5%)	LS	1	$15,667.00	$15,667
Utility Adjustments (10%)	LS	1	$31,334.00	$31,334
Conceptual Plans (2%)	LS	1	$6,266.76	$6,267
Design (5%)	LS	1	$15,666.90	$15,667
			Subtotal	**$115,936**

Summary		**Amount**
Site improvements include construction of new 12ft concrete multi-use path	Sub-Total	$429,273.66
	20% Contingency	$85,854.73
	Total	**$515,128.39**

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Basis for Cost Projection:

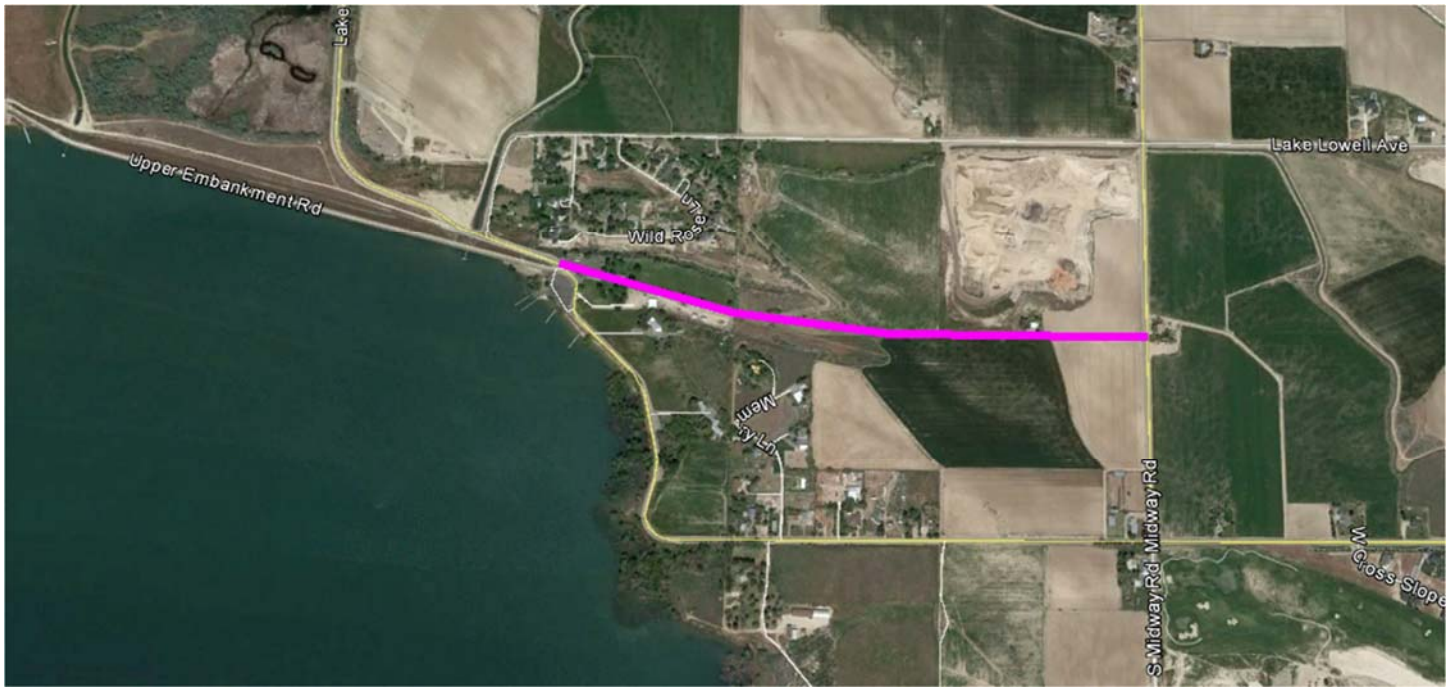
- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

Project Name	Lake Lowell Park Path						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently the pathway is private farmland with private gravel roads. No pedestrian facilities are provided.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	Deer Flat National Wildlife Refuge, City of Caldwell, and Highway District Staff						

Project Funding		Technical Information	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%), LHSIP, LRHIP, STP, Local	ADT	N/A
		Crash Info	N/A
		Environmental Aspects	Details provided in Appendix B
		Safety Issues	No ADA Access, no pedestrian/bike facilities
Cost Estimate		Facility Info	
Concept	$6,267	Length	0.72 miles
Design	$15,667	ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
ROW	Modifications to ROW anticipated Cost TBD		
Landscaping	$15,667	Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Traffic Maintenance	$15,667		
Drainage and Erosion Control	$31,334	Jurisdiction	Deer Flat National Wildlife Refuge, Caldwell City Limits, and Surrounding Impact Areas
Utilities	$31,334		
Construction	$313,338		
Contingency	$85,855		
Project Total	**$515,128**		

Project Scope of Work	Action Plan and Timing
Construction of a 12-ft-wide, 0.72-mile-long shared-use path inside Lake Lowell Park and on private land to the east of Lake Lowell Park. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.


Upper Embankment Rd
Wild Rose Ln
Lake Lowell Ave
S Midway Rd
Midway Rd
W Cross Slope

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Lake Lowell Park Path

Shared Use Path

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	2253	$15.00	$33,792
Concrete	SF	45619	$5.00	$228,096
Aggregate Base Course	CY	676	$50.00	$33,792
Thermoplastic Pavement Marking (all widths up to 6")	LF	48	$4.50	$216
High Visibility Crosswalk	EA	2	$1,200.00	$2,400
New Sign	EA	3	$414.00	$1,242
Bench	EA	3	$800.00	$2,400
Bike Rack	EA	3	$400.00	$1,200
Trash Can	EA	3	$400.00	$1,200
Large Map or Interpretive Sign Panel	EA	3	$3,000.00	$9,000
			Construction Subtotal	**$313,338.00**

Lump Sum Items				
Landscaping (5%)	LS	1	$15,667.00	$15,667
Drainage and E&S (10%)	LS	1	$31,334.00	$31,334
Maintenance of Traffic (5%)	LS	1	$15,667.00	$15,667
Utility Adjustments (10%)	LS	1	$31,334.00	$31,334
Conceptual Plans (2%)	LS	1	$6,266.76	$6,267
Design (5%)	LS	1	$15,666.90	$15,667
			Subtotal	**$115,936**

Summary		**Amount**
Site improvements include construction of new 12ft concrete multi-use path	Sub-Total	$429,273.66
	20% Contingency	$85,854.73
	Total	**$515,128.39**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

Project Name	Iowa Avenue – Lake Lowell Access
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.
Project Need/ Existing Conditions	Currently, Iowa Avenue between Midland Road and Lake Lowell Park is approximately 26 ft wide with 3-ft gravel shoulders and inadequate pedestrian facilities and lighting.

Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X

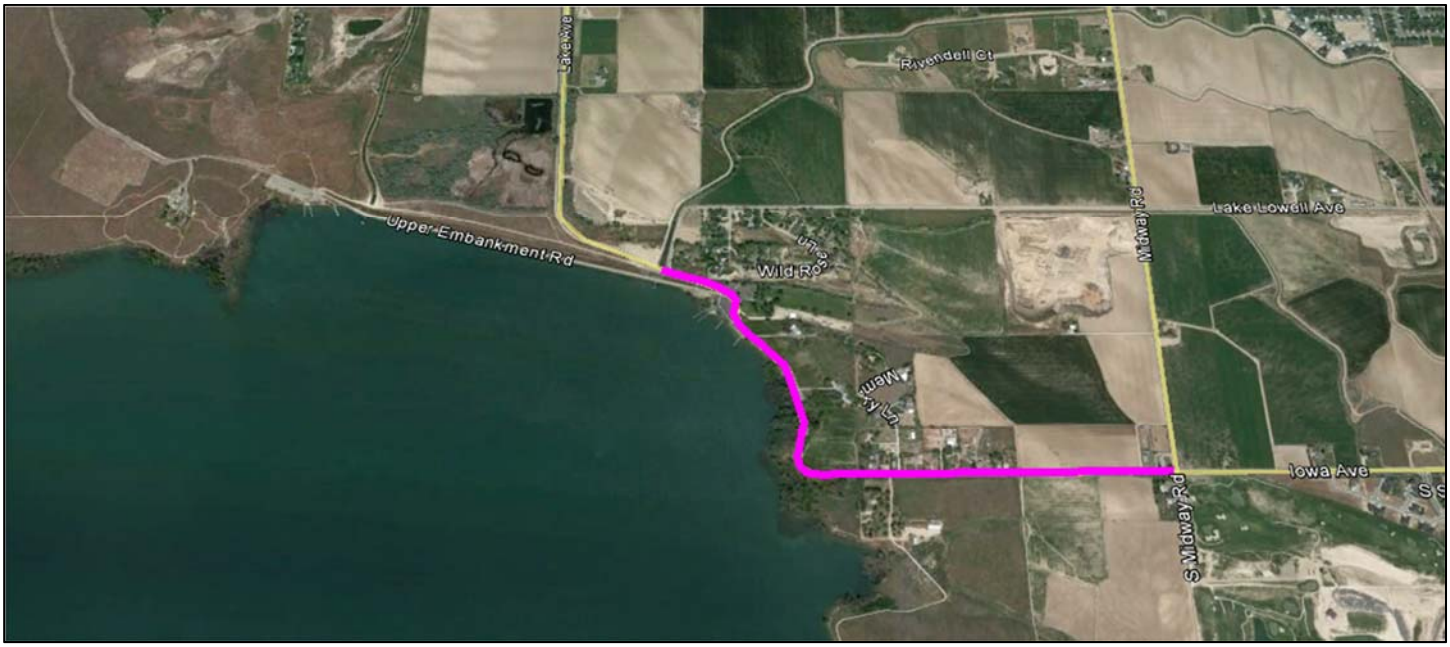
Community Priority	Short Term (5-10 years)
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff
Implementing/ Affected Agencies	Deer Flat National Wildlife Refuge, City of Nampa, and Highway District Staff

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%), LHSIP, LRHIP, STP, Local

Cost Estimate	
Concept	$5,967
Design	$14,918
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$14,918
Traffic Maintenance	$14,918
Drainage and Erosion Control	$29,835
Utilities	$29,835
Construction	$298,351
Contingency	$81,748
Project Total	$490,490

Technical Information	
ADT	884
Crash Info	Reports of accidents involving property damage and possible injuries
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	0.97 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Deer Flat National Wildlife Refuge, Nampa City Limits, and Surrounding Impact Areas

Project Scope of Work	Action Plan and Timing
Design of a 0.97-mile-long shared roadway along Iowa Avenue from Midway Road to Lake Lowell Park. Construction will include widening the existing roadway to accommodate bicycle traffic and striping to ensure motorists are aware of the possible presence of cyclists. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Iowa Avenue near Lake Lowell Park

Iowa Avenue west of Midland Road

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Iowa Avenue - Lake Lowell Park

Widen Roadway & Add Shared Use Markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	10243	$4.50	$46,094
Thermoplastic Pavement Marking Symbol (sharrow)	EA	20	$500.00	$10,243
High Visibility Crosswalk	EA	0	$1,200.00	$0
New Traffic Signs	EA	10	$414.00	$4,241
			Markings Subtotal	**$60,578**

Widen Roadway for Shared Use (one side of traffic)

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	2276	$15.00	$34,144
Aggregate Base Course for Pavement	CY	1138	$50.00	$56,907
Asphalt Surface Course	TON	291	$85.00	$24,735
Asphalt Base Course	TON	1164	$85.00	$98,940
Thermoplastic Pavement Marking (all widths up to 6")	LF	5122	$4.50	$23,047
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$298,351.15**

Lump Sum Items				
Landscaping (5%)	LS	1	$14,918.00	$14,918
Drainage and E&S (10%)	LS	1	$29,835.00	$29,835
Maintenance of Traffic (5%)	LS	1	$14,918.00	$14,918
Utility Adjustments (10%)	LS	1	$29,835.00	$29,835
Conceptual Plans (2%)	LS	1	$5,967.02	$5,967
Design (5%)	LS	1	$14,917.56	$14,918
			Subtotal	**$110,391**

Summary		**Amount**
Site improvements include striping of shared use roadway and widening existing road	Sub-Total	$408,741.73
	20% Contingency	$81,748.35
	Total	**$490,490.08**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

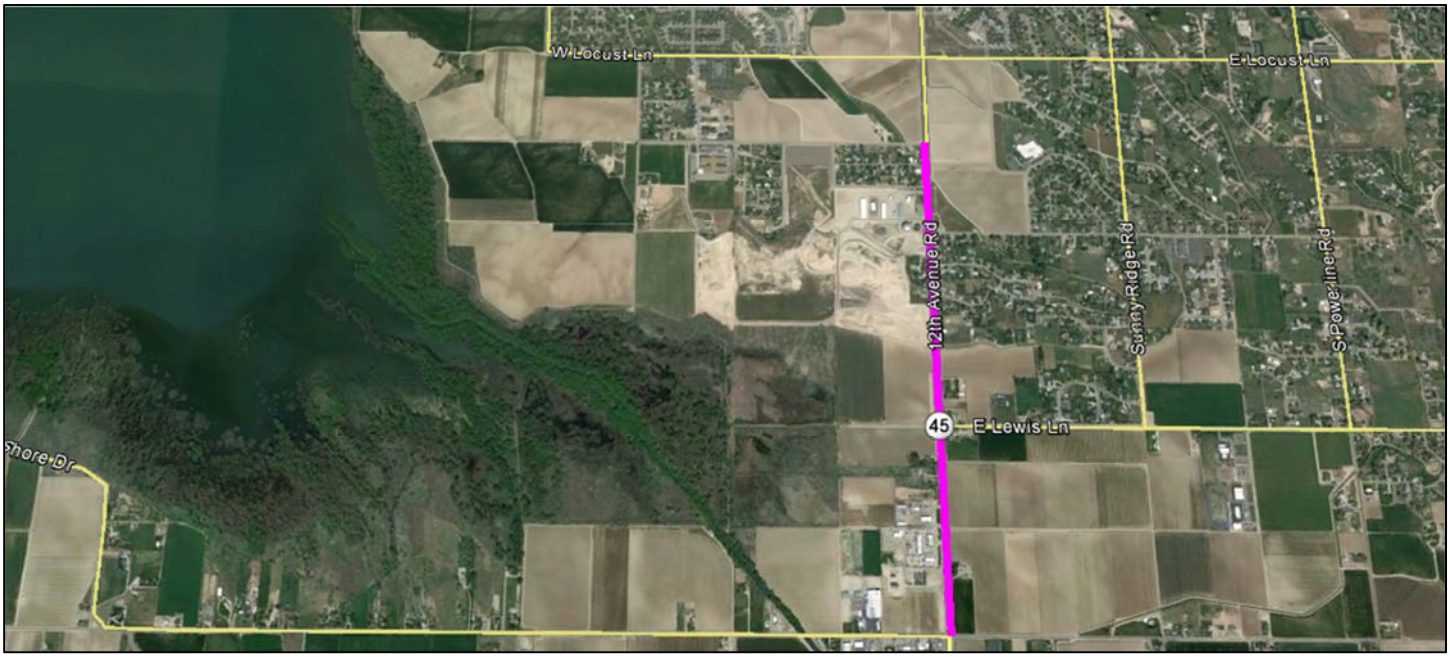
Project Name	Highway 45 Side-Path						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently, Highway 45 between Lake Shore Drive and Burke Lane is approximately 35 ft wide with 3-foot paved shoulders. No sidewalks or ADA ramps are currently provided and lighting is minimal.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	Deer Flat National Wildlife Refuge, City of Nampa, and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), RTP (20%), ADA Pedestrian Curb Ramp Program (none), LHSIP (7.34%), LRHIP (no match), STP (7.34%), Development, Local

Technical Information	
ADT	N/A
Crash Info	Multiple reports of accidents involving property damage, visible and fatal injuries. One report of fatal accident at Lake Shore Drive and Highway 45.
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	1.25 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Deer Flat National Wildlife Refuge, Nampa City Limits, and Surrounding Impact Areas

Cost Estimate	
Concept	$10,598
Design	$26,495
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$26,495
Traffic Maintenance	$26,495
Drainage and Erosion Control	$52,990
Utilities	$52,990
Construction	$529,901
Contingency	$145,193
Project Total	**$871,157**

Project Scope of Work	Action Plan and Timing
Design and construction of a 1.25-mile shared-use side path along Highway 45 from Lake Shore Drive to Burke Lane. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Highway 45, south of Burke Lane

Highway 45 at Lake Shore Drive

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Highway 45 Sidepath

Shared Use Side Path (12ft wide)

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	3911	$15.00	$58,667
Concrete	SF	79200	$5.00	$396,000
Aggregate Base Course	CY	1173	$50.00	$58,667
Thermoplastic Pavement Marking (all widths up to 6")	LF	120	$4.50	$540
High Visibility Crosswalk	EA	5	$1,200.00	$6,000
New Sign	EA	2	$414.00	$828
Bench	EA	2	$800.00	$1,600
Bike Rack	EA	2	$400.00	$800
Trash Can	EA	2	$400.00	$800
Large Map or Interpretive Sign Panel	EA	2	$3,000.00	$6,000
			Construction Subtotal	**$529,901.33**

Lump Sum Items				
Landscaping (5%)	LS	1	$26,495.00	$26,495
Drainage and E&S (10%)	LS	1	$52,990.00	$52,990
Maintenance of Traffic (5%)	LS	1	$26,495.00	$26,495
Utility Adjustments (10%)	LS	1	$52,990.00	$52,990
Conceptual Plans (2%)	LS	1	$10,598.03	$10,598
Design (5%)	LS	1	$26,495.07	$26,495
			Subtotal	**$196,063**

Summary		**Amount**
Site improvements includes construction of new 12ft concrete multi-use path	Sub-Total	$725,964.43
	20% Contingency	$145,192.89
	Total	**$871,157.31**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

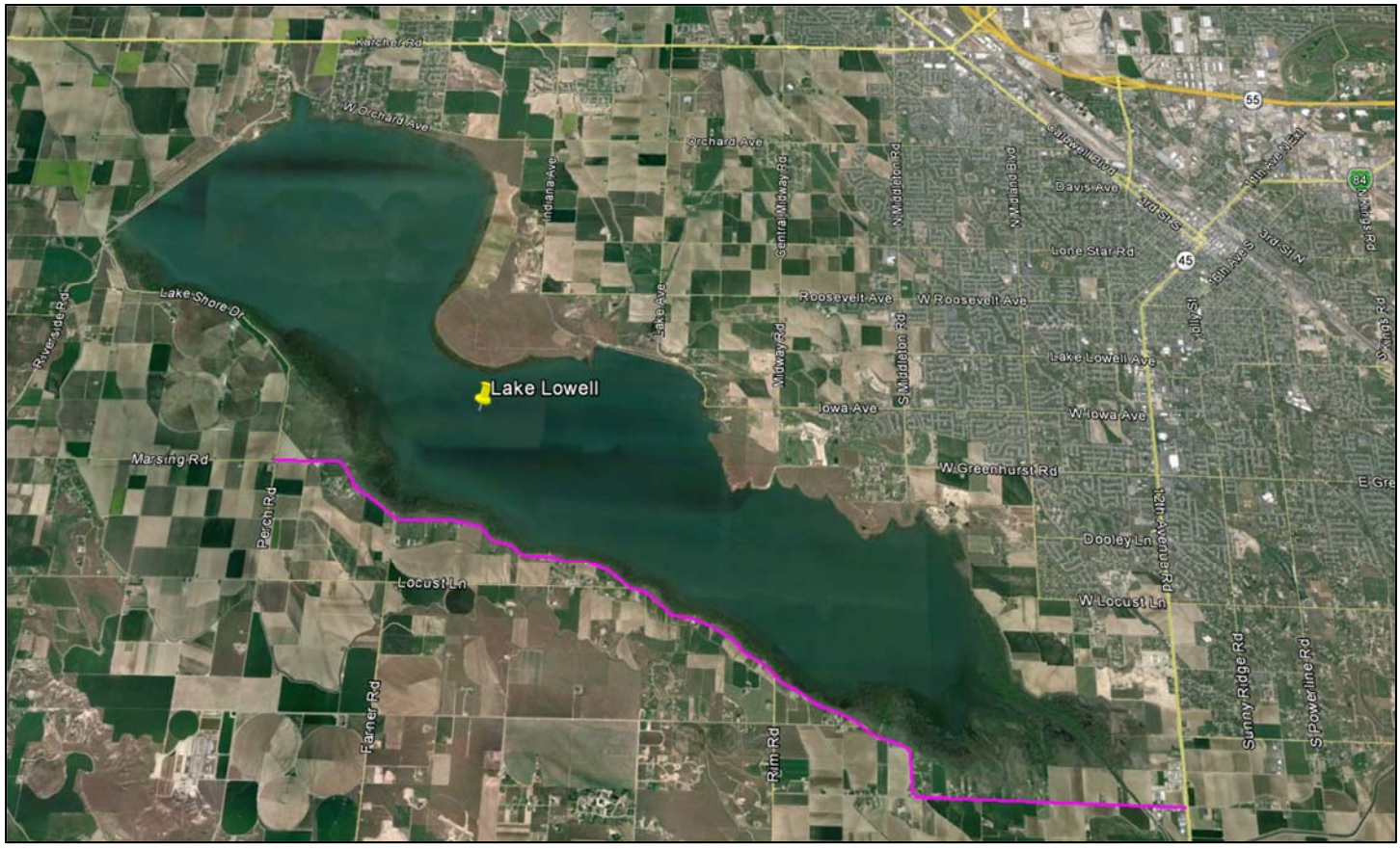
PRIORITIZED PROJECT SUMMARY

Project Name	Lake Shore Drive						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently, Lake Shore Drive between Highway 45 and Perch Road is approximately 24 ft wide with 3-ft paved shoulders. The roadway has multiple tight turns and potential blind turns. There are currently no sidewalk, ADA ramps or adequate pedestrian lighting.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	Deer Flat National Wildlife Refuge and Highway District Staff						

Project Funding		Technical Information	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), RTP (20%), LHSIP (7.34%), LRHIP (no match), STP (7.34%), Development, Local	ADT	Ranges between 584 – 2,554 along the 8.0mi roadway segment
		Crash Info	Multiple reports of accidents involving property damage and wild animals. Few reports of accidents causing minor injuries and two reports of serious injuries.
		Environmental Aspects	Details provided in Appendix B
		Safety Issues	No ADA Access, no pedestrian/bike facilities

Cost Estimate		Facility Info	
Concept	$59,661	Length	8.0 miles
Design	$149,152	ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
ROW	Modifications to ROW anticipated Cost TBD		
Landscaping	$149,152	Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Traffic Maintenance	$149,152		
Drainage and Erosion Control	$298,304	Jurisdiction	Deer Flat National Wildlife Refuge and Surrounding Impact Areas
Utilities	$298,304		
Construction	$2,983,044		
Contingency	$817,353		
Project Total	**$4,904,123**		

Project Scope of Work	Action Plan and Timing
Construction of approximately 8.0 miles of 6-ft wide paved shoulders along Lake Shore Drive from Highway 45 to Perch Road. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Lake Shore Drive at Dearborne Road

Lake Shore Drive at Locust Lane

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Lake Shore Drive

Widen Roadway & Add Striping

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	116794	$4.50	$525,571
Thermoplastic Pavement Marking Symbol	EA	0	$500.00	$0
High Visibility Crosswalk	EA	0	$1,200.00	$0
New Traffic Signs	EA	22	$414.00	$9,158
			Markings Subtotal	**$534,729**

Widen Paved Roadway (6ft shoulders, both sides)

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	25954	$15.00	$389,312
Aggregate Base Course for Pavement	CY	12977	$50.00	$648,853
Asphalt Surface Course	TON	3318	$85.00	$282,030
Asphalt Base Course	TON	13272	$85.00	$1,128,120
Thermoplastic Pavement Marking (all widths up to 6")	LF	0	$4.50	$0
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$2,983,044.21**

Lump Sum Items				
Landscaping (5%)	LS	1	$149,152.00	$149,152
Drainage and E&S (10%)	LS	1	$298,304.00	$298,304
Maintenance of Traffic (5%)	LS	1	$149,152.00	$149,152
Utility Adjustments (10%)	LS	1	$298,304.00	$298,304
Conceptual Plans (2%)	LS	1	$59,660.88	$59,661
Design (5%)	LS	1	$149,152.21	$149,152
			Subtotal	**$1,103,725**

Summary		**Amount**
Site improvements include construction of widening and striping existing roadway shoulders.	Sub-Total	$4,086,769.31
	20% Contingency	$817,353.86
	Total	**$4,904,123.17**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

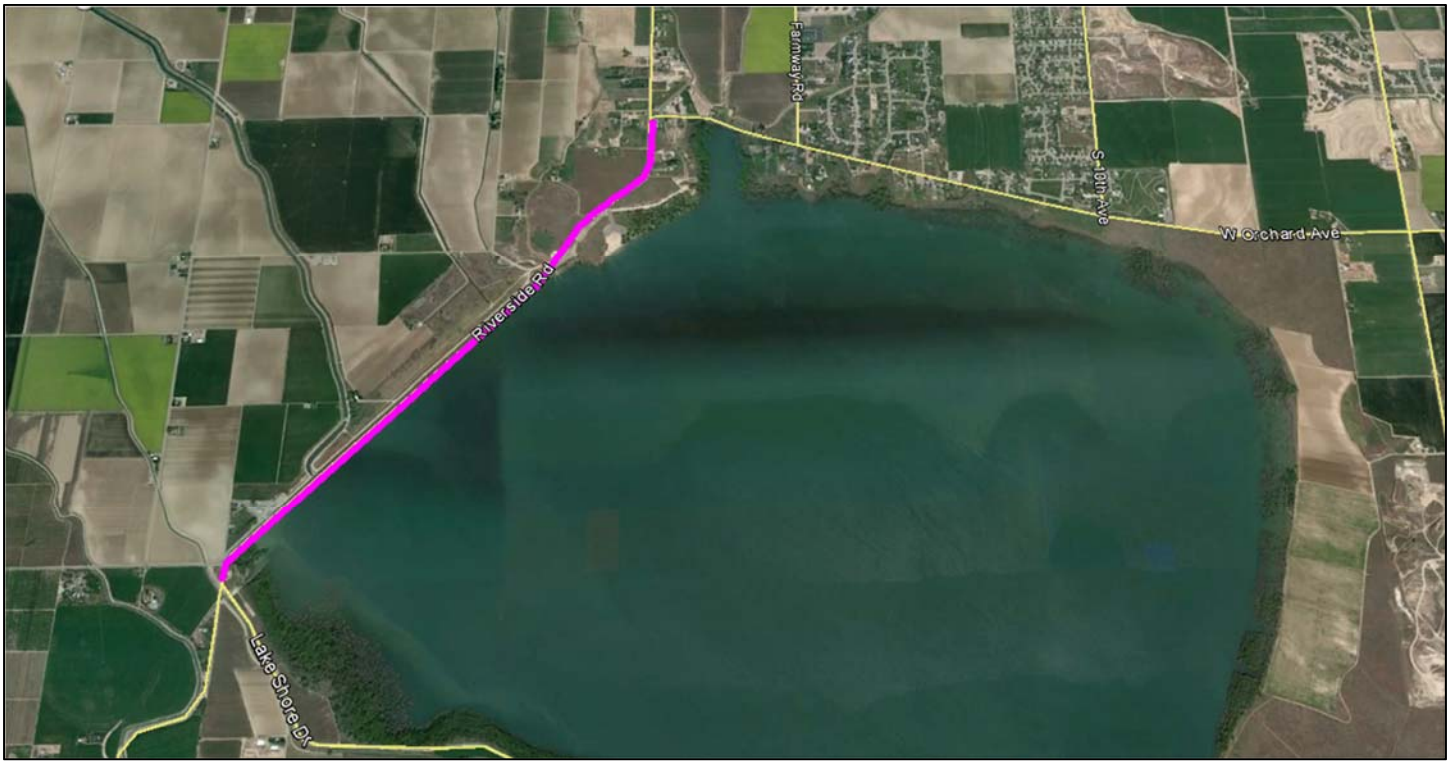
PRIORITIZED PROJECT SUMMARY

Project Name	**Riverside Road**						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently, Riverside Road runs along the northwest shore of Lake Lowell. It is approximately 24 ft wide with an 8-ft paved shoulder on the southeast side of the road. There are no sidewalks or ADA ramps along the road.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Caldwell, Deer Flat National Wildlife Refuge, and Highway District Staff						

Project Funding		**Technical Information**	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), RTP (20%), LHSIP (7.34%), LRHIP (no match), STP (7.34%), Development, Local	ADT	3,107
		Crash Info	Reports of accidents involving wild animals and property damage
		Environmental Aspects	Details provided in Appendix B
		Safety Issues	No ADA Access, no pedestrian/bike facilities

Cost Estimate		Facility Info	
Concept	No Cost Estimate Completed	Length	Approx. 2.06 miles
Design		ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
ROW			
Landscaping		Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Traffic Maintenance			
Drainage and Erosion Control		Jurisdiction	Caldwell City Limits, Deer Flat National Wildlife Refuge, and Surrounding Impact Areas
Utilities			
Construction			
Contingency			
Project Total			

Project Scope of Work	**Action Plan and Timing**
Construction and/or designation of bike lane along Riverside Road	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Riverside Drive

PRIORITIZED PROJECT SUMMARY

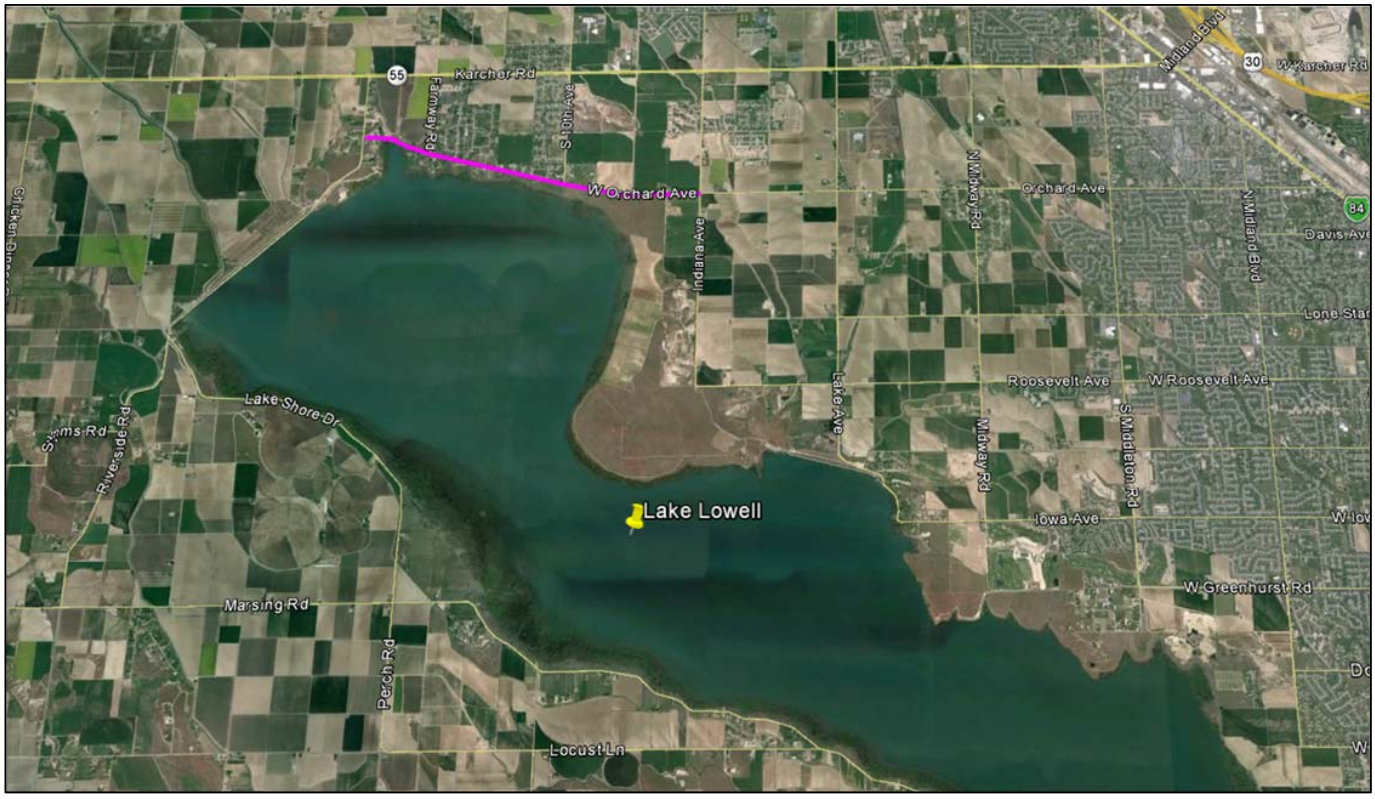
Project Name	Orchard Avenue						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently, Orchard Avenue between Riverside Road and Indiana Avenue is approximately 24 ft wide with gravel shoulders. The 2.57-mile section of roadway runs along farm land and some residential areas. There are currently no sidewalk, ADA ramps or adequate pedestrian lighting.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	Deer Flat National Wildlife Refuge City of Caldwell, and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), RTP (20%), LHSIP (7.34%), LRHIP (no match), STP (7.34%), Development, Local

Technical Information	
ADT	1,240
Crash Info	Multiple reports of accidents involving property damage and accidents that resulted in possible injury. Few reports of accidents involving animals and 2 reports of fatal accidents at Montana Ave and Indiana Ave.
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	2.57 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure may be required to cross irrigation canals or drainage ways
Jurisdiction	Deer Flat National Wildlife Refuge, Caldwell City Limits and Surrounding Impact Areas

Cost Estimate	
Concept	$13,400
Design	$33,501
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$33,501
Traffic Maintenance	$33,501
Drainage and Erosion Control	$67,002
Utilities	$67,002
Construction	$670,023
Contingency	$183,586
Project Total	**$1,101,516**

Project Scope of Work	Action Plan and Timing
Construction of approximately 2.57 miles of shared roadway along Orchard Avenue from Riverside Road to Indiana Avenue. Portions of the roadway may require widening for safe shared use. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Orchard & Indiana (west)

Orchard & 10th (west)

Orchard & Moonstruck (west)

Orchard & Riverside (east)

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Orchard Avenue

Bike Lanes - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	54278	$4.50	$244,253
Thermoplastic Pavement Marking Symbol	EA	27	$500.00	$13,570
High Visibility Crosswalk	EA	0	$1,200.00	$0
New Traffic Signs	EA	14	$414.00	$5,618
			Markings Subtotal	**$263,440**

Widen Roadway for Shared Use (3ft)

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	3015	$15.00	$45,232
Aggregate Base Course for Pavement	CY	1508	$50.00	$75,387
Asphalt Surface Course	TON	386	$85.00	$32,768
Asphalt Base Course	TON	1542	$85.00	$131,070
Thermoplastic Pavement Marking (all widths up to 6")	LF	27139	$4.50	$122,126
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$670,022.78**

Lump Sum Items				
Landscaping (5%)	LS	1	$33,501.00	$33,501
Drainage and E&S (10%)	LS	1	$67,002.00	$67,002
Maintenance of Traffic (5%)	LS	1	$33,501.00	$33,501
Utility Adjustments (10%)	LS	1	$67,002.00	$67,002
Conceptual Plans (2%)	LS	1	$13,400.46	$13,400
Design (5%)	LS	1	$33,501.14	$33,501
			Subtotal	**$247,908**

Summary		**Amount**
Site improvements include striping of new bike lane and widening roadway for bike lanes	Sub-Total	$917,930.38
	20% Contingency	$183,586.08
	Total	**$1,101,516.45**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

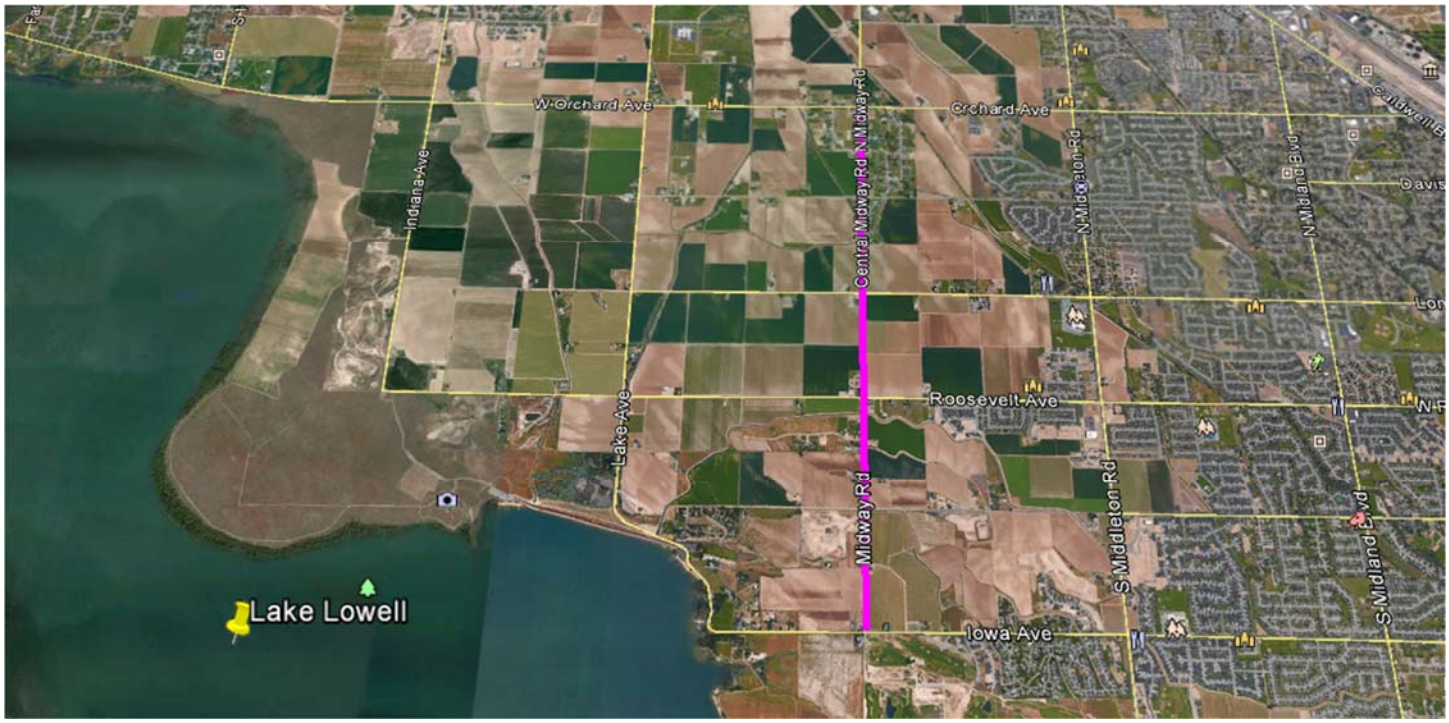
Project Name	Midway Road						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently Midway Road is a paved road, approximately 24 feet wide with no paved shoulders, sidewalks, ADA ramps, and inadequate lighting.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Nampa and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)

Technical Information	
ADT	2,045
Crash Info	Report of domestic animal accident on Midway and Lake Lowell Ave
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	2.29 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Nampa City Limits and Surrounding Impact Areas

Cost Estimate	
Concept	$19,266
Design	$48,166
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$48,166
Traffic Maintenance	$48,166
Drainage and Erosion Control	$96,332
Utilities	$96,332
Construction	$963,317
Contingency	$263,949
Project Total	**$1,583,693**

Project Scope of Work	Action Plan and Timing
Approximately 2.29 miles of 12-ft-wide shared-use path from just south of Orchard Ave to Iowa Ave. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Midway Road & Orchard Ave (south, 24ft wide)

Midway Road & Roosevelt Ave (south, 24ft wide)

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Midway Road

Shared Use Path

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	7165	$15.00	$107,477
Concrete	SF	145094	$5.00	$725,472
Aggregate Base Course	CY	2150	$50.00	$107,477
Thermoplastic Pavement Marking (all widths up to 6")	LF	144	$4.50	$648
High Visibility Crosswalk	EA	6	$1,200.00	$7,200
New Sign	EA	3	$414.00	$1,242
Bench	EA	3	$800.00	$2,400
Bike Rack	EA	3	$400.00	$1,200
Trash Can	EA	3	$400.00	$1,200
Large Map or Interpretive Sign Panel	EA	3	$3,000.00	$9,000
			Construction Subtotal	**$963,316.67**

Lump Sum Items				
Landscaping (5%)	LS	1	$48,166.00	$48,166
Drainage and E&S (10%)	LS	1	$96,332.00	$96,332
Maintenance of Traffic (5%)	LS	1	$48,166.00	$48,166
Utility Adjustments (10%)	LS	1	$96,332.00	$96,332
Conceptual Plans (2%)	LS	1	$19,266.33	$19,266
Design (5%)	LS	1	$48,165.83	$48,166
			Subtotal	**$356,428**

Summary		**Amount**
Site improvements includes construction of new 12ft concrete multi-use path	Sub-Total	$1,319,744.83
	20% Contingency	$263,948.97
	Total	**$1,583,693.80**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

Project Name	Roosevelt Avenue
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.
Project Need/ Existing Conditions	Currently Roosevelt Ave varies in cross-section along the 4.95-mile street section. Segment 1: From 11th Ave to Beechwood Drive the road varies in width from 26-46 ft. The road is paved with sidewalk, ramps and minimal pedestrian lighting. Segment 2: From Beechwood Driver to Midland Blvd the road is 46 ft wide with an attached sidewalk on the north side and detached path on the south side of the road with pedestrian lighting Segment 3: From Midland Blvd to Middleton Road, Roosevelt Ave is approximately 24 ft wide with a 12-ft-wide paved shoulder on the south side of the road with a sidewalk or detached path along portions of the road Segment 4: From Middleton Road to Midway Road the road is approximately 36 ft wide with 5-ft paved shoulders and detached paths on both the north and south sides of the road. Segment 5: From Midway Road to Indiana Ave the road is 2 4ft wide with no shoulders, sidewalks, ramps or adequate lighting. There are irrigation canals along most of the north side of the road.

Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X

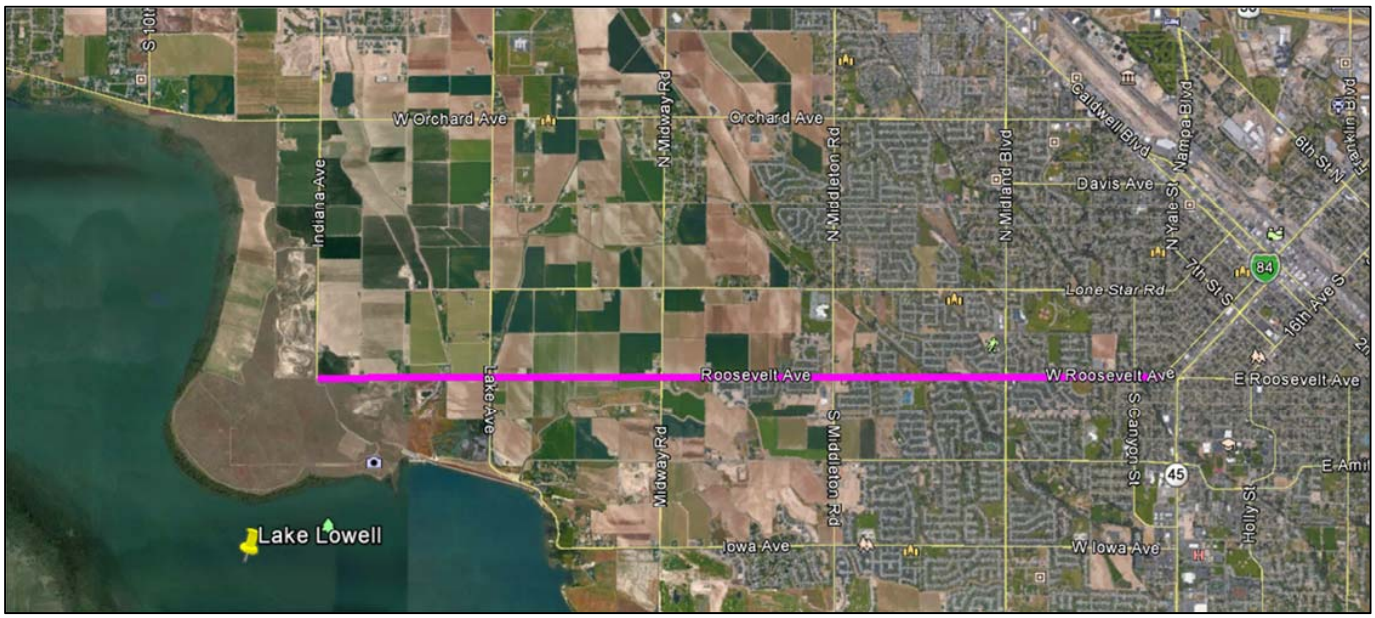
Community Priority	Short Term (5-10 years)
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff
Implementing/ Affected Agencies	City of Nampa, Deer Flat National Wildlife Refuge, and Highway District Staff

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)

Cost Estimate	
Concept	$18,306
Design	$45,764
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$45,764
Traffic Maintenance	$45,764
Drainage and Erosion Control	$91,528
Utilities	$91,528
Construction	$915,279
Contingency	$250,786
Project Total	**$1,504,719**

Technical Information	
ADT	1,108
Crash Info	
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	4.95 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Nampa City Limits, Deer Flat National Wildlife Refuge, and Surrounding Impact Areas

Project Scope of Work	Action Plan and Timing
Approximately 4.95 miles of bike lanes from 11th Avenue South to Indiana Avenue. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Segment 1

Segment 2

Segment 3

Segment 4

Segment 5

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Roosevelt Avenue

Single Bike Lane - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	47520	$4.50	$213,840
Thermoplastic Pavement Marking Symbol	EA	48	$500.00	$23,760
High Visibility Crosswalk	EA	5	$1,200.00	$6,000
New Traffic Signs	EA	24	$414.00	$9,837
			Markings Subtotal	**$253,437**

Widen Roadway to Add Bike Lane

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	6336	$15.00	$95,040
Aggregate Base Course for Pavement	CY	3168	$50.00	$158,400
Asphalt Surface Course	TON	810	$85.00	$68,850
Asphalt Base Course	TON	3240	$85.00	$275,400
Thermoplastic Pavement Marking (all widths up to 6")	LF	14256	$4.50	$64,152
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$915,278.64**

Lump Sum Items				
Landscaping (5%)	LS	1	$45,764.00	$45,764
Drainage and E&S (10%)	LS	1	$91,528.00	$91,528
Maintenance of Traffic (5%)	LS	1	$45,764.00	$45,764
Utility Adjustments (10%)	LS	1	$91,528.00	$91,528
Conceptual Plans (2%)	LS	1	$18,305.57	$18,306
Design (5%)	LS	1	$45,763.93	$45,764
			Subtotal	**$338,654**

Summary		**Amount**
Site improvements include striping of new bike lanesand widening the existing roadway	Sub-Total	$1,253,932.14
	20% Contingency	$250,786.43
	Total	**$1,504,718.57**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

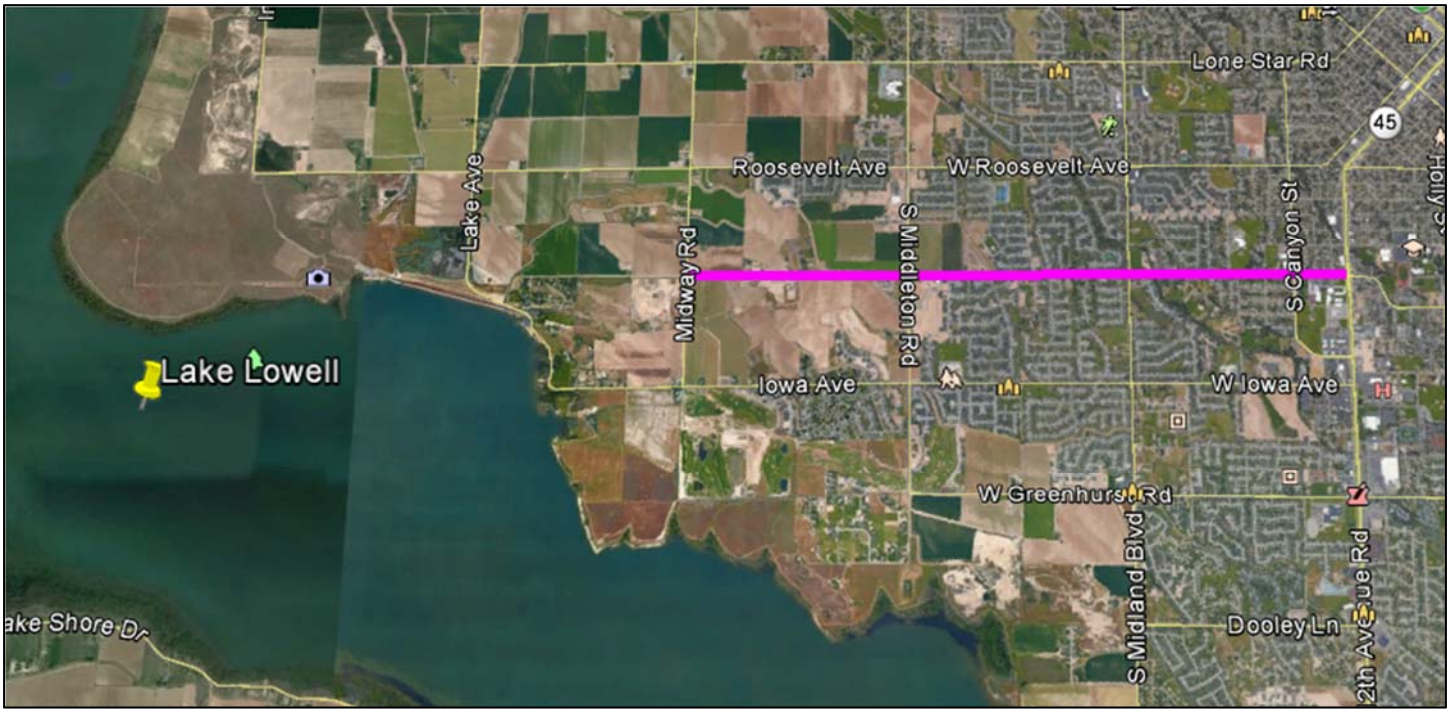
Project Name	Lake Lowell Avenue						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Currently, Lake Lowell Avenue has two predominant cross-sections. From Highway 45 west to Middleton Road the road varies between 36-48 ft, with sidewalks, detached paths, pedestrian ramps, and minimal lighting. West of Middleton the road is approximately 24 ft wide with no paved shoulder, sidewalk, ramp or lighting.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Nampa and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)

Technical Information	
ADT	Increases from 1,500 to 7,700 from Midway Road to Highway 45
Crash Info	
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	3.01 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Nampa City Limits and Surrounding Impact Areas

Cost Estimate	
Concept	$6,700
Design	$16,750
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$16,750
Traffic Maintenance	$16,750
Drainage and Erosion Control	$33,499
Utilities	$33,499
Construction	$334,990
Contingency	$91,787
Project Total	**$550,725**

Project Scope of Work	Action Plan and Timing
Approximately 3.01 miles of shared roadway from Highway 45 to Midway Road. Portions of Lake Lowell Avenue to be widen to accommodate bicycle traffic. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Lake Lowell east of Middleton Road

Lake Lowell west of Middleton Road

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Lake Lowell Avenue

Shared Use Road - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	0	$4.50	$0
Thermoplastic Pavement Marking Symbol (Sharrow)	EA	37	$500.00	$18,480
High Visibility Crosswalk	EA	0	$1,200.00	$0
New Traffic Signs	EA	18	$414.00	$7,651
			Markings Subtotal	**$26,131**

Widen Roadway to Add Bike Lane

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	2957	$15.00	$44,352
Aggregate Base Course for Pavement	CY	1478	$50.00	$73,920
Asphalt Surface Course	TON	378	$85.00	$32,130
Asphalt Base Course	TON	1512	$85.00	$128,520
Thermoplastic Pavement Marking (all widths up to 6")	LF	6653	$4.50	$29,938
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$334,990.32**

Lump Sum Items				
Landscaping (5%)	LS	1	$16,750.00	$16,750
Drainage and E&S (10%)	LS	1	$33,499.00	$33,499
Maintenance of Traffic (5%)	LS	1	$16,750.00	$16,750
Utility Adjustments (10%)	LS	1	$33,499.00	$33,499
Conceptual Plans (2%)	LS	1	$6,699.81	$6,700
Design (5%)	LS	1	$16,749.52	$16,750
			Subtotal	**$123,947**

Summary		**Amount**
Site improvements include striping of shared use roadway and widening existing road for bike lanes	Sub-Total	$458,937.64
	20% Contingency	$91,787.53
	Total	**$550,725.17**

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Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

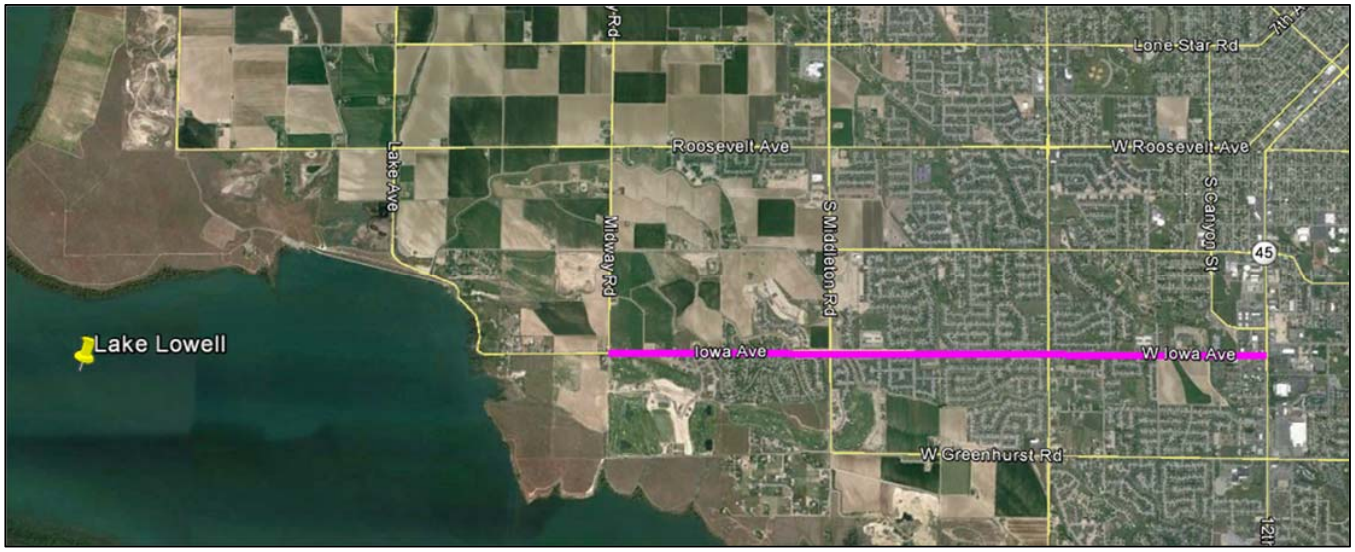
Project Name	Iowa Avenue						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Iowa Ave currently has multiple roadway cross-sections: Segment 1: From Highway 45 to Midland Road, Iowa Ave is approximately 30 ft wide with small paved shoulders and sidewalks provided along the road for short distances. Segment 2: From Midland to Middleton, Iowa Ave is approximately 38 ft wide with 8-ft paved shoulders. Sidewalk and ramps are provided with adequate lighting. Segment 3: From Middleton to midway Road, Iowa Ave is approximately 24 ft wide with gravel shoulders. Sidewalks and ramps are provided in residential areas. Pedestrian lighting is limited.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Nampa, Deer Flat National Wildlife Refuge, and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)

Technical Information	
ADT	884
Crash Info	Multiple reports of accidents involving property damaged and possible injuries
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	3.02 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Wilson Drainage way and irrigation canals may need to be crossed
Jurisdiction	Nampa City Limits, Deer Flat National Wildlife Refuge, and Surrounding Impact Areas

Cost Estimate	
Concept	$13,062
Design	$32,656
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$32,656
Traffic Maintenance	$32,656
Drainage and Erosion Control	$65,312
Utilities	$65,312
Construction	$653,123
Contingency	$178,956
Project Total	**$1,073,733**

Project Scope of Work	Action Plan and Timing
Approximately 3.02 miles of bikes lanes from Highway 45 to Midway. Portions of the roadway segment will require new construction of bike lanes. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Segment 1

Segment 2

Segment 3

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Iowa Avenue

Bike Lanes - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	21120	$4.50	$95,040
Thermoplastic Pavement Marking Symbol	EA	21	$500.00	$10,560
High Visibility Crosswalk	EA	0	$1,200.00	$0
New Traffic Signs	EA	11	$414.00	$4,372
			Markings Subtotal	**$109,972**

Widen Roadway to Add Bike Lanes (2)

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	4740	$15.00	$71,104
Aggregate Base Course for Pavement	CY	2370	$50.00	$118,507
Asphalt Surface Course	TON	606	$85.00	$51,510
Asphalt Base Course	TON	2424	$85.00	$206,040
Thermoplastic Pavement Marking (all widths up to 6")	LF	21331	$4.50	$95,990
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$653,122.91**

Lump Sum Items				
Landscaping (5%)	LS	1	$32,656.00	$32,656
Drainage and E&S (10%)	LS	1	$65,312.00	$65,312
Maintenance of Traffic (5%)	LS	1	$32,656.00	$32,656
Utility Adjustments (10%)	LS	1	$65,312.00	$65,312
Conceptual Plans (2%)	LS	1	$13,062.46	$13,062
Design (5%)	LS	1	$32,656.15	$32,656
			Subtotal	**$241,655**

Summary		**Amount**
Site improvements include striping of new bike lane and widening roadway for bike lanes	Sub-Total	$894,777.51
	20% Contingency	$178,955.50
	Total	**$1,073,733.01**

This OPC is not intended for basing financial decisions, or securing funding. Since Kimley-Horn and Associates, Inc. has no control over the cost of labor, materials, equipment, or services furnished by others, or over methods of determining price, or over competitive bidding or market conditions, any and all opinions as to the cost herein, including but not limited to opinions as to the costs of construction materials, shall be made on the basis of experience and best available data. Kimley-Horn and Associates, Inc. cannot and does not guarantee that proposals, bids, or actual costs will not vary from the opinions on costs shown herein. Contractor shall be responsible for their own take off and bid numbers. The quantities shown herein shall not be used for bidding purposes and may not be all inclusive.

Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

PRIORITIZED PROJECT SUMMARY

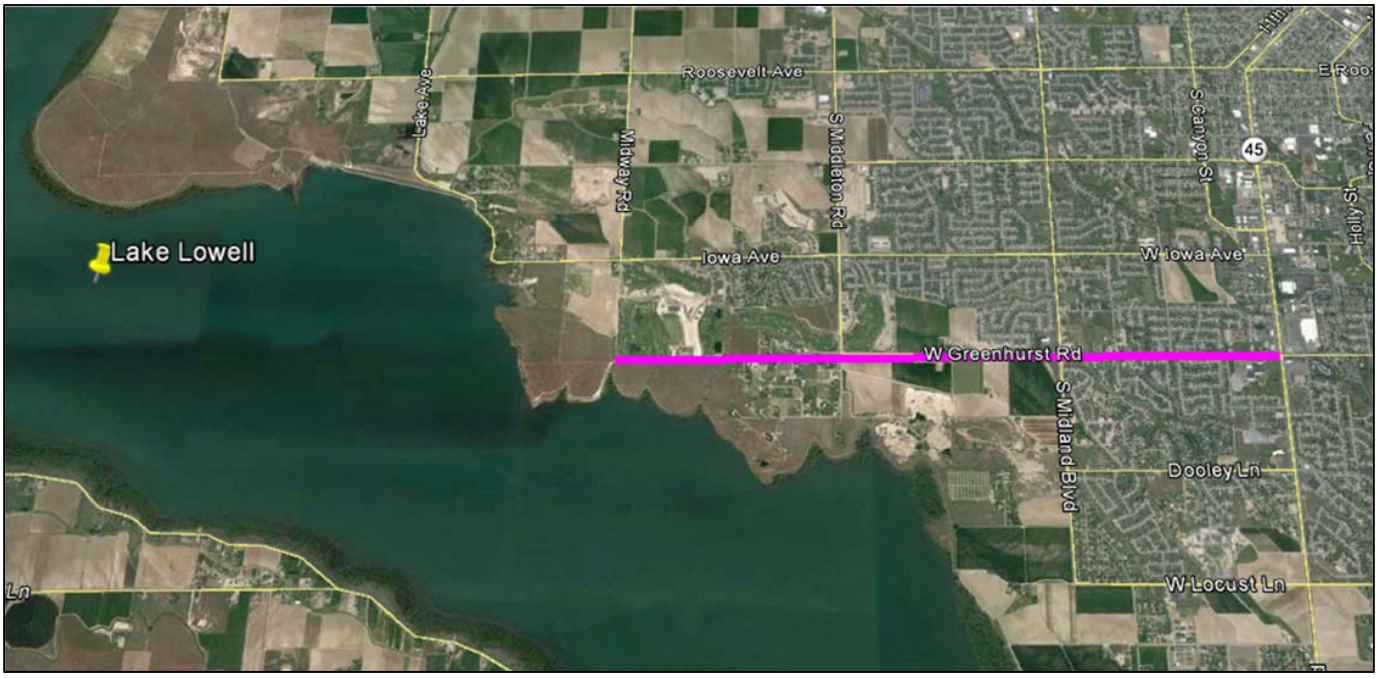
Project Name	Greenhurst Road						
Project Purpose	The purpose of this project is to provide safe, accessible facilities to promote walking, biking, and recreation for seniors, children and citizens in the cities of Caldwell and Nampa and the Lake Lowell Area.						
Project Need/ Existing Conditions	Greenhurst Road currently has multiple roadway cross-sections: Segment 1: From Highway 45 to Pascoe Lane, the roadway is approximately 50 ft wide with sidewalks, pedestrian ramps and lighting. Segment 2: From Pascoe Lane to Middleton Road, Greenhurst Road is approximately 24ft – 30 ft wide with gravel shoulders and sidewalks provided in residential areas. Segment 3: From Middleton to Refuge boundary, it is approximately 24 ft wide with gravel shoulders and no sidewalks or ramp and inadequate lighting.						
Benefits	REC	ADA	Safety	Seniors	Mobility	Connectivity	Enviro Sustainability
	X	X	X	X	X	X	X
Community Priority	Short Term (5-10 years)						
Stakeholders	Deer Flat National Wildlife Refuge, Western Federal Lands, City and Highway District Staff						
Implementing/ Affected Agencies	City of Nampa, Deer Flat National Wildlife Refuge, and Highway District Staff						

Project Funding	
Funding Sources & Match Required	FLAP (7.34%), TAP (7.34%), IDPR Funding – RTP (20%)

Cost Estimate	
Concept	$11,162
Design	$27,904
ROW	Modifications to ROW anticipated Cost TBD
Landscaping	$27,904
Traffic Maintenance	$27,904
Drainage and Erosion Control	$55,808
Utilities	$55,808
Construction	$558,083
Contingency	$152,915
Project Total	**$917,487**

Technical Information	
ADT	
Crash Info	Multiple reports of accidents involving property damage, possible injury and visible injuries
Environmental Aspects	Details provided in Appendix B
Safety Issues	No ADA Access, no pedestrian/bike facilities
Facility Info	
Length	3.02 miles
ROW Assumptions	Project will occur within existing ROW when possible, ROW may need to be obtained in some areas
Drainage Assumptions	Additional infrastructure will not be required to cross any irrigation canals or drainage ways
Jurisdiction	Nampa City Limits, Deer Flat National Wildlife Refuge, and Surrounding Impact Areas

Project Scope of Work	Action Plan and Timing
Approximately 1.02 miles of shared roadway from Highway 45 to Midland and 2.0 miles of bike lanes from Midland to Midway Road. Striping will be required for the shared roadway. Construction of additional bike lanes will be required for the majority of the stretch of road between Midland and Midway road. Cost estimate line items based on total construction costs: Concept Design (2%), Design (5%), Landscaping (5%), Traffic Maintenance (5), Drainage and Erosion Control (10%), and utility Adjustments (10%). Contingency is 20% of total project cost.	Apply for funding as opportunities arise. It is recommended to meet with the program manager in advance to discuss the project and refine concepts as needed. Hold regular meetings with core team to discuss project(s) and update plan(s). Maintain open communication with the public as project(s) are developed and implemented.



Segment 1

Segment 2

Segment 3

Kimley»Horn

May 16, 2016

Preliminary Engineer's Opinion of Probable Construction Costs
Lake Lowell Area Bicycle and Pedestrian Access Plan
Greenhurst Road

Bike Lanes - Add markings

Item	Unit	Quantity	Unit Cost	Total Cost
Thermoplastic Pavement Marking (all widths up to 6")	LF	0	$4.50	$0
Thermoplastic Pavement Marking Symbol (Sharrow)	EA	21	$500.00	$10,560
High Visibility Crosswalk	EA	0	$1,200.00	$0
New Traffic Signs	EA	11	$414.00	$4,372
			Markings Subtotal	**$14,932**

Widen Roadway to Add Bike Lanes (2)

Item	Unit	Quantity	Unit Cost	Total Cost
Earthwork, Excavation, Grading	CY	4740	$15.00	$71,104
Aggregate Base Course for Pavement	CY	2370	$50.00	$118,507
Asphalt Surface Course	TON	606	$85.00	$51,510
Asphalt Base Course	TON	2424	$85.00	$206,040
Thermoplastic Pavement Marking (all widths up to 6")	LF	21331	$4.50	$95,990
Curb and Gutter	LF	0	$20.00	$0
			Construction Subtotal	**$558,082.91**

Lump Sum Items				
Landscaping (5%)	LS	1	$27,904.00	$27,904
Drainage and E&S (10%)	LS	1	$55,808.00	$55,808
Maintenance of Traffic (5%)	LS	1	$27,904.00	$27,904
Utility Adjustments (10%)	LS	1	$55,808.00	$55,808
Conceptual Plans (2%)	LS	1	$11,161.66	$11,162
Design (5%)	LS	1	$27,904.15	$27,904
			Subtotal	**$206,490**

Summary		**Amount**
Site improvements include striping of new bike lane and widening roadway for bike lanes	Sub-Total	$764,572.71
	20% Contingency	$152,914.54
	Total	**$917,487.25**

This OPC is not intended for basing financial decisions, or securing funding. Since Kimley-Horn and Associates, Inc. has no control over the cost of labor, materials, equipment, or services furnished by others, or over methods of determining price, or over competitive bidding or market conditions, any and all opinions as to the cost herein, including but not limited to opinions as to the costs of construction materials, shall be made on the basis of experience and best available data. Kimley-Horn and Associates, Inc. cannot and does not guarantee that proposals, bids, or actual costs will not vary from the opinions on costs shown herein. Contractor shall be responsible for their own take off and bid numbers. The quantities shown herein shall not be used for bidding purposes and may not be all inclusive.

Basis for Cost Projection:

- [x] No Design Completed
- [ ] Preliminary Design
- [ ] Final Design

APPENDICES

LIST OF APPENDICES

APPENDIX A.
EXISTING CONDITIONS

EXISTING CONDITIONS

This section describes existing bicycling and walking facilities within the study area of the Lake Lowell Area Bicycle and Pedestrian Access Plan to determine both opportunities and constraints for improved facilities, including an inventory of existing bike and pedestrian facilities, recreation opportunities, roadway facilities, land ownership, and environmental resources.

Sources used to develop this summary of Existing Conditions include:

- **Previously adopted plans** – City of Nampa Bicycle and Pedestrian Master Plan, City of Caldwell Pathways and Bike Routes Master Plan, Nampa Highway District Transportation Plan, the Deer Flat National Wildlife Refuge CCP and the National Wildlife Refuge Visitor Survey 2010/2011, and VRT Valley**connect** plan.
- **Roadway information and traffic data** – Association of Canyon County Highway Districts (ACCHD) Standards; 2009-2013 Average Daily Traffic (ADT) data from Canyon County Highway District and Nampa Highway District; 2013 Average Annual Daily Traffic (AADT) data from ITD; and other information provided by agencies.
- **Land use** – Canyon County Zoning map and Future Land Use map, City of Nampa Zoning map and Future Land Use map, and City of Caldwell Zoning and Future Land Use map.
- **Public land ownership and easements** – Parcel ownership and easement data from the Bureau of Reclamation and Canyon County Assessor's office with a focus on publicly owned land (local, state, federal).
- **Environmental resources** – Various local, state, and federal agency databases and sources.

EXISTING AND PROPOSED BICYCLE AND PEDESTRIAN FACILITIES

An essential component of this project includes developing an inventory and assessment of the existing and planned bicycle and pedestrian facilities including sidewalks, shared-use paths, intersections, and bikeways within the study area. This data is useful in identifying opportunities for improvements and connections.

Existing conditions inventory is based on field reviews, a review of aerial mapping and GIS data, and a comprehensive review of existing bicycle and pedestrian plans completed by Nampa and Caldwell. GIS data was obtained from Nampa, Caldwell, ITD, Nampa Highway District, Canyon County Highway District, Canyon County, VRT, and the DFNWR. **Figure 5**, the Existing Bike and Pedestrian Network map, visually represents this compiled inventory of existing bike and pedestrian facilities.

Bicycle Facilities

Existing bicycle facilities identified in this section are those that are located within the study area or those that tie into the existing trail system.

City of Nampa Bicycle and Pedestrian Master Plan

A portion of Nampa's Bicycle and Pedestrian Master Plan study area overlaps with the project study area. The map provided in **Appendix F**, Existing Conditions Key Map shows the area of the Plan that partially overlaps into the southeastern portion of the project study area.

Bike Routes/Bicycle Boulevards

According to Section 5.4.5 of Nampa's Bicycle and Pedestrian Master Plan, bike routes are "streets prioritized for safe and convenient bicycle travel and are on shared roadways with no specific vehicle or bike lane delineation. Appropriate road types for bicycle boulevards are residential streets and other local streets with low vehicle volumes."

These routes utilize traffic calming treatments such as shared lane markings, directional signage, traffic diverters, chicanes, chokers, and other devices to reduce vehicle speeds. This allows bike and vehicles to generally travel at the same speed, creating a more comfortable and safe environment. No existing bike routes or boulevards are identified within the project study area. The only identified bike routes outside the study area, as shown in **Figure 5**, Existing Bike Route and Pedestrian Network map, are located along 18th Avenue in downtown Nampa, Sunnyridge Road between Maine Avenue and Greenhurst Road, and Sunnyridge Road between Dooley Lane and Locust Lane.

Bike Lanes

According to Section 5.4 of Nampa's Bicycle and Pedestrian Master Plan, bike lanes are "designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils. Bike lanes are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation."

Bike lanes define the road space for bicyclists and motorists, which can help reduce the use of sidewalks by bicyclists and remind drivers that cyclists have a right to the road. No existing bike lanes are identified in the study area. Within two miles of the study area, an existing bike lane is located along both sides of Sunnyridge Road from Hawaii Avenue to south of Maine Avenue, and the remainder of Sunnyridge Road to Greenhurst Road has "Share the Road" signs (confirmed with Karla Nelson, Long Range Planner, City of Nampa).

Pathways

Nampa has made great strides in developing an off-street multi-use path network. The City's continued growth has allowed them to capitalize on opportunities with developers to either dedicate land for pathways or construct them. This approach has supported the City's plans to expand the multi-use path network. The downside of waiting for development to occur is that significant connections and path segments are relatively undeveloped. The multi-use path system is intended to provide a critical north/south bicycle and pedestrian network not afforded by the road grid. A comprehensive signage system along the pathways would help users identify connections, distances, and key destinations.

In total, Nampa has 13 pathways planned, with an additional nine pathways partially constructed. However, the existing pathways located within the study area are sparse. One existing pathway east of Middleton Road begins at Iowa Avenue and transitions into a detached sidewalk to Lake Lowell Avenue. West of Middleton Road within the study area, a small network of private pathways is located in the Carriage Hill Subdivision, but they lack connection to the Refuge. Other existing pathways outside of the study area are identified in **Figure 5**, Existing Bike and Pedestrian Network.

City of Caldwell Pathways and Bike Routes Master Plan

Caldwell's Pathways and Bike Routes Master Plan identifies a small but growing network of publicly owned multi-use pathways—some are located within local parks and others along waterways. Lake Lowell is identified as a primary summertime attraction within the Plan; however, the existing bicycle and pedestrian facilities are primarily located within Caldwell's core. Caldwell's network of existing pathways and bike routes are shown in **Appendix G**, on the Plan's Map of Existing Pathways and Bike Routes.

Bike Routes / Bike Lanes / Pathways

No existing bike routes, bike lanes, or pathways extend from Caldwell into the study area. Caldwell has identified 35 bike routes and a comprehensive network of defined corridors combining proposed

pathways (35.73 total miles) with bike routes (approximately 92 miles in total length) within their Pathways and Bike Routes Master Plan as shown in **Appendix G**.

Bike lanes could be accommodated on several local roads with excess right-of-way through shoulder widening. Although street widening is typically more expensive than re-striping projects, bike lanes could be added to streets currently lacking curbs, gutters, and sidewalks without the high costs of major reconstruction.

Deer Flat National Wildlife Refuge CCP

Within the study area, most of the access points are connected by the existing rural roadway system. These roads typically have two travel lanes and narrow shoulders and were not developed to accommodate bicycle or pedestrian usage. The DFNWR has some existing multi-use trails that primarily serve nature walkers and provide access to and from existing parking lots. The trails are predominantly unimproved.

According to the Deer Flat National Wildlife Refuge CCP, there are six trails that are open to pedestrians, bicyclists, and equestrians. Dogs are required to remain on a leash at all times. In the winter, these trails are occasionally used for cross-country skiing and snowshoeing:

- **Nature Trail** – a 0.5-mile, unpaved, self-guided loop near the Visitor Center.
- **Observation Hill Trail** – a 3.25-mile loop internal Refuge road that serves as a trail west of the Visitor Center. There is an adjacent wildlife-viewing platform.
- **East Dike Trail** – a 1-mile internal Refuge road that serves as a trail east of the Tio Lane entrance.
- **Kingfisher Trail** – a 3.75-mile internal Refuge road that serves as a trail from Tio Lane entrance to Greenhurst Road entrance.
- **Gotts Point Trail** – a 0.5-mile internal Refuge road that serves as a trail from Greenhurst Road entrance to a gate just north of Gotts Point.
- **Centennial Trail** – a 1.2-mile ADA accessible historical interpretive trail from the Visitor Center to the viewing platform at the west end of the Upper Dam and allows users to cross the historic Upper Dam.

Source: Deer Flat National Wildlife Refuge CCP, Chapter 5: Human Environment; http://www.fws.gov/uploadedFiles/Region_1/NWRS/Zone_2/Deer_Flat/Documents/Chpt5.Deer%20Flat%20FCCP.EIS.pdf

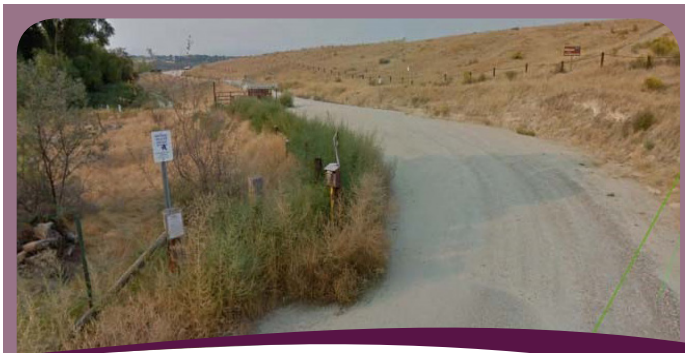


Exhibit A1 – Gotts Point Access: Looking West from Greenhurst Road Towards Gotts Point

The existing nature trails located near the Visitor Center/Upper Dam Recreation Area are shown in **Figure 5**. Gotts Point, shown in **Exhibit A1**, is located just southeast of the Visitor Center and provides vehicle parking for commuters. The existing trail system at Gotts Point does not currently connect to the Visitor Center/Upper Dam Recreation Area. The longest stretch of nature trails at the Refuge runs from Gotts Point to Schaffer's Access in close proximity to Lake Lowell.

The south side of the DFNWR does not offer any bicycle or pedestrian trails, transferring users to the narrow shoulders of the rural road system. As shown in **Exhibits A2, A3, and A4**, existing firebreaks

in some areas between the Refuge and Lake Shore Drive present an opportunity for potential bicycle and pedestrian improvements.


Exhibit A2


Exhibit A3


Exhibit A4

Exhibits A2, A3, and A4 – Existing Firebreak: Lake Shore Drive

Pedestrian Facilities

Existing pedestrian facilities identified in this section are those that are located within the study area or those that tie into the existing system.

City of Nampa Bicycle and Pedestrian Master Plan

Pedestrian travel throughout Nampa is primarily accommodated by sidewalks, shared-use pathways and intersection treatments (e.g., crosswalks, curb ramps).

Sidewalks

Very few sidewalks exist in the study area and most are discontinuous. The few existing discontinuous segments of sidewalk are located along Locust Lane between Midland Boulevard and 12th Avenue, and along the north side of Greenhurst Road between Middleton Road and Heron Drive.

Curb Ramps

No curb ramps exist within the study area. Seven missing curb ramp locations have been identified in the Plan within the study area along Midland Road and south of the Greenhurst Road intersection.

Crosswalks

No marked crosswalks exist within the study area. Only two crosswalks were identified in the Plan near the study area. One of the crosswalks is located at the intersection of 12th Avenue and Greenhurst Road near South Middle School. The second crosswalk is also located near the middle school, just west of 12th Avenue along Greenhurst Road.

Nampa's existing pedestrian facilities are shown on the Existing Conditions – Sidewalks Map for Area 1 from the Bicycle and Pedestrian Master Plan provided in **Appendix D**.

City of Caldwell Pathways and Bike Routes Master Plan

Sidewalks, shared-use paths, and roadway shoulders are typically recognized as pedestrian facilities in Caldwell. Pedestrian travel is accommodated and enhanced by intersection treatments such as crosswalks, curb ramps, as well as boulevards and other amenities.

Sidewalks / Curb Ramps / Crosswalks

No existing sidewalks, curb ramps, or crosswalks are identified within the Master Plan in the study area. The City of Caldwell Pathways and Bike Routes Master Plan does not specifically identify existing sidewalks, curb ramps, or crosswalks within the planning area; however, the City has identified intersections needing improvement, as shown in **Appendix E**. No specific pedestrian improvements have been identified in Caldwell's plan.

Deer Flat National Wildlife Refuge CCP

Most of the existing road network is located outside of the Refuge boundaries, minimizing the need for these types of improvements. There are no curbs except those existing near the Visitors Center. All roads that might require crosswalks are off-Refuge, except the entrance road to the Visitors Center (where there is one crosswalk).

According to the Refuge CCP, there are six trails that are proposed to be open to pedestrians:

- Nature Trail, a 0.5-mile, unpaved, self-guided loop near the Visitor Center. There is an adjacent wildlife-viewing blind.
- Observation Hill Trail, a 3.25-mile loop, internal Refuge road that serves as a trail west of the Visitor Center. There is an adjacent wildlife-viewing platform.
- East Dike Trail, a 1.0-mile internal Refuge road that serves as a trail east of the Tio Lane entrance.
- Kingfisher Trail, a 3.75-mile internal Refuge road that serves as a trail from Tio Lane entrance to Greenhurst Road entrance.
- Gotts Point Trail, a 0.75-mile internal Refuge road that serves as a trail from Greenhurst Road entrance to a gate just north of Gotts Point.
- Centennial Trail, a 1.2-mile ADA-accessible historical interpretive trail from the Visitor Center to the viewing platform at the west end of the Upper Dam and then across the historic
- Upper Dam.

As indicated in the bicycle facilities section of this Report, four additional trails are open to pedestrians, bicyclists, and equestrians.

Source: Deer Flat National Wildlife Refuge CCP, Chapter 5: Human Environment; http://www.fws.gov/uploadedFiles/Region_1/NWRS/Zone_2/Deer_Flat/Documents/Chpt5.Deer%20Flat%20FCCP.EIS.pdf

Transit Facilities

Valley Regional Transit (VRT) is the regional public transportation authority responsible for the regional public transportation system in Ada and Canyon counties. VRT has developed and recently updated their regional plan, Valley**connect**. This plan identifies existing and future public transportation facilities within the Treasure Valley.

Valley Regional Transit Valleyconnect Plan

Existing Routes

Currently no fixed bus routes provide access to the Refuge. The closest service route is located in Nampa at Greenhurst Road and 12th Avenue Road as shown in **Figure 5**. No identified fixed routes near the southern boundary of Caldwell provide service to the Deer Flat NWR.

Flex-Route Service

VRT has established a flex-route service that "will operate with a few fixed stops at scheduled times, but can pick up and drop off passengers with reservations at other locations within the flex-route area in between the fixed stops." The purpose of the flex-route is to connect fixed routes so passengers can access the entire bus system. As shown in **Figure 5**, flex-routes in the DFNWR study area include:

- In Nampa, the flex-route covers a majority of the city limits and some Refuge access points between Middleton Road and 12th Avenue. The flex-route service extends south to Lewis Lane on the easternmost edge of the study area.
- Near Caldwell, the flex-route covers the area between Farmway Road and 10th Avenue south of Karcher Road to Orchard Avenue. The flex-route could provide future access to Murphy's Neck and proposed pathways north of the Visitor Center.

VRT has not identified any future transit centers, stations, or park and ride lots within the study area. According to the Valley**connect** plan, the closest existing park and ride lot is located at Jefferson Middle School off 10th Avenue and services the South Caldwell area. One existing transit center is located near Karcher Mall in Nampa, but it does not provide service to the study area.

Source: http://www.valleyregionaltransit.org/PROJECTSSTUDIES/REGIONALOPERATIONS/VALLEYCONNECT. aspx

RECREATION OPPORTUNITIES

According to the Deer Flat National Wildlife Refuge CCP, Section 5.3.2 (General Visitation Information), the Refuge offers six priority wildlife-dependent recreational opportunities: fishing, hunting, wildlife watching, wildlife photography, environmental education, and environmental interpretation. Other activities are allowed when appropriate and compatible with the needs of wildlife and habitat.

According to the 2010/2011 National Visitor Survey conducted by the U.S. Geological Survey, there were three activities in which more than 10 percent of those surveyed had participated during the previous year: fishing (22 percent), boating (21 percent), and hiking (15 percent). There were five activities in which more than 25 percent of those surveyed had participated during the previous year: fishing (41 percent), wildlife observation (40 percent), hiking (39 percent), motorized boating (36 percent), and bird watching (35 percent).

According to DFNWR staff, more recent estimates of user activities show that fishing (from shore and boat) is the most common activity, followed by swimming, then walking, and finally, other types of recreational activities (confirmed by Susan Kain, Visitor Services Manager, DFNWR).

Source: Draft Deer Flat National Wildlife Refuge CCP, Chapter 5: Human Environment; http://www.fws.gov/deerflat/PDF/6DeerFlatNWR.DraftCCP-EIS.Chpt5.pdf

Since the DFNWR is located in close proximity to two major urban centers, Nampa and Caldwell, it is attractive to a variety of potential users. The DFNWR map in **Appendix H** and **Figure 5** shows the areas around the DFNWR with recreation facilities and access.

Lower Dam Recreation Area

One of the major access locations around the Refuge is the Lower Dam Recreation Area. It is located along Riverside Road on the northwest side of Lake Lowell. As shown in **Exhibits A5** and **A6** and **Figure 5**, this area includes an existing boat ramp, parking area, and boat dock. However, this area does not provide an existing trail system like some of the other high-use sites.

Exhibit A5

Exhibit A6

Exhibits A5 and A6 – Lower Dam Recreation Area: Parking, Waterfront Area

As shown in **Exhibits A7** and **A8** and on **Figure 5**, a 14-foot-wide (approximately) gravel shoulder runs along Riverside Road. Visitors often temporarily park in this area to view Lake Lowell and fish. The other side of Riverside Road is bound by a guardrail with no shoulder.

Exhibit A7

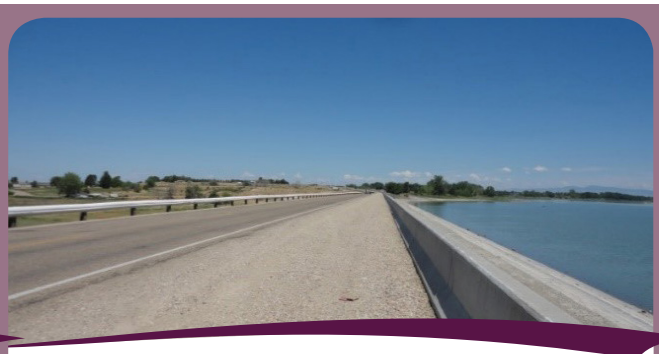


Exhibit A8

Exhibits A7 and A8 – Riverside Road: Existing 14-foot-wide Shoulder, East Side of the Roadway and South of the Lower Dam Recreation Area

Upper Dam Recreation Area

Some visitors, roughly 10,000 to 15,000 per year compared to the 130,000 to180,000 total Refuge visitors, begin their experience at the Visitor Center near the Upper Dam Recreation Area. The Visitor Center offers brochures, opportunities to view wildlife from the observation room, exploration of interpretive displays, and the KidsSpace area (provides hands-on activities for kids). The Upper Dam Recreation Area offers two improved boat ramps, two docks, a wildlife viewing platform, a designated swimming area, and four parking lots with trail access. See **Figure 2** Study Area and **Appendix H** Deer Flat National Wildlife Refuge – Lake Lowell Unit Map 5 - Alternative 2 (Preferred) Map.

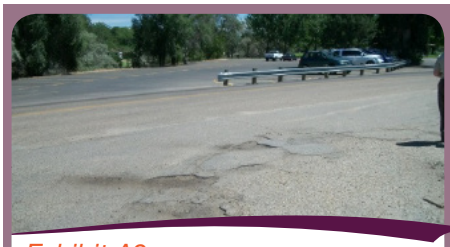


Exhibit A9

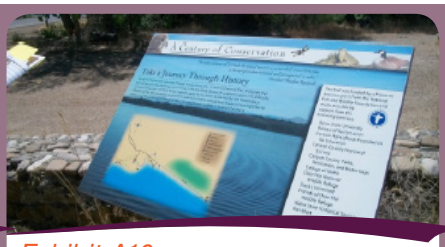


Exhibit A10

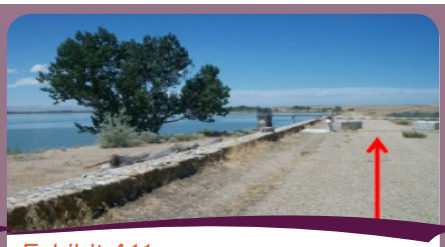


Exhibit A11

Exhibit A9 – Entrance near Upper Dam Recreation Area, Looking at Lake Lowell Park (Canyon County Park)
Exhibit A10 – Upper Dam: Interpretive Sign at Beginning of Closed Roadway/Existing Walkway
Exhibit A11 – Upper Dam: Closed Roadway/Walkway, Looking West from Boat Ramp Toward Visitor Center

Gotts Point

The Gotts Point area offers seasonal birding and trail access. According the DFNWR website, “For the best birding year-round, park at the gate and walk to the refuge "patrol road," located fifty yards south of the gate. This road parallels the lake and provides a view of the lake, riparian areas and upland habitats. For some of the Refuge's best birding, walk or bicycle this 4-mile road all the way to the Schaffer's Access.” One parking lot is provided near Gotts Point and connects to the multi-use trail system.

Tio Lane: Parking Area

Traveling southbound on Tio Lane from W. Locust Lane, there is primary access to an existing parking lot that connects users to the multi-use trail system on the north side of the Refuge. This access provides some biking opportunities between Gotts Point and Tio Lane, but it is primarily used for nature walking and sightseeing.

Exhibit A12

Exhibit A13

Exhibit A12 – East Side Recreation Area: East of Tio Lane on East Dike Trail
Exhibit A13 – East Side Recreation Area: West of Tio Lane on Kingfisher Trail

Lake Shore Drive

Eight designated parking facilities are located along Lake Shore Drive on the south side of the DFNWR. **Exhibits A14 and A15** show one of the parking access points and informational signage along Lake Shore Drive. Lake Shore Drive is a two-lane roadway with 25- to 37-foot widths as shown in **Figure 5**. Lake Shore Drive has predominantly narrow shoulders that prohibit safe bicycle and pedestrian usage. Adjacent to the parking facilities are a few existing, unimproved trails that lead to Lake Lowell and are primarily walk-through access only.

Exhibit A14

Exhibit A15

Exhibit A14 – Lake Lowell Access: South Side of the Lake from Lake Shore Drive
Exhibit A15 – Signage at Parking Area Along Lake Shore Drive

Hunting

Most of the hunting opportunities are located on the south side of the Refuge along Lake Shore Drive as shown in **Appendix H**. Additional designated hunting areas with trail access are located within the Refuge between Greenhurst Road and Lake Shore Drive.

PUBLIC LANDS

Land ownership data was collected from Canyon County and the BOR to identify local, state, and federally owned properties and easements within the study area as shown in **Figure A1**, Public Lands. Publicly owned lands and easements could present opportunities for coordination of future bicycle and pedestrian projects. A good portion of the Refuge property is owned by the U.S. Department of Interior (DOI)/BOR in fee title. Several properties that are part of or located adjacent to the Refuge study area are owned by the BOR or U.S Fish and Wildlife Service. Two 40-acre properties detached from the Refuge and outside the study area are owned by the BOR in fee title—one is located on the south side of Deer Flat Road east of Deersky Ranch Trail and Sky Ranch Road, and the other is located at the terminus of Lewis Lane east of Riverside Road. The Bureau of Land Management owns land north of the Refuge within the study area, north and west of the Upper Dam. There is no State-owned land within the study area.

Properties larger than one acre owned by Canyon County within the study area include:

- Approximately 18.4 acres along the south side of Locust Lane/Lake Shore Drive west of Duck Lane
- Lake Lowell Park (**Exhibits A16 and A17**), approximately 9.6 acres along Iowa Avenue/Lake Avenue near the intersection with Upper Embankment Road

Exhibit P

Exhibit Q

Exhibits A16 and A17 – Lake Lowell Park (Canyon County) across Iowa Avenue/Lake Avenue from the Upper Dam Recreation Area

Properties larger than one acre owned by Nampa within the study area include:

- Approximately 1.4 acres along the south side of SH 45/12th Avenue and Ruth Lane
- Approximately 14.2 acres along the south side of Lake Lowell Avenue between Midway Road and Middleton Road

The Nampa Highway District office, situated on 14.33 acres, is located along the south side of Burk Lane (south of Locust Lane, east of Midland Boulevard) between Tio Lane and Stanford Street.

Most of the land south of the Refuge is privately owned.

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

LEGEND

Public Lands

Muncipal Property
- City of Nampa
- City of Caldwell

School District Property
- Nampa School District
- Vallivue School District
- Caldwell School District

County Lands
- Canyon County

State Lands
- State of Idaho
- Idaho Fish and Game
- Idaho Transportation Department
- Idaho Housing and Urban Development

Federal Lands
- BLM
- BOR Easement
- Owned by BOR
- BOR Easement on State Land
- BOR Land Withdrawal
- FWS Secondary Management Authority
- FWS Land Aquisitions

Current Use
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities
- Study Area
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact Boundary

N

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0 0.25 0.5 0.75

Miles

Figure A1 – Public Lands

LAND USE

Current Land Use / Zoning

The study area is located outside of Nampa and Caldwell's city limits within unincorporated Canyon County. A portion of both Nampa and Caldwell's Areas of Impacts (AOIs) are located within the study area.

Canyon County Land Use / Zoning

Canyon County's Zoning map attached in **Appendix I** shows a mix of land uses and zoning classifications within the study area. Commercial uses zoned C (Commercial) are present on the north side of the study area near the Karcher Road and Farmway Road intersection. Commercial land uses are also present near the intersection of Lake Shore Drive and SH 45. These parcels are zoned C2 (Service Commercial) and C (Commercial). The majority of land within the study has either agriculture or residential use. The residential zoning is either RR (Rural Residential) or CR-RR (Rural Residential - Conditional Rezone).

City of Nampa Zoning

Nampa has the following zoning classifications identified on their Zoning Map within the study area as shown in **Appendix I**.

The land in Nampa within the study area is predominantly zoned AG (Agricultural), RS (Single-family Residential), RML (Limited Multiple-family Residential), RMH (Multiple-family Residential), or BC (Community Business). The following descriptions for each zoning classification are from the Nampa City Code.

- **AG – Agricultural:** "The AG agricultural district allows the establishment of agricultural operations within the city. Such agricultural district is deemed necessary to preserve the economic and social values of agricultural lands and to provide a district, the boundary of which will provide the transition between "rural" and "urban."" Within the study area, agricultural land is prominent along Greenhurst Road and Midway Road.

- **RS – Single-family Residential:** "The RS single-family residential district is intended for low density, urban single-family residential and compatible uses. A stable and healthful environment, together with the full range of urban services, makes this an important land use district within the community." Four different types of single-family residential zoning are located inside the city limits of Nampa and within the study area, RS 6, RS 7, RS 8.5, and RS 18. **Table A1** provides the definition of each type of residential zoning. RS zoning is present in Nampa in a large portion of the study area.

Table A1 – City of Nampa Residential Districts

RS Zoning District/Zone	Maximum Number Dwelling Units Per Acre	Required Property Area
RS 6	7.26	6,000
RS 7	6.22	7,000
RS 8.5	5.12	8,500
RS 18	2.42	18,000

Source: City of Nampa Zoning Code - http://www.sterlingcodifiers.com/codebook/getBookData.php?chapter_id=39143

- **RML – Limited Multiple-family Residential:** "The RML limited multiple-family residential district is to encourage a flexible use of the land and promote and maintain stable single-family residential areas. It is also the purpose of this classification to develop residential areas within the city that are characterized by higher residential densities and higher volumes of vehicular traffic than are characteristic in the RS and RD districts." RML-zoned land makes up a small portion of the study area along Greenhurst Road between Midway Road and Middleton Road.
- **RMH – Multiple-family Residential:** "The RMH multiple-family residential district provides for high density, multiple-family housing. It is intended to be situated in close proximity to major commerce areas, campus location, and major thoroughfare intersections and around the downtown districts." RMH-zoned land is mixed throughout the southwest portion of Nampa's AOI, predominantly along Greenhurst Road, Midway Road, and Middleton Road.
- **BC – Community Business:** "The BC community business district is intended to create, preserve and enhance areas with a wide range of retail sales and service establishments serving both long and short term needs in compact locations typically appropriate to commercial clusters near intersections of major thoroughfares. This district also includes some development that does not strictly fit the description of this chapter but also does not merit a zoning district." BC-zoned land is identified between W. Iowa Avenue and W. Greenhurst Road within the study area. The north and southeast corners of S. Middleton Road and W. Iowa Avenue are predominantly commercial use.

City of Caldwell Zoning

Caldwell has the following zoning designations identified on their Zone Map within the study area as shown in **Appendix I**. Existing zoning in Caldwell and within the study area include R-1 (Low Density Residential) and R-S-2 (Semi-Rural Residential 2). This residential zoning is generally located north of Orchard Avenue between 10th Avenue and Florida Avenue. One parcel of R-1 zoned land is on the south side of Orchard Avenue east of Indiana Avenue.

Future Land Use

Canyon County and City of Caldwell Future Land Use

Canyon County and Caldwell utilize similar future land use areas as shown in **Appendix I**. Land surrounding Lake Lowell and the DFNWR is primarily designated as Federal Land and future residential. A few key intersections have been identified for future commercial land use including Farmway Road and Karcher Road/SH 55, Lake Shore Drive and SH 45, Midway Road and Lake Lowell Avenue, and Lake Avenue and Roosevelt Avenue.

City of Nampa Future Land Use

Nampa's Future Land Use Map, provided in **Appendix I**, shows a mix of land use designations within the study area. Land surrounding the northeast and southeast boundaries of the study area is identified as Agriculture. Future residential land uses within the study area fall into two zoning designations: Low Density Residential (up to four units per acre) and Medium Density Residential (four to nine units per acre). Future residential land uses are predominantly identified on the north side of the Refuge/Lake Lowell. Pockets of residential mixed use, community mixed use, light industrial, and public uses exist within the study area, mostly concentrated along Greenhurst Road and 12th Avenue.

Residential Mixed Use, according to the Nampa 2035 Comprehensive Plan, is "recommended locations for development of activity centers that are specifically planned to include both residential and nonresidential uses." Future Residential Mixed Use zones have been identified near the intersections of W. Greenhurst Road and S. Middleton Road, W. Greenhurst Road and S. Midland Boulevard, and along W. Iowa Avenue between Midway Road and S. Middleton Road.

Community Mixed Use districts, according to the Nampa 2035 Comprehensive Plan, are "recommended locations for development of activity centers that are specifically planned to include commercial uses, would focus on more communitywide needs and services. These areas should be sited along major transportation corridors." Future Community Mixed Use has been identified near the intersection of SH 45/12th Avenue Road and Lake Shore Drive.

The Nampa 2035 Comprehensive Plan states "the purpose of this [commercial] land use would be to fulfill the needs for local traveled trips. They should be relatively compact districts located along roadways, and larger commercial districts. This land use should provide commercial services and retail sales to residents within the City." Future Commercial districts are shown at two main intersections within the study area: the four corners of S. Middleton Road and Iowa Avenue and the northwest side of W. Locust Lane and 12th Avenue Road.

Light industrial land uses "provide for processing, warehousing and manufacturing of goods, research and development and flex space development. These are important land uses that assist the City to diversify its economy with new and renovated industrial properties." Future Light Industrial land is shown along SH 45/12th Avenue Road near Ruth Lane.

ROADWAY INFORMATION

Roadway information collected and analyzed for this plan includes right-of-way, pavement width, shoulder width, ADT and AADT traffic volumes, and standards for federally funded projects.

Highway District Roadway Data

Both Canyon Highway District and Nampa Highway District provided pavement width GIS data as represented in **Figure 5**. However, only Canyon Highway District provided shoulder width data. Pavement and shoulder width as well as type (curb and gutter or gravel) is useful when planning future bike and pedestrian network connections to the DFNWR.

Right-of-Way

Currently a comprehensive, county-wide dataset or GIS file including right-of-way, pavement width, and shoulder width is not available. According to District staff, most roadways within the planning area under the jurisdiction of Canyon County Highway District and Nampa Highway District have a minimum of 50 feet of right-of-way, most of which is prescriptive. **Exhibit A18** illustrates a typical 50-foot roadway section without bike lanes.

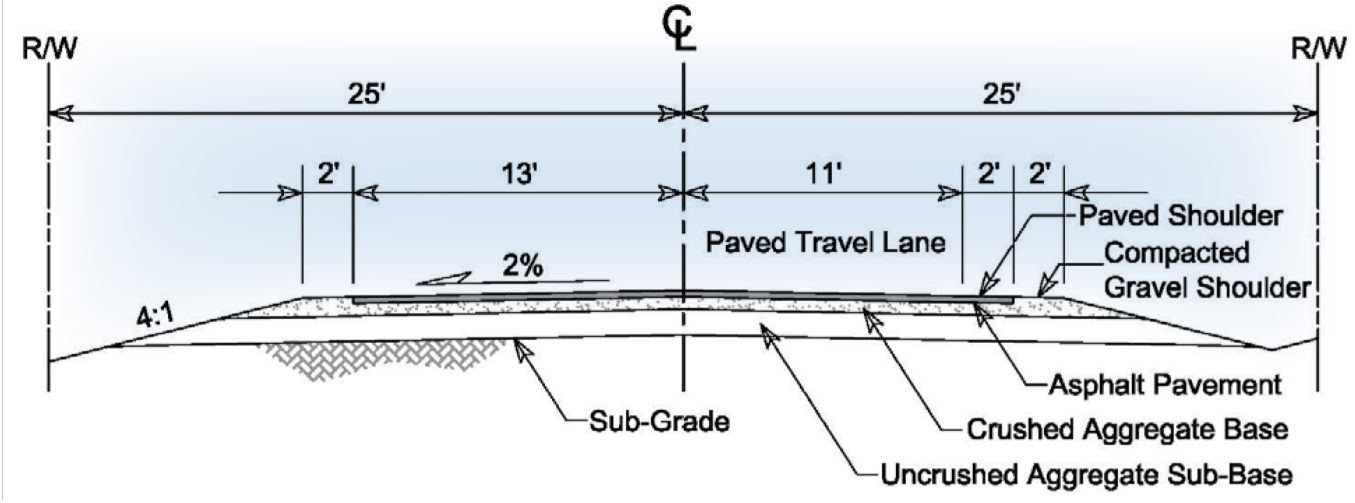

Exhibit A18 – Existing Typical Roadway Section
Source: provided by District Engineer, Nampa Highway District

As shown in **Exhibit A19**, opportunities may exist to widen roadways within the existing 50 feet of right-of-way to accommodate four-foot-wide bike lanes.

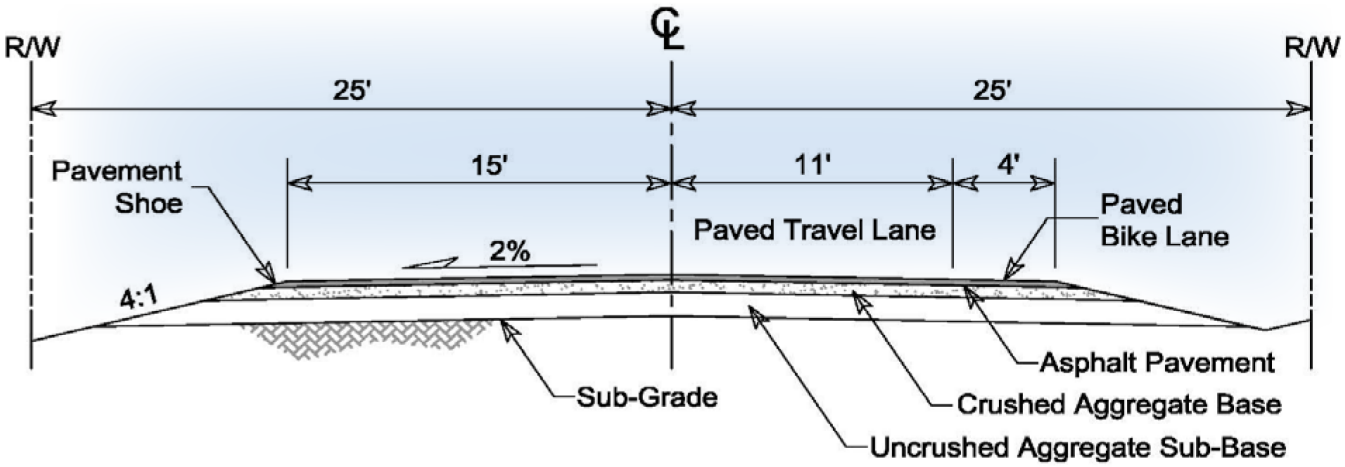

Exhibit A19 – Possible Typical Roadway Section with Bike Lanes/Routes
Source: provided by District Engineer, Nampa Highway District

Pavement Width

Pavement widths vary, but most improved roadways have 24 to 30 feet of pavement to accommodate travel lanes and varying widths of shoulders, with drainage swales on both sides of the roadway. In most cases, the pavement width is only 24 to 26 feet wide with narrow shoulders.

Pavement widths within the study area predominantly range between 25 to 28 feet as shown in **Figure 5**.

Riverside Road near the Lower Dam as well as segments along Iowa Avenue, Lone Star Road, Smith Avenue, Hoadley Road, Lowell Road, and Symms Road have roadway widths of 20 to 24 feet. Part of Lake Shore Drive west of HWY 45 extending to Access No. 1 has a roadway width of 29 to 33 feet. Farmway Road, near Caldwell at the northern boundary of the study area, also has 29 to 33 feet of roadway width.

Shoulder Width

Shoulder type and widths along Canyon Highway District roadways are represented in **Figure 5**. The majority of shoulder types identified within the study area comprise gravel, which may represent opportunities for bicycle and pedestrian improvements.

Idaho Transportation Department (ITD) Roadway Data

ITD's ArcGIS IPlan map system provides lane width data for highways throughout the state. The two state highways in the study area vicinity are SH 55 to the west and north and SH 45 to the northeast and east. These highways are under the jurisdiction of ITD.

According to ITD's ArcGIS IPlan map system, the existing travel lanes of SH 45 and SH 55 are 12 feet wide as shown in **Exhibit A20** from ITD's IPlan map system. No GIS database is available that includes right-of-way or shoulder width data for ITD roadways.

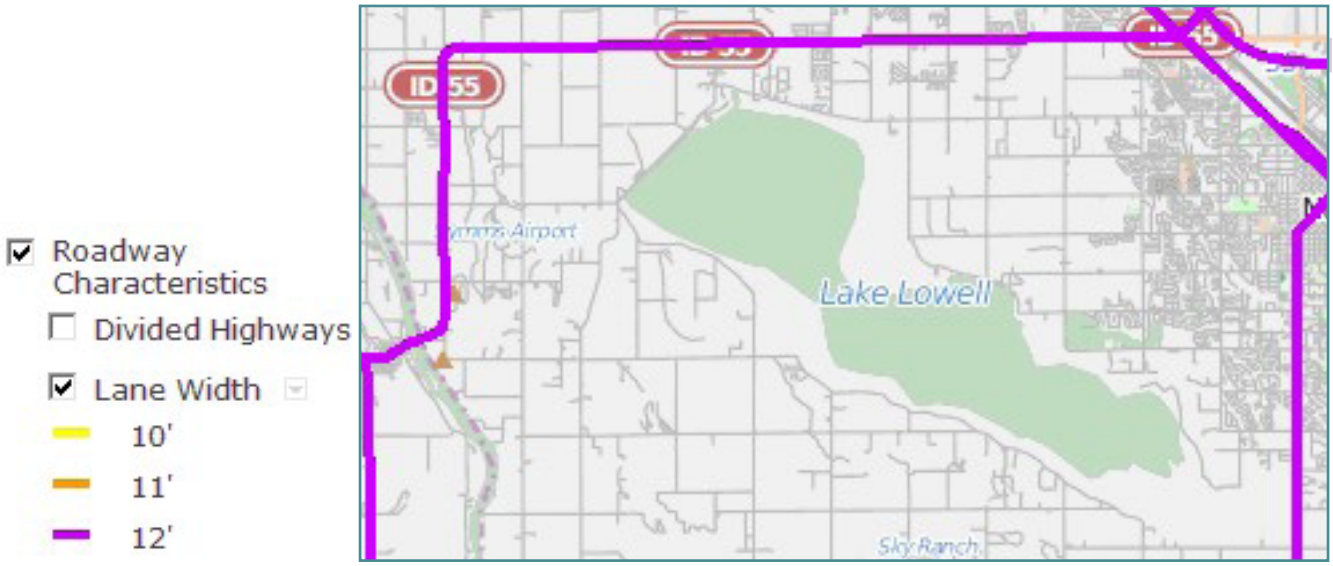

Exhibit A20 – Lane Width on SH 55 and SH 45
Source: ITD iPLAN (2014)

Roadway Standards

As part of reviewing existing conditions and developing a regional bicycle and pedestrian plan, it is important to understand what design standards might be applicable for projects implemented with federal funds.

Highway District Standards

Both Nampa and Canyon Highway Districts have adopted the Highway Standards and Development Procedures for the Association of Canyon County Highway Districts (ACCHD) 2007 (most recent revision 2010). Nampa Highway District No. 1 and Canyon Highway District No. 4 represent two of the four Highway Districts within Canyon County. Each District is allowed variance from the Standards to "construct, reconstruct or improve" existing roadways. The Districts are also given leeway to either "meet or exceed" the standards on new projects or maintenance activities.

While roadway guidelines for the Districts are included in the ACCHD Standards, no specific guidelines for bicycle and pedestrian facilities are included. Minimum roadway lane width standards from ACCHD are shown in **Table A2**.

Table A2 – Typical Roadway Lane Widths for Rural and Urban Roadways under District Jurisdiction

Type of Roadway	Width in Feet			
	Lane	Shoulder	Center Lane	Curb and Gutter
Two-lane rural	13	2	–	–
Two-lane rural low volume	12	2	–	–
Three-lane rural	13	7	14	–
Five-lane rural	Inner Lane – 12 Outer Lane – 13	7	14	–
Two-lane urban	Minimum – 17	–	–	Included in width
Three-lane urban	14	–	12	2
Five-lane urban	Inner Lane – 12 Outer Lane – 14	–	14	2

Source: Highway Standards and Development Procedures for the Association of Canyon County Highway Districts

These roadway standards will become relevant if future projects require lane reconfiguration/restriping or reconstruction.

ITD Standards

The Roadway Design Manual (RDM) was developed by ITD to serve as a guide for the design of state highways. The manual provides guidance for the development of projects through the ITD and Federal Highway Administration (FHWA) approved development process. Design criteria for bicycle facilities from the RDM are described in more detail below.

Bicycle Facilities

Bicycle facilities is a general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling, including parking facilities, bikeways, and shared roadways not specifically designated for bicycle use.

The existing conditions for bicyclists in the study area vicinity encompass all four basic types of facilities: urban-arterial, collector, residential, and rural roadways.

Multiple types of bicycle facilities are designed to accommodate the needs of different types of bicyclists:

- **Shared Lane** – bicyclists/motorists share the same travel lanes; 14-foot minimum lane width
- **Shoulder Bikeway** – paved roadway shoulder; 4-foot minimum shoulder width
- **Bicycle Lane** – designated portion of the roadway for use by bicyclists; 4-foot minimum width (5- foot minimum width adjacent to curb, guardrail, or on-street parking)
- **Separated, Multiuse Path** – facility used by pedestrians and/or bicyclists that is physically separated from motorized vehicular traffic by an open space or barrier; minimum 5-foot separation (if less than 5 feet, physical barrier or railing must be installed) and 10-foot standard width of path)

Roadways in the study area provide opportunities for either shoulder bikeways or bicycle lanes. Shoulder bikeways could potentially be implemented within the 50 feet of right-of-way that already exists on most District roads within the planning area.

Existing roadways may be modified to address the needs of the different bicyclist groups who use them. The RDM defines three groups of bicyclists:

- **Advanced Bicyclists** – experienced riders who can operate under most traffic conditions;
- **Basic Casual Bicyclists** – less confident bicyclists who prefer special provisions for bicycles; and
- **Children** – riders whose roadway use is monitored.

The needs of these different user groups should be considered when developing future bicycle facility projects.

Traffic Volumes

Traffic data from Canyon County Highway District, Nampa Highway District, and ITD was collected, mapped, and analyzed to evaluate traffic volumes within the study area.

The ADT data was provided for 2009 through 2013.

Canyon County Highway District and Nampa Highway District ADT Volumes

Based on the ADT data provided by Canyon County Highway District and Nampa Highway District, the highest ADTs within the study area occurred on Riverside Road, with 3,987 ADT in 2009 and Farmway Road with 3,784 average daily trips in 2010. Other high-volume roadway segments within the study area include Orchard Avenue between Lake Avenue and 10th Avenue and Lake Shore Drive. The highest-use roadways represented on **Figure A2** provide access to the DFNWR and Lake Lowell.

All available ADT data for the study area is shown in **Figure A2**, Average Daily Traffic (2009-2013).

ITD AADT Volumes

The ITD uses two primary methods to collect and evaluate traffic information: portable traffic counters and permanent Automatic Traffic Recorders (ATRs). This traffic data is reported as AADT, which is further broken down as Commercial Annual Average Daily Traffic (CAADT), which reflects truck traffic percentages.

AADT is useful as a simple measurement of how busy roads are, as it takes the sum of the total traffic for the entire year divided by 365 days. ITD maintains AADT counts for functionally classified roadways (minor and major collectors and minor and principal arterials) throughout the state of Idaho. AADT data is generated by permanent ATRs; in areas where ATRs are not located, AADT is calculated by using portable traffic counter data in addition to ATR data on adjacent roadways. CAADT is useful data because it represents average daily commercial truck traffic volumes.

Based on 2013 AADT data provided by ITD, the highest volume roads within the study area are SH 45 with 11,000 daily trips and SH 55 with 9,500 daily trips. Greenhurst Road to the east of the study area had a volume of 9,500 daily trips. This volume decreased to 4,900 daily trips west of Midland Boulevard. The segment of Middleton Road between Greenhurst Road and Lone Star Road had 6,300 daily trips.

The AADT of Lake Shore Drive along the south side of the Refuge ranges from 1,400 daily trips between Riverside Road and Marsing Road to 530 daily trips on the segment directly east between Marsing Road and Dearborne Road; however, the AADT increases to 2,600 daily trips on Lake Shore Drive between Dearborne Road and SH 45.

According to ITD's 2013 AADT data, Lake Shore Drive has the highest percentage of truck traffic within the study area at 15 percent. Riverside Road has the second highest percentage of truck traffic at 11 percent.

The 2013 AADT data for the study area is shown in **Figure A3**. See **Appendix J** for a complete listing of AADT and CAADT (truck traffic).

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

Canyon County Highway District Roads

- 2009
- 2010
- 2011
- 2012
- 2013

Note: *Thick lines represent roads with ADT > 2500*

- Nampa Highway District Roads (ADT Year Not Specified)
- Study Area
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact Boundary

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0 1,500 3,000
Feet

Figure A2 – Average Daily Traffic (2009-2013

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

LEGEND

Average Annual Daily Traffic (ITD)

Traffic Volume

- 0 - 5000
- 5000 - 10000
- 10000 - 30000
- Over 30000
- Study Area
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact Boundary

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0 1,500 3,000
Feet

Figure A3 – Average Annual Daily Traffic (2013)

ENVIRONMENTAL RESOURCES

The Lake Lowell Unit of the DFNWR was established in 1909 and lies in Canyon County, Idaho. The Refuge surrounds Lake Lowell, an existing off-stream reservoir built by the BOR that opened in 1909. The existing environmental conditions study area varies from three-quarters to over one mile from the Lake Lowell water edge. The environmental conditions study area is bound by the following:

- West – Malt Road/Riverside Road
- East – Sunnyridge Road
- South – Deer Flat Road
- North – Homedale Road

Federal, state, and local databases and sources were reviewed to collect and analyze existing environmental resource conditions within the environmental conditions study area. Map figures presenting the collected environmental resource information are as follows:

- Figure A4 – Environmental Resources - Farmland
- Figure A5 – Environmental Resources - Floodplains and Wetlands
- Figure A6 – Environmental Resources - Hazardous Materials, 4(f)/6(f) properties, Pathway Concerns

Physical Environment

The physical environment involves components including soil resources and farmland, air quality, hydrology (surface waters, floodplains, wetlands, and groundwater/sole source aquifers), hazardous materials, and biological resources (threatened and endangered species, State sensitive species).

Soil Resources and Prime Farmland

Land is not considered farmland if it is developed, if the U.S. Census considers it urban, if it exists within the footprint of rights-of-way, or if it is land that is committed to urban development or water storage.

Congress enacted the Farmland Protection Policy Act (FPPA) as a subtitle of the 1981 Farm Bill. The purpose of the law is “to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that, to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland” (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.).

Farmland protected under the FPPA is defined in Section 4201 of the FPPA as prime farmland, farmland of statewide or local importance, and unique farmland.

Prime farmland soils are those that have the best combination of physical and chemical characteristics for producing food, feed, forage, and fiber and oilseed crops, and are available for these land uses. Prime farmland can be either non-irrigated land or land that would be considered prime farmland if irrigated or if irrigated and reclaimed of excess salts and sodium. Prime farmland with these characteristics makes up a large portion, 45 percent, which represents 10,553.7 acres of the environmental conditions study area as shown in **Figure A4**.

Farmland of statewide importance is land, other than prime and unique farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Farmland of statewide importance if irrigated or if irrigated and reclaimed of excess salts and sodium makes up approximately 7.5 percent or 1,777.7 acres of the environmental conditions study area.

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

LEGEND

- Prime Farmland
- Farmland of Statewide Importance
- Study Area
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact Boundary

CALDWELL

NAMPA

Lake Lowell
(elev. 2531.20 ft)

Access No. 8
Access No. 7
Access No. 6
Access No. 5
Access No. 4
Access No. 3
Access No. 2
Access No. 1
Gotts Point Access
Schaffer's Access

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0 1,500 3,000
Feet

Figure A4 – Environmental Resources Prime Farmland

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

LEGEND

- Canal
- Stream
- 100 Year Flood Zone
- 500 Year Flood Zone

NWI Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Study Area
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
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0 1,500 3,000
Feet

Figure A5 – Environmental Resources Wetlands, Flood Zones, and Waterways

DEER FLAT NATIONAL WILDLIFE REFUGE

Regional Bicycle / Pedestrian Plan

LEGEND

- Study Area
- 4(f) Property
- 6(f) Property
- National Register Historic Places
- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Swimming
- Wildlife Viewing Platform/Blind
- Parking Facilities

Hazardous Materials

- RCRA
- UST
- UST/LUST
- UST/RCRA
- UST/LUST/Brownfield

Public Use Areas

- Area Closed to All Entry Year Round
- Fishing Areas A and
- East Side Recreation Area
- North Side Recreation Area
- South Side Recreation Area
- Deer Flat Wildlife Refuge
- Interstate
- State Highway
- U.S. Highway
- Principle Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Collector
- Local Road
- City Boundary
- Snake River Canyon Scenic Byway
- City Area of Impact Boundary

N

0 1,500 3,000 Feet

Pathway Concerns

Major issues — Few issues — No issues

1. Shoreline and emergent vegetation heavily used by waterfowl and roosting eagles
2. Area immediately adjacent to historic grebe colonies and heron rookery
3. Long standing sanctuary that has been closed to the public for decades
4. Immediately adjacent to a wetland area that is heavily used by migrating waterfowl and hunters
5. Increases in cycling and pedestrian use will likely degrade hunting experience.Area may be near heavily contaminated sight.
6. Increases in cycling and pedestrian use will likely degrade hunting experience.
7. 8 Area immediately adjacent to farming operation that successfully attracts and feeds large concentrations of migrating waterfowl

Lake Lowell (elev. 2531.20 ft)

Diversion Dam and Deer Flat Embankments

Access No. 8 — Access No. 7 — Access No. 6 — Access No. 5 — Access No. 4 — Access No. 3 — Access No. 2 — Access No. 1

Goth's Point Access

Schaefer's Access

Figure A6 – Hazardous Materials, 4(f)/6(f) Properties, Pathway Concerns

Unique farmland is land other than prime farmland used for production of specific high-value food and fiber crops (e.g., cranberries or citrus). Idaho does not have farmland categorized as unique (Hal Swenson, Idaho State Soil Scientist, USDA Natural Resources Conservation Service).

A large portion (47.5 percent) of the environmental conditions study area comprises Lake Lowell, a gravel pit, and farmland that is not considered prime farmland.

Information on soils was obtained from the Natural Resources Conservation Service (NRCS) to determine the presence of prime, unique, statewide, or locally important farmland in the environmental conditions study area. The soil survey data for the environmental conditions study area indicates that the predominant soil types within the area include silt, sandy, and other various types of loam.

Table A3 – NRCS Prime Farmland/Farmland of Statewide Importance

Farmland Type	Acres	Percent of Planning Boundary Limits
Prime Farmland if irrigated	8,003.5	34.1%
Prime farmland if irrigated & reclaimed of excess salts & sodium	2,550.2	10.9%
Total Prime Farmland	**10,553.7**	**45.0%**
Farmland of Statewide Importance if irrigated	1,462.1	6.2%
Total Farmland of Statewide Importance if irrigated or if irrigated & reclaimed of excess salts and sodium	315.6	1.3%
Lake Lowell/Gravel Pit	7,985.9	34.0%
Not Prime Farmland	3,170.0	13.5%
Total Environmental Conditions Study Area Boundary Limits	**23,487.5**	**100.0%**

Source: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

The USDA Farmland Conversion Impact Rating Form AD-1006 (03-02) is used by the NRCS to inventory and evaluate impacts to the prime and important farmlands within the state. Any proposed project area associated with the construction of any potential alternative route may convert farmland as defined in the FPPA to nonagricultural uses. Any proposed project bicycle/pedestrian pathway would more than likely be located within existing right-of-way. No additional right-of-way purchase is anticipated. It is unlikely that prime farmland or farmland of statewide importance would be affected. If the proposed project does affect prime/statewide important farmland, the federal agency providing financial or technical assistance would need to coordinate with NRCS to determine potential farmland impacts.

Figure A4 shows the locations of the farmlands.

Air Quality

Overview

Under the authority of the federal Clean Air Act, the Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: ozone, sulfur dioxide, carbon monoxide, nitrogen dioxide, particulate matter, and lead (EPA, 2012, www.epa.gov/air/criteria.html, http://www.epa.gov/airdata/). The Idaho Department of Environmental Quality (DEQ) is required by the Idaho Environmental Protection and Health Act to supervise and administer a system to safeguard air quality in the State of Idaho. In Idaho, pollutants of concern include carbon monoxide, particulate matter (PM10 and PM2.5), and Mobile Source Air Toxics (MSAT).

Source: EPA Air Quality Index Report, 2014, www.deq.idaho.gov/air-quality.aspx

All state air quality jurisdictions are divided into three classes of air quality protection: Class I, II, and III. Class I areas are subject to maximum limits on air quality degradation called air quality increments, often referred to as Prevention of Significant Deterioration (PSD) increments. Class I areas are special areas such as national parks, national monuments, and wilderness areas. These air quality increments are more stringent than national ambient air quality standards. Most areas are designated as Class II areas, which are areas subject to maximum limits on air quality degradation. Class II has more stringent air quality increments than national ambient air quality standards but less than Class I. Class III areas have no air quality increments and may be degraded to levels correspondent to national ambient air quality standards.

A Nonattainment Area is an air quality jurisdiction that has formally been recognized by the EPA as violating a national ambient air quality standard.

A Maintenance Area is one where a nonattainment area now meets the standards and additional redesignation requirements in the Clean Air Act.

An Area of Concern is an area that has exceeded the threshold of the National Ambient Air Quality Standards in the past, but has not violated those standards (Source: David Luft, Airshed Manager, Idaho DEQ).

An airshed is a geographical area characterized by similar topography and weather patterns. Idaho DEQ bases the boundaries of airsheds on meteorological data. Certain geographical regions that violate NAAQS are designated as nonattainment areas. Nonattainment areas receive special attention and mitigation efforts in order to improve the ambient air quality to the established standards. The Administrative Boundaries for Areas with Sensitive Air Quality map in **Appendix K** shows attainment and nonattainment areas throughout the state of Idaho.

Air Quality – Canyon County

Canyon County is part of the Treasure Valley airshed, which is considered an Area of Concern for PM2.5 and O3. PM2.5 is particulate matter less than or equal to 2.5 microns in diameter; O3 is corrosive ozone. In the lower atmosphere, ozone is created by chemical reactions between air pollutants from vehicle exhaust, gasoline vapors, and other emissions. High concentrations of ozone are toxic to people and plants.

The environmental conditions study area is entirely located in Canyon County and would most likely be considered an exempt project per 40 CFR 93.126, Air Quality, Bicycle and pedestrian facilities.

Hydrology

Surface waters, floodplains, wetlands, groundwater contaminants, and sole source aquifers are discussed in detail below. If proposed bicycle/pedestrian pathway projects include any alteration or other development work involving surface or groundwater, various levels of regulatory compliance and/or permitting would be required.

Surface Waters

The environmental conditions study area has a total of 21 irrigation canals, ditches, and drains. In certain instances, irrigation ditches and canals may be considered jurisdictional waterways, and specific regulatory requirements under Sections 404 and 401 of the Clean Water Act would apply to any proposed pathway encroaching upon these facilities.

According to the Lake Lowell Total Maximum Daily Load (TMDL): Addendum to the Lower Boise River Subbasin Assessment and TMDLs, Lake Lowell is considered impaired on the 303(d) list (impaired and threatened waters) for nutrients and low dissolved oxygen (DO), which is an indicator of the health of a body of water and its capacity to support a balanced ecosystem of plants and animals. DO levels in water below 5.0mg/l create an aquatic stressful environment.

Source: http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls/boise-river-lowersubbasin.aspx.

Floodplains

Executive Order (EO) 11988: Floodplain Management requires federal agencies to avoid to the extent possible, long and short-term adverse impacts associated with modification and/or development of floodplains whenever a practicable alternative exists. EO 11988 and 23 CRF 650 Part A require an evaluation of project alternatives to determine the extent of any encroachment into the base floodplain. The base floodplain, also referred to as the "100-year-flood," is the regulatory standard used by federal agencies for administering new development. This is a flood having a one percent chance of being equaled or exceeded in a given year. A "floodplain" is defined as a nearly flat plain along the course of a stream or river that is naturally subject to flooding.

The Flood Insurance Rate Map (FIRM) Panel numbers for the environmental conditions study area are 16027C0375F and 16027C0390F. The Federal Emergency Management Agency (FEMA) has not issued floodplain maps for these panel numbers because they have determined they are not in a special flood hazard area.

Source: http://maps.idwr.idaho.gov/FloodHazard/Map

Wetlands

Executive Order 11990 Protection of Wetlands requires all federal agencies to "minimize the destruction, loss or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands." This Executive Order, along with U.S. Department of Transportation Order 5660.1A, directs federal agencies to avoid new construction in wetlands unless there is no practicable alternative and the proposed action includes all feasible measures to minimize harm to wetlands. These directives have a long-term goal of no overall net loss of the nation's remaining wetlands.

Wetlands have been defined by the U.S. Army Corps of Engineers (USACE) and the EPA, pursuant to Section 404 of the Clean Water Act (CWA) as: those areas that are inundated or saturated by surface or groundwater (hydrology) at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils) (USACE, http://www.usace.army.mil/). Wetlands generally include swamps, marches, bogs, and similar areas that are saturated by surface or groundwater and support vegetation adapted for life in saturated conditions [40 CFR 232.2(r)]. They provide important functions including groundwater recharge, erosion control, shoreline stabilization, and fish and wildlife food and habitat.

The following presents the federal definition of Waters of the U.S., including wetlands. Wetlands are a subset of Waters of the U.S. and receive protection under Section 404 of the CWA. The term "Waters of the U.S." as defined in Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) includes:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. All interstate waters including interstate wetlands.
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds that the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
   - That are or could be used by interstate or foreign travelers for recreational or other purposes;
   - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   - That are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as Waters of the U. S. under the definition.
5. Tributaries of waters identified in numbers one through four.
6. Territorial seas.
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in numbers one through six.

Waters of the U.S. do not include previously converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, the final authority regarding CWA jurisdiction remains with EPA (328.3[a][8] added 58 FR 45035, Aug. 25, 1993).

Potential wetland areas were identified using existing National Wetlands Inventory (NWI) maps (http://www.fws.gov/wetlands/Data/Mapper.html). This initial mapping was not field verified by a qualified biologist or wetland expert. Formal wetland delineation in accordance with the 1987 USACE Manual and Arid West (2010) Regional Supplement requires a more detailed identification process, which would involve delineating hydric soils and hydrologic parameters. **Figure A5** shows the approximate NWI wetland boundaries based solely on vegetation type.

Figure A5 shows the locations of floodplains and wetlands.

Groundwater/Sole Source Aquifers

A sole source aquifer is an underground water supply designated by the Environmental Protection Agency (EPA) as the "sole or principal" source of drinking water for an area. Projects that are to receive federal financial assistance and have the potential to contaminate the aquifer "so as to create a significant hazard to public health" under the Safe Drinking Water Act of 1974 (42 U.S.C. 201, 300 et seq., and 21 U.S.C. 349) are subject to EPA review and approval. As shown in **Appendix L**, no designated sole source aquifers are located within the environmental conditions study area.

Source: http://www.deq.idaho.gov/media/462639-sole_source_aquifers_west_map.pdf

Hazardous Materials

The Idaho DEQ databases were researched for any regulated hazardous facilities reporting to the EPA. The databases contain information about environmental activities that may affect air, water, and land. The facilities reporting to the EPA may be related to waste, water quality, toxics, air quality, radiation, and other types of facilities.

Table A4 lists sites identified in EPA's database within the environmental conditions study area including Underground Storage Tanks (USTs), Leaking Underground Storage Tanks (LUSTs), Resource Conservation and Recovery Act (RCRA) sites, and brownfields.

Table A4 – Hazardous Materials Summary

Facility ID	Facility Name	Street Address	City	Type
3-140056	Nampa Hwy District #1	4507 12th Ave. Rd.	Nampa	UST/LUST
3-140202	Bryce Millar	3502 S Midland Blvd	Nampa	UST
3-140698	Gem Stop	1502 S. Middleton Rd.	Nampa	UST
3-140164	Gem State Academy	Montana & Hwy 55	Caldwell	UST/LUST
3-140055	Lake Lowell Market	15722 Riverside	Caldwell	UST/LUST
3-140197	DFNWR	Iowa Rd. Maintenance Area	Nampa	UST
3-140611	Ron's Lakeshore	9031 Lake Shore Dr.	Nampa	UST/LUST Brownfield
3-140141	Pioneer Hi-Bred International	9178 Lakeshore Dr.	Nampa	UST/RCRA
IDR000001453	Bass Auto Body	9675 Hwy 45	Nampa	RCRA
IDD980978159	Chegwidden Trucking & Excavating	4411 Sunnyridge Rd.	Nampa	RCRA
IDD072991508	Idaho Sand & Gravel Co. Inc.	Karcher Rd. and 10th Ave.	Caldwell	RCRA

Source: Envirofacts, 2014, http://www.epa.gov/enviro/index.html

Further evaluation may be needed during project development to determine if there is a potential for encountering specific sites or contaminated areas during construction. This may include subsurface investigation activities to determine the extent of soil and groundwater contamination.

If an investigation determines that contaminated soils or groundwater could be encountered during construction, handling/disposing of the contaminated material must be conducted in accordance with federal, state, and local laws and specifications.

Biological Resources

Biological resources including threatened and endangered species, state sensitive species and wildlife, and fish resources are discussed in detail below.

Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §1531 et seq.) protects federally listed threatened and endangered plant and animal species and the critical habitats in which they are found. Endangered species are those that are in danger of extinction throughout all or a significant portion of their range. Threatened species are those that are likely to become endangered in the near future throughout all or a significant portion of their range. Candidate species are those that are actively being considered for listing as endangered or threatened under the ESA, as well as those species for which the National Marine Fisheries Service has initiated an ESA status review (Federal Register, Volume 64, 1999). Candidate species receive no protection under the ESA. Proposed species are candidate species found to warrant listing as either threatened or endangered and were officially proposed as such in a Federal Register notice after the completion of a status review and consideration of other protective conservation measures. The Idaho Fish and Wildlife Office in Boise, Idaho maintains the State of Idaho's ESA list of endangered, threatened, proposed, and candidate species with associated proposed and critical habitats. Below is a summary of the species listed in the environmental conditions study area based on information from the U.S. Fish & Wildlife Service's Information, Planning, and Conservation (IPaC) system.

Source: http://ecos.fws.gov/ipac/

Slickspot Peppergrass (Lepidium papilliferum)

Slickspot peppergrass is a proposed species. The slickspot peppergrass is endemic to southwestern Idaho, where it is restricted to unique small-scale openings within sagebrush steppe habitats. Also known as Idaho pepperweed, slickspot peppergrass is an annual or biennial tap-rooted plant, averaging 2 to 8 inches in height. Leaves and stems are covered with fine, soft hairs, and the leaves are divided into linear segments. When in bloom, the clusters of small white flowers nearly cover the entire plant. Flowers are numerous, 0.1 inches in diameter, and have four petals. This flower only grows where puddles or small pools form after rain or snow and then dry up in hot climate.

Although Slickspot peppergrass has critical habitat in Canyon County, no critical habitat is listed within the environmental conditions study area.

State Sensitive Species

Section O6D of the ESA defines State Sensitive Species as those species that could become endangered or extinct with the state. The network of Natural Heritage Program and Conservation Data Center (CDC) ranks the range-wide and state status of plants, animals, and plant communities. Idaho Fish and Game maintains a database of species that are considered to have the greatest conservation need in Idaho. Western Grebe is one species located in the study area. Table 4-3 of the Deer Flat National Wildlife Refuge Draft CCP and Environmental Impact Statement provides a complete list of sensitive species within the study area.

Sources:

Idaho Fish and Game: http://fishandgame.idaho.gov/public/docs/compWildStrategy/appendixB.pdf

Draft DFNWR CCP and EIS: http://www.fws.gov/deerflat/PDF/5DeerFlatNWR.DraftCCPEIS.Chpt4.pdf#page=26

Human Environment

The human environment involves components that are strongly influenced by or are related directly to humans including demographics, environmental justice, cultural resources, visual impacts, section 4(f) and 6(f) resources, land use, and noise.

Demographics

Minorities, Low Income Populations

The following Census tracts were researched to determine locations of minority and low income populations:

- Census Tract 223 – encompassing the southern portion of Lake Lowell from Wagner Rd. (west) to Duck Ln. (east)
- Census Tract 224 – encompassing the southeastern portion of Lake Lowell from Duck Ln. (west) to Sunnyridge Road
- Census Tract 218 – encompassing the northern portion of Lake Lowell from Wagner Rd. (west) to Lake Ave. (east)
- Census Tract 209.02 – encompassing the northeastern portion of Lake Lowell from Lake Ave. (west) to 12th Ave./SH 45 (east)
- Census Tract 209.01 – encompassing the eastern portion to Sunnyridge Road

Data from the estimated 2013 U.S. Census and the 2014 Federal Financial Institutions Examination Council presented in **Table A5** provides information in which to evaluate social impacts and characteristics of the existing population.

The comparison indicates Census Tract 209.02 has the highest percentage of population below the poverty level; however, Census Tract 224 has the lowest median household income at $52,008 within the environmental conditions study area. The City of Caldwell has the lowest median household income of the cities in the study area at $39,302.

Table A5 – Demographic Information

Area	2013 Population (estimated)	Median Household Income 2008–2012	Estimated Population Below Poverty Level	Minority (Non-White, Hispanic, and Latino included)
State of Idaho	1,612,136	$47,015	15.1%	16.9%
Canyon County	198,871	$42,691	19.6%	28.4%
City of Caldwell	48,957	$39,302	22.1%	39.2%
City of Nampa	86,518	$40,835	22.0%	27.3%

Area	2014 Population	Estimated Median Household Income 2014	Estimated Population Below Poverty Level	Tract Minority
Census Tract 223	6,215	$56,673	10.45%	21.03%
Census Tract 224	4,472	$52,008	9.79%	16.28%
Census Tract 218	5,630	$52,192	11.21%	16.96%
Census Tract 209.02	14,190	$56,556	11.46%	21.17%
Census Tract 209.01	12,861	$60,915	7.63%	18.23%

Source: http://www.ffiec.gov/

Environmental Justice

Title VI of the U.S. Civil Rights Act of 1964, as amended (Title 42 United States Code, Chapter 21) and EO 12898 require that no minority or low-income person shall be disproportionately adversely impacted by any project receiving federal funds. For transportation projects, this means that no particular minority or low-income person or population may be disproportionately isolated, displaced, or otherwise subjected to adverse effects. An environmental justice evaluation may need to be completed during the project development process if it is questionable whether any project could adversely impact any minority or low-income persons within the environmental conditions study area.

Cultural Resources

Section 106 of the National Historic Preservation Act (16 United States Code 470 et. Seq.), requires federal agencies to "take into account" the effect a project may have on historic properties. The purpose of the Section 106 process is to identify historic properties that could be affected by the undertaking, assess the effects of the project, and investigate methods to avoid, minimize, or mitigate any adverse effects on historic properties.

Cultural resources are defined as the expressions of human culture and history in the physical environment including culturally significant landscapes, historic and archaeological sites, Native American and sacred places, and artifacts and documents of cultural and historical significance.

The National Register of Historic Places (NRHP) database website was accessed to research historic properties in the environmental conditions study area. Two historic sites were found:

- The Deer Flat Embankment – U. S. Department of the Interior National Park System (NPS)

#72001610 was certified as a national historic site on March 8, 1972

- Diversion Dam and Deer Flat Embankments – NPS #76000666 was certified as a national historic site on March 14, 1976

No other information was found concerning The Deer Flat Embankment (NPS #72001610). It is thought that NPS #76000666, Diversion Dam and Deer Flat Embankments (Embankments), includes the Embankments at Deer Flat Reservoir (Lake Lowell) with the Diversion Dam on the Boise River; this NPS number is used to reference the Embankments on the NRHP.

The Embankments consist of two large and two small earthen embankments: Deer Flat Upper Embankment, Deer Flat Lower Embankment, Deer Flat Middle Embankment, and Deer Flat East Dike Dam. All are considered historical under the same NPS #76000666 and located within the environmental conditions study area as shown in **Figure 10**. No other historic places are listed within the environmental conditions study area.

Source: http://www.nationalregisterofhistoricplaces.com/id/Canyon/districts.html.

Visual Impacts

The National Environmental Policy Act (NEPA), 42 USC Section 4231, requires that all actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that environmental considerations such as impacts related to aesthetics and visual quality are given due weight in project decision making. NEPA Section 101(B) (2) states that it is the "continuous responsibility" of the federal government to "use all practicable means" to "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings" (NEPA, http://www.epa.gov/compliance/nepa/).

Under Council on Environmental Quality (CEQ) implementing regulations, environmental analysis is to consider impacts on "urban quality, historic and cultural resources, and the design of the built environment" (Section 1502.16). Agencies shall "identify methods and procedures to insure that presently unquantified environmental amenities and values may be given appropriate consideration" (Section 1507.2). Federal Implementing regulations are included in 23 CFR 771 (FHWA) and 40 CFR 1500-1508 (CEQ).

In-depth visual assessments were not included in the NEPA analysis for the proposed bicycle/pedestrian pathway projects. As each future pathway project begins the process of implementation, it will be determined whether or not an individual project requires a visual impact review.

Section 4(f) Resources

Section 4(f) refers to the original section within the Department of Transportation Act of 1966 (23 CFR 774), which set the requirement for consideration of publicly owned park, recreational area, wildlife and waterfowl refuges, and any publicly or privately owned historic sites in projects that receive federal funding. "Use" may mean ether a direct use or constructive use. A direct use occurs when land that is permanently incorporated into a transportation facility or temporarily occupies the land has an adverse effect on a 4(f) resource. Constructive "use" occurs when a project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under 4(f) are substantially impaired. Use is determined by the Federal Highway Administration (FHWA), including measures(s) to minimize harm that will have a de minimis impact.

Any project action within the Refuge area would result in "use" of a publicly owned wildlife and waterfowl refuge. FHWA could determine this project has de minimis impact to the DFNWR, meaning the impact is one that will not adversely affect the activities, features, or attributes of the property.

The decision ultimately lies with FHWA. **Table A6** lists the 4(f) properties within the environmental conditions study area.

Table A6 – 4(f) Public Parks, Schools, and Wildlife and Waterfowl Refuges in the Study Area

4(f) Resource	Type of 4(f) Resource	Address	Potential for Impact
Lake Ridge Elementary School	Public school with recreation area	12974 Iowa Avenue, Nampa, ID	Unlikely
Owyhee Elementary School	Public school with recreation area	615 Burke Lane, Nampa, ID	Unlikely
Sunny Ridge Elementary School	Public school with recreation area	506 Fletcher Dr., Nampa, ID	Unlikely
Lake Lowell Park	Public park	12974 Iowa Avenue, Nampa, ID	Possible
DFNWR Visitor Center	National Wildlife Refuge management facility	13751 Upper Embankment Road, Nampa, ID	Possible
DFNWR	National Wildlife Refuge	13751 Upper Embankment Road, Nampa, ID	Possible

Sources: http://www.idaho.gov/education/k12.html; http://www.fws.gov/deerflat/map.html

Section 6(f) Resources

Section 6(f) of the Land and Water Conservation Act (LWCA) requires that the conversion of lands or facilities acquired with LWCA funds (CFR Title 36, Chapter 1) be coordinated with the U.S. Department of the Interior (DOI). The DOI must approve and ensure any replacement lands are of equal value, location, and usefulness.

The Land and Water Conservation Fund (LWCF) database was accessed to identify LWCF properties within the environmental conditions study area. As shown in **Table A7**, one 6(f) site listed is within the environmental conditions study area.

Table A7 – LWCF 6(f) Resources

6(f) Resource	Type of 6(f) Resource	Address	Potential for Impact
Lake Ridge Elementary School	Public park	12974 Iowa Avenue, Nampa, ID	Possible

Source: http://www.invw.org/data/lwcf/grants-id.html

Conversions of Section 6(f) property acquired or developed with LWCA funds for a non-recreational purpose must be approved by the Secretary of Interior. It is not anticipated that any of the projects would require conversion of land or facilities to a non-creational use.

Federal Aeronautics Administration (FAA) Airspace Intrusion

Federal Aviation Administration (FAA) maps and databases and local zoning and comprehensive plans were reviewed to identify aviation facilities and FAA airspace within the environmental conditions study area. No public or private airports/heliports are located within one mile of the environmental conditions study area.

Deer Flat National Wildlife Refuge Environmental Concerns

On **Figure 10** the Refuge has identified environmental "pathway concerns" in specific areas around the refuge. Concerns were denoted by color, i.e., red where a pathway would encounter major issues, yellow where a pathway or bike/pedestrian improvement would encounter few issues, and green where no issues would be encountered. Areas where no issues would be encountered are intermittent on the south, southwest, and northwest areas of the Refuge. Red areas where major issues would be encountered if a pathway or bike/pedestrian improvement were proposed are mainly located on the north, northeast, and southern tip of the Refuge. Areas where a pathway or bike/pedestrian improvement would evoke few issues are located on the southwest and northeast areas of the Refuge.

Also identified on **Figure 10** are specific areas and their unique environmental issues:

1. Shoreline and emergent vegetation heavily used by waterfowl and roosting eagles
2. Area immediately adjacent to historic grebe colonies and heron rookery
3. Long standing sanctuary that has been closed to the public for decade
4. Immediately adjacent to a wetland areas that is heavily used by migrating waterfowl and hunters
5. Increases in cycling and pedestrian use will likely degrade hunting experience. Area may be near heavily contaminated site.
6. Increases in cycling and pedestrian use will likely degrade hunting experience.

7/8. Area immediately adjacent to farming operation that successfully attracts and feeds large concentrations of migrating waterfowl.

APPENDIX B.
ENVIRONMENTAL SCAN

ENVIRONMENTAL SCAN

OVERVIEW

The purpose of this planning-level Environmental Scan (ES) is to expand on the 'Environmental Resources' subsection of the Existing Conditions section of the Lake Lowell Area Bicycle and Pedestrian Access Plan. The Environmental Resources section includes a comprehensive overview of known environmental resources within the study area. This ES includes a summary of potential environmental issues, resources present, and permitting that may be required upon implementation of priority bicycle and pedestrian projects identified in the 'Network Plan' section of the Lake Lowell Area Bicycle and Pedestrian Access Plan (Plan).

According to the Deer Flat National Wildlife Refuge CCP, the DFNWR encompasses 10,500 acres with approximately a 9,000-acre overlay area on Lake Lowell. The study area for the Network Plan extends approximately 4,000 feet in all directions beyond the DFNWR boundaries as shown in **Figure 1**. Some of the priority routes identified in the Network Plan reach the cities of Caldwell and Nampa with the majority in unincorporated Canyon County.

This ES provides planning-level information and is not intended to meet the requirements of the National Environmental Policy Act (NEPA) or NEPA implementing regulations. Since a majority of the priority projects in the Network Plan are minor bicycle and pedestrian widening and intersection improvements, they would likely qualify for Categorical Exclusion (CE). However, the lead agency will determine the appropriate level of NEPA documentation required for each project based on the scope, location, and potential resource impacts.

Environmental Scan Focus

Due to the large number of projects identified in the Network Plan, this ES focuses only on the priority routes identified in the Network Plan. **Figure A7** shows the priority routes and known environmental resources within the planning area. Sources used to develop this ES include various local, state, and federal agency databases and sources, along with the priority projects identified in the Network Plan. **Appendix L** includes the opinions of probable construction costs for the priority 1 projects.

Roadway Jurisdiction

The road right-of way, where most proposed priority bicycle and pedestrian improvements would occur, is owned by four local jurisdictions:

- Canyon County Highway District No. 4 – north and west, roads in unincorporated Canyon County
- Nampa Highway District No. 1 – south and east, roads in unincorporated Canyon County
- City of Caldwell – north, roads in city limits
- City of Nampa – east and north, roads in city limits

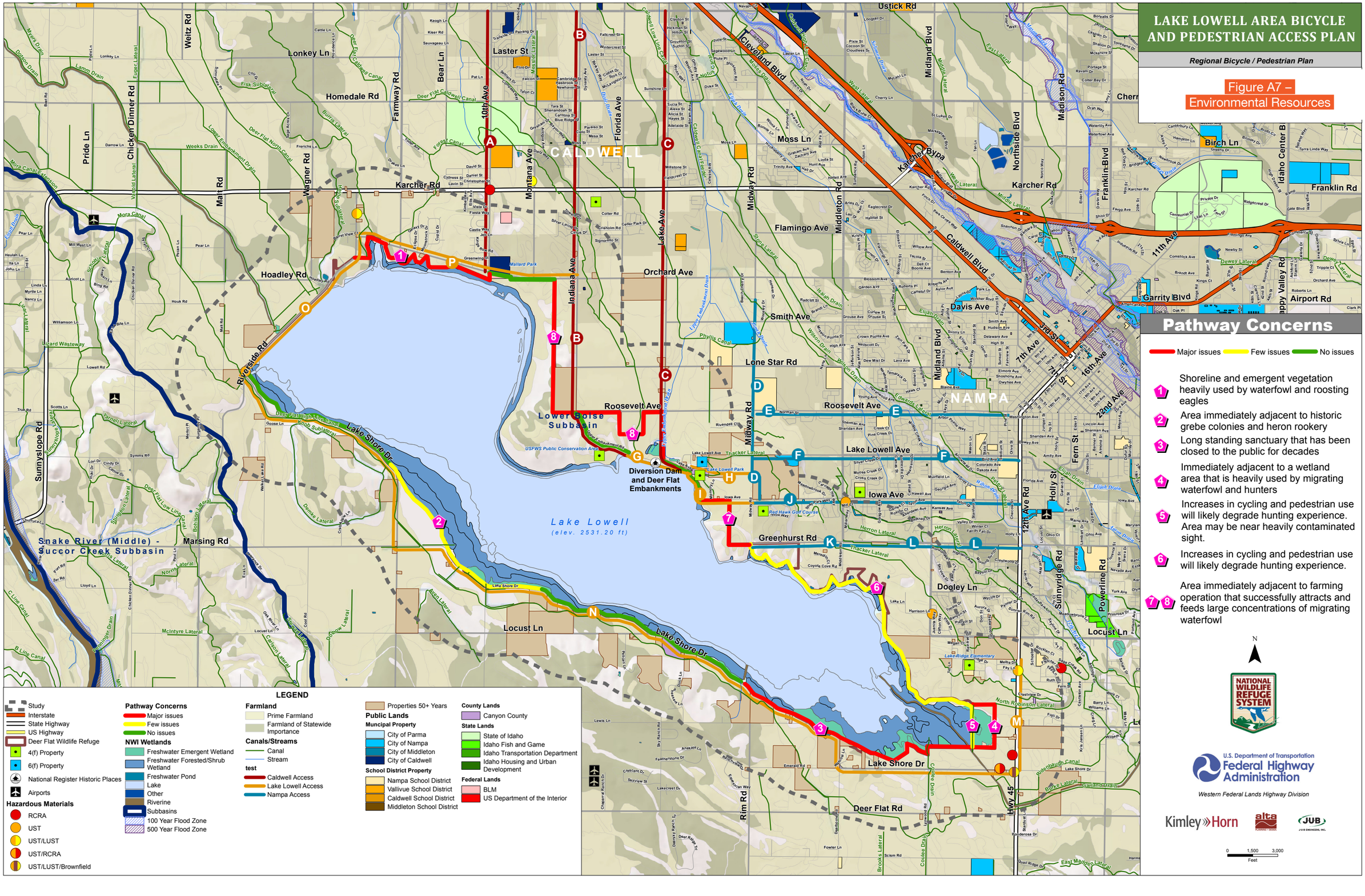
The Idaho Transportation Department has jurisdiction over State Highway 55 (Karcher Road) and State Highway 45.

As described in the 'Roadway Information' subsection in the Existing Conditions section of the Plan, most proposed bike lanes would be completed within the existing right-of-way. Most Highway District roadways within the planning area have 50 feet of right-of-way, most of which is prescriptive right-of-way.

LAKE LOWELL AREA BICYCLE AND PEDESTRIAN ACCESS PLAN

Regional Bicycle / Pedestrian Plan

Figure A7 –
Environmental Resources



Anticipated Funding Source and Lead Agency Information

It is anticipated that a majority of proposed Network Plan projects will be funded through the Federal Lands Access Program (FLAP). FHWA is the federal agency responsible for reviewing and approving NEPA documents for FLAP-funded projects. FHWA is also responsible for a majority of other federally funded transportation programs in which priority projects may also be funded. If a proposed project is funded through a federal agency other than FHWA, or is located on federal lands, other federal agencies may require NEPA review independent of FHWA.

For projects located within the Refuge boundary, the U.S. Fish and Wildlife Service (USFWS) would be responsible for completing/reviewing/approving NEPA documents independent of FHWA. For any USFWS NEPA analysis, coordination would also need to occur with the Bureau of Reclamation (Lake Lowell is a Reclamation reservoir), Boise Project Board of Control (since they manage water delivery), and other agencies/groups that have an interest in the Refuge.

Since there are multiple properties owned by various local, state, and federal agencies within the planning area, the Refuge, along with relevant public agencies, should be included in the project scoping process to evaluate potential impacts and/or determine their role in consultation, if applicable.

PRIORITY ROUTES AND POTENTIAL AFFECTED RESOURCES

The proposed location, scope, and intensity of future projects within the project area will determine which environmental resources have the potential to be affected. The need for further evaluation and/or mitigation will depend on the location and scope of each project. Details about project/facility types can be found in the Network Plan and Design Guidelines sections of the Plan. A summary of existing environmental resources and relationship to future projects is shown in **Table A8**.

Table A8 – Environmental Resources and Relationship to Future/Proposed Priority Projects

Environmental Resource	Relationship to Future/Proposed Projects
NEPA Review/ Federal Agency Coordination	• If the project is located within or adjacent to a federally owned property, the lead agency would determine if the project requires a NEPA review independent of FHWA.
Refuge Environmental Concerns	• DFNWR staff has identified environmental 'Pathway Concerns' in specific areas around the Refuge. Concerns are denoted by color: red where a pathway would encounter major issues, yellow where a pathway or bike/pedestrian improvement would encounter few issues, and green where no issues would be encountered. Areas where no issues would be encountered are intermittent and located in the south, southwest, and northwest areas of the Refuge. Red areas where major issues would be encountered if a pathway or bike/pedestrian improvement were proposed are mainly located in the north, northeast, and southern tip of the Refuge. Areas where a pathway or bike/pedestrian improvement would evoke few issues are located on the southwest and northeast areas of the Refuge. **Figure A7** shows these areas that are denoted with eight specific notes in the legend.
Prime or Unique Farmlands	• As shown in **Figure A7**, prime farmland and farmland of statewide and local importance exists within the study area. Consultation with the U.S. Department of Agriculture (USDA) would be required for projects that propose to convert farmland to a transportation use. A Farmland Conversion Impact Rating Form AD-1006 (03-02) and/or Form NRCS-CPA-106 may be required.

Table A8 – Environmental Resources and Relationship to Future/Proposed Priority Projects, cont.

Environmental Resource	Relationship to Future/Proposed Projects
Sections 404 and 401	• There is one impaired waterway (Lake Lowell) and multiple irrigation canals, ditches and drains, and wetland areas within the study area. Coordination with the U.S. Army Corps of Engineers may be necessary to determine if a 404 permit is required. Coordination with the Idaho Department of Environmental Quality may be necessary to determine if a 401 permit is required.
Wetland and Riparian Areas	• As shown on **Figure A7**, multiple potential areas may contain wetlands that would need to be delineated by a qualified biologist for jurisdictional boundaries.
Threatened & Endangered (T&E) Species	• Slickspot peppergrass is listed as a proposed species in the study area. Although Slickspot peppergrass has critical habitat in Canyon County, no critical habitat is listed within the study area. Several State Sensitive Species are listed within the study area. A full listing is available in Table 4-3 of the Deer Flat National Wildlife Refuge CCP and Environmental Impact Statement. A Biological Evaluation (BE) would be necessary to determine if the project would impact any T&E Species.
Tribal Resources	• No known tribal resources are located in or adjacent to the study area. To determine if there would be any potential impacts to tribal resources, Section 106 consultation including Tribal consultation will need to be conducted during the NEPA process by the lead funding agency. The Shoshone-Bannock Tribes, Shoshone-Paiute Tribes, and the Burns-Paiute General Council should be consulted to determine if any cultural/tribal resources may be impacted.
Archaeology	• During project development, Section 106 consultation will need to be conducted. Programmatic agreements should be evaluated and research of previous ground disturbance should be conducted to determine if any surveys, investigations, and/or reports need to be prepared by a qualified archaeologist.
Historic	• As shown on **Figure A7**, the only NRHP-listed resources are the Deer Flat Embankment, U. S. Department of the Interior National Park System (NPS), #72001610, listed in 1972 and the Diversion Dam and Deer Flat Embankments, NPS, #76000666, listed in 1976. The Embankments consist of two large and two small earthen embankments: Deer Flat Upper Embankment, Deer Flat Lower Embankment, Deer Flat Middle Embankment, and Deer Flat East Dike Dam. All are considered historical under the same NPS #76000666 as shown on **Figure A7**. No other historic places are listed within the planning area. • As shown on **Figure A7**, Canyon County parcel data shows approximately 122 properties with structures 50 years or older within the study area. During the project development phase, further evaluation would be needed to determine if any of these sites would be eligible for NRHP listing. • Section 106 consultation will need to be conducted including a cultural resource survey for projects that receive state or federal funding or have a federal nexus (i.e., USACE permit).
Hazardous Materials	• Sites with hazardous materials identified by the Idaho Department of Environmental Quality are shown on **Figure A7**. During project development, it should be determined if specific sites or contaminated areas could potentially be encountered during construction. If subsurface testing for contamination reveals that contaminated soils or groundwater would be encountered during construction, handling/disposing of the contaminated material must be conducted in accordance with federal, state, and local laws and specifications.

Table A8 – Environmental Resources and Relationship to Future/Proposed Priority Projects (cont.)

Environmental Resource	Relationship to Future/Proposed Projects
Air Quality	• Canyon County is designated as an Area of Concern for $PM_{2.5}$ and O3 ($Pm_{2.5}$ is particulate matter less than or equal to 2.5 microns in diameter; and O3 is corrosive ozone). Regardless of the airshed status in Canyon County, air quality associated with proposed construction activities should be evaluated (i.e., fugitive dust). Bicycle and pedestrian facilities are exempt per Section 93.126 of Title 40, Chapter I, Subchapter C, Part 93, Subpart A.
Visual	• The Snake River Canyon Scenic Byway is located southwest of the study area, and no bicycle and/or pedestrian projects are identified along the Byway. If no major cut/fills, bridges, or large retaining walls are proposed, it is unlikely that a Visual Quality Assessment or Visual Element Study would be required; however, consideration should be given to the rural nature of the area, as well as the Refuge and its natural surroundings as projects/facilities are designed.
Noise	• Early in planning process, potential noise impacts to receptors such as the Refuge, wildlife, and surrounding properties should be evaluated. While it is unlikely that bicycle and pedestrian improvements would require a noise analysis, consultation with Refuge staff, along with a qualified biologist, should occur to determine potential noise impacts and ways to minimize noise to receptors, and if a noise study, and to what level, may be required.
Land Use/ Planning, Publicly Owned Land	• Land Use and Zoning: Projects that would affect land use are not likely. Any changes to roadways should involve review by the local jurisdiction to evaluate compatibility. • Publicly owned lands: Several properties are owned by local, state, and federal agencies. The proposed Lake Lowell Park Path (Project H) alignment traverses Lake Lowell Park, which is owned by Canyon County. It also would traverse private properties, requiring close coordination with property owners to acquire the property needed to extend the proposed pathway to Midway Road. • During project development, it should be determined if additional right-of-way is needed, and which property owners and/or public agencies could be impacted.
Socio-economic	• While it is not anticipated that any minority or low-income person or population would be disproportionately isolated, displaced, or otherwise subjected to adverse effects, access to community resources or transportation routes and environmental justice should be considered during the project development process. Construction staging (keep at least one lane open while work occurs on the other side) and timing (seasons and Refuge visitation) should be evaluated to reduce or avoid delays during construction.
Section 4(f) Potential	• As shown on **Figure 16**, multiple 4(f) properties are located within the study area and beyond. For any projects located within the Refuge, or within a 4(f) site, a 4(f) analysis will be required to evaluate the "use" of the Section 4(f) (a publicly owned wildlife and waterfowl refuge, park, or school recreation area).
Section 6(f) Potential	• Only one 6(f) property is located in the study area – the Lake Lowell Park, owned by Canyon County. Conversions of Section 6(f) property acquired or developed with LWCA funds for a non-recreational purpose must be approved by the Secretary of Interior. If a portion of the park were to be used for the proposed bicycle/pedestrian "recreational" pathway, consultation with the DOI would be necessary to make the determination if replacement lands would be required for mitigation.

Figure A7 shows geographic locations of the potential affected resources, priority route locations, and Refuge Environmental Concerns (as noted in **Table A8**). **Table A9** on the following page includes a summary of the potential affected resources within priority route areas. Potential environmental impacts vary for short- and long-term projects. During project development the anticipated amount of environmental impacts will be further evaluated and determined.



Table A9 – Potential Affected Resources within Priority Route Areas

ID	Jurisdictions	Priority Project Location	From/To	Facility Type	Canals/Waterways	Wetlands (NWI)	Refuge Environmental Concerns	Historic	Hazardous Materials	Land Use/Planning, Publicly-Owned Lands	Section 4(f) Potential	Section 6(f) Potential
Caldwell Access												
A	Caldwell (city limits) & CCHD4 (Canyon County) & ITD (intersections w/Hwy 55)	10th Ave	Orchard Ave/Ustick Rd	Shared-Use Path/Sidepath	✿		✿		✿	✿	✿	
B		Indiana Ave	Upper Embankment Rd/Ustick Rd	Shared Roadway (short-term), Bicycle Lanes (long-term)	✿		✿	✿	✿	✿	✿	
C		Lake Ave	Lake Lowell Ave/Ustick Rd	Shared-Use Path/Sidepath, Lake Lowell Avenue to Orchard Ave Shared Roadway (short-term), Bicycle Lanes (long-term), Orchard Ave to Ustick Rd	✿	✿	✿	✿		✿	✿	✿
Nampa Access												
D	Nampa (city limits) & NHD1 (Canyon County)	Midway Rd	Iowa Ave/Beach Cherry Dr	Shared-Use Path/Sidepath	✿		✿	✿		✿		
E		Roosevelt Ave	Midway Rd/Olive St	Shared Roadway	Not Evaluated (outside the study area)							
F	Nampa (city limits) & NHD1 & CCHD4 (Canyon County)	Lake Lowell Ave	Midway Rd/State Hwy 45 (12th Ave)	Shared Roadway (short-term), Bicycle Lanes (long-term)								
J	Nampa (city limits) & NHD1 (Canyon County)	Iowa Ave	Midway Rd/State Hwy 45 (12th Ave)	Bicycle Lanes, Middleton Road to Midland Road Shared Roadway, Midland Road to State Highway 45 (12th Ave)	✿	✿	✿	✿	✿	✿	✿	
K		Greenhurst Rd	Midway Rd/Middleton Rd	Shared-Use Path/Sidepath	✿	✿	✿	✿	✿	✿	✿	
L		Greenhurst Rd	Middleton Rd/State Hwy 45 (12th Ave)	Shared Roadway, Middleton Rd to State Hwy 45 (12th Ave), Shared-Use Path/ Sidepath, Middleton Rd to Midland Rd	✿	✿	✿	✿	✿	✿	✿	
Lake Lowell Access												
G	CCHD4	Upper Embankment Rd	Approx. 1 mi. east of Indiana Ave/Lake Lowell Ave	Shared-Use Path/Sidepath	✿	✿	✿	✿		✿	✿	✿
H		Lake Lowell Park Path	Lake Ave/Midway Rd	Shared-Use Path/Sidepath	✿	✿		✿		✿	✿	✿
I		Iowa Ave	Upper Embankment Rd/Midway Rd	Shared Roadway	✿	✿	✿	✿		✿	✿	✿
M	NHD1 & ITD	State Hwy 45 (12th Ave)	Lake Shore Dr/Burk Ln	Shared-Use Path/Sidepath	✿	✿	✿	✿	✿	✿	✿	
N	NHD1	Lake Shore Dr	Riverside Rd/State Hwy 45 (12th Ave)	Shared Roadway (short-term), Bicycle Lanes (long-term)	✿	✿	✿	✿	✿	✿		
O	CCHD4	Riverside Rd	Riverside Rd/Orchard Ave to Marsing Rd	Shared Roadway & Shared-Use Path/Sidepath, Orchard Ave to Lake Shore Dr; Shared Roadway (short-term), Bicycle Lanes (long-term) & Shared-Use Path/ Sidepath, Riverside Rd to Marsing Rd	Not Evaluated (scheduled for 2016 construction)							
P	CCHD4	Orchard Ave	Riverside Rd/Indiana Ave	Shared-Use Path/Sidepath & Shared Roadway (short-term), Bicycle Lanes (long-term; Improve Crossing at Orchard Ave and Indiana Ave	✿	✿	✿	✿		✿	✿	

Environmental Resources Reviewed

A summary of primary environmental resources (canals, wetlands, Refuge environmental concerns, historic properties, hazardous materials, land use/planning/publicly owned land, and Section 4(f) and Section 6(f) properties), sorted by Caldwell, Nampa, and Lake Lowell priority access routes, are described below. See the Environmental Resources subsection of the Existing Conditions section of the Plan for additional information.

The primary focus of this ES is the environmental resources around the Refuge within priority route areas as shown on **Figure A7**. Environmental resource information provided in this ES is limited to:

- Canals and Waterways – limited to priority routes
- Wetlands – limited to priority routes
- Refuge Environmental Concerns – only areas around/adjacent to the Refuge
- Historic (NRHP and properties 50 years or older) – properties within the Study Area boundary
- Hazardous Materials – properties within the Study Area boundary
- Land Use/Planning/Publicly owned Lands – limited to priority routes
- Section 4(f) – limited to the priority routes
- Section 6(f) – properties within the Study Area boundary

Caldwell Access Priority Routes

Three priority routes are identified in the Network Plan that would provide access from Caldwell to Lake Lowell. The following pages summarize the environmental resources present within priority project areas. All Caldwell access priority routes fall under the jurisdiction of the City of Caldwell (city limits), Canyon County Highway District No. 4 (Canyon County), and the Idaho Transportation Department (intersections with Highway 55). Caldwell access area priority routes, environmental resources, and public land ownership within ¼ mile of priority routes are listed on the following page, shown on **Figure A7**, and summarized in **Table A9**.

10th Avenue (A), Orchard Avenue to Ustick Road

Shared-Use Path/Sidepath

- **Canals/Waterways –** three canals bisect 10th Avenue (listed south to north): Forest Canal, Deer Flat Caldwell Canal and the Phyllis Canal.
- **Wetlands –** the National Wetlands Inventory (NWI) does not indicate wetlands; however, wetlands are identified as a Refuge Environmental Concern at the southern terminus of the project. A field review will need to be conducted by a qualified Biologist to determine if wetlands are present.
- **Refuge Environmental Concerns –** the southern terminus of the project (10th Avenue and Orchard Avenue) is located where red and green lines meet on the 'Pathway Concerns' map. The red line denoted with a '1' indicates shoreline and emergent vegetation heavily used by waterfowl and roosting eagles. Green indicates there are no known issues.
- **Historic –** there are no known NRHP sites or potential (50 years or older) historic sites within the Study Area of the priority project area.
- **Hazardous Materials –** One hazardous materials site is located along the priority route within the study area at the intersection of 10th Avenue and State Highway 55 (Karcher Road): ID # IDD072991508, Idaho Sand & Gravel Co. Inc., Resource Conservation and Recovery Act (RCRA) site.
- **Land Use/Planning –** eight properties owned by public entities are located within the vicinity of the project area (listed south to north):
  - Bureau of Land Management (BLM), Refuge, southeast corner of 10th Avenue and Orchard Avenue
  - City of Caldwell, Mallard Park, at the northeast corner of 10th Avenue and Orchard Avenue
  - Bureau of Land Management (BLM), east of 10th Avenue between Orchard Avenue and Karcher Road
  - Vallivue School District, Vallivue Middle School, east side of 10th Avenue between Karcher Road and Homedale Road
  - Idaho Department of Lands, grazing lands, along both sides of 10th Avenue south of Homedale Road
  - Vallivue School District, Vallivue High School, east of 10th Avenue, north side of Homedale Road
  - Caldwell School District, Lewis and Clark Elementary School, east of 10th Avenue, south side of Laster Street
  - City of Caldwell, Ustick Park, east of 10th Avenue, south side of Ustick Road
- **Section 4(f) –** there are six potential 4(f) properties within the vicinity of the project area (listed south to north):
  - DFNWR, south of the southern project limit
  - Mallard Park, northwest corner of 10th Avenue and Orchard Avenue
  - Vallivue Middle School, east side of 10th Avenue between Karcher Road and Homedale Road
  - Vallivue High School, east of 10th Avenue, north side of Homedale Road
  - Lewis and Clark Elementary School, east of 10th Avenue, south side of Laster Street
  - Ustick Park, east of 10th Avenue, south side of Ustick Road
- **Section 6(f) –** no known 6(f) properties are located along the priority route within the study area.

Indiana Avenue (B), Upper Embankment Road to Ustick Road

Shared Roadway (short-term), Bicycle Lanes (long-term)

- **Canals/Waterways –** four canals and waterways bisect Indiana Avenue (listed south to north): Forest Canal, Deer Flat Caldwell Canal, Phyllis Canal and the Dixie Drain. The priority route terminates on Upper Embankment Road at the Upper Dam of Lake Lowell.
- **Wetlands –** the NWI does not indicate wetlands; however, a field review will need to be conducted by a qualified Biologist to determine if wetlands are present.
- **Refuge Environmental Concerns –** the southern terminus of the project (Indiana Avenue and Roosevelt Avenue to Upper Embankment Road) is located where the red and green lines meet on the 'Pathway Concerns' map. The red line denoted with an '8' indicates an area immediately adjacent to farming operation that successfully attracts and feeds large concentrations of migrating waterfowl. Green indicates there are no known issues.
- **Historic –** the Diversion Dam and Deer Flat Embankments are NRHP site(s), located on the Refuge, south of the project area. There are three properties with structures that are potentially historic (50 years or older) along priority routes within the study area (listed south to north):
  - Along Indiana Avenue south of the planning boundary at the northwest corner of Indiana Avenue and Roosevelt Avenue
  - East of Indiana Avenue, along the north side of Orchard Avenue
  - Along the west side of Indiana Avenue approximately ¼ mile north of Orchard Avenue
- **Hazardous Materials –** there is one hazardous materials site identified within approximately ¼ mile of the project area, near the intersection of Montana Avenue and State Highway 55 (Karcher Road): ID # 3-140164, Gem State Academy, UST/LUST site.
- **Land Use/Planning –** there are three properties owned by public entities within the vicinity of the project area (listed south to north):
  - USFWS, Refuge, directly south of the project terminus at Indiana Avenue and Roosevelt Avenue/Upper Embankment Road
  - Vallivue School District, Central Canyon Elementary School, east of Indiana Avenue along Florida Avenue and Moss Street
  - Vallivue School District, Vallivue High School, west of Indiana Avenue, north side of Homedale Road
- **Section 4(f) –** there are four potential 4(f) properties within the vicinity of the project area (listed south to north):
  - DFNWR/USFWS Public Conservation Area, along the south side of southern project area
  - Hillcrest Memorial Gardens, cemetery, southeast corner of Indiana Avenue and Karcher Road
  - Central Canyon Elementary School, east of Indiana Avenue along Florida Avenue and Moss Street
  - Vallivue High School, west of Indiana Avenue, north side of Homedale Road
- **Section 6(f) –** there are no known 6(f) properties along the priority route within the study area.

Lake Avenue (C), Lake Lowell Avenue to Ustick Road

Shared-Use Path/Sidepath, Lake Lowell Avenue to Orchard Avenue

Shared Roadway (short-term), Bicycle Lanes (long-term), Orchard Avenue to Ustick Road

- **Canals/Waterways –** there are five canals and waterways that bisect Lake Avenue (listed south to north): Upper Embankment Drain, Phyllis Canal, Caldwell Canal Feeder, Caldwell Low Line Canal and the Caldwell High Line Canal.
- **Wetlands –** the NWI indicates wetlands are present in three locations within the vicinity of the project area (listed south to north):
  - Along the west side of Lake Avenue, north of Upper Embankment Road
  - Along the northeast side of Lake Avenue, southwest of Lake Lowell Avenue
  - East of Lake Avenue between Orchard Avenue and Karcher Road
- **Refuge Environmental Concerns –** the southern terminus of the project (Lake Avenue and Roosevelt Avenue/Upper Embankment Road/Lake Lowell Avenue) is located where red and green lines meet on the 'Pathway Concerns' map. The red line denoted with an '8' indicates an area immediately adjacent to farming operation that successfully attracts and feeds large concentrations of migrating waterfowl. Green indicates there are no known issues.
- **Historic –** the Diversion Dam and Deer Flat Embankments are NRHP site(s), located on the Refuge, south of the project area. There are five properties with structures that are potentially historic (50 years or older) along priority routes within the study area (listed south to north):
  - Northeast corner of Lake Avenue and Roosevelt Avenue
  - Along the west side of Lake Avenue between Roosevelt Avenue and Lone Star Road
  - Southeast corner of Lake Avenue and Lone Star Road
  - Northwest corner of Lake Avenue and Lone Star Road
  - Southwest corner of Lake Avenue and Orchard Avenue
- **Hazardous Materials –** there are no hazardous materials sites along the priority route within the study area.
- **Land Use/Planning –** there are three properties owned by public entities within the vicinity of the project area (listed south to north):
  - Bureau of Reclamation, Refuge, along the west side of Lake Avenue between Upper Embankment Road and Roosevelt Avenue
  - Canyon County, Lake Lowell Park, southeast of project area
  - Vallivue School District, Lakeview Elementary School, east of Lake Avenue between Orchard Avenue and Karcher Road
- **Section 4(f) –** there are nine potential 4(f) properties within the vicinity of the project area (listed south to north):
  - Lake Lowell Park, southeast of project area
  - DFNWR, south and west of the project limit
  - Lakeview Elementary School, east of Lake Avenue between Orchard Avenue and Karcher Road
  - Diversion Dam and Deer Flat Embankments are NRHP site(s), located on the Refuge
  - Five properties with structures that are potentially historic (50 years or older), as listed above
- **Section 6(f) –** Lake Lowell Park, southeast of the project area

Nampa Access Priority Routes

There are six priority routes identified in the Network Plan that would provide access from Nampa to Lake Lowell. Below is a summary of the environmental resources present within priority project areas. All Nampa access priority routes fall under the jurisdiction of the City of Nampa (city limits), Nampa Highway District No. 1 (Canyon County – all routes), and Canyon County Highway District No. 4 (Canyon County –Lake Lowell Avenue, west of Midway Road). The Nampa access area priority routes, and environmental resources and public land ownership within ¼ mile of priority routes are shown on **Figure 16** and summarized in **Table 14**.

Midway Road (D), Iowa Avenue to Beach Cherry Drive

Shared-Use Path/Sidepath

- **Canals/Waterways –** there are four canals and waterways that bisect Midway Road (listed south to north): Thacker Lateral, North Robinson Lateral, Phyllis Canal and the Jonah Drain.
- **Wetlands –** the NWI does not indicate wetlands; however, a field review will need to be conducted by a qualified Biologist to determine if wetlands are present.
- **Refuge Environmental Concerns –** southwest of the project area along Iowa Avenue there is a red line shown on the 'Pathway Concerns' map. The red line denoted with a '7' indicates an area immediately adjacent to a farming operation that successfully attracts and feeds large concentrations of migrating waterfowl.
- Historic – there are no NRHP listed historic sites within the project area; however, there are four properties with structures that are potentially historic (50 years or older) within the study area of the priority project area (listed south to north):
  - From Midway Road to Beaverton Street: northeast corner of Midway Road and Iowa Avenue, to the southeast corner of Midway Road and Lake Lowell Avenue
  - East side of Midway Road, north of Lake Lowell Avenue
  - West side of Midway Road, north of Lake Lowell Avenue
  - West side of Midway Road, north of Lake Lowell Avenue, south of Rivendell Court
- **Hazardous Materials –** there are no hazardous materials sites identified along the priority route within the study area.
- **Land Use/Planning –** there are five properties owned by public entities within the vicinity of the project area (listed south to north):
  - USFWS, Refuge, south of project area
  - City of Nampa, vacant land, east of Midway Road along the south side of Lake Lowell Avenue between Midway Road and Middleton Road
  - Nampa School District, vacant land, northeast corner of Midway Road and Roosevelt Avenue
  - Nampa School District, vacant land, northwest of project area along Lone Star Road between Midway Road and Lake Avenue
  - City of Nampa, vacant land, southwest corner of Midland Road and Smith Avenue
- **Section 4(f) –** the Refuge, located south of the project area and four properties with structures that are 50 years or older.
- **Section 6(f) –** there are no known 6(f) properties along the priority route within the study area.

Roosevelt Avenue (E), Indiana Avenue to Olive Street

Shared Roadway

This priority route is located outside of the study area; therefore, it is not included in this ES.

Lake Lowell Avenue (F), Middleton Road to State Highway 45 (12th Avenue)

Shared Roadway (short-term), Bicycle Lanes (long-term)

This priority route is located outside of the study area; therefore, it is not included in this ES.

Iowa Avenue (J), Midway Road to State Highway 45 (12th Avenue)

Bicycle Lanes, Middleton Road to Midland Road

Shared Roadway, Midland Road to State Highway 45 (12th Avenue)

- **Canals and Waterways –** in addition to Lake Lowell located west of the project, there are four waterways that bisect Iowa Avenue within the project area (listed west to east): Thacker Lateral, Herron Lateral, unnamed canal/ditch and the Peters Lateral.
- **Wetlands –** the NWI map indicates that there are wetlands adjacent to Lake Lowell and along the fringe, west of the project area.
- **Refuge Environmental Concerns –** there is a red line approximately ¼ mile west of the project area along Iowa Avenue shown on the 'Pathway Concerns' map that is denoted with a '7' which indicates an area immediately adjacent to a farming operation that successfully attracts and feeds large concentrations of migrating waterfowl.
- **Historic –** the Diversion Dam and Deer Flat Embankments are NRHP site(s), located on the Refuge, west of the project area. Additionally, there is one property within the study area located at the northeast corner of Iowa Avenue and Midway Road with structure(s) that is(are) potentially historic (50 years or older).
- **Hazardous Materials –** there is one hazardous materials site identified within the project area, located at the southeast corner of Iowa Avenue and Middleton Road: ID # 3-140698, Gem Stop, UST site.
- **Land Use/Planning –** there are nine properties owned by public entities within the vicinity of the project area (listed west to east):
  - City of Nampa, facilities, northeast of the project area along the south side of Iowa Avenue and Landau Way, between Midway Road and Middleton Road
  - City of Nampa, open space lot along canal, south of Iowa Avenue, east of Middleton Road to Midland Blvd
  - City of Nampa, South Fork Park, south side of Iowa Avenue, west of Boundary Street
  - Nampa School District, Owyhee Elementary School, north side of Iowa Avenue across from Herron Springs Drive
  - Canyon County, vacant land/grass, south of Iowa Avenue, along Kansas Avenue and Kansas Place
  - City of Nampa, vacant land/grass, northeast corner of Iowa Avenue and Torrey Lane
  - Nampa School District, Iowa Elementary School, north side of Iowa Avenue, east of Torrey Lane
  - Nampa School District, Nampa High School, north of project area, southwest corner of Lake Lowell Avenue and Highway 45 (12th Avenue)
  - City of Nampa, Nampa Recreation Center, southeast of the project area, approximately ¼ mile south of Iowa Avenue, along the east side of Highway 45 (12th Avenue)

- **Section 4(f) –** the nine properties listed above are recreational open space, parks, or schools; therefore, they are considered potential 4(f) properties. Additionally, there is one property within the study area located at the northeast corner of Iowa Avenue and Midway Road with structure(s) that is(are) potentially historic (50 years or older).
- **Section 6(f) –** there are no known 6(f) properties along the priority route within the study area.

Greenhurst Road (K), Midway Road to Middleton Road

Shared-Use Path/Sidepath

- **Canals and Waterways –** in addition to Lake Lowell west of the project area, the Thacker Lateral bisects Greenhurst Road, approximately 700 feet west of Middleton Road.
- **Wetlands –** the NWI map indicates that there are wetlands near Lake Lowell and along the fringe, south of the project area.
- **Refuge Environmental Concerns –** there is a red line that begins at the west project limit that aligns with Greenhurst Road shown on the 'Pathway Concerns' map that is denoted with a '7' which indicates an area immediately adjacent to a farming operation that successfully attracts and feeds large concentrations of migrating waterfowl. Additionally, there is a yellow line that begins at Greenhurst Road and continues south of Greenhurst Road, southeast along the Refuge boundary that is denoted with a '6' which indicates that increases in cycling and pedestrian use will likely degrade the hunting experience.
- **Historic –** there are no known NRHP site(s) listed within the vicinity of the project area; however, there is one property south of the project area, north of Meredith Court with a structure that is potentially historic (50 years or older).
- **Hazardous Materials –** there is one hazardous materials site northeast of the project area, located at the southeast corner of Iowa Avenue and Middleton Road: ID # 3-140698, Gem Stop, UST site.
- **Land Use/Planning –** the only property owned by a public entity within the vicinity of the project area is the Refuge, located south of Greenhurst Road.
- **Section 4(f) –** the Refuge, located along the south side of Greenhurst Road is a potential 4(f) property. There is also a property located south of the project area, north of Meredith Court, that has a structure(s) that is potentially historic (50 years or older).
- **Section 6(f) –** there are no known 6(f) properties along the priority route within the study area.

Greenhurst Road (L), Middleton Road to State Highway 45 (12th Avenue)

Shared Roadway, Middleton Road to State Highway 45 (12th Avenue)

Shared-Use Path/Sidepath, Middleton Road to Midland Road

- **Canals and Waterways –** in addition to Lake Lowell south of the project area, the North Robinson Lateral and Herron Lateral bisect Greenhurst Road within the project area.
- **Wetlands –** the NWI map indicates that there are wetlands along Lake Lowell and along the fringe, south of the project area.
- **Refuge Environmental Concerns –** there is a yellow line that runs south of the project area along the Refuge shown on the 'Pathway Concerns' map that is denoted with a '6' which indicates that increases in cycling and pedestrian use will likely degrade the hunting experience.
- **Historic –** there are no known NRHP site(s) listed within the vicinity of the project area; however, there are two properties with structures that are potentially historic (50 years or older) along the priority route within the study area:

- South side of Greenhurst Road, between Middleton Road and Midland Boulevard
- Northeast corner of Greenhurst Road and Midland Boulevard

- **Hazardous Materials –** there is one hazardous materials site north of the project area, located at the southeast corner of Iowa Avenue and Middleton Road: ID # 3-140698, Gem Stop, UST site.
- **Land Use/Planning –** there are two properties owned by public entities within the vicinity of the project area:
  - USFWS/BOR, Refuge, south of Greenhurst Road
  - Nampa School District, South Middle School, southwest corner of Greenhurst Road and State Highway 45 (12th Avenue)
- **Section 4(f) –** the Refuge, located south of Greenhurst Road is a potential 4(f) property located within the vicinity of the project area. The two properties listed above with structure(s) that are potentially historic (50 years or older) are also potential 4(f) properties.
- **Section 6(f) –** there are no known 6(f) properties along the priority route within the study area.

Lake Lowell Access Priority Routes

There are seven priority routes identified in the Network Plan that would provide access around Lake Lowell. Below is a summary of the environmental resources present within priority project areas. Lake Lowell access priority routes fall under the jurisdiction of the Canyon County Highway District No. 4 (G, H, I, O and P), and Nampa Highway District No. 1 (M and N), and the Idaho Transportation Department (State Highway 45/12th Avenue - M). Lake Lowell access area priority routes, and environmental resources and public land ownership within ¼ mile of priority routes are shown on **Figure 16** and summarized in **Table 14**.

Upper Embankment Road (G), approx. 1 mile east of Indiana Avenue to Lake Lowell Avenue

Shared-Use Path/Sidepath

- **Canals and Waterways –** Lake Lowell, south side of Upper Embankment Road
- **Wetlands –** the NWI map indicates wetlands are present in three locations within the vicinity of the project area (listed west to east):
  - Lake Lowell - south of Upper Embankment Road
  - North of Upper Embankment Road, along the west side of Lake Avenue
  - North of Upper Embankment Road, north side of Lake Avenue, west of Lake Lowell Avenue
- **Refuge Environmental Concerns –** the project area has a green line alongside it. There is a red line north of the project area shown on the 'Pathway Concerns' map that is denoted with an '8' which indicates an area immediately adjacent to a farming operation that successfully attracts and feeds large concentrations of migrating waterfowl.
- **Historic –** the Diversion Dam and Deer Flat Embankments are NRHP site(s), located on the Refuge. Additionally, there is one property with a structure that is potentially historic (50 years or older) located north of the project area at the northeast corner of Lake Lowell Avenue and Lake Avenue.
- **Hazardous Materials –** there are no hazardous materials sites identified within the project area.
- **Land Use/Planning –** there are two properties owned by public entities within the vicinity of the project area (listed west to east):

- USFWS/BOR, Refuge, along both sides of Upper Embankment Road
- Canyon County, Lake Lowell Park, east of the project area

- **Section 4(f) –** there are two potential 4(f) properties within the vicinity of the project area (listed west to east):
  - DFNWR, along both sides of Upper Embankment Road
  - Lake Lowell Park, east of the project area
- **Section 6(f) –** Lake Lowell Park, located east of the project area.

Lake Lowell Park Path (H), Lake Avenue to Midway Road

Shared-Use Path/Sidepath

- **Canals and Waterways –** there are two waterways within the project area: Lake Lowell (west of the project area) and the Thacker Lateral (bisects the proposed pathway alignment).
- **Wetlands –** the NWI map indicates that there are wetlands along Lake Lowell, west of the project area.
- **Refuge Environmental Concerns –** there are no environmental concerns noted on the 'Pathway Concerns' portion of the Environmental Resources map within the project area.
- **Historic –** the Diversion Dam and Deer Flat Embankments are NRHP site(s), located on the Refuge, west of the project area. Additionally, there are four properties with structures that are potentially historic (50 years or older):
  - Along the north side of the proposed pathway alignment
  - East of the project area along the east side of Midway Road
  - South of the project area along the north side of Iowa Avenue near the terminus of Memory Lane
  - South of the project area along the north side of Iowa Avenue east of Memory Lane
- **Hazardous Materials –** there are no hazardous materials sites identified within the project area.
- **Land Use/Planning –** there are three properties owned by public entities within the vicinity of the project area (listed west to east):
  - USFWS/BOR, Refuge, west of the project area
  - Canyon County, Lake Lowell Park, within the project area
  - City of Nampa, vacant land, northeast of the project area along the south side of Lake Lowell Avenue, east of Midway Road

Note: currently, the east portion of the proposed pathway alignment is depicted across private properties; therefore, land acquisition or establishment of an easement would be necessary to implement the proposed project.

- **Section 4(f) –** there are seven potential 4(f) properties within the vicinity of the project area (listed west to east):
  - Refuge, west of the project area
  - Lake Lowell Park, within the project area
  - Redhawk Golf Course, south of project area, along the south side of Iowa Avenue
  - Four properties with structures that are potentially historic (50 years or older), as listed above
- **Section 6(f) –** Lake Lowell Park, located within the project area.

Iowa Avenue (I), Upper Embankment Road to Midway Road

Shared Roadway

- **Canals and Waterways –** there are two waterways within the project area: Lake Lowell (west of the project area) and the Thacker Lateral (east of the project area).
- **Wetlands –** the NWI map indicates that there are wetland along Lake Lowell, west of the project area.
- **Refuge Environmental Concerns –** the project area has a green line along the Lake Lowell Park frontage. There is a red line along Iowa Avenue where the road shifts to an east-west alignment within the project area. The red line shown on the 'Pathway Concerns' map is denoted with a '7' which indicates an area immediately adjacent to a farming operation that successfully attracts and feeds large concentrations of migrating waterfowl.
- **Historic –** the Diversion Dam and Deer Flat Embankments are NRHP site(s), located on the Refuge, west of the project area. Additionally, there are five properties with structures that are potentially historic (50 years or older):
  - North of the project area along the north side of Lake Avenue
  - Three properties north of the project area along the south side of Lake Lowell Avenue
  - Within the project area along the north side of Iowa Avenue near the terminus of Memory Lane
  - Within the project area along the north side of Iowa Avenue east of Memory Lane
  - Northeast of the project area at the north-east corner of Iowa Avenue and Midway Road
- **Hazardous Materials –** there are no hazardous materials sites identified within the project area.
- **Land Use/Planning –** there are three properties owned by public entities within the vicinity of the project area (listed west to east):
  - USFWS/BOR, Refuge, west of the project area
  - Canyon County, Lake Lowell Park, east of the project area
  - City of Nampa, vacant land, northeast of the project area along the south side of Lake Lowell Avenue, east of Midway Road
- **Section 4(f) –** there are 10 potential 4(f) properties within the vicinity of the project area (listed west to east):
  - DFNWR, west of the project area
  - Lake Lowell Park, east and north of the project area
  - Redhawk Golf Course, south of project area, along the south side of Iowa Avenue
  - Seven properties with structures that are potentially historic (50 years or older), as listed above
- **Section 6(f) –** Lake Lowell Park, located east and north of the project area.

State Highway 45 / 12th Avenue (M), Lake Shore Drive to Burk Lane

Shared-Use Path/Sidepath

- **Canals and Waterways –** there are two waterways within the project area (listed south to north): Ridenbaugh Canal (south of the project area – does not bisect the project limits), North Robinson Lateral and an unnamed canal ditch.
- **Wetlands –** the NWI map indicates that there are wetlands along Lake Lowell and along the fringe, west of the project area.
- **Refuge Environmental Concerns –** west of the project area, there is a red line along the eastern area of the Refuge. The red line shown on the 'Pathway Concerns' map is denoted with a '4' which indicates an area immediately adjacent to a wetland area that is heavily used by migrating waterfowl and hunters. Farther west, there is a yellow line parallel to the red line denoted with a '5' which indicates that increases in cycling and pedestrian use will likely degrade hunting experience, and that the area may be near a heavily contaminated site.
- **Historic –** there are no listed NRHP sites within the project area; however, there are 10 properties with structures that are potentially historic (50 years or older):
  - South of the project area along the east side of Highway 45, south of the Ridenbaugh Canal
  - Two properties west of the project area along the south side of Lake Shore Drive
  - Two properties east of the project area along the north and south sides of Lake Shore Drive
  - Three properties along the east and west sides of Highway 45, south of Lewis Lane
  - Along the east side of Highway 45, at the northeast corner of Highway 45 and Lewis Lane
  - At the northern project area terminus at the northwest corner of Highway 45 and Burke Lane
- **Hazardous Materials –** there are four hazardous materials sites identified within approximately ¼ mile of the project area (listed south to north):
  - Southwest corner of State Highway 45 (12th Avenue) and Lake Shore Drive: ID# 3-140611, 9031 Lake Shore Dr, Nampa, Ron's Lakeshore, UST/LUST/Brownfield site
  - West of the project area along the north side of Lake Shore Drive: ID # 3-140141, Pioneer Hi-Bred International, 9178 Lakeshore Drive, Nampa, UST/RCRA site
  - West side of Highway 45, north of Lake Shore Drive: ID# R000001453, Bass Auto Body, 9675 Highway 45, Nampa, RCRA site
  - West side of Highway 45, south of Fay Lane: ID# 3-140056, Nampa Highway District No. 1, 4507 12th Avenue, Nampa, UST/LUST site
- **Land Use/Planning –** there are six properties owned by public entities within the vicinity of the project area (listed south to north):
  - USFWS/BOR, Refuge, west of the project area. Note: a Bureau of Reclamation easement area extends to the west side of Highway 45 north of Lake Shore Drive, north beyond Lewis Lane
  - Canyon County, lot in Crestview Heights Subdivision, east of project area along the south side of Crestview Drive
  - City of Nampa, water tank site, west side of Highway 45, south of Fay Lane
  - Nampa Highway District No. 1, west side of Highway 45, south of Fay Lane
  - Nampa School District, Lake Ridge Elementary School, west of the project area, along the south side of Burke Lane
  - Nampa School District, Sunny Ridge Elementary School, east of the project area, along the north side of Schnober Drive

- **Section 4(f) –** there are 12 potential 4(f) properties within the vicinity of the project area (listed south to north):
  - Ten properties with structures that are potentially historic (50 years or older), as listed above
  - Lake Ridge Elementary School, west of the project area, along the south side of Burke Lane
  - Sunny Ridge Elementary School, east of the project area, along the north side of Schnober Drive
- **Section 6(f) –** there are no known 6(f) properties within the vicinity of the project area.

Lake Shore Drive (N), Riverside Road to State Highway 45 / 12th Avenue

Shared Roadway (short-term), Bicycle Lanes (long-term)

- **Canals and Waterways –** there are five waterways within the project area (listed west to east):
  - Lake Lowell, north side of Lake Shore Drive
  - Deer Flat High Line Canal, bisects Marsing Road, then runs parallel and south of Lake Shore Drive
  - Unnamed canal ditches located along Marsing Road and Lake Shore Drive
  - Coulee Drain, bisects Lake Shore Drive near Lynwood Road
  - Ridenbaugh Canal, south of the project area
- **Wetlands –** the NWI map indicates that there are wetlands along Lake Lowell and along the fringe, along the north side of Lake Shore Drive
- **Refuge Environmental Concerns –** three areas are identified on the 'Pathway Concerns' map:
  - Beginning at Marsing Road to approximately ¼ mile east of Farner Road, there is a yellow line along the southern area of the Refuge denoted with a '2' which indicates an area immediately adjacent to historic grebe colonies and heron rookery.
  - Joining with the yellow line is a green line, indicating no known environmental issues, along the southern area of the Refuge to approximately 750 feet west of Rim Road.
  - Joining with the green line approximately 750 feet west of Rim Road to Highway 45 is a red line along the southern edge of the Refuge denoted with a '3' which indicates an area with a long standing sanctuary that has been closed to the public for decades.
- **Historic –** there are no listed NRHP sites within the project area; however, there are 31 properties with structures that are potentially historic (50 years or older) within the vicinity of the project area:
  - Along the south side of Marsing Road, west of the project area
  - Northwest corner of Marsing Road and Lake Shore Drive, within the project area
  - Southwest corner of Marsing Road and Lake Shore Drive, within the project area
  - Along the east side of Perch Road, south of the project area
  - Three properties along the north and south sides of Locust Lane, between Farner Road and Pump Road, south of the project area
  - Two properties along the south side of Lake Shore Drive, between Farner Road and Pump Road within the project area
  - South side of Lake Shore Drive, approximately ¼ mile east of Pump Road, within the project area
  - Three properties along Locust Lane, south of the project area
  - Along the south side of Lake Shore Drive, east of Locust Lane, within the project area

- South of Locust Lane, at Pelican Lane, south of the project area
- Two properties along the south side of Lake Shore Drive, between Locust Lane and Rim Road within the project area
- Three properties south of the project area west of Rim Road, south of the project area
- Along Lake Shore Drive, east side of Rim Road, within the project area
- Two properties along the south side of Lake Shore Drive, north of Lewis Lane, within the project area
- Along the south and west side of Lake Shore Drive, north of Emerald Road, within the project area
- Along the east side of Lake Shore Drive before the change in roadway alignment to the south, within the project area
- North and east of Lake Shore Drive after the change in roadway alignment to the south, north of the project area
- Three properties along the north side of Lake Shore Drive, between Dearborne Road and Lynwood Road, within the project area
- Two properties along the south side of Lake Shore Drive, between the Ridenbaugh Canal and Highway 45

- **Hazardous Materials –** there are three hazardous materials sites identified within approximately ¼ mile of the project area (listed west to east):
  - Along the north side of Lake Shore Drive: ID # 3-140141, Pioneer Hi-Bred International, 9178 Lakeshore Dr., Nampa, UST/RCRA site
  - Southwest corner Highway 45 and Lake Shore Drive: ID # 3-140611, 9031 Lake Shore Dr., Nampa, Ron's Lakeshore, UST/LUST/Brownfield site
  - North of the project area along the west side of State Highway 45 (12th Avenue): ID # R000001453, Bass Auto Body, 9675 Highway 45, Nampa, RCRA site
- **Land Use/Planning –** there are two properties owned by public entities within the vicinity of the project area (listed west to east):
  - USFWS/BOR, Refuge, along the north side of Lake Shore Dr.
  - Canyon County, vacant land, south side of Lake Shore Dr., west of Duck Lane
- **Section 4(f) –** there are 32 potential 4(f) properties within the vicinity of the project area:
  - DFNWR, north side of the project area
  - 31 properties with structures that are potentially historic (50 years or older) as listed above
- **Section 6(f) –** there are no known 6(f) properties within the vicinity of the project area.

Riverside Road (O), Orchard Avenue to Marsing Road

Shared Roadway & Shared-Use Path/Sidepath, Orchard Avenue to Lake Shore Drive

Shared Roadway (short-term), Bicycle Lanes (long-term) & Shared-Use Path/Sidepath, Riverside Road to Marsing Road

This project is scheduled for construction in 2016; therefore, it is not included in this ES.

Orchard Avenue (P), Riverside Road to Indiana Road

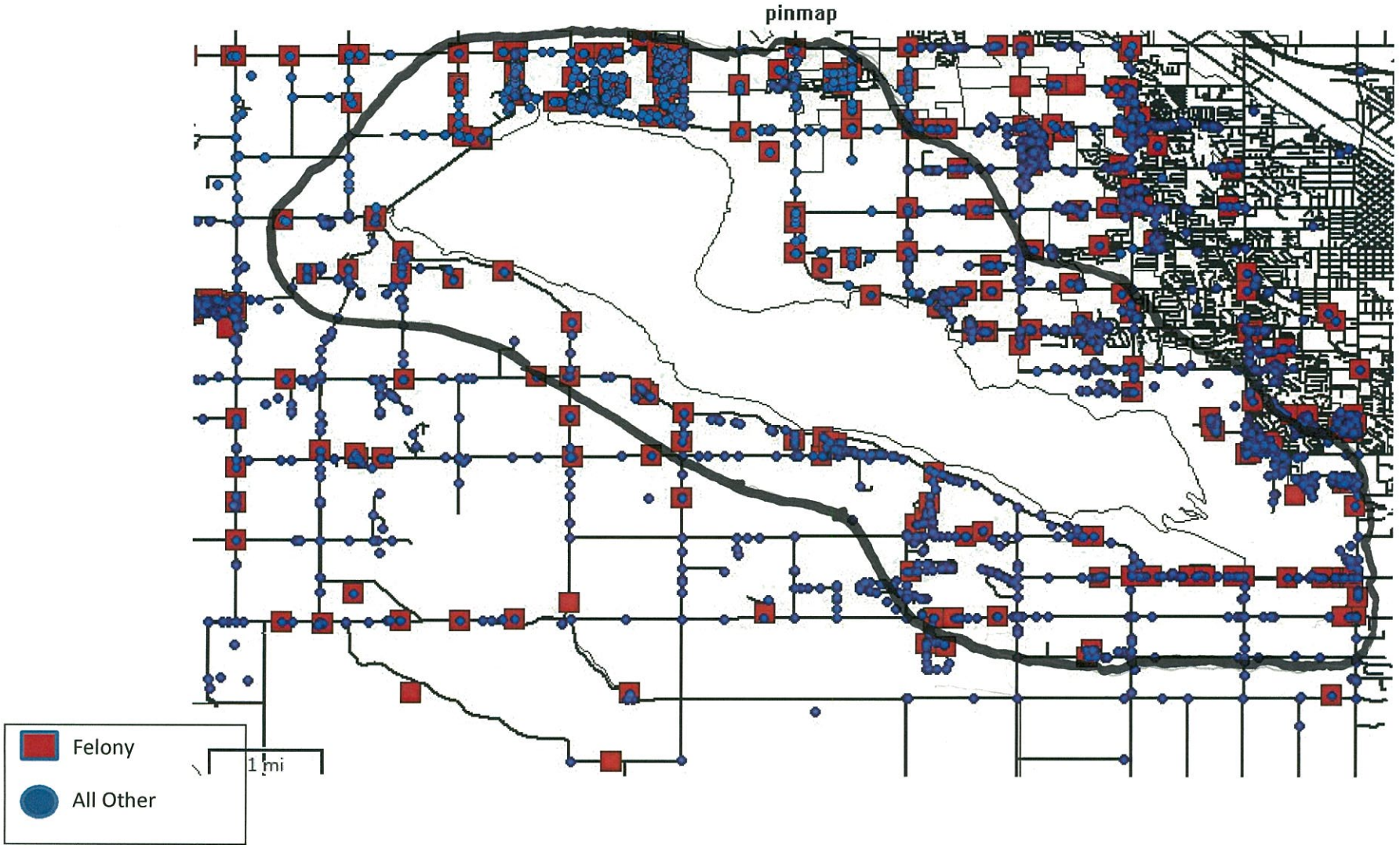
Shared-Use Path/Sidepath & Shared Roadway (short-term), Bicycle Lanes (long-term)

Canals and Waterways – Lake Lowell is located south of the project area and the Burris Lateral bisects Orchard Avenue at the east end of the project.

- **Wetlands –** the NWI map indicates that there are wetlands along Lake Lowell, south of the project area.
- **Refuge Environmental Concerns –** the project area has a red line along the south side of Orchard Avenue beginning at Riverside Road to 10th Avenue. The red line shown on the 'Pathway Concerns' map is denoted with a '1' which indicates shoreline and emergent vegetation heavily used by waterfowl and roosting eagles. There is a green line that begins at 10th Avenue and continues to Indiana Avenue, indicating there are no known Refuge-related environmental concerns along that portion of the priority route.
- **Historic -** there are no listed NRHP sites within the project area; however, there are three properties with structures that are potentially historic (50 years or older) within the vicinity of the project area (listed west to east):
  - North side of Orchard Avenue, east of Riverside Road
  - Two properties along the south side of Orchard Avenue, between Riverside Road and 10th Avenue
- **Hazardous Materials –** there are no hazardous materials sites identified within the project area.
- **Land Use/Planning –** there are three properties owned by public entities within the vicinity of the project area (listed west to east):
  - USFWS/BOR, Refuge, south of the project area
  - City of Caldwell, Mallard Park, northeast corner of Orchard Avenue and 10th Avenue
  - BLM, vacant land, across the street from Mallard Park, southeast corner of Orchard Avenue and 10th Avenue
- **Section 4(f) –** there are five potential 4(f) properties within the vicinity of the project area (listed west to east):
  - Deer Flat National Wildlife Refuge, south side of Orchard Avenue
  - Mallard Park, northeast corner of Orchard Avenue and 10th Avenue
  - Three properties with structures that are potentially historic (50 years or older) as listed above
- **Section 6(f) –** there are no known 6(f) properties within the vicinity of the project area.

APPENDIX C.
AREA CRIME REPORT MAP:
DEER FLAT REFUGE

Area Crime Report
Deer Flat Refuge
01/01/2010 to 12/05/14



APPENDIX D. CITY OF NAMPA BICYCLE AND PEDESTRIAN MASTER PLAN MAPS

- Nampa Existing Conditions – Sidewalks, Area 1
- Sidewalk Gap In-Fill Priorities
- Nampa Proposed Bikeway and Off-Street Pathway Network

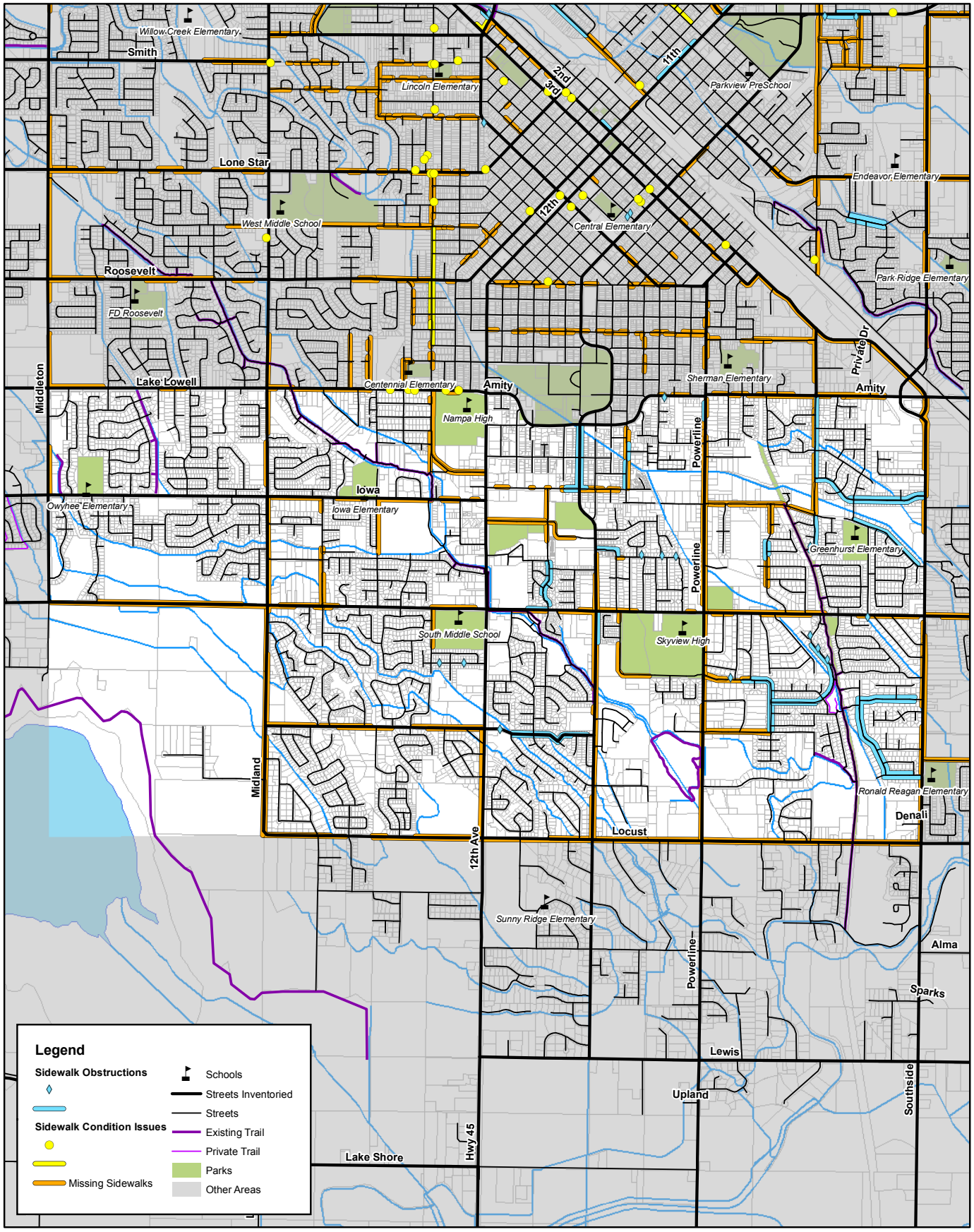


Figure 2.2 Nampa Existing Conditions - Sidewalks, Area 1

City of Nampa
Nampa Bicycle and Pedestrian Master Plan
Source: Data obtained from City of Nampa
Author: EAS
Date: October 2010

0 1,000 2,000 4,000 Feet

alta PLANNING + DESIGN

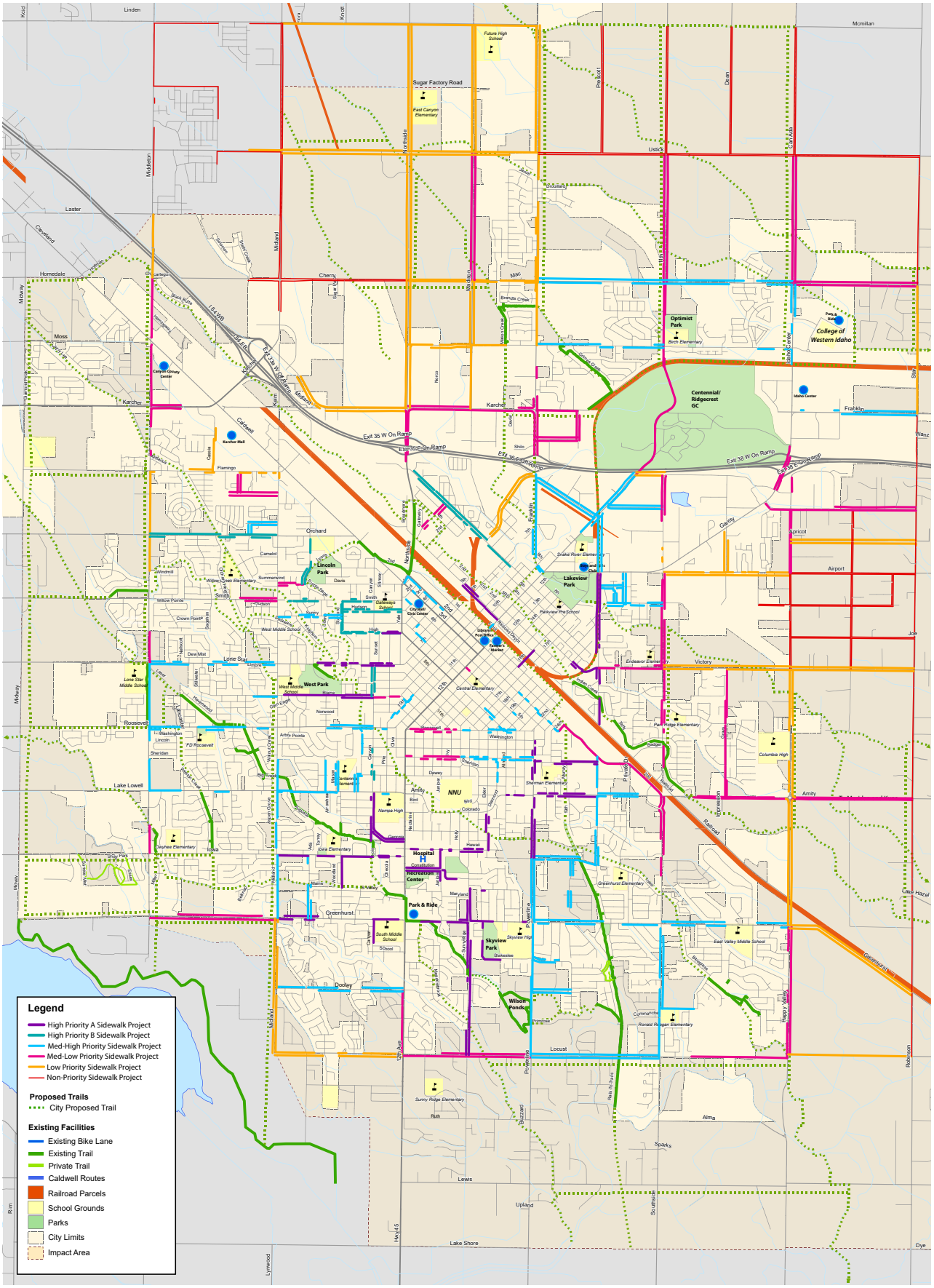


Figure 4.1 Sidewalk Gap In-fill Priorities

City of Nampa
Nampa Bicycle and Pedestrian Plan
Source: Data obtained from City of Nampa
Author: SM

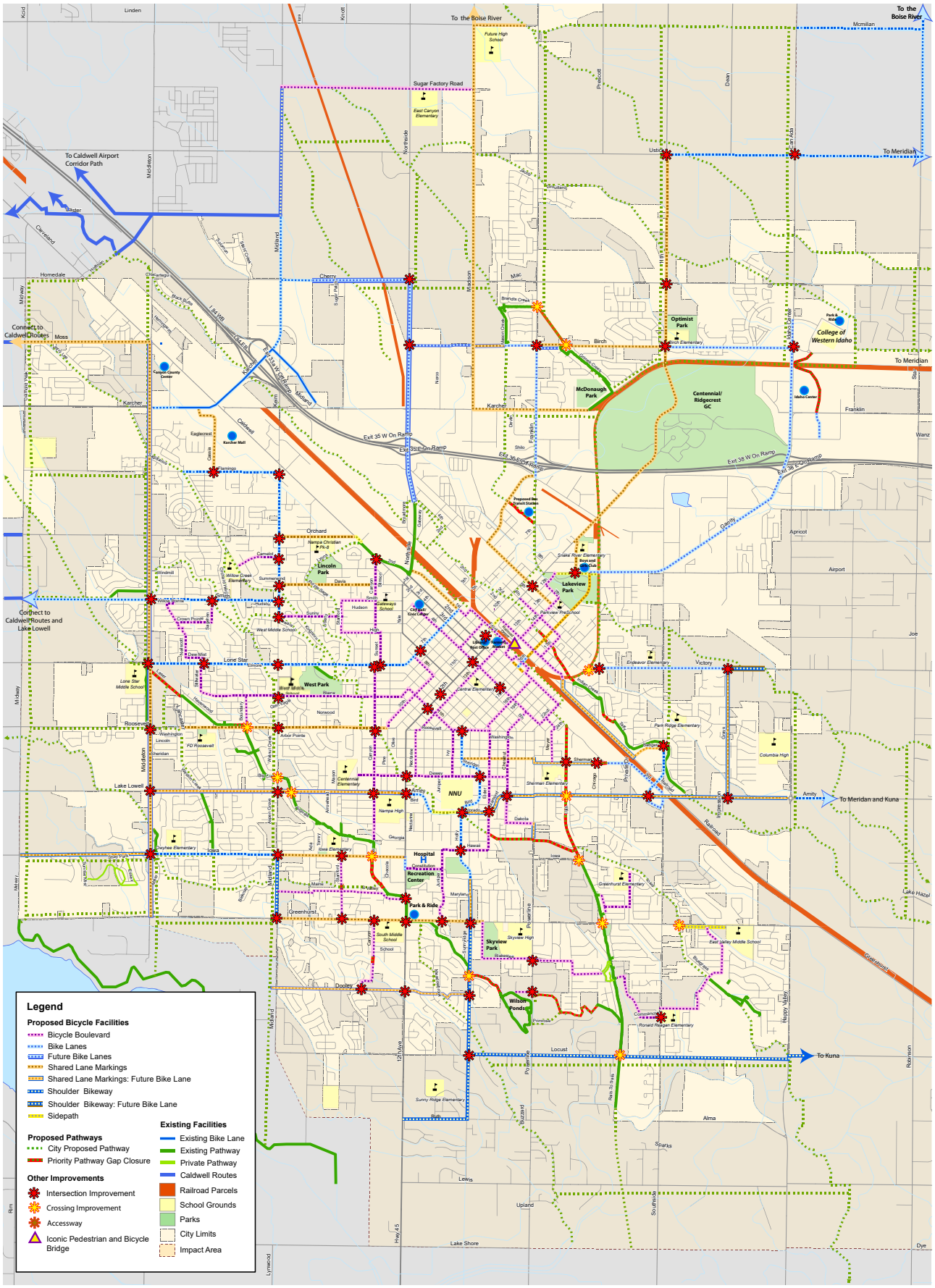


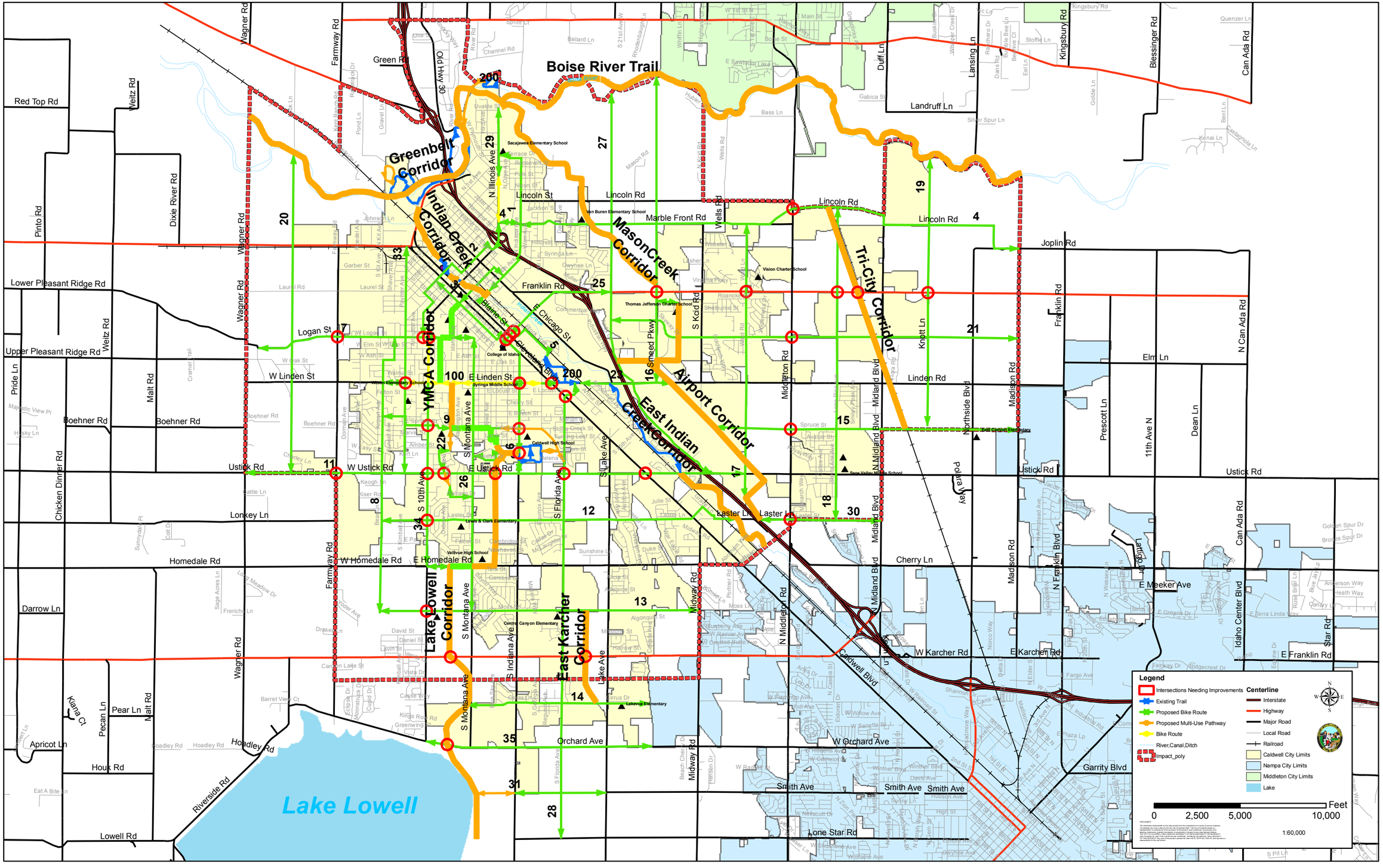
Figure 4.2 Nampa Proposed Bikeway and Off-Street Pathway Network

City of Nampa
Nampa Bicycle and Pedestrian Plan
Source: Data obtained from City of Nampa
Author: SM
Date: September 2011

APPENDIX E. CITY OF CALDWELL PATHWAYS AND BIKE ROUTES MASTER PLAN MAP

- Proposed Pathways and Bike Routes

Figure 3. Proposed Pathways and Bike Routes



APPENDIX F: FIGURE 2.1: EXISTING CONDITIONS KEY MAP, NAMPA

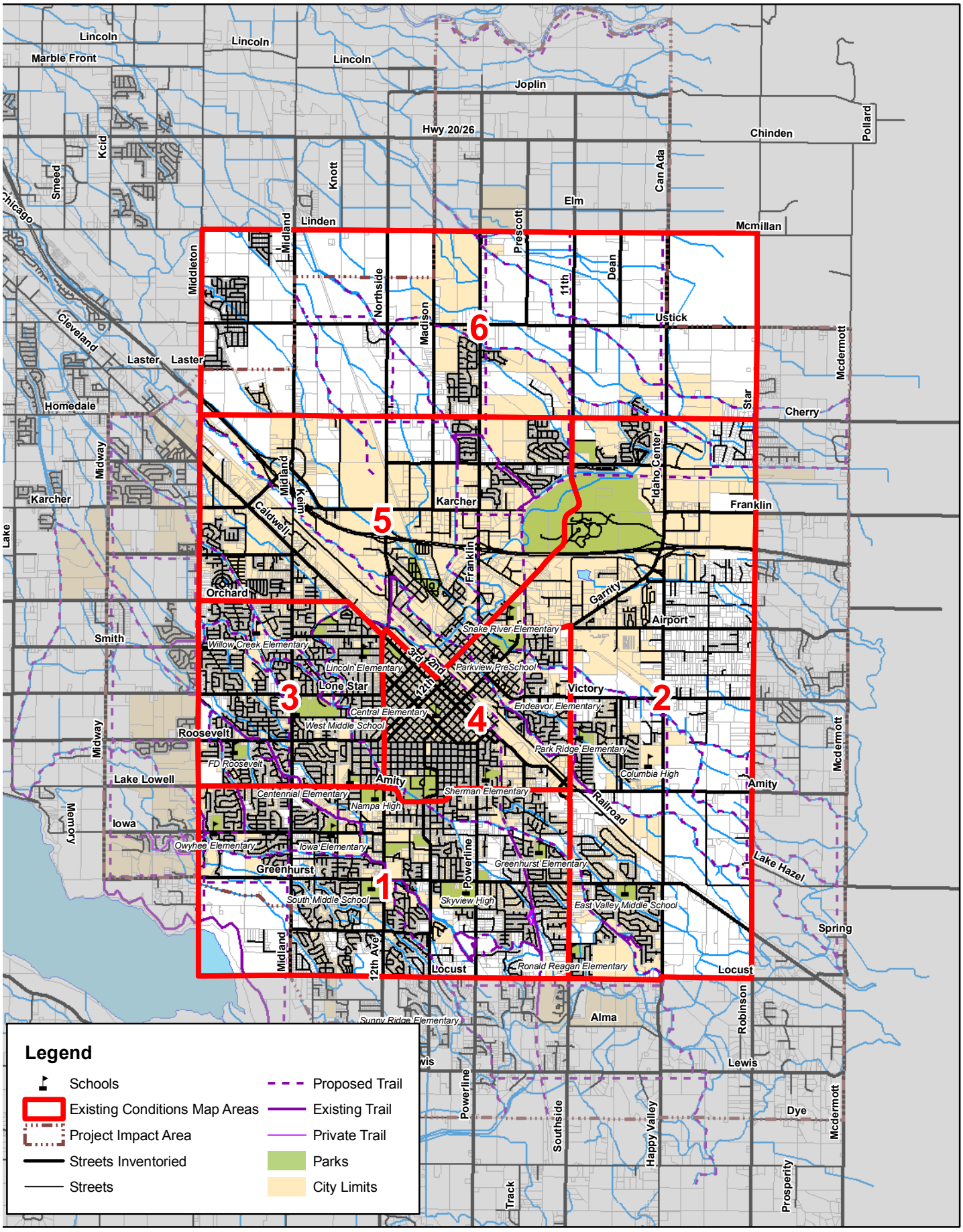


Figure 2.1: Existing Conditions Key Map

City of Nampa
Nampa Bicycle and Pedestrian Master Plan

0 0.5 1 2 Miles

APPENDIX G: FIGURE 2: MAP OF EXISTING PATHWAYS AND BIKE ROUTES, CALDWELL

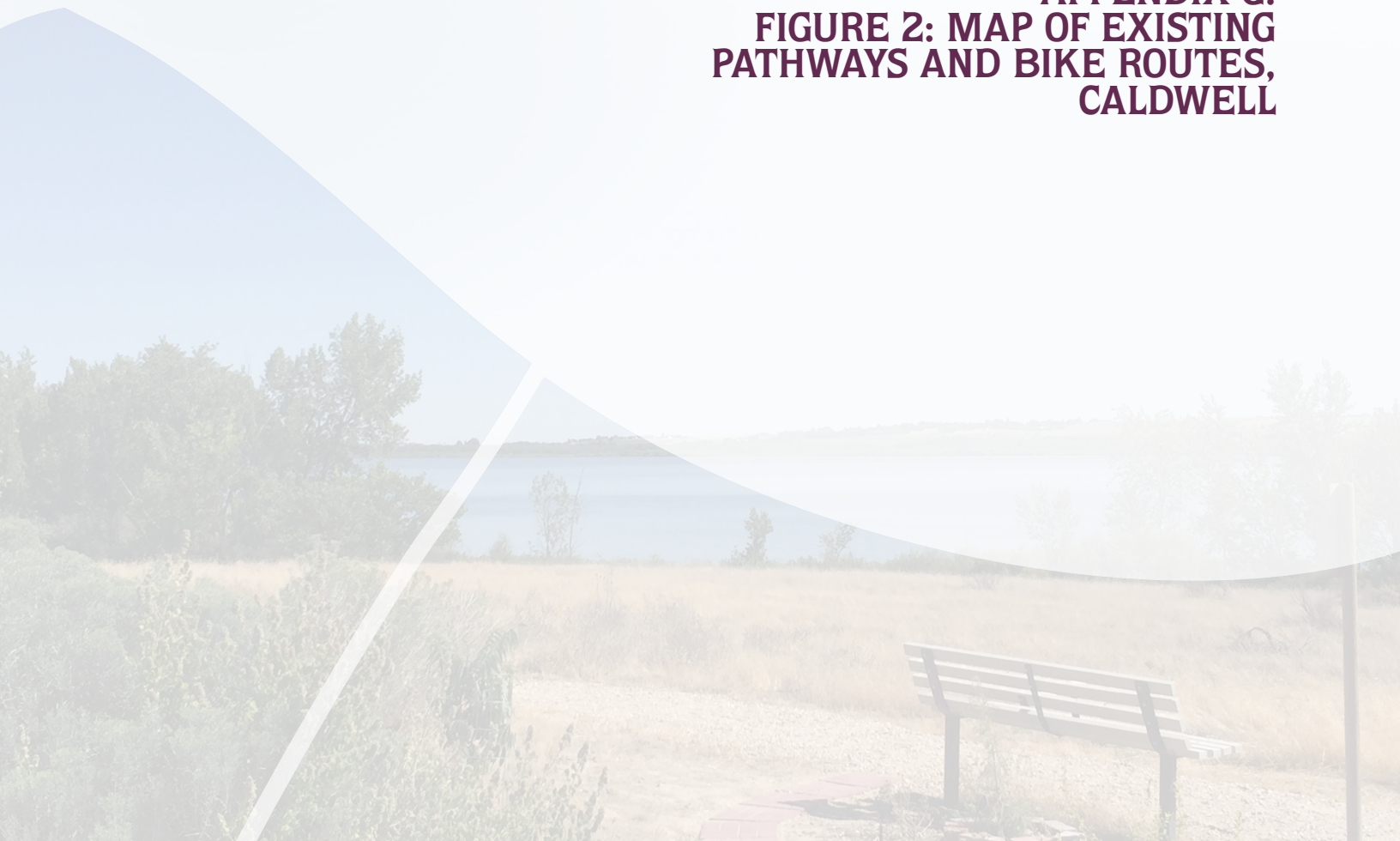
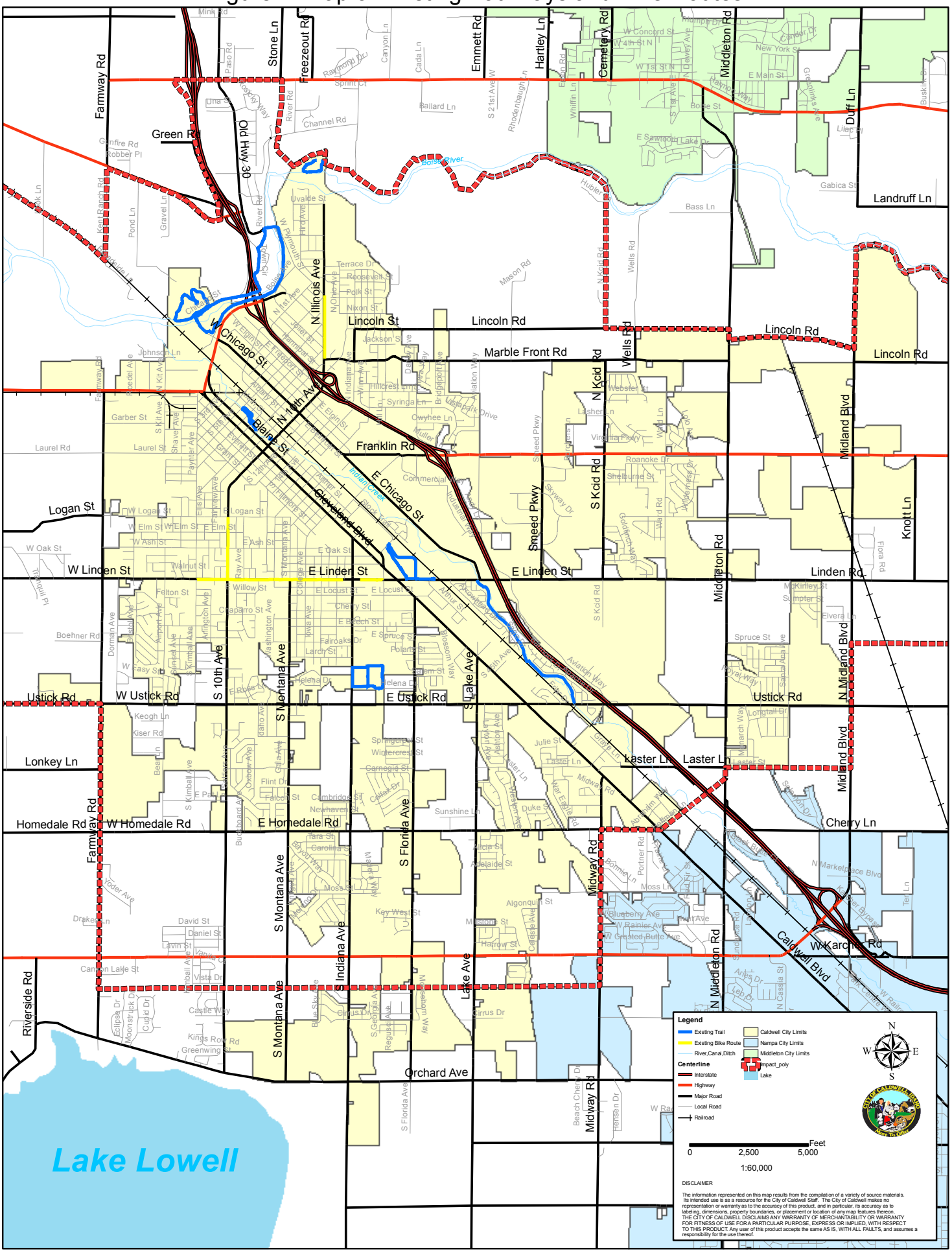


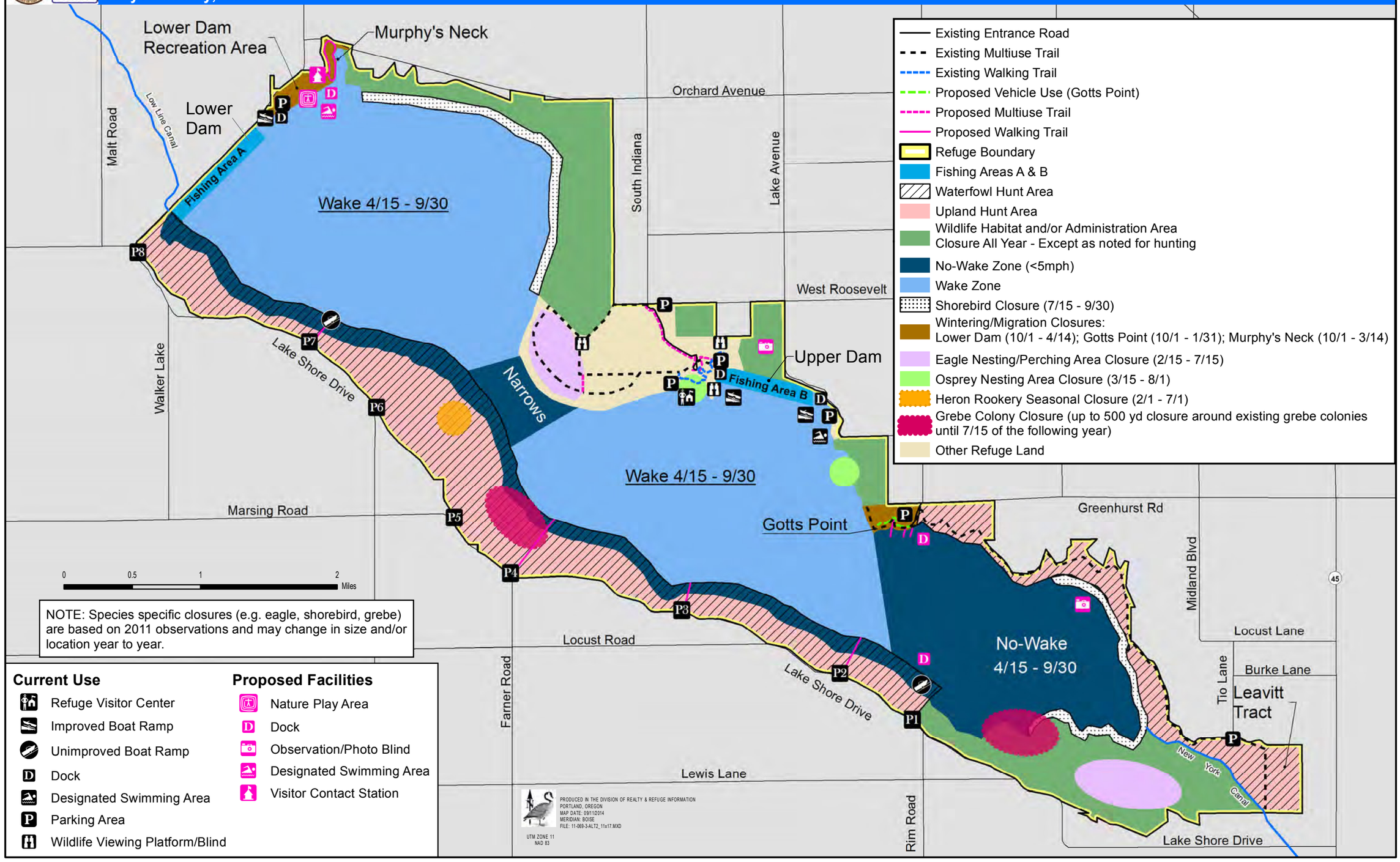
Figure 2. Map of Existing Pathways and Bike Routes



APPENDIX H: DEER FLAT NATIONAL WILDLIFE REFUGE

U.S. Fish & Wildlife Service
Deer Flat National Wildlife Refuge - Lake Lowell Unit
Canyon County, Idaho

MAP 5 - ALTERNATIVE 2 (Preferred)



- Existing Entrance Road
- Existing Multiuse Trail
- Existing Walking Trail
- Proposed Vehicle Use (Gotts Point)
- Proposed Multiuse Trail
- Proposed Walking Trail
- Refuge Boundary
- Fishing Areas A & B
- Waterfowl Hunt Area
- Upland Hunt Area
- Wildlife Habitat and/or Administration Area Closure All Year - Except as noted for hunting
- No-Wake Zone (<5mph)
- Wake Zone
- Shorebird Closure (7/15 - 9/30)
- Wintering/Migration Closures: Lower Dam (10/1 - 4/14); Gotts Point (10/1 - 1/31); Murphy's Neck (10/1 - 3/14)
- Eagle Nesting/Perching Area Closure (2/15 - 7/15)
- Osprey Nesting Area Closure (3/15 - 8/1)
- Heron Rookery Seasonal Closure (2/1 - 7/1)
- Grebe Colony Closure (up to 500 yd closure around existing grebe colonies until 7/15 of the following year)
- Other Refuge Land

NOTE: Species specific closures (e.g. eagle, shorebird, grebe) are based on 2011 observations and may change in size and/or location year to year.

Current Use

- Refuge Visitor Center
- Improved Boat Ramp
- Unimproved Boat Ramp
- Dock
- Designated Swimming Area
- Parking Area
- Wildlife Viewing Platform/Blind

Proposed Facilities

- Nature Play Area
- Dock
- Observation/Photo Blind
- Designated Swimming Area
- Visitor Contact Station

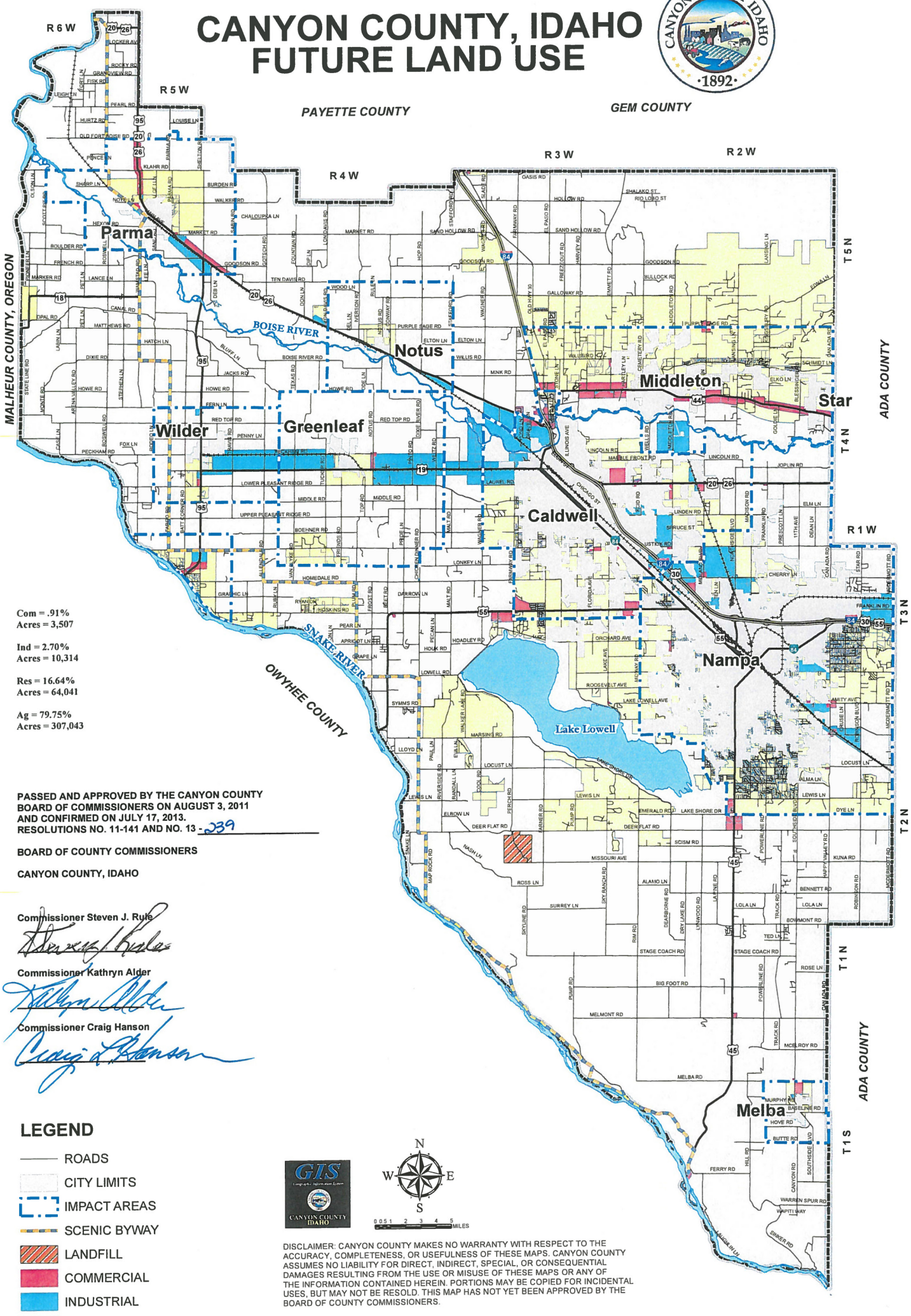
PRODUCED IN THE DIVISION OF REALTY & REFUGE INFORMATION
PORTLAND, OREGON
MAP DATE: 09/11/2014
MERIDIAN: BOISE
FILE: 11-069-3-ALT2_11x17.MXD

UTM ZONE 11
NAD 83

APPENDIX I: FUTURE LAND USE MAPS/ ZONING MAPS

- Canyon County Future Land Use Map
- Nampa Proposed Future Land Use Map
- City of Caldwell Zone Map
- Canyon County Zoning Map
- Nampa Zoning Map

CANYON COUNTY, IDAHO
FUTURE LAND USE



Com = .91%
Acres = 3,507

Ind = 2.70%
Acres = 10,314

Res = 16.64%
Acres = 64,041

Ag = 79.75%
Acres = 307,043

PASSED AND APPROVED BY THE CANYON COUNTY
BOARD OF COMMISSIONERS ON AUGUST 3, 2011
AND CONFIRMED ON JULY 17, 2013.
RESOLUTIONS NO. 11-141 AND NO. 13 - 239

BOARD OF COUNTY COMMISSIONERS

CANYON COUNTY, IDAHO

Commissioner Steven J. Rule

Commissioner Kathryn Alder

Commissioner Craig Hanson

LEGEND

- ROADS
- CITY LIMITS
- IMPACT AREAS
- SCENIC BYWAY
- LANDFILL
- COMMERCIAL
- INDUSTRIAL
- RESIDENTIAL
- AGRICULTURE

N
W E
S

0 0.5 1 2 3 4 5 MILES

DISCLAIMER: CANYON COUNTY MAKES NO WARRANTY WITH RESPECT TO THE ACCURACY, COMPLETENESS, OR USEFULNESS OF THESE MAPS. CANYON COUNTY ASSUMES NO LIABILITY FOR DIRECT, INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR MISUSE OF THESE MAPS OR ANY OF THE INFORMATION CONTAINED HEREIN. PORTIONS MAY BE COPIED FOR INCIDENTAL USES, BUT MAY NOT BE RESOLD. THIS MAP HAS NOT YET BEEN APPROVED BY THE BOARD OF COUNTY COMMISSIONERS.

REVISED: AUGUST 3, 2011 - AAA

O:\GIS\COUNTY MAPS\PROPOSED ZONING\COMP_PLAN_FINAL_8_4_2011.MXD

EXHIBIT "M"

Proposed Future Land Use Map

NAMPA
IDAHO

Proposed Land Use

- Ag
- LD Res
- MD Res
- HD Res
- Residential Mixed Use
- Community Mixed Use
- Neighborhood Commercial
- Highway Commercial
- General Commercial
- Business Park
- Downtown
- Employment Center
- Light Industrial
- Heavy Industrial
- Parks
- Public
- Airport

Specific Plan Areas

Refer to Comprehensive Plan Chapter 3.0. These plans will be developed and amended to the Comprehensive Plan.

Proposed Major Roadways

Proposed Pathways

Proposed Parks

Varieties of proposed park and open space locations as identified in the Nampa Park and Recreation Comprehensive Plan, A Long Range Plan for Park and Recreation Services (NDS 2001). It is generally expected that actual City parks be located within approximately 1/2 mile of the points shown on this map.

Impact Areas

- Nampa
- Nampa Proposed Additional
- Caldwell
- Kuna
- Meridian
- Middleton
- Star

City Limits

- Nampa
- Regional Cities

N
W E
S

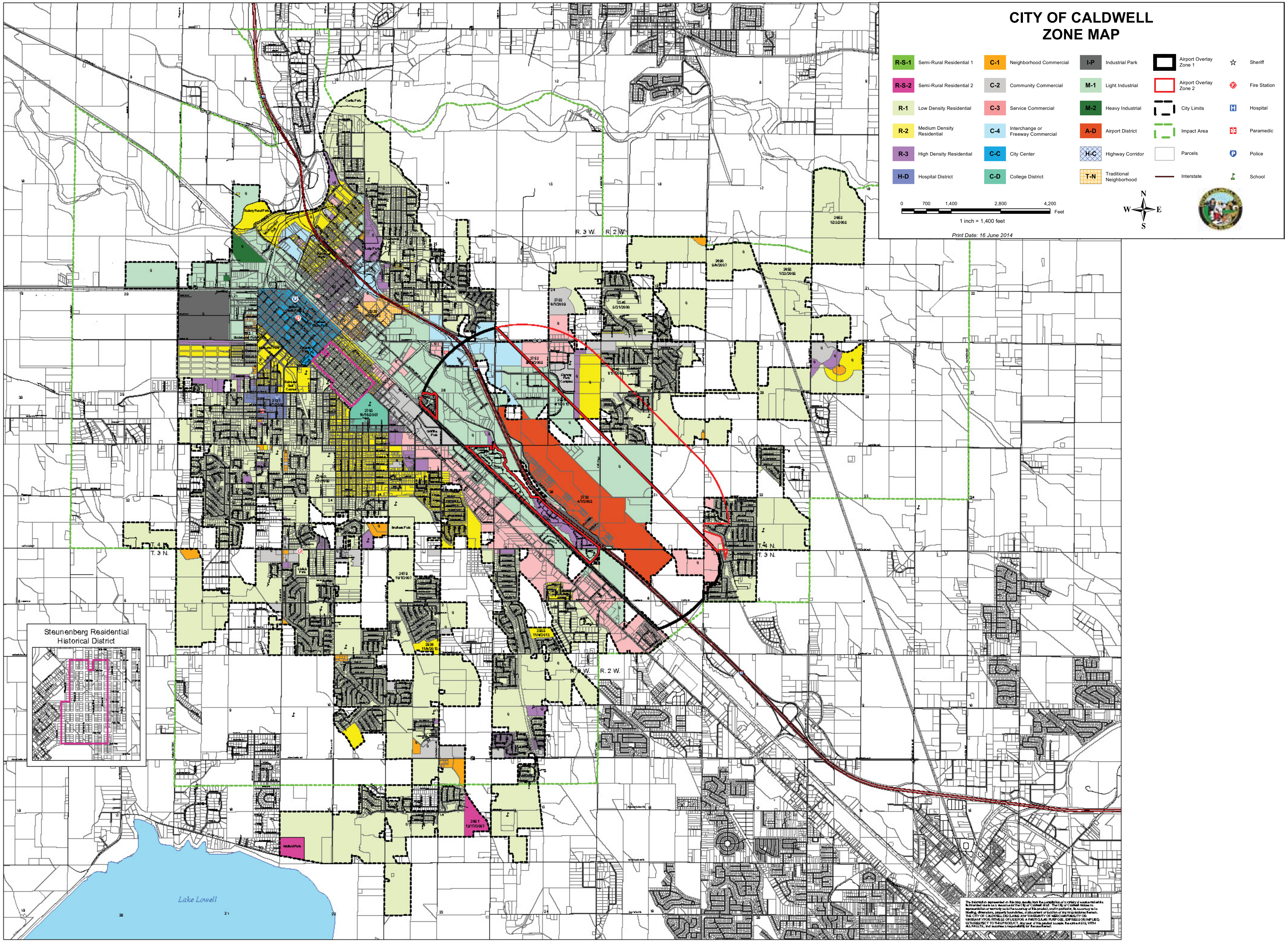
Last Update: 4/2/2012
Printed: 11/3/2014

The mapped boundary between two adjoining land use designations is considered flexible and may be interpreted as being stretchable to include the abutting parcels in the direction of either designation.

NOTE: This map is for reference only. The official map can be reviewed in the Planning Department at Nampa City Hall.

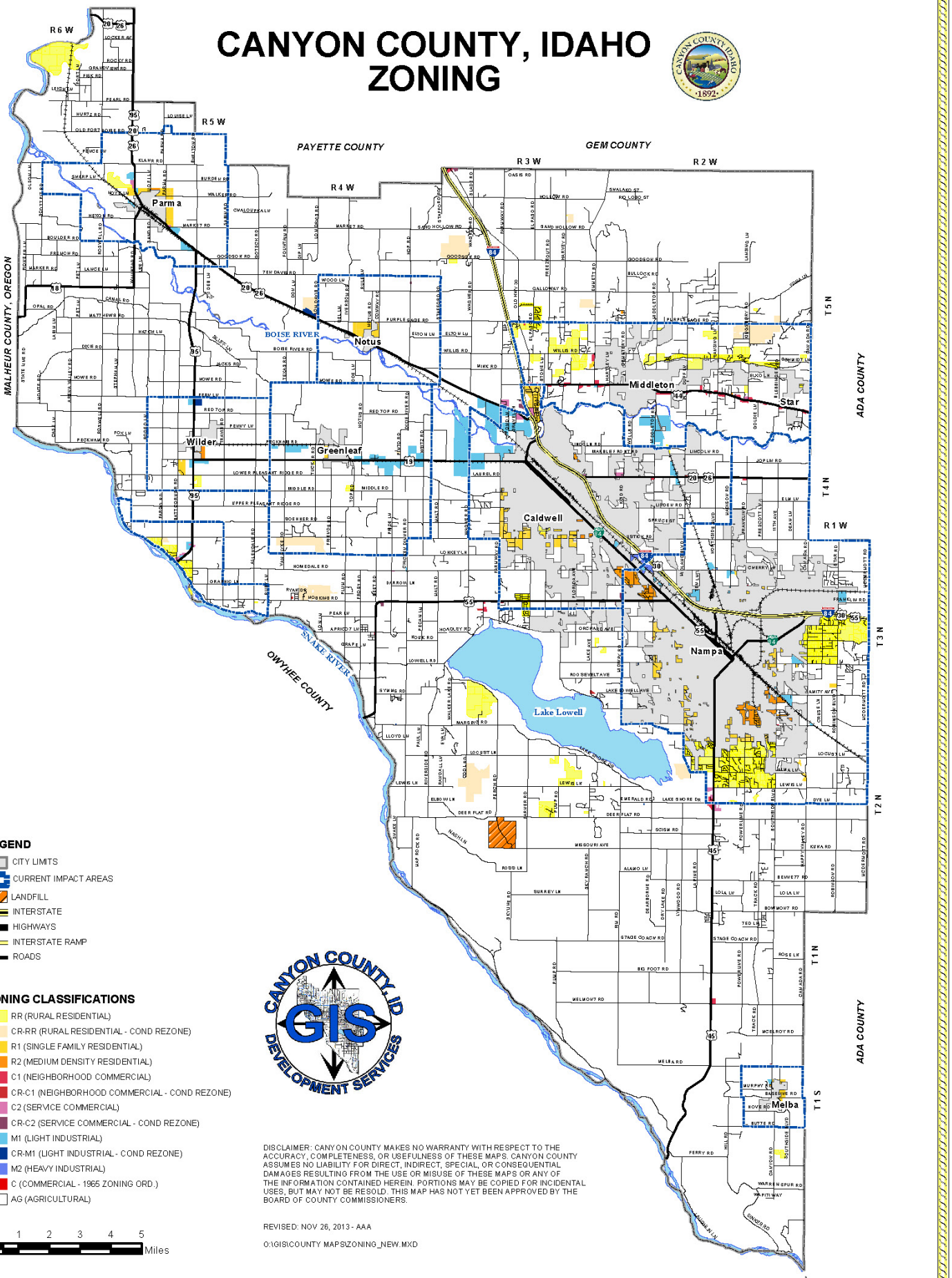
0 0.5 1 1.5 2 2.5 Miles

Middleton Impact Area
City of Star
Star Impact Area
City of Caldwell
Caldwell Impact Area
Meridian Impact Area
Canyon County
Ada County
City of Kuna



CITY OF CALDWELL
ZONE MAP
R-S-1 Semi-Rural Residential 1
R-S-2 Semi-Rural Residential 2
R-1 Low Density Residential
R-2 Medium Density Residential
R-3 High Density Residential
H-D Hospital District
C-1 Neighborhood Commercial
C-2 Community Commercial
C-3 Service Commercial
C-4 Interchange or Freeway Commercial
C-C City Center
C-D College District
I-P Industrial Park
M-1 Light Industrial
M-2 Heavy Industrial
A-D Airport District
H-C Highway Corridor
T-N Traditional Neighborhood
Airport Overlay Zone 1
Airport Overlay Zone 2
City Limits
Impact Area
Parcels
Interstate
Sheriff
Fire Station
Hospital
Paramedic
Police
School
0 700 1,400 2,800 4,200 Feet
1 inch = 1,400 feet
Print Date: 16 June 2014
N
W
E
S
Steunenberg Residential Historical District
R. 3 W.
R. 2 W.
T. 4 N.
T. 3 N.
Lake Lowell

CANYON COUNTY, IDAHO
ZONING



LEGEND

- CITY LIMITS
- CURRENT IMPACT AREAS
- LANDFILL
- INTERSTATE
- HIGHWAYS
- INTERSTATE RAMP
- ROADS

ZONING CLASSIFICATIONS

- RR (RURAL RESIDENTIAL)
- CR-RR (RURAL RESIDENTIAL - COND REZONE)
- R1 (SINGLE FAMILY RESIDENTIAL)
- R2 (MEDIUM DENSITY RESIDENTIAL)
- C1 (NEIGHBORHOOD COMMERCIAL)
- CR-C1 (NEIGHBORHOOD COMMERCIAL - COND REZONE)
- C2 (SERVICE COMMERCIAL)
- CR-C2 (SERVICE COMMERCIAL - COND REZONE)
- M1 (LIGHT INDUSTRIAL)
- CR-M1 (LIGHT INDUSTRIAL - COND REZONE)
- M2 (HEAVY INDUSTRIAL)
- C (COMMERCIAL - 1965 ZONING ORD.)
- AG (AGRICULTURAL)

0 1 2 3 4 5 Miles

CANYON COUNTY, ID GIS DEVELOPMENT SERVICES

REVISED: NOV 26, 2013 - AAA

O:\GIS\COUNTY MAPS\ZONING_NEW.MXD

Zoning Map

NAMPA
IDAHO

Zoning
AG, BC, BC PUD, BF, BN, BN PUD, DB, DH, DV, Enc, GB1, GB2, IH, IL, IL PUD, IL RS, IP, IP RS, RA, RD, RD PUD, RMH, RML, RML PUD, RP, RP PUD, RS6, RS6 PUD, RS7, RS7 PUD, RS8.5, RS8.5 PUD, RS12, RS12 PUD, RS15, RS15 PUD, RS18, RS18 PUD, RS22, RS22 PUD, U, UnZoned

Impact Areas
Nampa, Caldwell, Meridian, Middleton, Star, Regional Cities

11/3/2014

0 0.25 0.5 0.75 1 Miles

Caldwell Impact Area
City of Caldwell
Star Impact Area
City of Star
Meridian Impact Area
Canyon County
Ada County

APPENDIX J: IDAHO TRANSPORTATION DEPARTMENT AADT 2013

Idaho Transportation Department Average Annual Daily Traffic Data (2013)

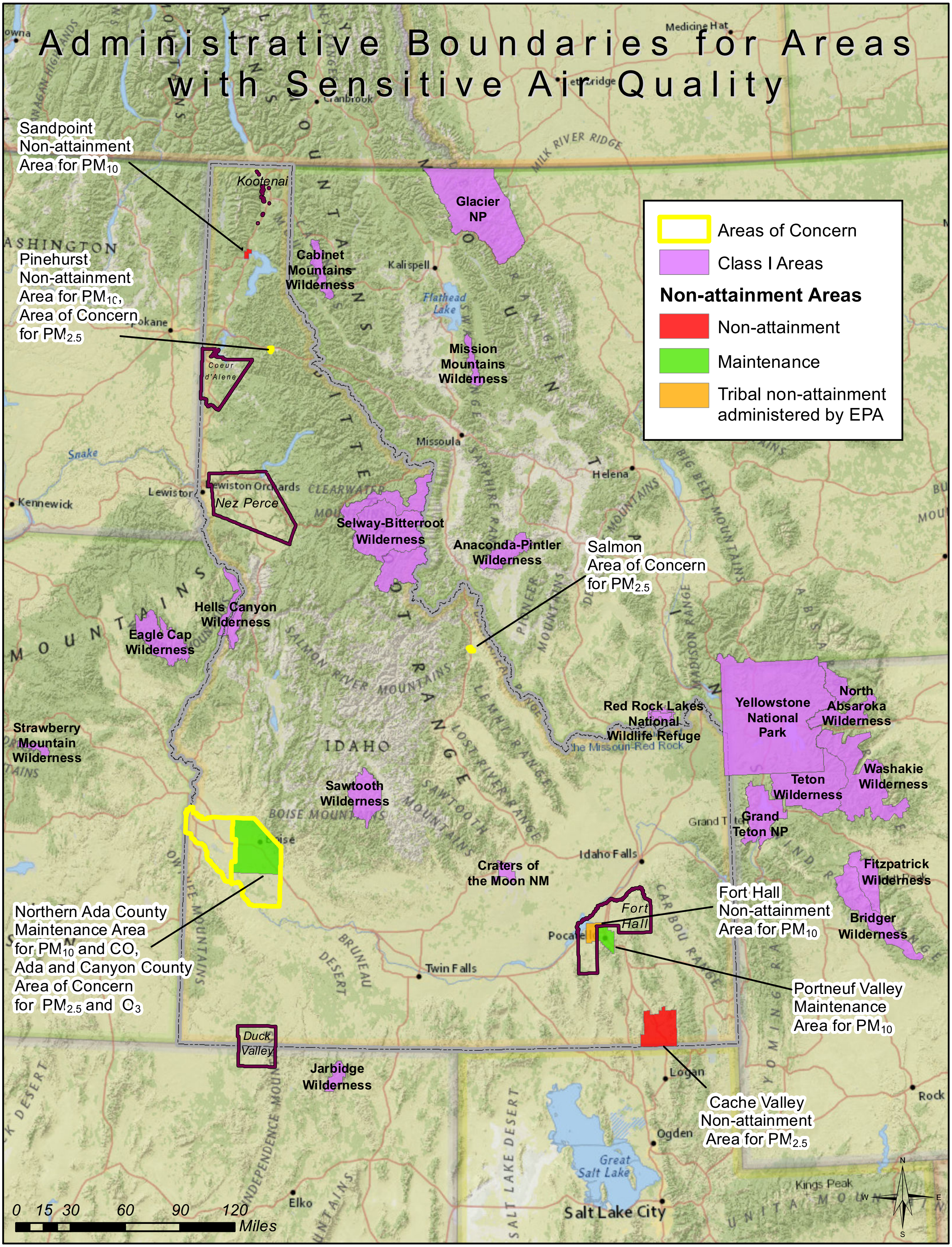
Road Name	To	From	AADT	CAADT	Truck Traffic %
10TH AVE	ORCHARD AVE	KARCHER RD (SH-55)	2,800	0	0%
DEER FLAT RD	FARNER RD	SH-45	170	10	6%
DOOLEY LN	MIDLAND BLVD	WESTVIEW LN	1,800	140	8%
FARMWAY RD	ORCHARD AVE	SH-55	820	0	0%
FARMWAY RD	KARCHER RD (SH-55)	HOMEDALE RD	4,000	0	0%
FLORIDA AVE	ORCHARD AVE	HOMEDALE RD	800	0	0%
GREENHURST RD	12TH AVE RD (SH-45)	MIDLAND BLVD	9,500	0	0%
GREENHURST RD	MIDDLETON RD	MIDLAND BLVD	4,900	350	7%
INDIANA AVE	ORCHARD AVE	KARCHER RD (SH-55)	1,200	20	2%
INDIANA AVE	LONE STAR RD	ORCHARD AVE	1,000	20	2%
INDIANA AVE	W ROOSEVELT AVE	LONE STAR RD	700	20	3%
IOWA AVE	S MIDDLETON RD	BOUNDARY ST	3,500	0	0%
IOWA AVE	MIDWAY RD	S MIDDLETON RD	3,300	0	0%
LAKE AVE	SMITH AVE	LAKE AVE	1,900	70	4%
LAKE AVE	W ROOSEVELT AVE	LONE STAR RD	1,700	50	3%
LAKE AVE		W ROOSEVELT AVE	900	50	6%
LAKE LOWELL AVE	LAKE LOWELL AVE		900	50	6%
LAKE LOWELL AVE	MIDWAY RD	MIDDLETON RD	1,500	0	0%
LAKE SHORE DR	MARSING RD		530	80	15%
LAKE SHORE DR	LOCUST LN	RIVERSIDE RD	1,400	150	11%
LAKE SHORE DR	LAKESHORE DR/DEARBORNE		2,600	60	2%
LAKE SHORE DR		DEARBORNE RD	530	80	15%
LAKE SHORE DR		SH-45	2,600	60	2%

Road Name	To	From	AADT	CAADT	Truck Traffic %
LOCUST LANE	PERCH RD	LAKE SHORE DR	450	60	13%
LOCUST LANE	MIDLAND BLVD	S POWERLINE RD	3,000	0	0%
LONE STAR RD	LAKE AVE	MIDWAY RD	1,600	80	5%
LONE STAR RD	S INDIANA AVE	LAKE AVE	630	0	0%
MALT RD	LOWELL RD		250	0	0%
MARSING ROAD	MARSING RD @ RIVERSIDE	LAKE SHORE DR/PERCH RD	870	80	9%
MIDDLETON RD	GREENHURST RD	LONE STAR RD	6,300	0	0%
MIDLAND BLVD	GREENHURST RD	IOWA AVE	6,000	0	0%
MIDLAND BLVD	DOOLEY LN	GREENHURST RD	6,000	0	0%
MIDLAND BLVD	VISTA DR	DOOLEY LN	3,400	0	0%
MIDLAND BLVD	LOCUST LN	VISTA DR	880	0	0%
MIDWAY RD	LAKE LOWELL AVE	ROOSEVELT AVE	1,700	0	0%
MIDWAY RD	IOWA AVE	LAKE LOWELL AVE	1,200	0	0%
MONTANA AVE	ORCHARD AVE	KARCHER RD (SH-55)	430	30	7%
ORCHARD AVE	S FLORIDA AVE	MIDWAY AVE	3,400	0	0%
ORCHARD AVE	S INDIANA AVE	S FLORIDA AVE	4,400	0	0%
ORCHARD AVE	S 10TH AVE	S INDIANA AVE	3,700	0	0%
ORCHARD AVE		S 10TH AVE	2,000	0	0%
ORCHARD AVE	RIVERSIDE RD		2,000	0	0%
RIVERSIDE RD	ORCHARD RD	KARCHER RD (SH-55)	3,000	150	5%
RIVERSIDE RD	HOADLEY RD	ORCHARD RD	3,500	230	7%
RIVERSIDE RD	LAKE SHORE RD	HOADLEY RD	3,200	200	6%
RIVERSIDE RD	MARSING RD	LAKE SHORE RD	710	80	11%
ROOSEVELT AVE	LAKE AVE		1,400	0	0%
ROOSEVELT AVE	S INDIANA AVE	LAKE AVE	670	0	0%
WAGNER RD	HOADLEY RD	KARCHER RD (SH-55)	160	0	0%

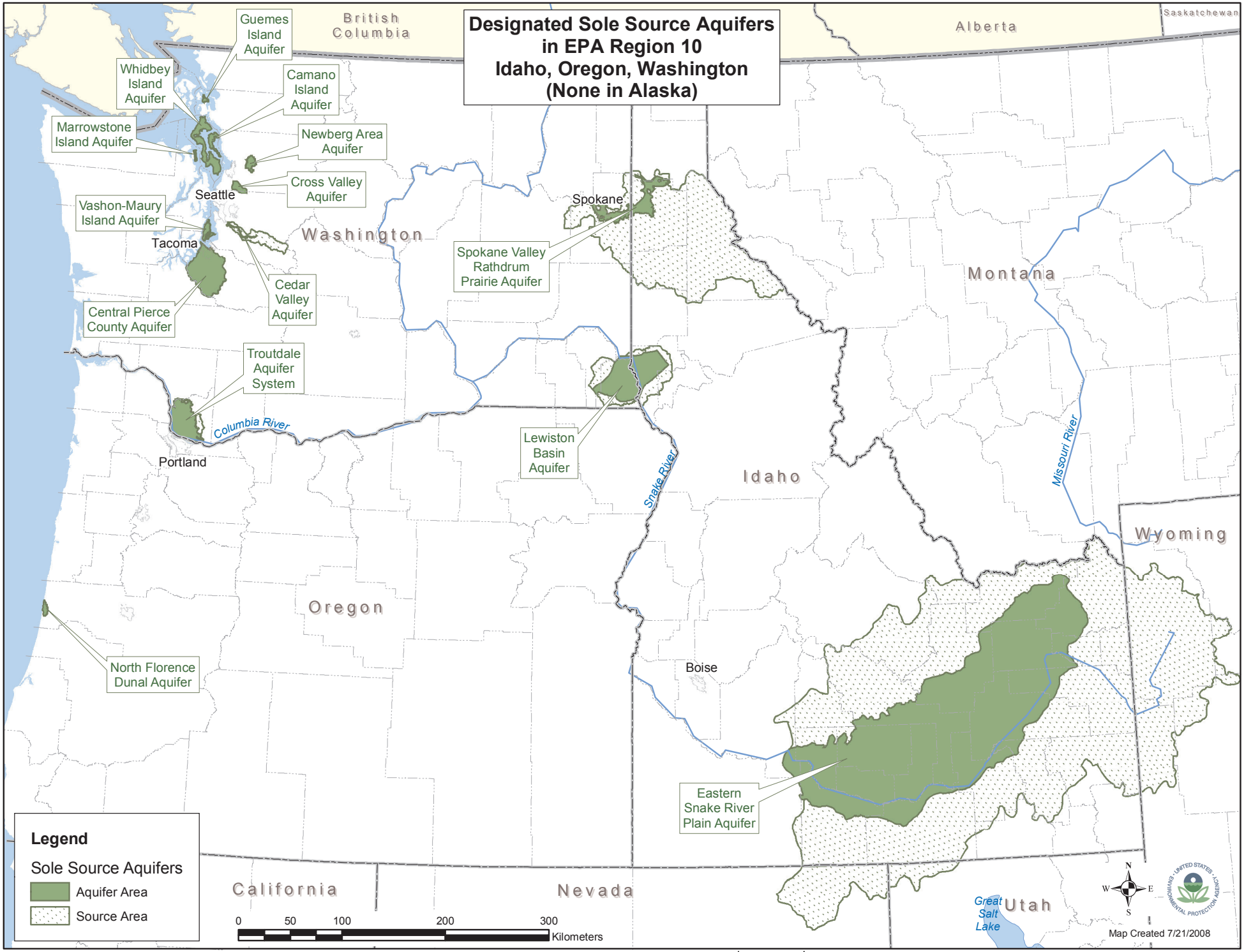
Road Name	To	From	AADT	CAADT	Truck Traffic %
SH-45	DEER FLAT RD	LAKE SHORE DR	7,000	280	4%
SH-45	BURK LN	LOCUST LN	11,000	340	3%
SH-45	LEWIS LN	RUTH LN	10,000	280	3%
SH-45	RUTH LN	BURK LN	11,000	300	3%
SH-45	LAKE SHORE DR	LEWIS LN	9,000	280	3%
SH-55	RIVERSIDE RD	FARMWAY RD	9,500	650	7%
SH-55	WAGNER RD	RIVERSIDE RD	7,300	600	8%
SH-55	FARMWAY RD	S 10TH AVE	8,700	650	7%

Source: Idaho Transportation Department (2013)

APPENDIX K: IDAHO DEPT. OF ENVIRONMENT QUALITY NON-ATTAINMENT MAP


Administrative Boundaries for Areas with Sensitive Air Quality
Areas of Concern
Class I Areas
Non-attainment Areas
Non-attainment
Maintenance
Tribal non-attainment administered by EPA
Sandpoint Non-attainment Area for PM10
Pinehurst Non-attainment Area for PM10, Area of Concern for PM2.5
Salmon Area of Concern for PM2.5
Northern Ada County Maintenance Area for PM10 and CO, Ada and Canyon County Area of Concern for PM2.5 and O3
Fort Hall Non-attainment Area for PM10
Portneuf Valley Maintenance Area for PM10
Cache Valley Non-attainment Area for PM2.5
Kootenai
Coeur d'Alene
Nez Perce
Duck Valley
Fort Hall
Glacier NP
Cabinet Mountains Wilderness
Mission Mountains Wilderness
Selway-Bitterroot Wilderness
Anaconda-Pintler Wilderness
Hells Canyon Wilderness
Eagle Cap Wilderness
Strawberry Mountain Wilderness
Sawtooth Wilderness
Craters of the Moon NM
Jarbidge Wilderness
Red Rock Lakes National Wildlife Refuge
Yellowstone National Park
North Absaroka Wilderness
Teton Wilderness
Washakie Wilderness
Grand Teton NP
Fitzpatrick Wilderness
Bridger Wilderness
IDAHO
Kalispell
Missoula
Helena
Lewiston
Kennewick
Boise
Idaho Falls
Pocatello
Twin Falls
Logan
Ogden
Salt Lake City
Elko
Great Salt Lake
0 15 30 60 90 120 Miles

APPENDIX L: DESIGNATED SOLE SOURCE AQUIFERS IN EPA REGION 10


Designated Sole Source Aquifers
in EPA Region 10
Idaho, Oregon, Washington
(None in Alaska)
British Columbia
Alberta
Saskatchewan
Guemes Island Aquifer
Whidbey Island Aquifer
Camano Island Aquifer
Marrowstone Island Aquifer
Newberg Area Aquifer
Cross Valley Aquifer
Seattle
Vashon-Maury Island Aquifer
Tacoma
Washington
Spokane
Spokane Valley Rathdrum Prairie Aquifer
Montana
Cedar Valley Aquifer
Central Pierce County Aquifer
Troutdale Aquifer System
Columbia River
Portland
Lewiston Basin Aquifer
Snake River
Idaho
Missouri River
Wyoming
Oregon
North Florence Dunal Aquifer
Boise
Eastern Snake River Plain Aquifer
California
Nevada
Utah
Great Salt Lake
Legend
Sole Source Aquifers
Aquifer Area
Source Area
0 50 100 200 300
Kilometers
N
W
E
S
Map Created 7/21/2008

APPENDIX M:
DESIGN GUIDELINES

Lake Lowell Bicycle and Pedestrian Access Plan

Bicycle and Pedestrian Facility Design Guidelines

2015

DRAFT

PREPARED BY:
Alta Planning + Design
1836 Blake Street, Suite 100
Denver, CO 80202

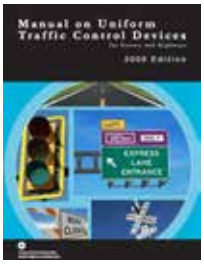
alta
PLANNING + DESIGN

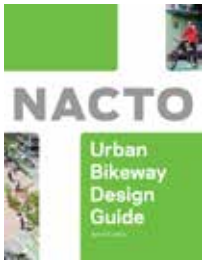
Contents

Introduction

This technical handbook is intended to assist in the selection and design of bicycle and pedestrian facilities for Lake Lowell and Deer Flat National Wildlife Refuge. The following sections pull together best practices by facility type from public agencies and municipalities nationwide.

National Standards





The Federal Highway Administration's **Manual on Uniform Traffic Control Devices** (MUTCD) defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings. To further clarify the MUTCD, the FHWA created a table of contemporary bicycle facilities that lists various bicycle-related signs, markings, signals, and other treatments and identifies their official status (e.g., can be implemented, currently experimental). See **Bicycle Facilities and the Manual on Uniform Traffic Control Devices.**[1]

Bikeway treatments not explicitly covered by the MUTCD are often subject to experiments, interpretations and official rulings by the FHWA. The **MUTCD Official Rulings** is a resource that allows website visitors to obtain information about these supplementary materials.

American Association of State Highway and Transportation Officials (AASHTO) **Guide for the Development of Bicycle Facilities**, updated in June 2012 provides guidance on dimensions, use, and layout of specific bicycle facilities. The standards and guidelines presented by AASHTO provide basic information, such as minimum sidewalk widths, bicycle lane dimensions, detailed striping requirements and recommended signage and pavement markings.

The National Association of City Transportation Officials' (NACTO) 2012 **Urban Bikeway Design Guide**[2] is the newest publication of nationally recognized bicycle-specific design guidelines, and offers guidance on the current state of the practice designs. The NACTO Urban Bikeway Design Guide is based on current practices in the best cycling cities in the world. The intent of the guide is to offer substantive guidance for cities seeking to improve bicycle transportation in places where competing demands for the use of the right of way present unique challenges.

Offering similar guidance for pedestrian design, the 2004 AASHTO **Guide for the Planning, Design and Operation of Pedestrian Facilities** provides comprehensive guidance on planning and designing for people on foot.

Some of these treatments are not directly referenced in the current versions of the AASHTO Guide or the MUTCD, although many of the elements of these treatments are found within these documents. In all cases, engineering judgment is recommended to ensure that the application makes sense for the context of each treatment, given the many complexities of urban streets.

Local Standards

The City of Nampa, Idaho's **Bicycle and Pedestrian Master Plan** identifies design standards and guidelines for future bicycle and pedestrian infrastructure in the area. The plan creates a cohesive, integrated, non-motorized transportation network that connects to the regional non-motorized transportation system.

---

1 *Bicycle Facilities and the Manual on Uniform Traffic Control Devices. (2011). FHWA. http://www.fhwa.dot.gov/environment/bikeped/mutcd_bike.htm*

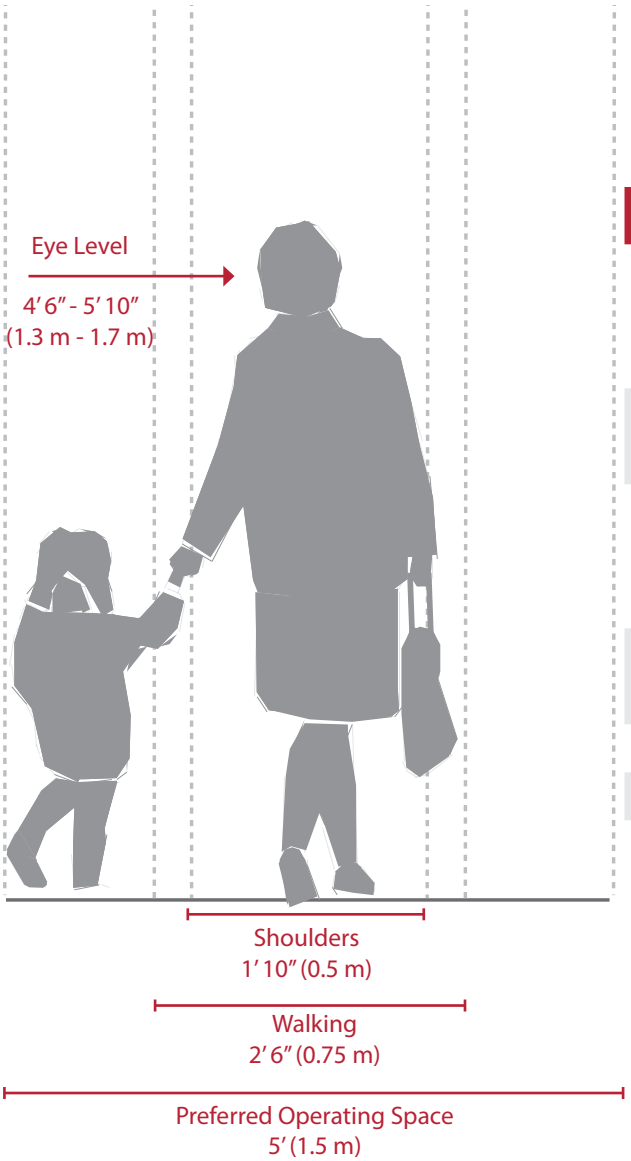
2 *http://nacto.org/cities-for-cycling/design-guide/*

Design Needs of Pedestrians

Types of Pedestrians

Pedestrians have a variety of characteristics and the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing. The table below summarizes common pedestrian characteristics for various age groups.

The MUTCD recommends a normal walking speed of 3.5 feet per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to 3 feet per second for areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.



Pedestrian Characteristics by Age

Age	Characteristics
0-4	Learning to walk
	Requires constant adult supervision
	Developing peripheral vision and depth perception
5-8	Increasing independence, but still requires supervision
	Poor depth perception
9-13	Susceptible to "darting out" in roadways
	Insufficient judgment
	Sense of invulnerability
14-18	Improved awareness of traffic environment
	Insufficient judgment
19-40	Active, aware of traffic environment
41-65	Slowing of reflexes
65+	Difficulty crossing street
	Vision loss
	Difficulty hearing vehicles approaching from behind

Source: AASHTO. *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, Exhibit 2-1. 2004.

The table below summarizes common physical and cognitive impairments, how they affect personal mobility, and recommendations for improved pedestrian-friendly design.

Disabled Pedestrian Design Considerations

Impairment	Effect on Mobility	Design Solution
Wheelchair and Scooter Users	Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
	Cross-slopes cause wheelchairs to veer downhill.	Cross-slopes of less than two percent.
	Require wider path of travel.	Sufficient width and maneuvering space.
Walking Aid Users	Difficulty negotiating steep grades and cross slopes; decreased stability.	Smooth, non-slipperly travel surface.
	Slower walking speed and reduced endurance; reduced ability to react.	Longer pedestrian signal cycles, shorter crossing distances, median refuges, and street furniture.
Hearing Impairment	Less able to detect oncoming hazards at locations with limited sight lines (e.g. driveways, angled intersections, channelized right turn lanes) and complex intersections.	Longer pedestrian signal cycles, clear sight distances, highly visible pedestrian signals and markings.
Vision Impairment	Limited perception of path ahead and obstacles; reliance on memory; reliance on non-visual indicators (e.g. sound and texture).	Accessible text (larger print and raised text), accessible pedestrian signals (APS), guide strips and detectable warning surfaces, safety barriers, and lighting.
Cognitive Impairment	Varies greatly. Can affect ability to perceive, recognize, understand, interpret, and respond to information.	Signs with pictures, universal symbols, and colors, rather than text.

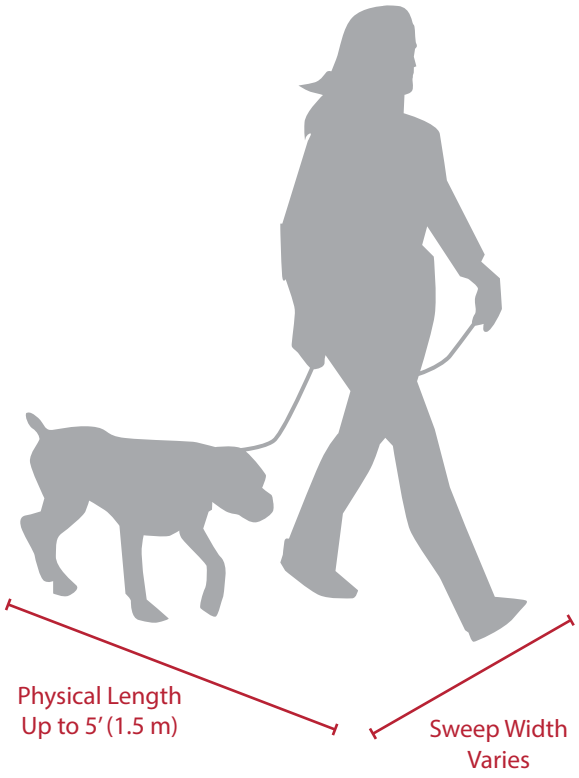
Design Needs of Dog Walkers

Dog walking is a common and anticipated use on shared use paths. Dog sizes vary largely, as does leash length and walking style, leading to wide variation in possible design dimensions.

Shared use paths designed to accommodate wheelchair users are likely to provide the necessary dimensions for the average dog walker. Amenities such as dog waste stations may enhance conditions for dog walkers.

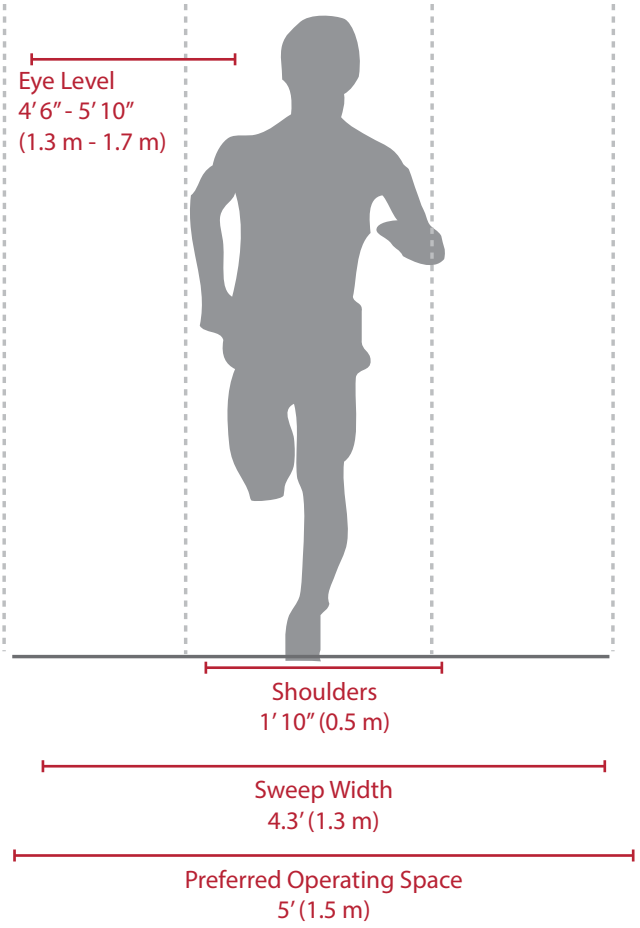
Design Needs of Runners

Running is an important recreation and fitness activity commonly performed on shared use paths. Many runners prefer softer surfaces (such as rubber, bare earth or crushed rock) to reduce impact. Runners can change their speed and direction frequently. If high volumes are expected, controlled interaction or separation of different types of users should be considered.



Typical Speed

User	Typical Speed
Runner	6.2 mph



Source: FHWA. *Characteristics of Emerging Road and Trail Users and Their Safety.* (2004).

Design Needs of Wheelchair Users

As the American population ages, the number of people using mobility assistive devices (such as manual wheelchairs, powered wheelchairs) increases.

Manual wheelchairs are self-propelled devices. Users propel themselves using push rims attached to the rear wheels. Braking is done through resisting wheel movement with the hands or arm. Alternatively, a second individual can control the wheelchair using handles attached to the back of the chair.

Power wheelchairs user battery power to move the wheelchair. The size and weight of power wheelchairs limit their ability to negotiate obstacles without a ramp. Various control units are available that enable users to control the wheelchair movement, based on their ability (e.g., joystick control, breath controlled, etc).

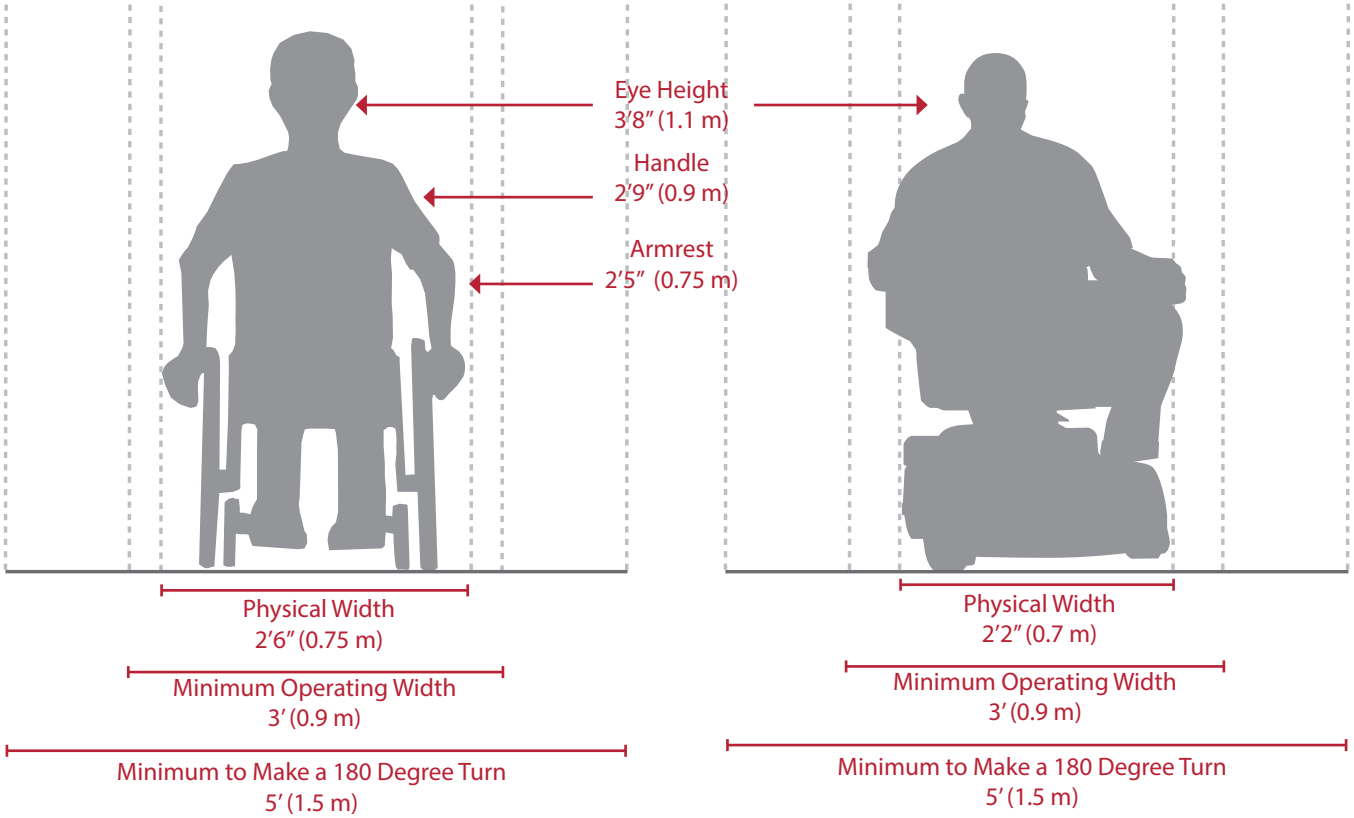
Maneuvering around a turn requires additional space for wheelchair devices. Providing adequate space for 180 degree turns at appropriate locations is an important element for accessible design.

Wheelchair User Typical Speed

User	Typical Speed
Manual Wheelchair	3.6 mph
Power Wheelchair	6.8 mph

Wheelchair User Design Considerations

Effect on Mobility	Design Solution
Difficulty propelling over uneven or soft surfaces.	Firm, stable surfaces and structures, including ramps or beveled edges.
Cross-slopes cause wheelchairs to veer downhill.	Cross-slopes of less than two percent.
Require wider path of travel.	Sufficient width and maneuvering space.



Source: FHWA. *Characteristics of Emerging Road and Trail Users and Their Safety.* 2004.
USDOJ. *2010 ADA Standards for Accessible Design.* 2010.

Pedestrians at Intersections

Attributes of pedestrian-friendly intersection design include:

Clear Space: Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.

Visibility: It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.

Legibility: Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.

Accessibility: All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, and textures, should meet accessibility standards and follow universal design principles.

Separation from Traffic: Corner design and construction should be effective in discouraging turning vehicles from driving over the pedestrian area. Crossing distances should be minimized.

Lighting: Adequate lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, suburban and rural intersections may have limited or no signing. However, legibility regarding appropriate pedestrian movements should still be taken into account during design.


Marked Crosswalks

Marked Crosswalks

Description

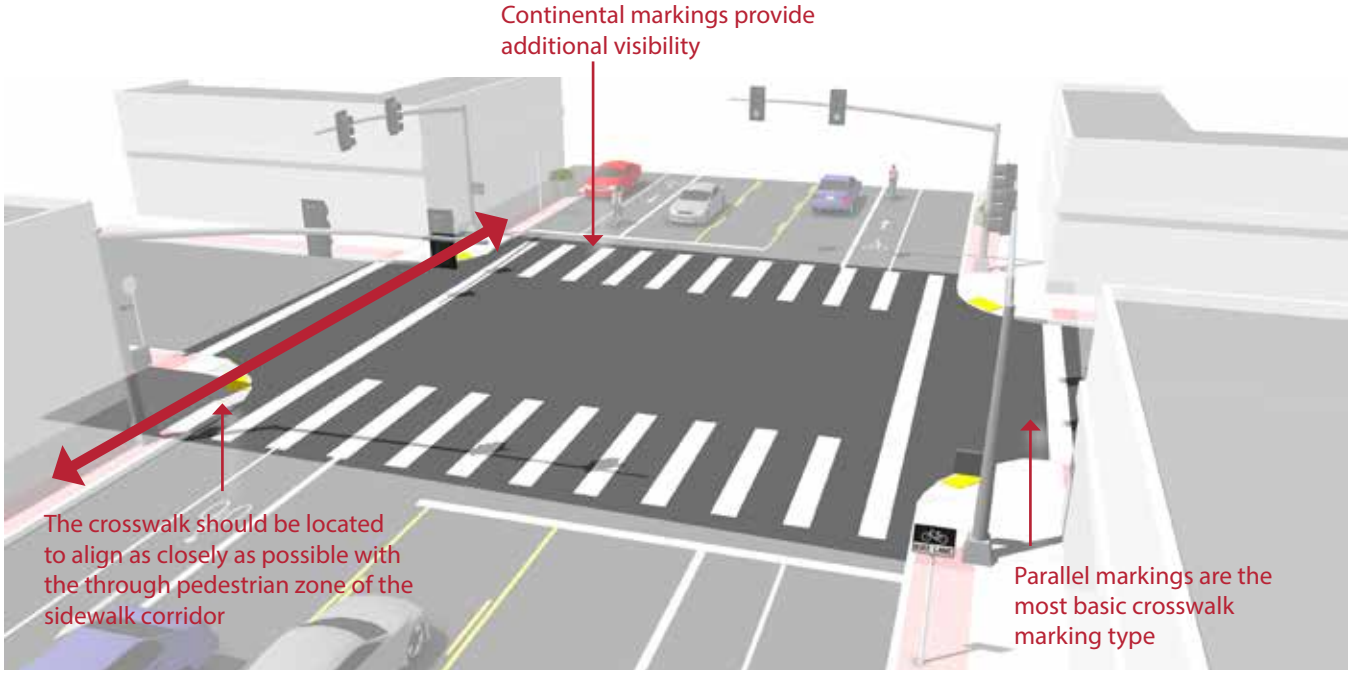
A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer especially on multi-lane roadways.

At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.

Guidance

At signalized intersections, all crosswalks should be marked. At un-signalized intersections, crosswalks may be marked under the following conditions:

- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.
- At an intersection within a school zone on a walking route.



Discussion

Continental crosswalk markings should be used at crossings with high pedestrian use or where vulnerable pedestrians are expected, including: school crossings, across arterial streets for pedestrian-only signals, at mid-block crosswalks, and at intersections where there is expected high pedestrian use and the crossing is not controlled by signals or stop signs.

See intersection signalization for a discussion of enhancing pedestrian crossings.

Additional References and Guidelines

FHWA. *Manual on Uniform Traffic Control Devices. (3B.18). 2009.*
AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.
FHWA. *Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations.* 2005.
FHWA. *Crosswalk Marking Field Visibility Study.* 2010.
NACTO. *Urban Street Design Guide.* 2013.

Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability than conventional paint.

Crossing Beacons and Signals

Crossing beacons and signals facilitate crossings of roadways for pedestrians and bicyclists. Beacons make crossing intersections safer by clarifying when to enter an intersection and by alerting motorists to the presence of pedestrians and bicyclists.

Flashing amber warning beacons can be utilized at unsignalized intersection crossings. Push buttons, signage, and pavement markings may be used to highlight these facilities for pedestrians, bicyclists and motorists.

Determining which type of signal or beacon to use for a particular intersection depends on a variety of factors. These include speed limits, traffic volumes, and the anticipated levels of pedestrian and bicycle crossing traffic.

An intersection with crossing beacons may reduce stress and delays for a crossing users, and discourage illegal and unsafe crossing maneuvers.

Pedestrians at Signalized Crossings

Active Warning Beacons

Pedestrians at Signalized Crossings

Description

Pedestrian Signal Head

Pedestrian signal indicators demonstrate to pedestrians when to cross at a signalized crosswalk. All traffic signals should be equipped with pedestrian signal indications except where pedestrian crossing is prohibited by signage.

Countdown pedestrian signals are particularly valuable for pedestrians, as they indicate whether a pedestrian has time to cross the street before the signal phase ends. Countdown signals should be used at all signalized intersections.

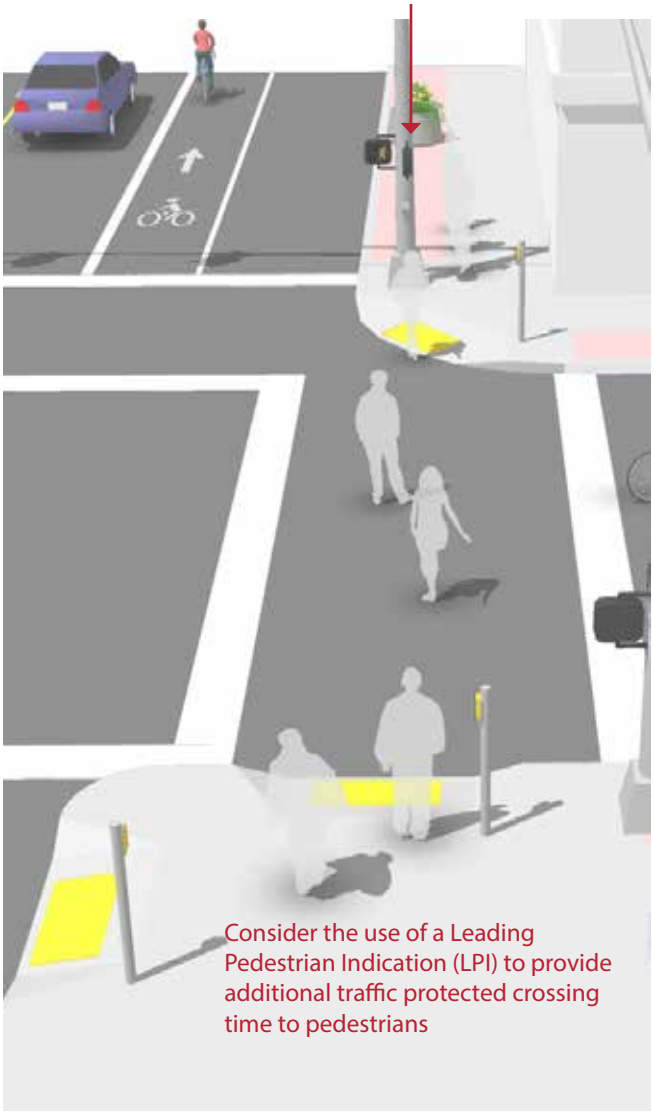
Signal Timing

Providing adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The MUTCD recommends traffic signal timing to assume a pedestrian walking speed of 4' per second, meaning that the length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street.

At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3' per second may be assumed. Special pedestrian phases can be used to provide greater visibility or more crossing time for pedestrians at certain intersections.

In busy pedestrian areas such as downtowns, the pedestrian signal indication should be built into each signal phase, eliminating the requirement for a pedestrian

Audible pedestrian traffic signals provide crossing assistance to pedestrians with vision impairment at signalized intersections



Consider the use of a Leading Pedestrian Indication (LPI) to provide additional traffic protected crossing time to pedestrians

Discussion

When push buttons are used, they should be located so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk, and marked (for example, with arrows) so that it is clear which signal is affected.

In areas with very heavy pedestrian traffic, consider an all-pedestrian signal phase to give pedestrians free passage in the intersection when all motor vehicle traffic movements are stopped.

Additional References and Guidelines

United States Access Board. *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public-Right-of-Way (PROWAG).* 2011.
AASHTO. *Guide for the Planning, Design, and Operation of Pedestrian Facilities.* 2004.
NACTO. *Urban Street Design Guide.* 2013.

Materials and Maintenance

It is important to repair or replace traffic control equipment before it fails. Consider semi-annual inspections of controller and signal equipment, intersection hardware, and loop detectors.

Active Warning Beacons

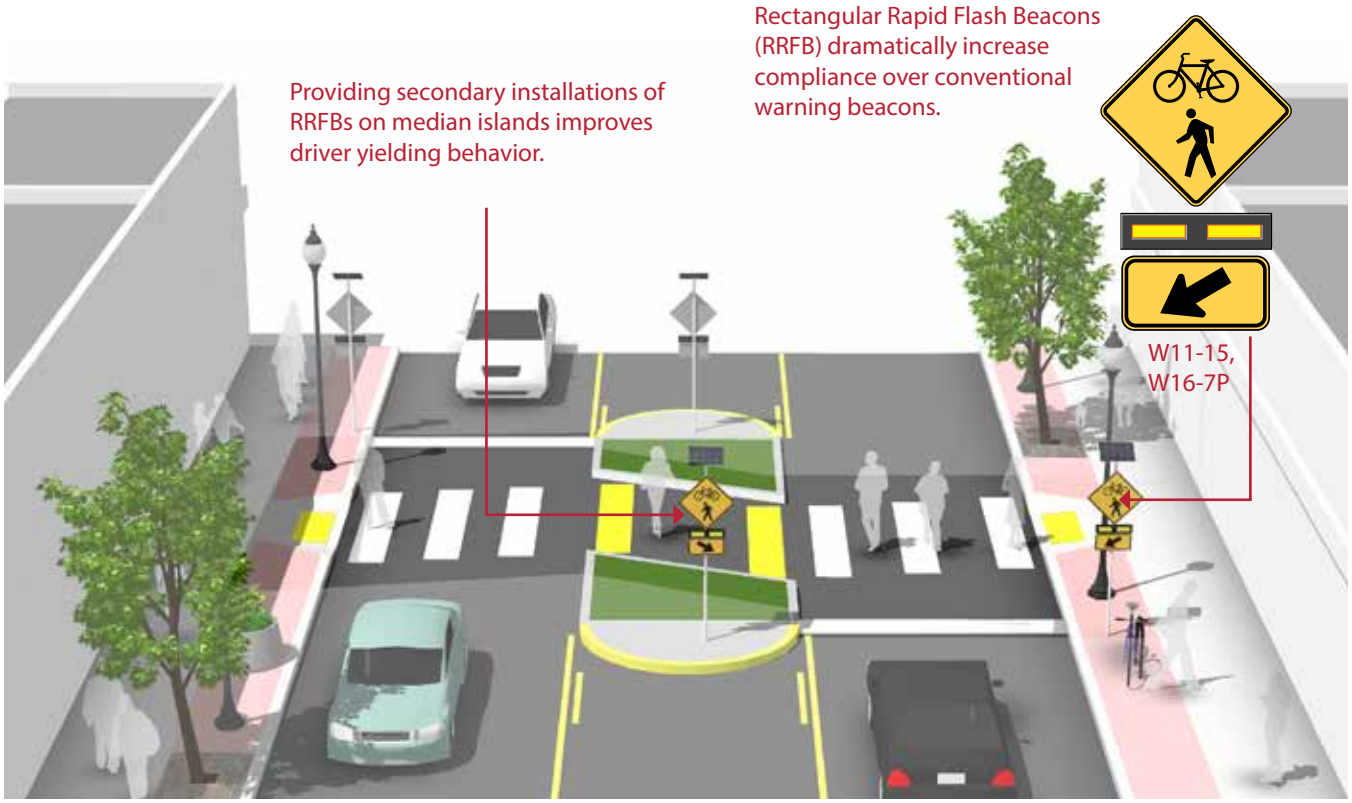
Description

Active warning beacons are user actuated illuminated devices designed to increase motor vehicle yielding compliance at crossings of multi lane or high volume roadways.

Types of active warning beacons include conventional circular yellow flashing beacons, in-roadway warning lights, or Rectangular Rapid Flash Beacons (RRFB).

Guidance

- Warning beacons shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic signals.
- Warning beacons shall initiate operation based on pedestrian or bicyclist actuation and shall cease operation at a predetermined time after actuation or, with passive detection, after the pedestrian or bicyclist clears the crosswalk.



Discussion

Rectangular rapid flash beacons have the most increased compliance of all the warning beacon enhancement options.

A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88 percent. Additional studies over long term installations show little to no decrease in yielding behavior over time.

Additional References and Guidelines

NACTO. *Urban Bikeway Design Guide.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
FHWA. *MUTCD - Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11).* 2008.

Materials and Maintenance

Depending on power supply, maintenance can be minimal. If solar power is used, RRFBs should run for years without issue.

Design Needs of Bicyclists

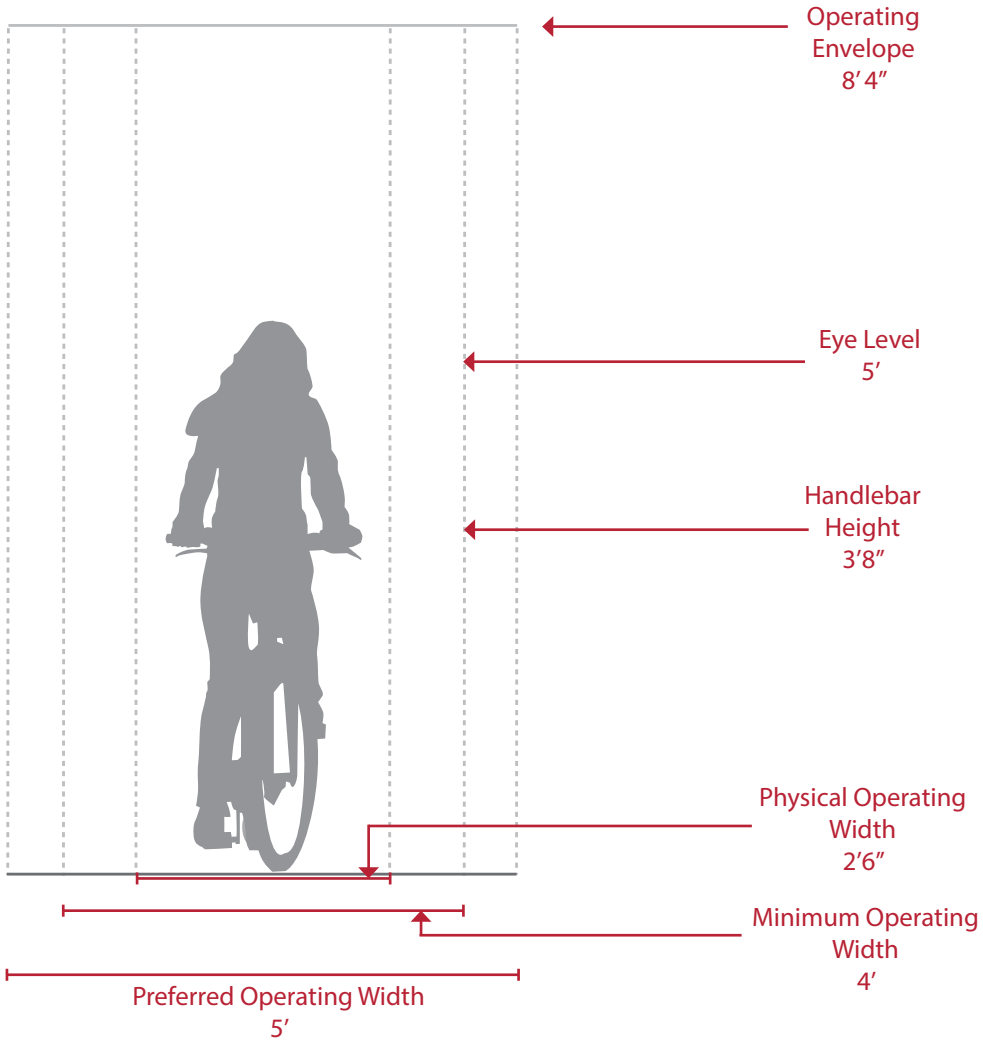
The purpose of this section is to provide the facility designer with an understanding of how bicyclists operate and how their bicycle influences that operation. Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers. Bicyclists lack the protection from the elements and roadway hazards provided by an automobile's structure and safety features. By understanding the unique characteristics and needs of bicyclists, a facility designer can provide quality facilities and minimize user risk.

Bicycle as a Design Vehicle

Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider reasonably expected bicycle types on the facility and utilize the appropriate dimensions.

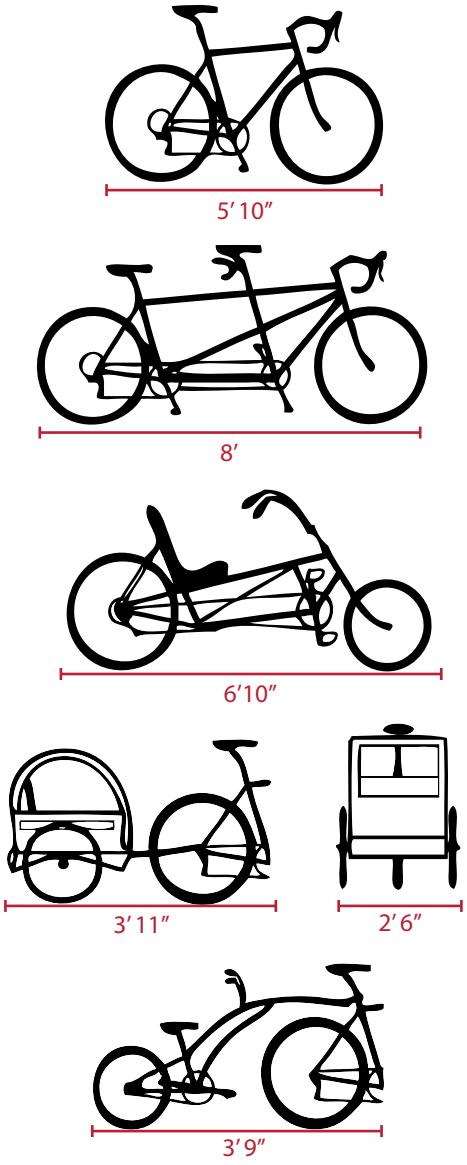
The figure below illustrates the operating space and physical dimensions of a typical adult bicyclist, which are the basis for typical facility design. Bicyclists require clear space to operate within a facility. This is why the minimum operating width is greater than the physical dimensions of the bicyclist. Bicyclists prefer five feet or more operating width, although four feet may be minimally acceptable.

Standard Bicycle Rider Dimensions



Source: AASHTO Guide for the Development of Bicycle Facilities, 4th Edition. 2012.

In addition to the design dimensions of a typical bicycle, there are many other commonly used pedal-driven cycles and accessories to consider when planning and designing bicycle facilities. The most common types include tandem bicycles, recumbent bicycles, and trailer accessories. The figure and table below summarize the typical dimensions for bicycle types.



Bicycle as Design Vehicle - Typical Dimensions

Source: AASHTO *Guide for the Development of Bicycle Facilities*, 4th Edition *AASHTO does not provide typical dimensions for tricycles.

Bicycle as Design Vehicle - Typical Dimensions

Bicycle Type	Feature	Typical Dimensions
Upright Adult Bicyclist	Physical width	2 ft 6 in
	Operating width (Minimum)	4 ft
	Operating width (Preferred)	5 ft
	Physical length	5 ft 10 in
	Physical height of handlebars	3 ft 8 in
	Operating height	8 ft 4 in
	Eye height	5 ft
	Vertical clearance to obstructions (tunnel height, lighting, etc)	10 ft
	Approximate center of gravity	2 ft 9 in - 3 ft 4 in
Recumbent Bicyclist	Physical length	8 ft
	Eye height	3 ft 10 in
Tandem Bicyclist	Physical length	8 ft
Bicyclist with child trailer	Physical length	10 ft
	Physical width	2 ft 6 in

Design Speed Expectations

The expected speed that different types of bicyclists can maintain under various conditions also influences the design of facilities such as shared use paths. The table to the right provides typical bicyclist speeds for a variety of conditions.

Bicycle as Design Vehicle - Design Speed Expectations

Bicycle Type	Feature	Typical Speed
Upright Adult Bicyclist	Paved level surfacing	15 mph
	Crossing Intersections	10 mph
	Downhill	30 mph
	Uphill	5 -12 mph
Recumbent Bicyclist	Paved level surfacing	18 mph

*Tandem bicycles and bicyclists with trailers have typical speeds equal to or less than upright adult bicyclists.

Types of Bicyclists

It is important to consider bicyclists of all skill levels when creating a non-motorized plan or project. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people.

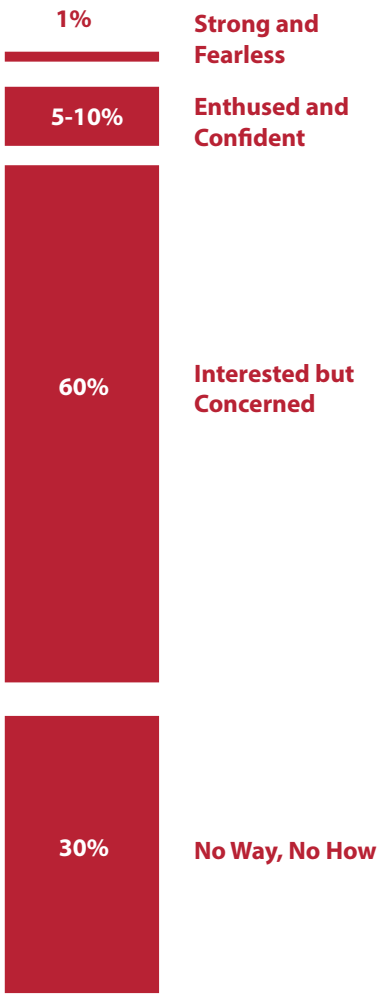
The bicycle planning and engineering professions currently use several systems to classify the population which can assist in understanding the characteristics and infrastructure preferences of different bicyclists. The current AASHTO Guide to the Development of Bicycle Facilities encourages designers to identify their rider type based on the trip purpose (Recreational vs Transportation) and on the level of comfort and skill of the rider (Causal vs Experienced). A more detailed framework for understanding of the US population's relationship to transportation focused bicycling is illustrated in the figure below. Developed by planners in Portland, OR[1] and supported by research[2], this classification provides the following alternative categories to address varying attitudes towards bicycling in the US:

- **Strong and Fearless** (approximately 1% of population) – Characterized by bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections -- even if shared with vehicles -- over separate bicycle facilities such as shared use paths.

- **Enthused and Confident** (5-10% of population) - This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or shared use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreationalists, racers and utilitarian bicyclists.

- **Interested but Concerned** (approximately 60% of population) – This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or shared use paths under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become "Enthused & Confident" with encouragement, education and experience.

- **No Way, No How** (approximately 30% of population) – Persons in this category are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually become more regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.



Typical Distribution of Bicyclist Types

1 *Roger Geller, City of Portland Bureau of Transportation. Four Types of Cyclists. http://www.portlandonline.com/transportation/index.cfm?&a=237507. 2009.*

2 Dill, J., McNeil, N. *Four Types of Cyclists? Testing a Typology to Better Understand Bicycling Behavior and Potential.* 2012.

Shared Roadways

On shared roadways, bicyclists and motor vehicles use the same roadway space. These facilities are typically used on roads with low speeds and traffic volumes, however they can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Shared roadways employ a large variety of treatments from simple signage and shared lane markings to more complex treatments including directional signage, traffic diverters, chicanes, chokers, and/or other traffic calming devices to reduce vehicle speeds or volumes.

Bike Boulevards

Bike boulevards are a special class of shared roadways designed for a broad spectrum of bicyclists. They are low-volume local streets where motorists and bicyclists share the same travel lane. Treatments for bike boulevards are selected as necessary to create appropriate automobile volumes and speeds, and to provide safe crossing opportunities of busy streets.

Signed Shared Roadway


Marked Shared Roadway


Bike Boulevards

Signed Shared Roadway

Description

Signed shared roadways are facilities shared with motor vehicles. They are typically used on roads with low speeds and traffic volumes, however can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

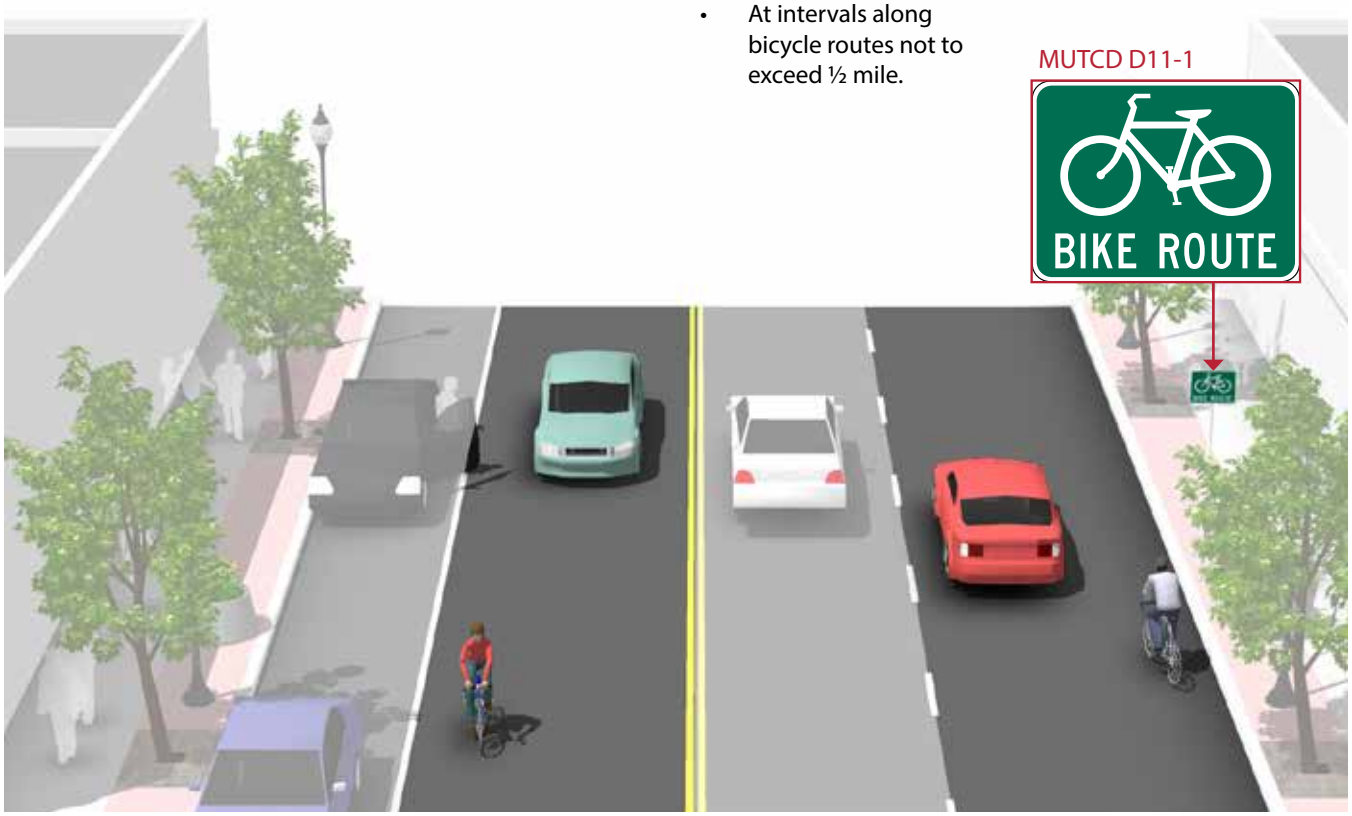
Guidance

Lane width varies depending on roadway configuration.

Bike route signage (D11-1) should be applied at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists. Commonly, this includes placement at:

- Beginning or end of Bicycle Route.
- At major changes in direction or at intersections with other bicycle routes.
- At intervals along bicycle routes not to exceed ½ mile.

MUTCD D11-1



Discussion

Signed Shared Roadways serve either to provide continuity with other bicycle facilities (usually bike lanes) or to designate preferred routes through high-demand corridors.

This configuration differs from a neighborhood greenway due to a lack of traffic calming, wayfinding, pavement markings and other enhancements designed to provide a higher level of comfort for a broad spectrum of users.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.

Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs, and will need periodic replacement due to wear.

Marked Shared Roadway

Description

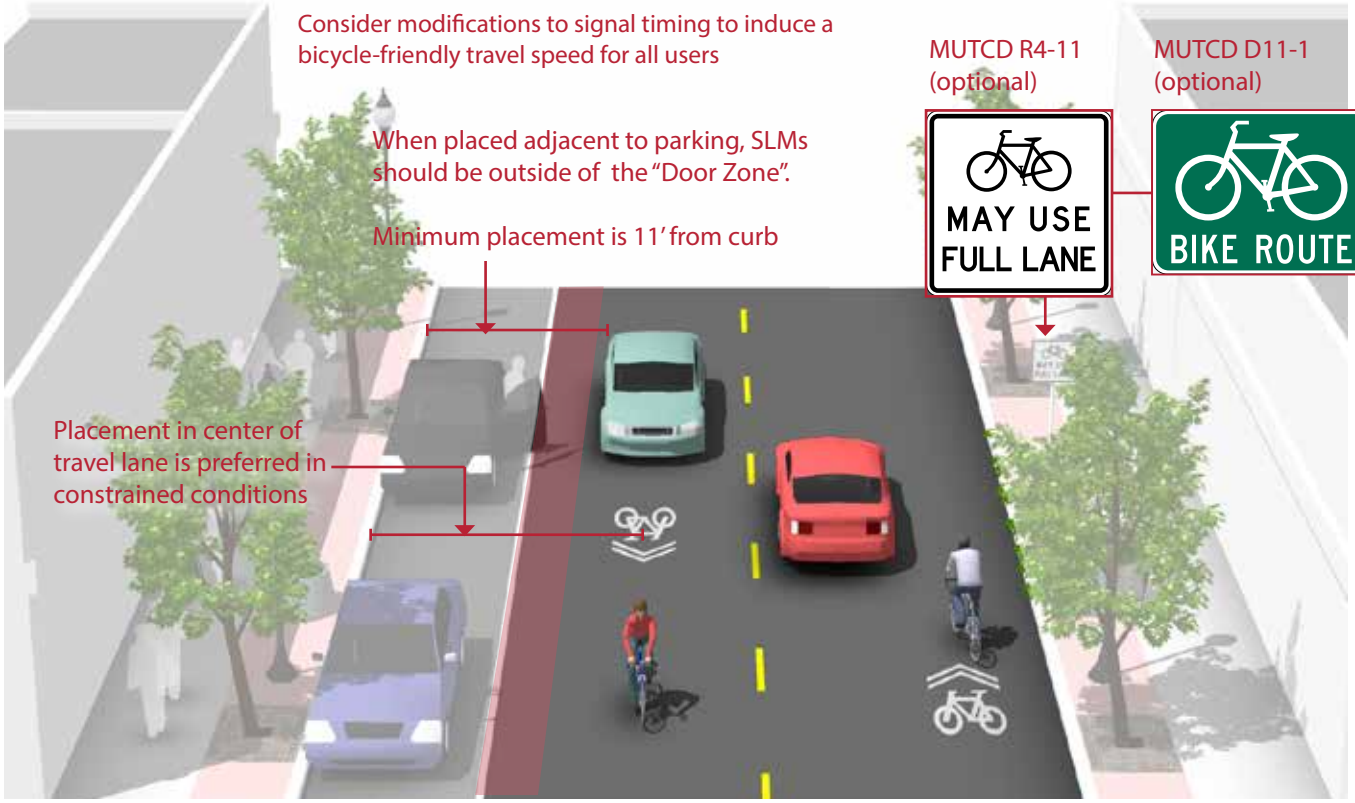
A marked shared roadway is a general purpose travel lane marked with shared lane markings (SLM) used to encourage bicycle travel and proper positioning within the lane.

In constrained conditions, the SLMs are placed in the middle of the lane. On a wide outside lane, the SLMs can be used to promote bicycle travel to the right of motor vehicles.

In all conditions, SLMs should be placed outside of the door zone of parked cars.

Guidance

- May be used on streets with a speed limit of 35 mph or under. Lower than 30 mph speed limit preferred.
- In constrained conditions, preferred placement is in the center of the travel lane to minimize wear and promote single file travel.
- Minimum placement of SLM marking centerline is 11 feet from edge of curb where on-street parking is present, 4 feet from edge of curb with no parking. If parking lane is wider than 7.5 feet, the SLM should be moved further out accordingly.



Discussion

If collector or arterial, this should not be a substitute for dedicated bicycle facilities if space is available.

Bike Lanes should be considered on roadways with outside travel lanes wider than 15 feet, or where other lane narrowing or removal strategies may provide adequate road space. SLMs shall not be used on shoulders, in designated bike lanes, or to designate bicycle detection at signalized intersections. (MUTCD 9C.07)

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
NACTO. *Urban Bikeway Design Guide.* 2012.

Materials and Maintenance

Placing SLMs between vehicle tire tracks will increase the life of the markings and minimize the long-term cost of the treatment.

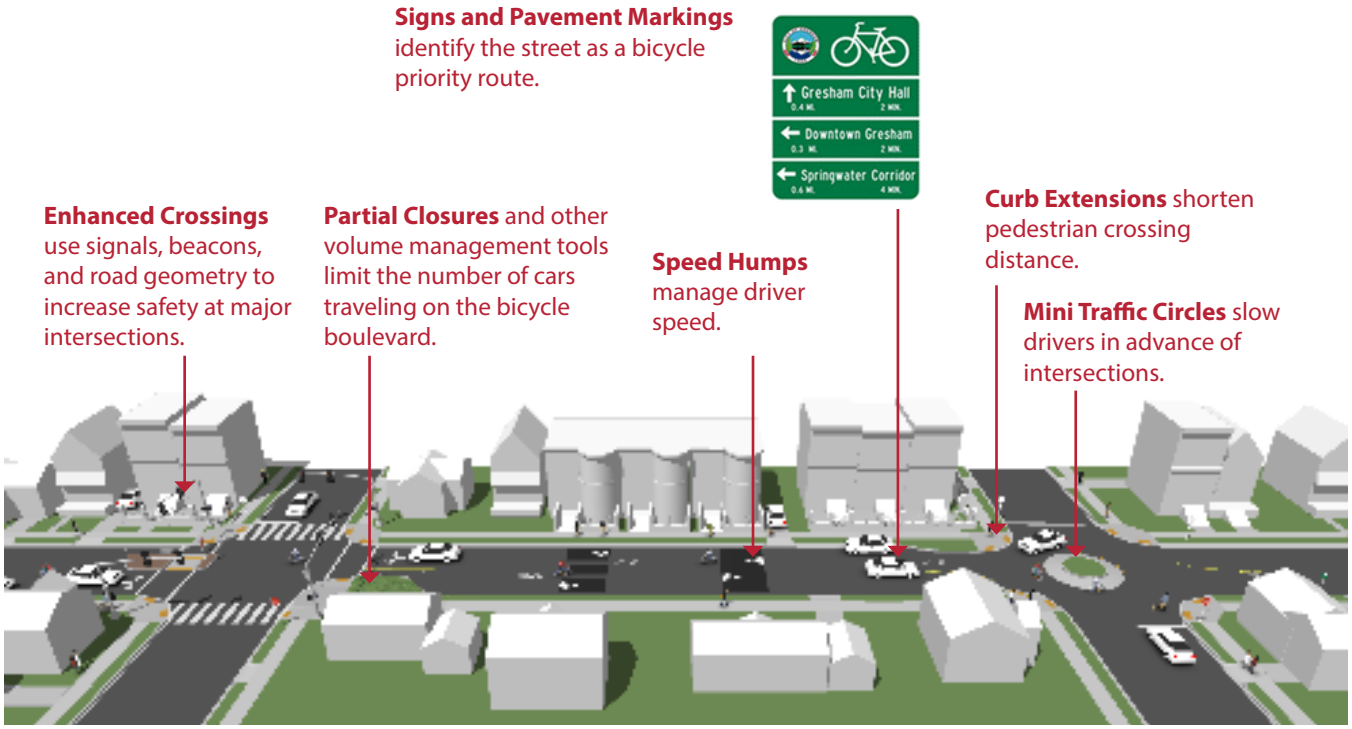
Bicycle Boulevard

Description

Bicycle boulevards are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.

Guidance

- Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard.
- Bicycle boulevards should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.
- Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
- Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.



Discussion

Bicycle boulevard retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the bicycle boulevard and compromise safety.

Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

Additional References and Guidelines

Alta Planning + Design and IBPI. *Bicycle Boulevard Planning and Design Handbook*. 2009.
BikeSafe. *Bicycle countermeasure selection system.*
Ewing, Reid. *Traffic Calming: State of the Practice.* 1999.
Ewing, Reid and Brown, Steven. *U.S. Traffic Calming Manual.* 2009.

Materials and Maintenance

Vegetation should be regularly trimmed to maintain visibility and attractiveness.

Separated Bikeways

Designated exclusively for bicycle travel, separated bikeways are segregated from vehicle travel lanes by striping, and can include pavement stencils and other treatments. Separated bikeways are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation.

Separated bikeways can increase safety and promote proper riding by:

- Defining road space for bicyclists and motorists, reducing the possibility that motorists will stray into the bicyclists' path.
- Discouraging bicyclists from riding on the sidewalk.
- Reducing the incidence of wrong way riding.
- Reminding motorists that bicyclists have a right to the road.


Shoulder Bikeways


On-Street Bicycle Lanes


Buffered Bike Lanes

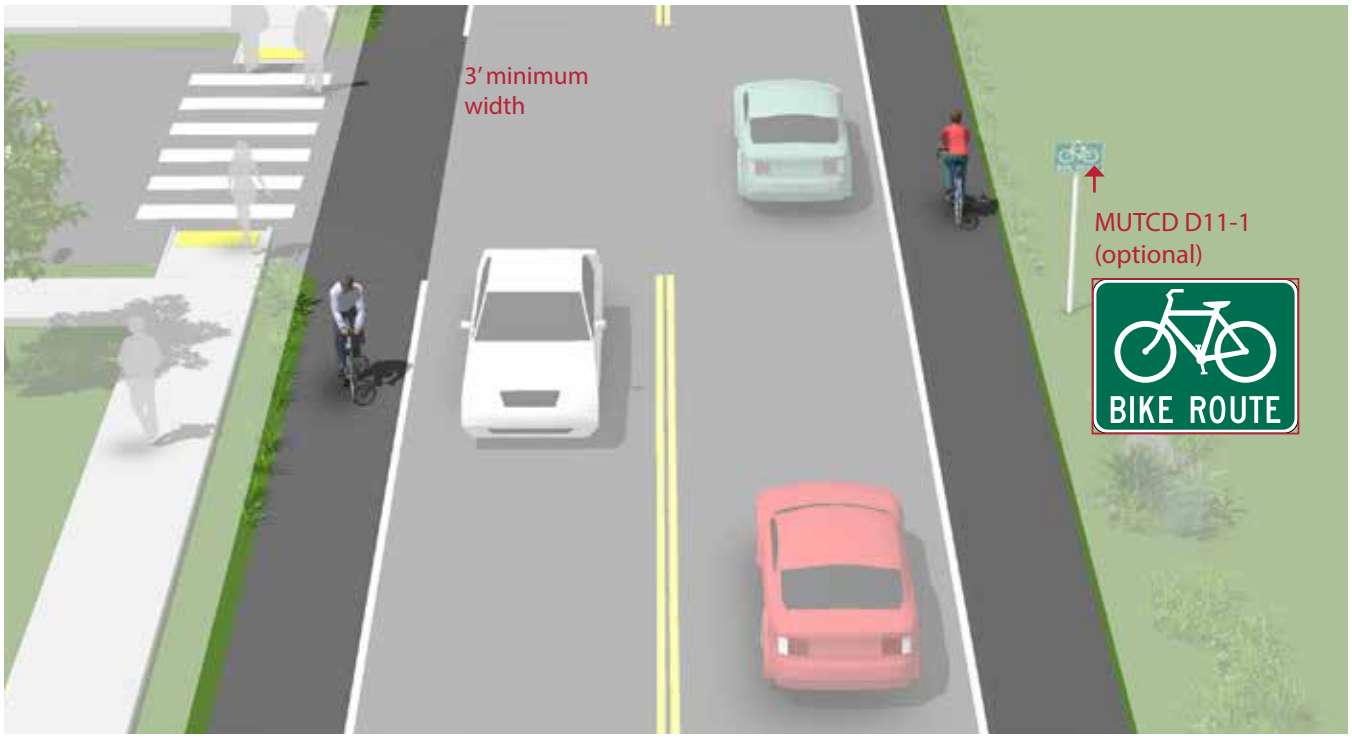
Shoulder Bikeways

Description

Typically found in less-dense areas, shoulder bikeways are paved roadways with striped shoulders (4'+) wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. Shoulder bikeways should be considered a temporary treatment, with full bike lanes planned for construction when the roadway is widened or completed with curb and gutter. This type of treatment is not typical in urban areas and should only be used where constraints exist.

Guidance

- If 4 feet or more is available for bicycle travel, the full bike lane treatment of signs, legends, and an 8" bike lane line would be provided.
- If it is not possible to meet minimum bicycle lane dimensions, a reduced width paved shoulder can still improve conditions for bicyclists on constrained roadways. In these situations, a minimum of 3 feet of operating space should be provided.
- Rumble strips are not recommended on shoulders used by bicyclists unless there is a minimum 4 foot clear path. 12 foot gaps every 40-60 feet should be provided to allow access as needed.



Discussion

A wide outside lane may be sufficient accommodation for bicyclists on streets with insufficient width for bike lanes but which do have space available to provide a wider (14'-16') outside travel lane. Consider configuring as a marked shared roadway in these locations.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.

Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Shoulder bikeways should be cleared of snow through routine snow removal operations.

On-Street Bicycle Lanes

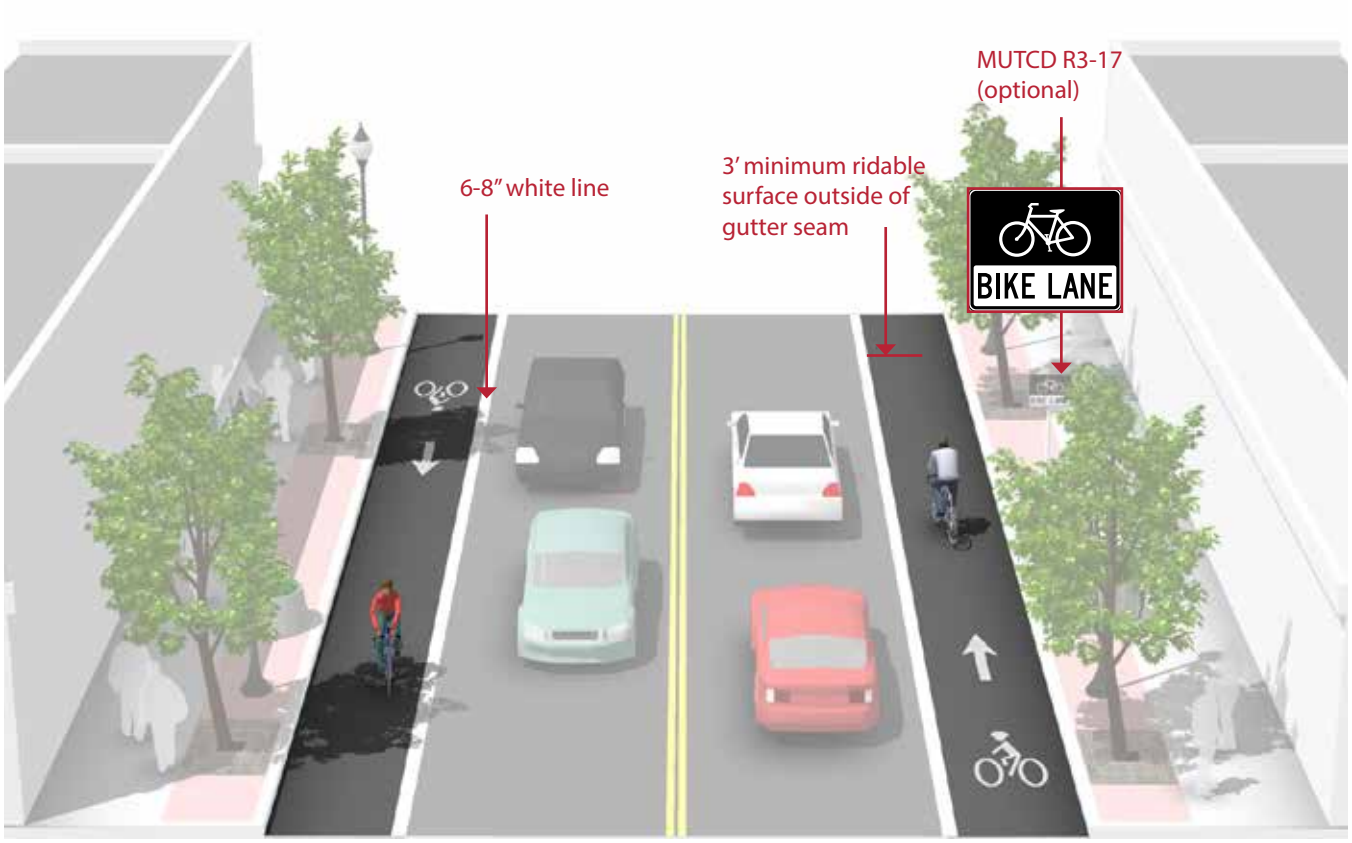
Description

On-street bicycle lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is typically located on the right side of the street, between the adjacent travel lane and curb, and is used in the same direction as motor vehicle traffic.

An on-street bike lane width of 7 feet makes it possible for bicyclists to ride side-by-side or pass each other without leaving the bike lane, thereby increasing the capacity of

Guidance

- 4 foot minimum when no curb and gutter is present.
- 5 foot minimum when adjacent to curb and gutter or 3 feet more than the gutter pan width if the gutter pan is wider than 2 feet.
- 7 foot maximum width for use adjacent to arterials with high travel speeds. Greater widths may encourage motor vehicle use of bike lane. Configure as buffered bicycle lanes when a wider facility is desired.



Discussion

Wider bicycle lanes are desirable in certain situations such as on higher speed arterials (45 mph+) where use of a wider bicycle lane would increase separation between passing vehicles and bicyclists. Appropriate signing and stenciling is important with wide bicycle lanes to ensure motorists do not mistake the lane for a vehicle lane or parking lane. Consider buffered bicycle lanes when further separation is desired.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
NACTO. *Urban Bikeway Design Guide.* 2012.

Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

Buffered Bike Lane

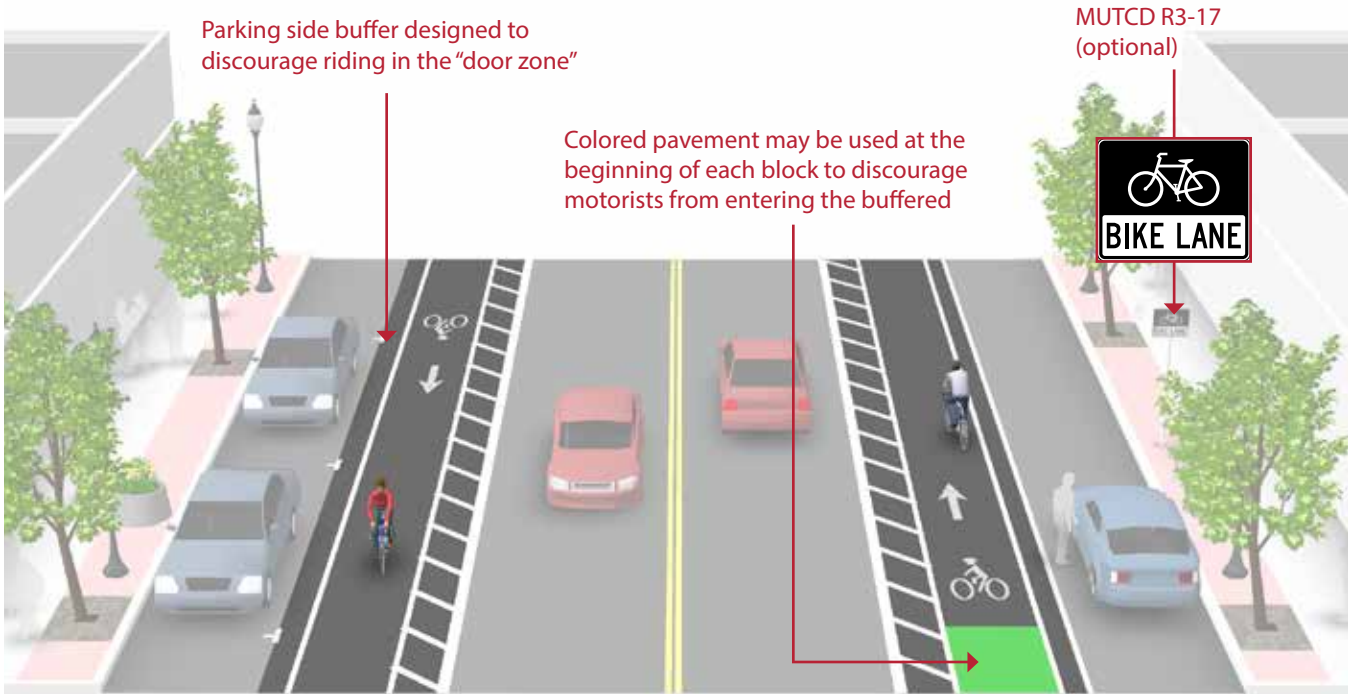
Description

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes follow general guidance for buffered preferential vehicle lanes as per MUTCD guidelines (section 3D-01).

Buffered bike lanes are designed to increase the space between the bike lane and the travel lane and/or parked cars. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

Guidance

- The minimum bicycle travel area (not including buffer) is 5 feet wide.
- Buffers should be at least 2 feet wide. If 3 feet or wider, mark with diagonal or chevron hatching. For clarity at driveways or minor street crossings, consider a dotted line for the inside buffer boundary where cars are expected to cross.
- Buffered bike lanes can buffer the travel lane only, or parking lane only depending on available space and the objectives of the design.



Discussion

Frequency of right turns by motor vehicles at major intersections should determine whether continuous or truncated buffer striping should be used approaching the intersection. Commonly configured as a buffer between the bicycle lane and motor vehicle travel lane, a parking side buffer may also be provided to help bicyclists avoid the 'door zone' of parked cars.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices. (3D-01).* 2009.
NACTO. *Urban Bikeway Design Guide.* 2012.

Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

Physically Separated Bicycle Lane

A physically separated bicycle lane is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A physically separated bicycle lane is physically separated from motor traffic and distinct from the sidewalk. Physically separated bicycle lanes have different forms but all share common elements—they provide space that is intended to be exclusively or primarily used by bicycles, and are separated from motor vehicle travel lanes, parking lanes, and sidewalks. In situations where on-street parking is allowed, physically separated bicycle lanes are located to the curb-side of the parking (in contrast to bike lanes).

Physically separated bicycle lanes may be one-way or two-way, and may be at street level, sidewalk level or at an intermediate level. If at sidewalk level, a curb or median separates them from motor traffic, while different pavement color/texture separates the physically separated bicycle lane from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking or bollards.

A two-way physically separated bicycle lane is desirable when more destinations are on one side of a street (therefore preventing additional crossings), if the facility connects to a path or other bicycle facility on one side of the street, or if there is not enough room for a physically separated bicycle lane on both sides of the road.

By separating bicyclists from motor traffic, physically separated bicycle lanes can offer a higher level of comfort than bike lanes and are attractive to a wider spectrum of the public.

Intersections and approaches must be carefully designed to promote safety and facilitate left-turns from the right side of the street.

One-Way Physically Separated Bike Lane

Two-Way Physically Separated Bike Lane

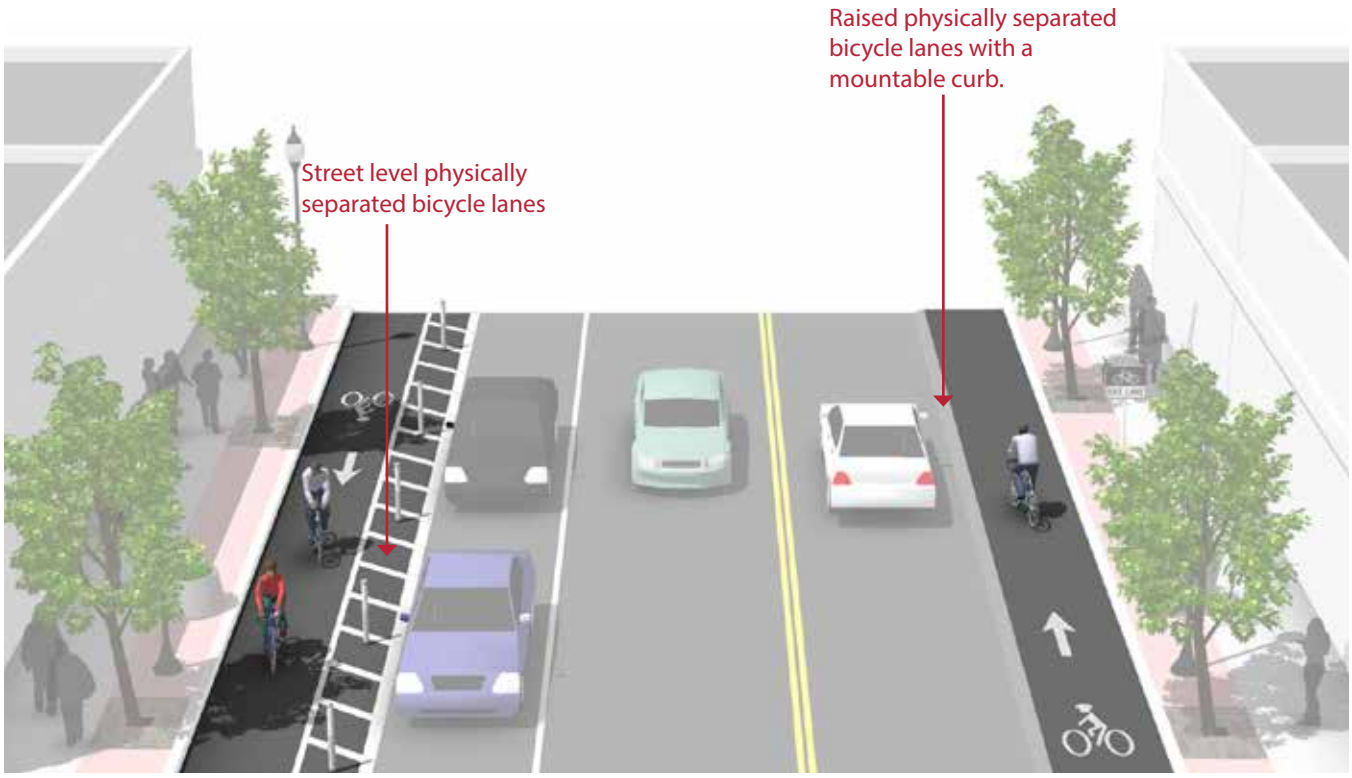
One-Way Physically Separated Bicycle Lane

Description

One-way physically separated bicycle lanes are physically separated from motor traffic and distinct from the sidewalk. One-way physically separated bicycle lanes are either raised or at street level and use a variety of elements for physical protection from passing traffic.

Guidance

- 7 foot recommended minimum to allow passing.
- 5 foot minimum width in constrained locations.
- When placed adjacent to parking, the parking buffer should be three feet wide to allow for passenger loading and to prevent door collisions.
- When placed adjacent to a travel lane, one-way raised physically separated bicycle lanes may be configured with a mountable curb to allow entry and exit from the bicycle lane for passing other bicyclists or to access vehicular turn lanes.



Discussion

Special consideration should be given at transit stops to manage bicycle and pedestrian interactions. Driveways and minor street crossings are unique challenges to physically separated bicycle lane design. Parking should be prohibited within 30 feet of the intersection to improve visibility. Color, yield markings and "Yield to Bikes" signage should be used to identify the conflict area and make it clear that the physically separated bicycle lane has priority over entering and exiting traffic. If configured as a raised facility, the crossing should be raised so that the sidewalk and physically separated bicycle lane maintain their elevation through the crossing.

Additional References and Guidelines

NACTO. *Urban Bikeway Design Guide.* 2012.

Materials and Maintenance

In cities with winter climates, barrier separated and raised physically separated bicycle lanes may require special equipment for snow removal.

Two-Way Physically Separated Bicycle Lane

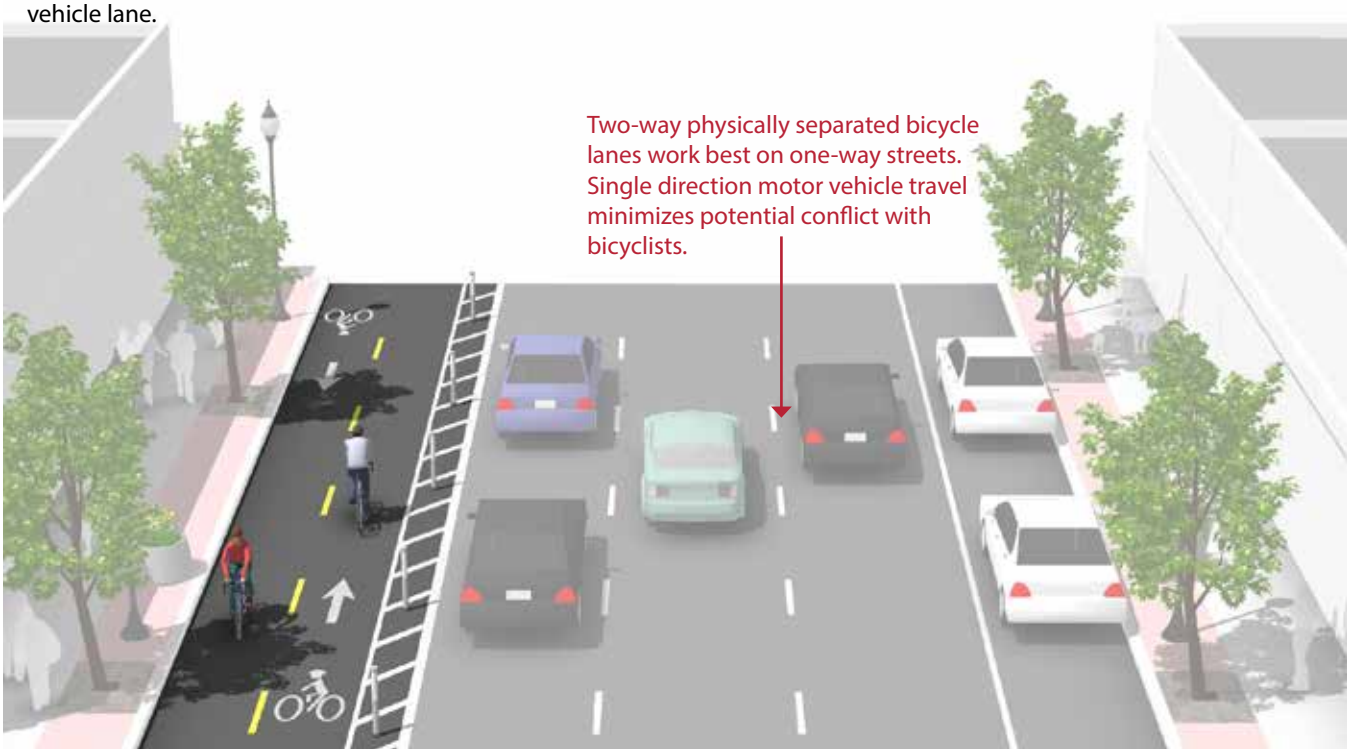
Description

Two-way physically separated bicycle lanes are physically separated bike facilities that allow bicycle movement in both directions on one side of the road. Two-way physically separated bicycle lanes share some of the same design characteristics as one-way facilities, but may require additional considerations at driveway and side-street crossings.

A two-way physically separated bicycle lane may be configured as a protected facility at street level with a parking lane or other barrier between the physically separated bicycle lane and the motor vehicle travel lane and/or as a raised physically separated bicycle lane to provide vertical separation from the adjacent motor vehicle lane.

Guidance

- 12 foot recommended minimum for two-way facility
- 8 foot minimum in constrained locations
- When placed adjacent to parking, the parking buffer should be three feet wide to allow for passenger loading and to prevent door collisions.



Discussion

Two-way physically separated bicycle lanes require a higher level of control at intersections to allow for a variety of turning movements. These movements should be guided by separated signals for bicycles and motor vehicles. Transitions into and out of two-way physically separated bicycle lanes should be simple and easy to use to deter bicyclists from continuing to ride against the flow of traffic.

At driveways and minor intersections, bicyclists riding against roadway traffic in two-way facilities may surprise pedestrians and drivers not expecting bidirectional travel. Appropriate signage is recommended.

Additional References and Guidelines

NACTO. *Urban Bikeway Design Guide*. 2012.

Materials and Maintenance

In cities with winter climates barrier, separated and raised physically separated bicycle lanes may require special equipment for snow removal.

Separated Bikeways at Intersections

Intersections are junctions at which different modes of transportation meet and facilities overlap. An intersection facilitates the interchange between bicyclists, motorists, pedestrians and other modes in order to advance traffic flow in a safe and efficient manner. Designs for intersections with bicycle facilities should reduce conflict between bicyclists (and other vulnerable road users) and vehicles by heightening the level of visibility, denoting clear right-of-way and facilitating eye contact and awareness with other modes. Intersection treatments can improve both queuing and merging maneuvers for bicyclists, and are often coordinated with timed or specialized signals.

The configuration of a safe intersection for bicyclists may include elements such as color, signage, medians, signal detection and pavement markings. Intersection design should take into consideration existing and anticipated bicyclist, pedestrian and motorist movements. In all cases, the degree of mixing or separation between bicyclists and other modes is intended to reduce the risk of crashes and increase bicyclist comfort. The level of treatment required for bicyclists at an intersection will depend on the bicycle facility type used, whether bicycle facilities are intersecting, and the adjacent street function and land use.

Bicyclists at Single Lane Roundabouts

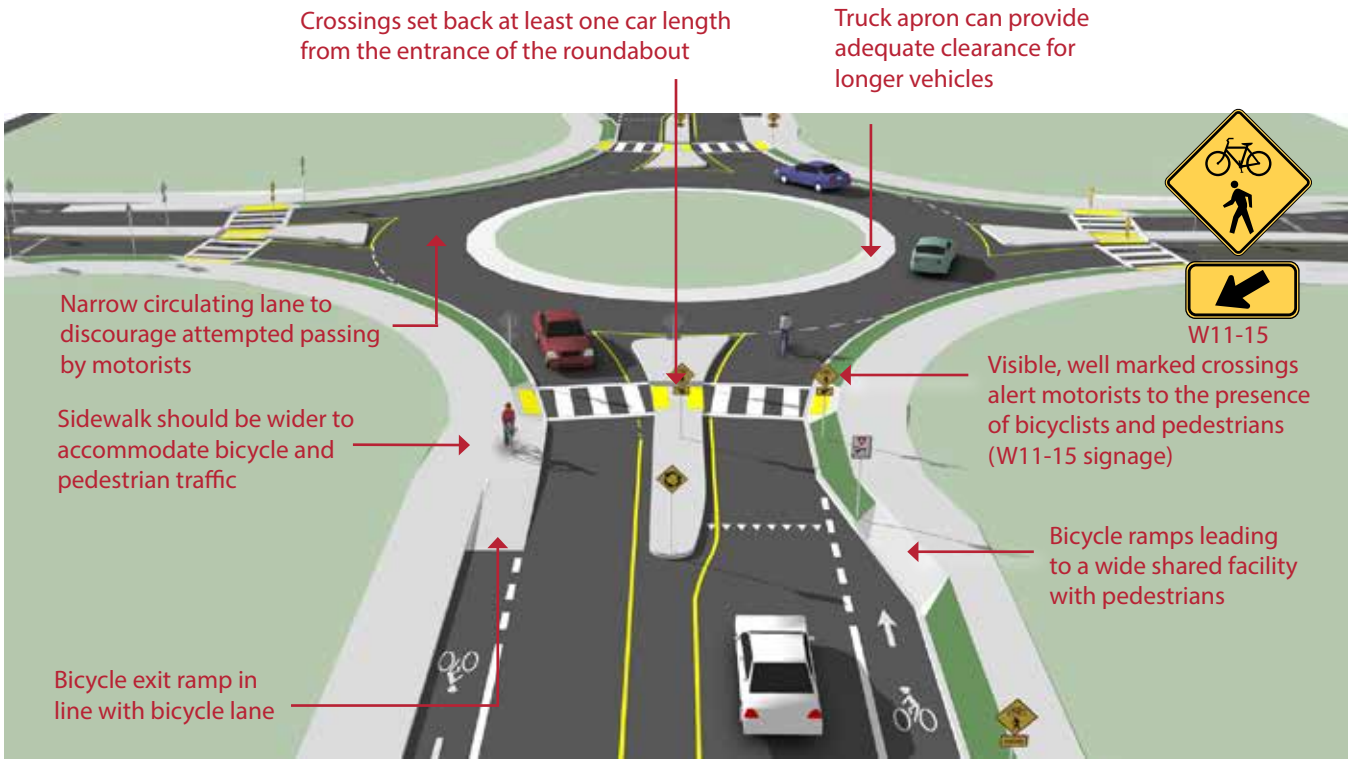
Bicyclists at Single Lane Roundabouts

Description

In single lane roundabouts it is important to indicate to motorists, bicyclists and pedestrians the right-of-way rules and correct way for them to circulate, using appropriately designed signage, pavement markings, and geometric design elements.

Guidelines

- 25 mph maximum circulating design speed.
- Design approaches/exits to the lowest speeds possible.
- Encourage bicyclists navigating the roundabout like motor vehicles to "take the lane."
- Maximize yielding rate of motorists to pedestrians and bicyclists at crosswalks.
- Provide separated facilities for bicyclists who prefer not to navigate the roundabout on the roadway.



Discussion

Research indicates that while single-lane roundabouts may benefit bicyclists and pedestrians by slowing traffic, multi-lane roundabouts may present greater challenges and significantly increase safety problems for these users.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.

FHWA. *Roundabouts: An Informational Guide.* 2000.
TRB. *Roundabouts: An Informational Guide, Second Edition.* NCHRP 672. 2010.

Materials and Maintenance

Signage and striping require routine maintenance.

Bikeway Signing

The ability to navigate through a city is informed by landmarks, natural features and other visual cues. Signs throughout the city should indicate to bicyclists:

- Direction of travel
- Location of destinations
- Travel time/distance to those destinations

These signs will increase users' comfort and accessibility to the bicycle systems.

Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the bicycle network
- Helping users identify the best routes to destinations
- Helping to address misperceptions about time and distance
- Helping overcome a "barrier to entry" for people who are not frequent bicyclists (e.g., "interested but concerned" bicyclists)

A community-wide bicycle wayfinding signage plan would identify:

- Sign locations
- Sign type – what information should be included and design features
- Destinations to be highlighted on each sign – key destinations for bicyclists
- Approximate distance and travel time to each destination

Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.

Wayfinding Sign Types


Wayfinding Sign Placement

Wayfinding Sign Types

Description

A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. There are three general types of wayfinding signs:

Confirmation Signs

Indicate to bicyclists that they are on a designated bikeway. Make motorists aware of the bicycle route.

Can include destinations and distance/time. Do not include arrows.

Turn Signs

Indicate where a bikeway turns from one street onto another street. Can be used with pavement markings.

Include destinations and arrows.

Decisions Signs

Mark the junction of two or more bikeways.

Inform bicyclists of the designated bike route to access key destinations. Includes destinations and arrows and distances.

Travel times are optional but recommended.

Discussion

There is no standard color for bicycle wayfinding signage. Section 1A.12 of the MUTCD establishes the general meaning for signage colors. Green is the color used for directional guidance and is the most common color of bicycle wayfinding signage in the US, including those in the MUTCD.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
NACTO. *Urban Bikeway Design Guide.* 2012.

Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs and will need periodic replacement due to wear.

Wayfinding Sign Placement

Confirmation Signs

Every ¼ to ½ mile on off-street facilities and every 2 to 3 blocks along on-street bicycle facilities, unless another type of sign is used (e.g., within 150 ft of a turn or decision sign). Should be placed soon after turns to confirm destination(s). Pavement markings can also act as confirmation that a bicyclist is on a preferred route.

Turn Signs

Near-side of intersections where bike routes turn (e.g., where the street ceases to be a bicycle route or does not go through). Pavement markings can also indicate the need to turn to the bicyclist.

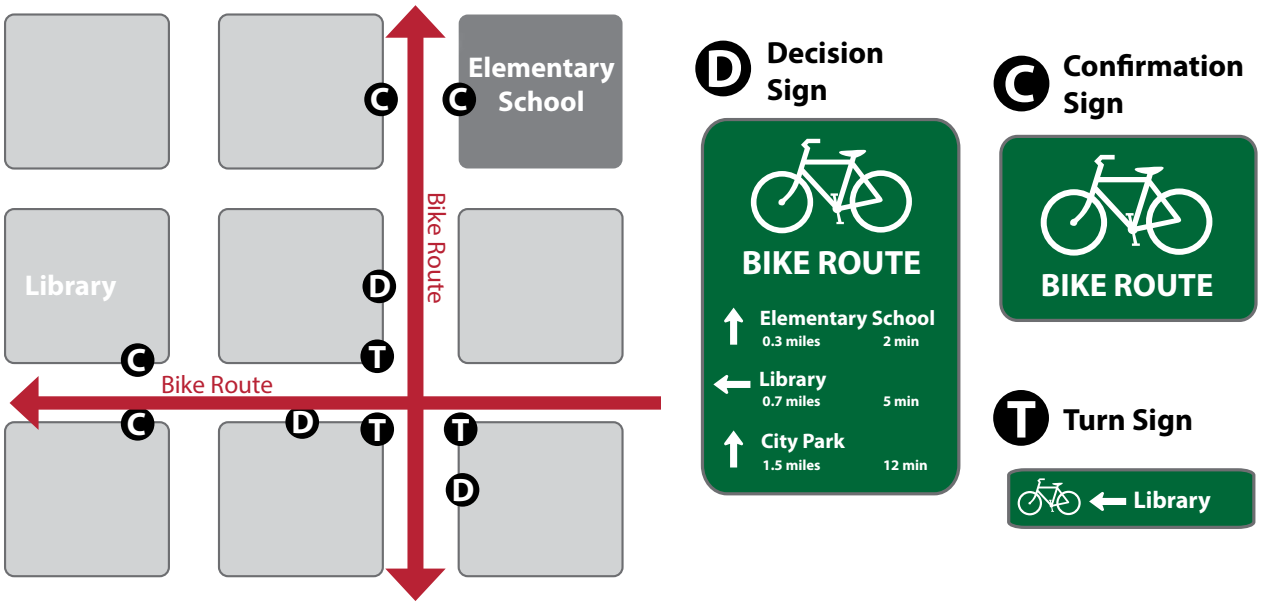
Guidance

Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes.

Decisions Signs

Near-side of intersections in advance of a junction with another bicycle route.

Along a route to indicate a nearby destination.



Discussion

It can be useful to classify a list of destinations for inclusion on the signs based on their relative importance to users throughout the area. A particular destination's ranking in the hierarchy can be used to determine the physical distance from which the locations are signed. For example, primary destinations (such as the downtown area) may be included on signage up to 5 miles away. Secondary destinations (such as a transit station) may be included on signage up to two miles away. Tertiary destinations (such as a park) may be included on signage up to one mile away.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
NACTO. *Urban Bikeway Design Guide.* 2012.

Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs and will need periodic replacement due to wear.

Retrofitting Existing Streets to add Bikeways

Most major streets are characterized by conditions (e.g., high vehicle speeds and/or volumes) for which dedicated bike lanes are the most appropriate facility to accommodate safe and comfortable riding. Although opportunities to add bike lanes through roadway widening may exist in some locations, many major streets have physical and other constraints that would require street retrofit measures within existing curb-to-curb widths. As a result, much of the guidance provided in this section focuses on effectively reallocating existing street width through striping modifications to accommodate dedicated bike lanes.

Although largely intended for major streets, these measures may be appropriate for any roadway where bike lanes would be the best accommodation for bicyclists.


Roadway Widening


Lane Narrowing

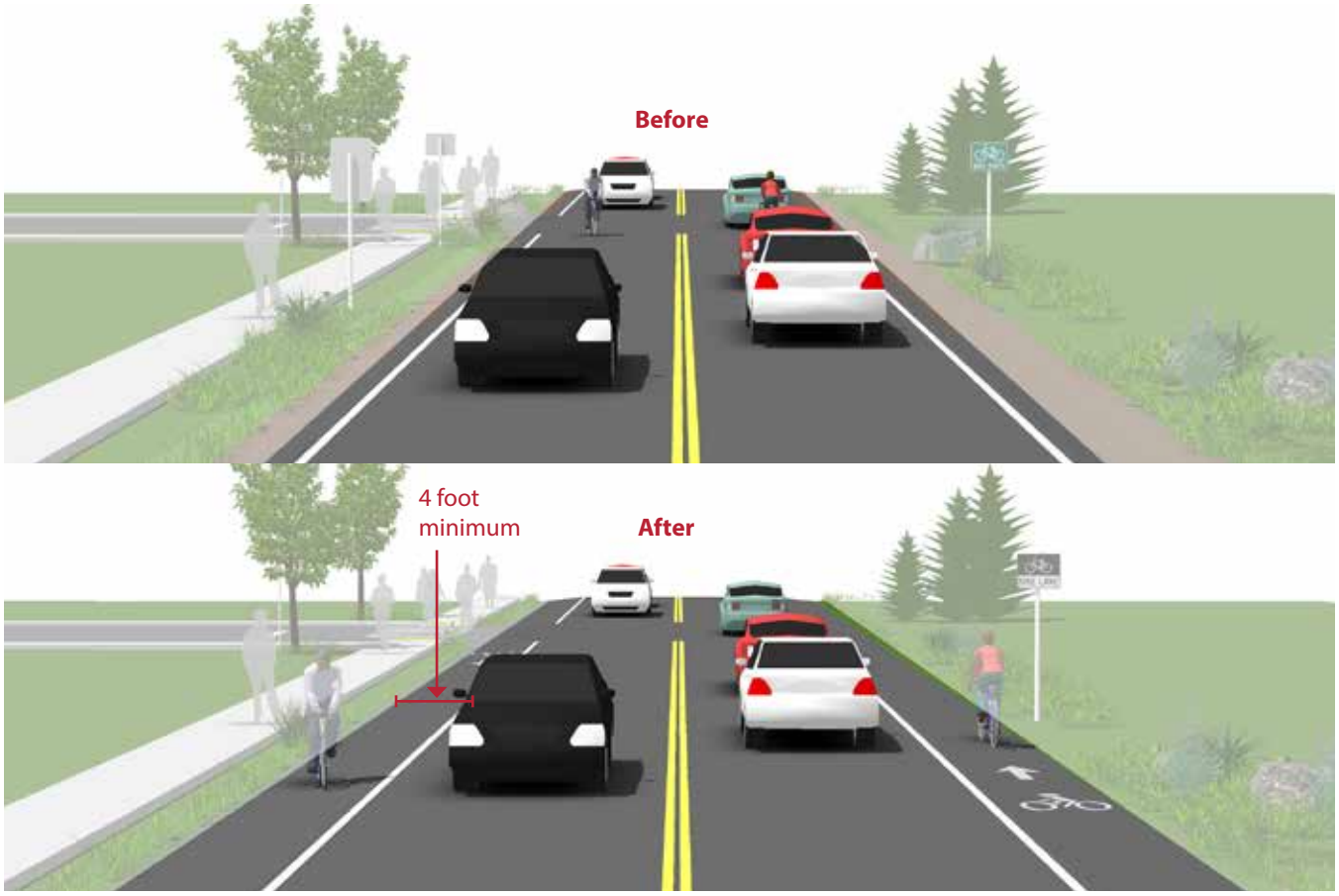
Roadway Widening

Description

Bike lanes can be accommodated on streets with excess right-of-way through shoulder widening. Although roadway widening incurs higher expenses compared with re-striping projects, bike lanes can be added to streets currently lacking curbs, gutters and sidewalks without the high costs of major infrastructure reconstruction.

Guidance

- Guidance on bicycle lanes applies to this treatment.
- 4 foot minimum width when no curb and gutter is present.
- 6 foot width preferred.



Discussion

Roadway widening is most appropriate on roads lacking curbs, gutters and sidewalks.

If it is not possible to meet minimum bicycle lane dimensions, a reduced width paved shoulder can still improve conditions for bicyclists on constrained roadways. In these situations, a minimum of 3 feet of operating space should be provided.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.

Materials and Maintenance

The extended bicycle area should not contain any rough joints where bicyclists ride. Saw or grind a clean cut at the edge of the travel lane, or feather with a fine mix in a non-ridable area of the roadway.

Lane Narrowing

Description

Lane narrowing utilizes roadway space that exceeds minimum standards to provide the needed space for bike lanes. Many roadways have existing travel lanes that are wider than those prescribed in local and national roadway design standards, or which are not marked. Most standards allow for the use of 11 foot and sometimes 10 foot wide travel lanes to create space for bike lanes.

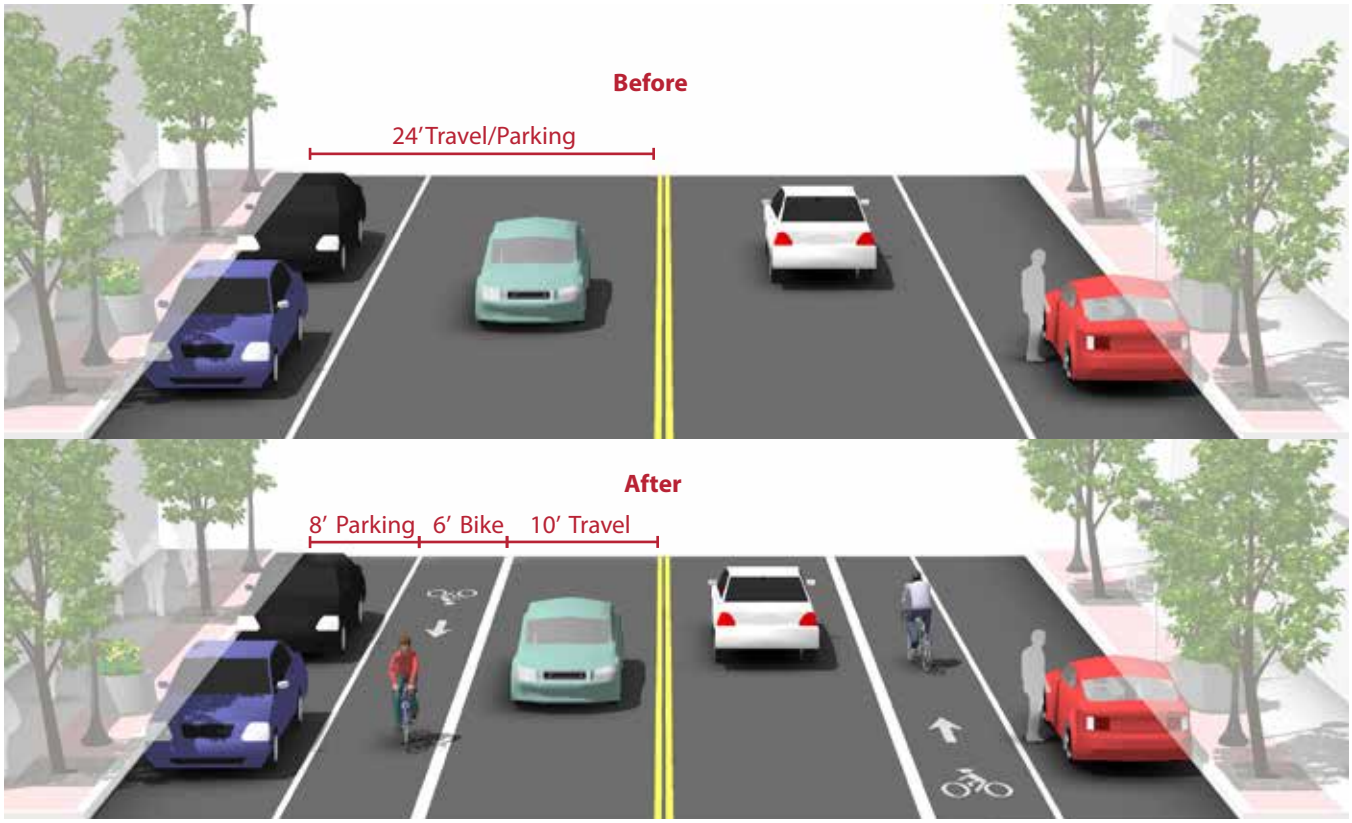
Guidance

Vehicle lane width:

- Before: 10-15 feet
- After: 10-11 feet

Bicycle lane width:

- Guidance on bicycle lanes applies to this treatment.



Discussion

Special consideration should be given to the amount of heavy vehicle traffic and horizontal curvature before the decision is made to narrow travel lanes. Center turn lanes can also be narrowed in some situations to free up pavement space for bike lanes.

AASHTO supports reduced width lanes in *A Policy on Geometric Design of Highways and Streets: "On interrupted-flow operation conditions at low speeds (45 mph or less), narrow lane widths are normally adequate and have some advantages."*

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
AASHTO. *A Policy on Geometric Design of Highways and Streets.* 2004.
NACTO. *Urban Street Design Guide.* 2013.

Materials and Maintenance

Repair rough or uneven pavement surface. Use bicycle compatible drainage grates. Raise or lower existing grates and utility covers so they are flush with the pavement.

Shared Use Paths and Off-Street Facilities

A shared use path allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate).

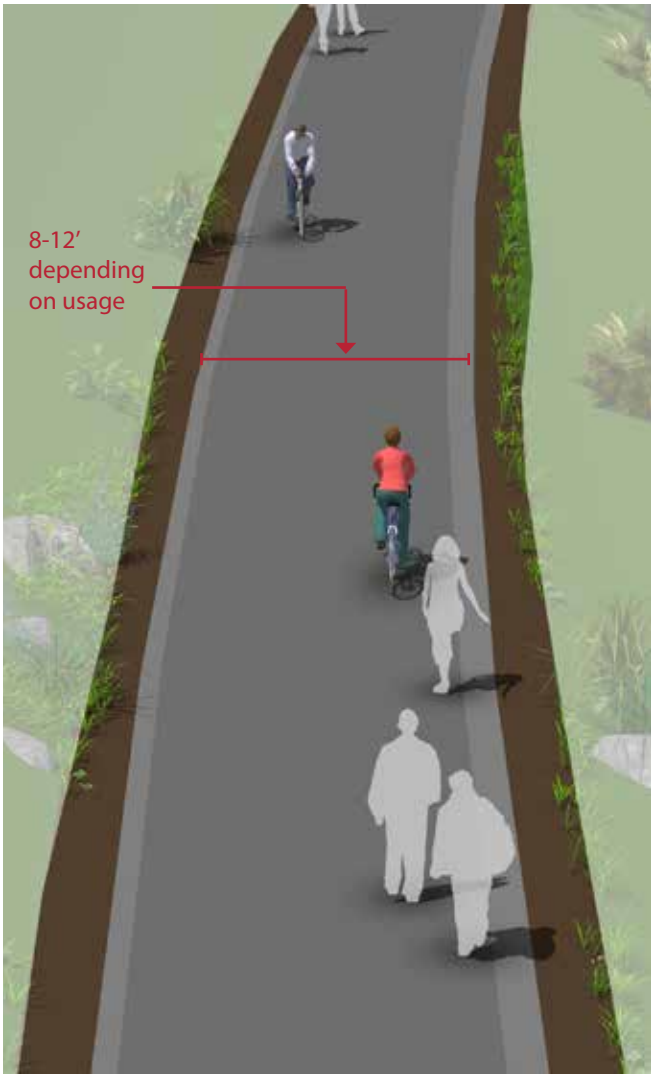
Key features of shared use paths include:

- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and bicyclists when heavy use is expected.

General Design Practices

Description

Shared use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Bicycle paths should generally provide directional travel opportunities not provided by existing roadways.



Guidance

Width

- 8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users. A separate track (5' minimum) can be provided for pedestrian use.

Lateral Clearance

- A 2 foot or greater shoulder on both sides of the path should be provided. An additional foot of lateral clearance (total of 3') is required by the MUTCD for the installation of signage or other furnishings.
- If bollards are used at intersections and access points, they should be colored brightly and/or supplemented with reflective materials to be visible at night.

Overhead Clearance

- Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

Striping

- When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
- Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

Discussion

Terminate the path where it is easily accessible to and from the street system, preferably at a controlled intersection or at the beginning of a dead-end street.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
Flink, C. *Greenways: A Guide To Planning Design And Development.* 1993.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

Shared-Use Paths in River and Utility Corridors

Description

Utility and waterway corridors often offer excellent shared use path development and bikeway gap closure opportunities. Utility corridors typically include powerline and sewer corridors, while waterway corridors include canals, drainage ditches, rivers, and beaches. These corridors offer excellent transportation and recreation opportunities for bicyclists of all ages and skills.

Guidance

Shared use paths in utility corridors should meet or exceed general design practices. If additional width allows, wider paths, and landscaping are desirable.

Access Points

Any access point to the path should be well-defined with appropriate signage designating the pathway as a bicycle facility and prohibiting motor vehicles.

Path Closure

Public access to the shared use path may be prohibited during the following events:

- Canal/flood control channel or other utility maintenance activities
- Inclement weather or the prediction of storm conditions

Discussion

Similar to railroads, public access to flood control channels or canals may be undesirable. Hazardous materials, deep water or swift current, steep, slippery slopes, and debris all may constitute risks for public access. Appropriate fencing may be desired to keep path users within the designated travel way. Creative design of fencing is encouraged to make the path facility feel welcoming to the user.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
Flink, C. *Greenways: A Guide To Planning Design And Development.* 1993.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

Shared-Use Paths Along Roadways

Description

Shared Use Paths along roadways, also called Sidepaths, are a type of path that run adjacent to a street.

Because of operational concerns it is generally preferable to place paths within independent rights-of-way away from roadways. However, there are situations where existing roads provide the only corridors available.

Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the path.

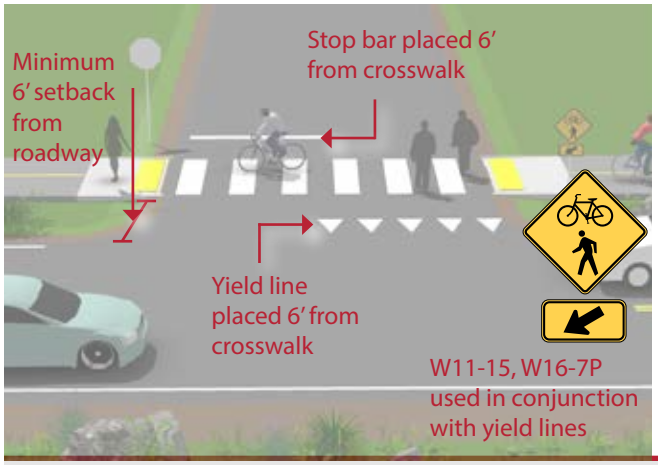
The AASHTO Guide for the Development of Bicycle Facilities cautions practitioners of the use of two-way sidepaths on urban or suburban streets with many driveways and street crossings.

In general, there are two approaches to crossings: adjacent crossings and setback crossings, illustrated below.

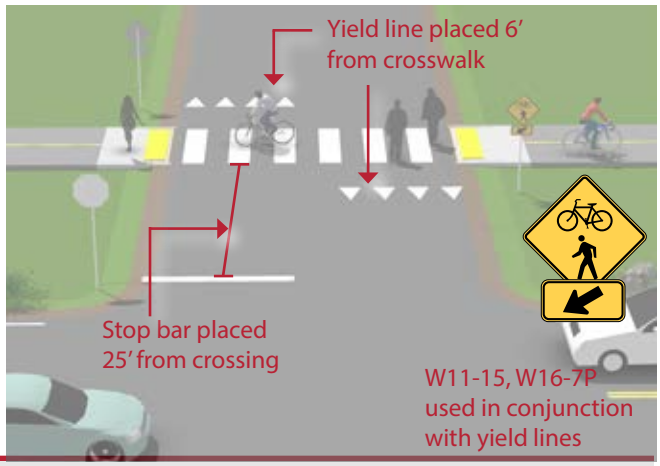
Guidance

- Guidance for sidepaths should follow that for general design practises of shared use paths.
- A high number of driveway crossings and intersections create potential conflicts with turning traffic. Consider alternatives to sidepaths on streets with a high frequency of intersections or heavily used driveways.
- Where a sidepath terminates special consideration should be given to transitions so as not to encourage unsafe wrong-way riding by bicyclists.
- Crossing design should emphasize visibility of users and clarity of expected yielding behavior. Crossings may be STOP or YIELD controlled depending on sight lines and bicycle motor vehicle volumes and speeds.

Adjacent Crossing - A separation of 6 feet emphasizes the conspicuity of riders at the approach to the crossing.



Setback Crossing - A set back of 25 feet separates the path crossing from merging/turning movements that may be competing for a driver's attention.



Discussion

The provision of a shared use path adjacent to a road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities.

To reduce potential conflicts in some situations, it may be better to place one-way sidepaths on both sides of the street.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
NACTO. *Urban Bikeway Design Guide.* See entry on Raised Cycle Tracks. 2012.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

Natural Surface Trails

Description

Sometimes referred to as footpaths or hiking trails, the natural surface trail is used along corridors that are environmentally-sensitive but can support bare earth, wood chip, or boardwalk trails. Natural surface trails are a low-impact solution and found in areas with limited development or where a more primitive experience is desired.

Guidance presented in this section does not include considerations for bicycles. Natural surface trails designed for bicycles are typically known as single track trails.

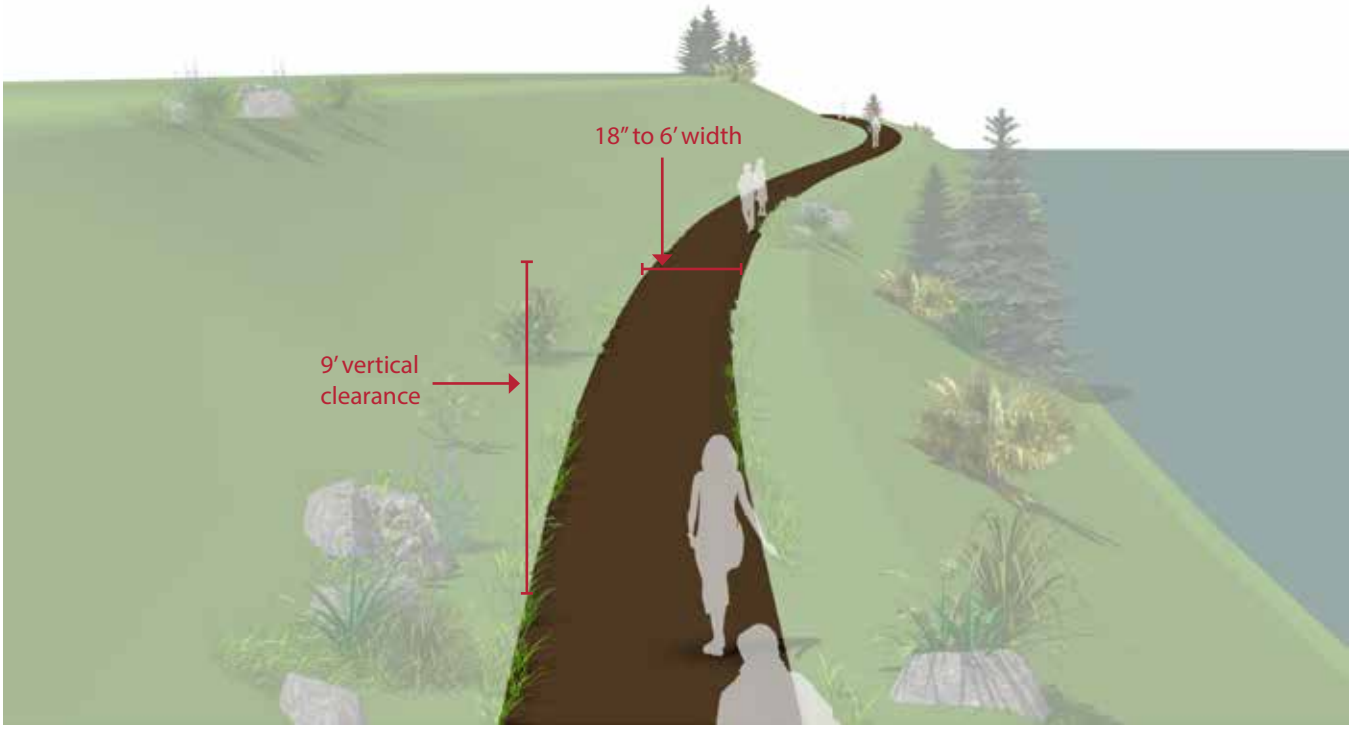
Guidance

Trails can vary in width from 18 inches to 6 feet or greater; vertical clearance should be maintained at nine-feet above grade.

Base preparation varies from machine-worked surfaces to those worn only by usage.

Trail surface can be made of dirt, rock, soil, forest litter, or other native materials. Some trails use crushed stone (a.k.a. "crush and run") that contains about 4% fines by weight, and compacts with use.

Provide positive drainage for trail tread without extensive removal of existing vegetation; maximum slope is five percent (typical).



Discussion

Trail erosion control measures include edging along the low side of the trail, steps and terraces to contain surface material, and water bars to direct surface water off the trail; use bedrock surface where possible to reduce erosion.

Additional References and Guidelines

Flink, C. *Greenways: A Guide To Planning Design And Development.* 1993.

Materials and Maintenance

Consider implications for accessibility when weighing options for surface treatments.

Boardwalks

Description

Boardwalks are typically required when crossing wetlands or other poorly drained areas. They are usually constructed of wooden planks or recycled material planks that form the top layer of the boardwalk. The recycled material has gained popularity in recent years since it lasts much longer than wood, especially in wet conditions. A number of low-impact support systems are also available that reduce the disturbance within wetland areas to the greatest extent possible.

Guidance

- Boardwalk width should be a minimum of 10 feet when no rail is used. A 12 foot width is preferred in areas with average anticipated use and whenever rails are used.
- When the height of a boardwalk exceeds 30", railings are required.
- If access by vehicles is desired, boardwalks should be designed to structurally support the weight of a small truck or a light-weight vehicle.

Discussion

In general, building in wetlands is subject to regulations and should be avoided.

The foundation normally consists of wooden posts or auger piers (screw anchors). Screw anchors provide greater support and last much longer.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Wetland Trail Design and Construction.* 2001.

Materials and Maintenance

Decking should be either non-toxic treated wood or recycled plastic. Cable rails are attractive and more visually transparent but may require maintenance to tighten the cables if the trail has snow storage

Path/Roadway Crossings

At-grade roadway crossings can create potential conflicts between path users and motorists, however, well-designed crossings can mitigate many operational issues and provide a higher degree of safety and comfort for path users. This is evidenced by the thousands of successful facilities around the United States with at-grade crossings. In most cases, at-grade path crossings can be properly designed to provide a reasonable degree of safety and can meet existing traffic and safety standards. Path facilities that cater to bicyclists can require additional considerations due to the higher travel speed of bicyclists versus pedestrians.

Consideration must be given to adequate warning distance based on vehicle speeds and line of sight, with the visibility of any signs absolutely critical. Directing the active attention of motorists to roadway signs may require additional alerting devices such as a flashing beacon, roadway striping or changes in pavement texture. Signing for path users may include a standard "STOP" or "YIELD" sign and pavement markings, possibly combined with other features such as bollards or a bend in the pathway to slow bicyclists. Care must be taken not to place too many signs at crossings lest they begin to lose their visual impact.

A number of striping patterns have emerged over the years to delineate path crossings. A median stripe on the path approach will help to organize and warn path users. Crosswalk striping is typically a matter of local and State preference, and may be accompanied by pavement treatments to help warn and slow motorists. In areas where motorists do not typically yield to crosswalk users, additional measures may be required to increase compliance.


Marked/Unsignalized Crossings

Active Warning Beacons


Signalized/Controlled Crossings


Overcrossings

Marked/Unsignalized Crossings

Description

A marked/unsignalized crossing typically consists of a marked crossing area, signage and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

When space is available, using a median refuge island can improve user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time.

Guidance

Maximum traffic volumes

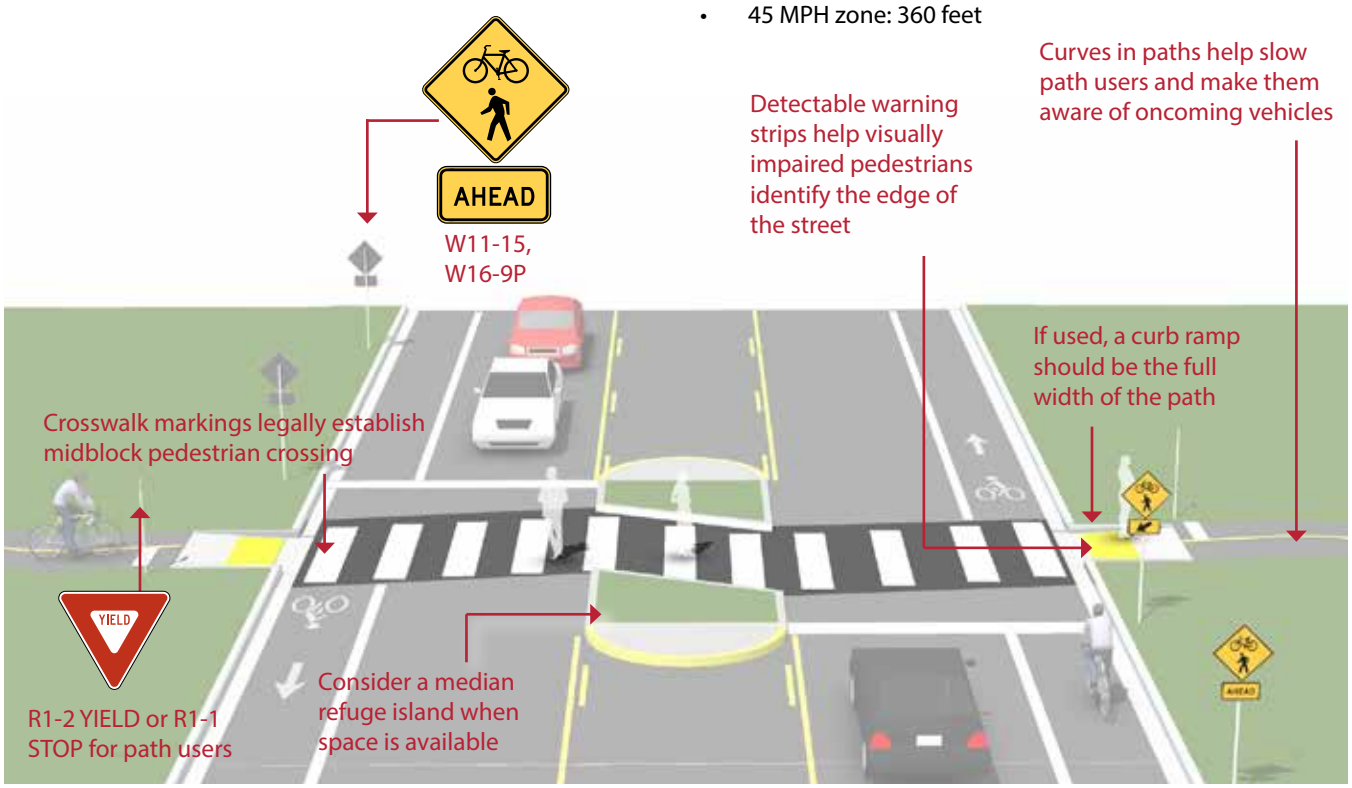
- ≤9,000-12,000 Average Daily Traffic (ADT) volume
- Up to 15,000 ADT on two-lane roads, preferably with a median
- Up to 12,000 ADT on four-lane roads with median

Maximum travel speed

- 35 MPH

Minimum line of sight

- 25 MPH zone: 155 feet
- 35 MPH zone: 250 feet
- 45 MPH zone: 360 feet



Discussion

Unsignalized crossings of multi-lane arterials over 15,000 ADT may be possible with features such as sufficient crossing gaps (more than 60 per hour), median refuges, and/or active warning devices like rectangular rapid flash beacons or in-pavement flashers, and excellent sight distance. For more information see the discussion of active warning beacons.

On roadways with low to moderate traffic volumes (<12,000 ADT) and a need to control traffic speeds, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.

Materials and Maintenance

Locate markings out of wheel tread when possible to minimize wear and maintenance costs.

Active Warning Beacons

Description

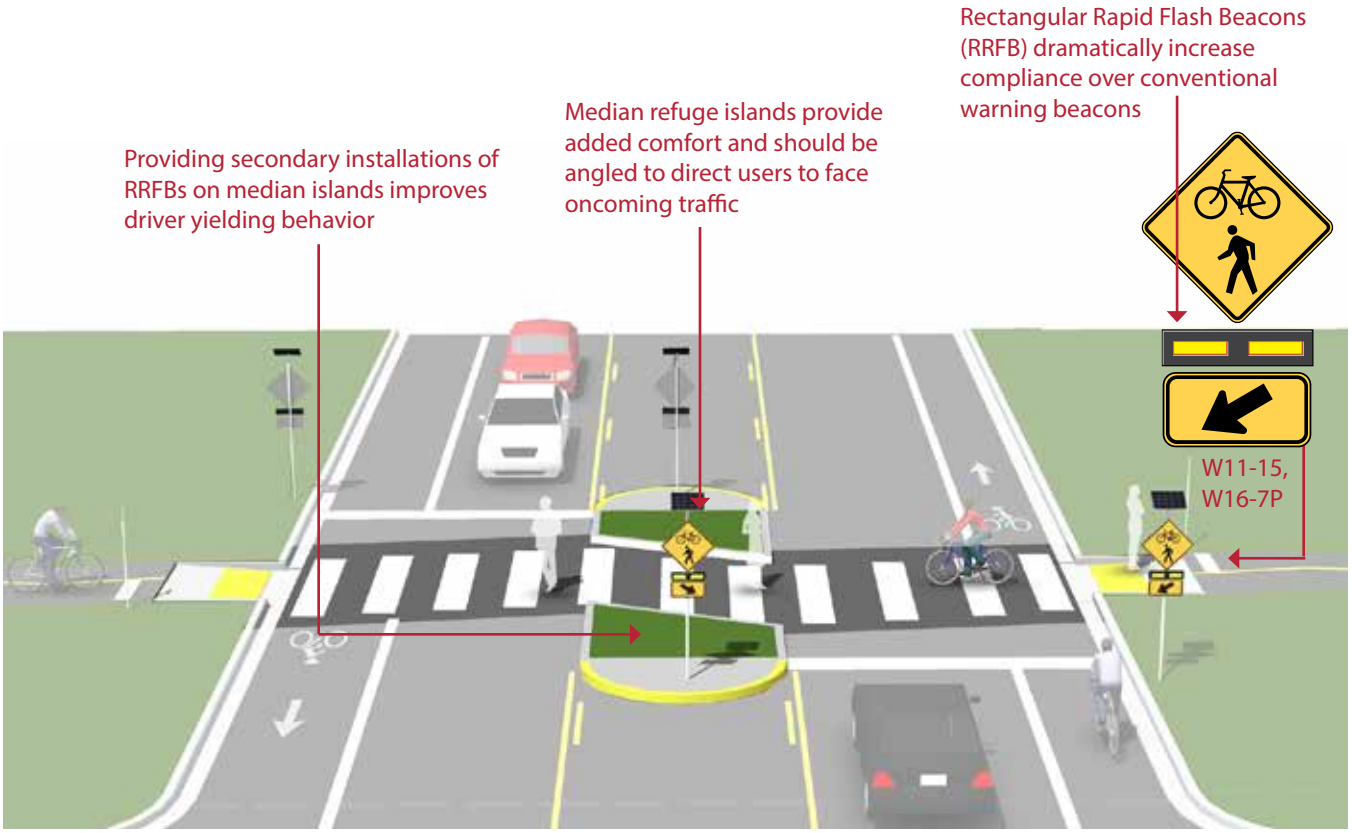
Enhanced marked crossings are unsignalized crossings with additional treatments designed to increase motor vehicle yielding compliance on multi-lane or high volume roadways.

These enhancements include pathway user or sensor actuated warning beacons, Rectangular Rapid Flash Beacons (RRFB) shown below, or in-roadway warning lights.

Guidance

Guidance for marked/unsignalized crossings applies.

- Warning beacons shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.
- Warning beacons shall initiate operation based on user actuation and shall cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.



Discussion

Rectangular rapid flash beacons show the most increased compliance of all the warning beacon enhancement options.

A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88%. Additional studies of long term installations show little to no decrease in yielding behavior over time.

Additional References and Guidelines

NACTO. *Urban Bikeway Design Guide*. 2012.
FHWA. *Manual on Uniform Traffic Control Devices*. 2009.
FHWA. *MUTCD - Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11)*. 2008.

Materials and Maintenance

Locate markings out of wheel tread when possible to minimize wear and maintenance costs. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

Pedestrian Hybrid Beacon Crossings

Description

Pedestrian hybrid beacons provide a high level of comfort for crossing users through the use of a red-signal indication to stop conflicting motor vehicle traffic.

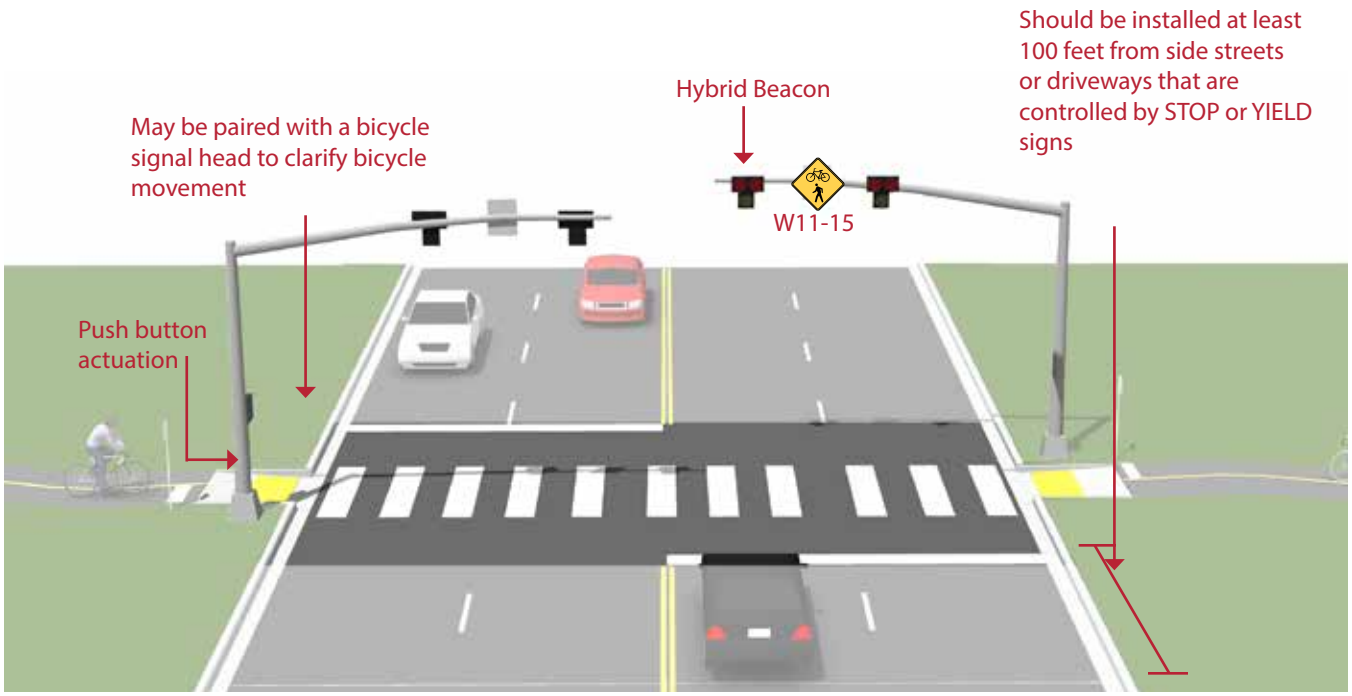
Hybrid beacon installation faces only cross motor vehicle traffic, stays dark when inactive, and uses a unique 'wig-wag' signal phase to indicate activation. Vehicles have the option to proceed after stopping during the final flashing red phase, which can reduce motor vehicle delay when compared to a full signal installation.

Guidance

Hybrid beacons (illustrated here) may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable path crossings.

FHWA does not allow bicycle signals to be used with Hybrid beacons, though some cities have done so successfully.

To maximize safety when used for bicycle crossings, the flashing 'wig-wag' phase should be very short and occur after the pedestrian signal head has changed to a solid "DON'T WALK" indication as bicyclists can enter an intersection quickly.



Discussion

Shared use path signals are normally activated by push buttons but may also be triggered by embedded loop, infrared, microwave or video detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street.

Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity and safety.

Additional References and Guidelines

FHWA. *Pedestrian Hybrid Beacon Guide - Recommendations and Case Study.* 2014.
NACTO. *Urban Bikeway Design Guide.* 2012.
FHWA. *Manual on Uniform Traffic Control Devices.* 2009.

Materials and Maintenance

Hybrid beacons are subject to the same maintenance needs and requirements as standard traffic signals. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

Full Traffic Signal Crossings

Description

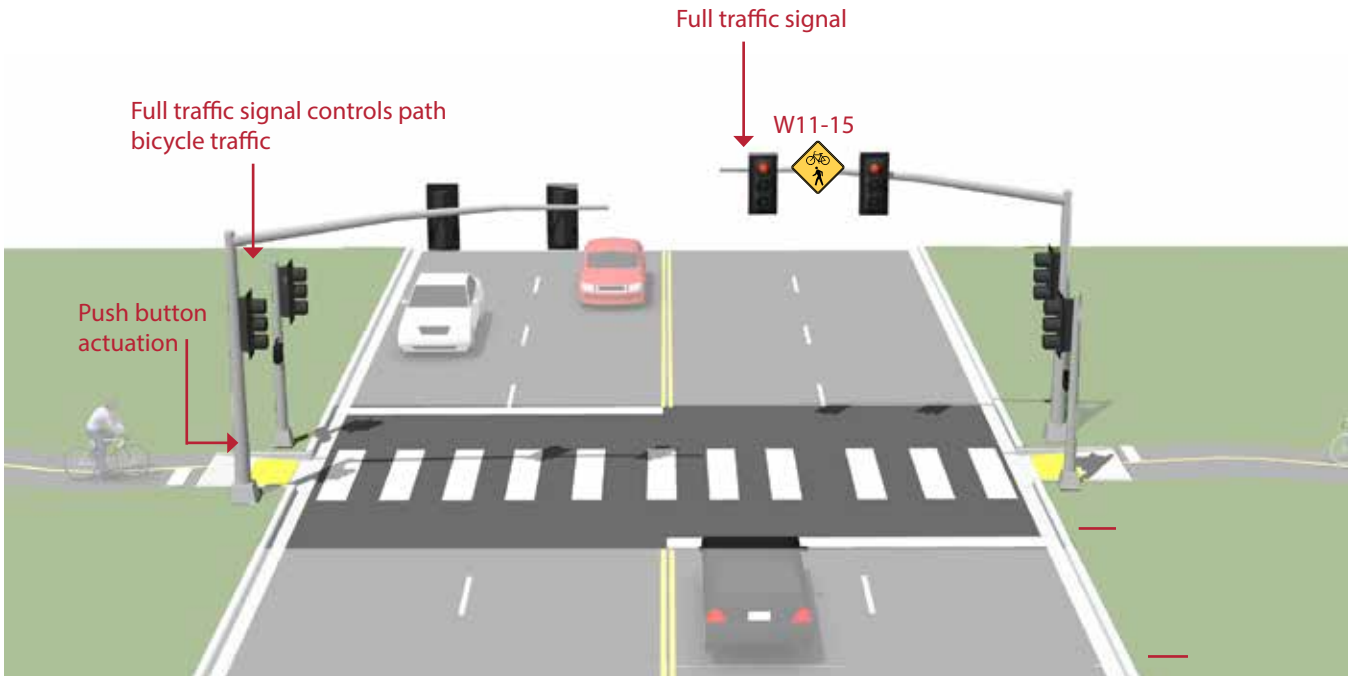
Signalized crossings provide the most protection for crossing path users through the use of a red-signal indication to stop conflicting motor vehicle traffic.

A full traffic signal installation treats the path crossing as a conventional 4-way intersection and provides standard red-yellow-green traffic signal heads for all legs of the intersection.

Guidance

Full traffic signal installations must meet MUTCD pedestrian, school or modified warrants. Additional guidance for signalized crossings:

- Located more than 300 feet from an existing signalized intersection
- Roadway travel speeds of 40 MPH and above
- Roadway ADT exceeds 15,000 vehicles



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Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity and safety.

Additional References and Guidelines

FHWA. *Manual on Uniform Traffic Control Devices.* 2009.
NACTO. *Urban Bikeway Design Guide.* 2012.

Materials and Maintenance

Traffic signals require routine maintenance. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

Overcrossings

Description

Bicycle/pedestrian overcrossings provide critical non-motorized system links by joining areas separated by barriers such as deep canyons, waterways or major transportation corridors. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist.

There are no minimum roadway characteristics for considering grade separation. Depending on the type of facility or the desired user group grade separation may be considered in many types of projects.

Overcrossings require a minimum of 17 feet of vertical clearance to the roadway below versus a minimum elevation differential of around 12 feet for an undercrossing. This results in potentially greater elevation differences and much longer ramps for bicycles and pedestrians to negotiate.

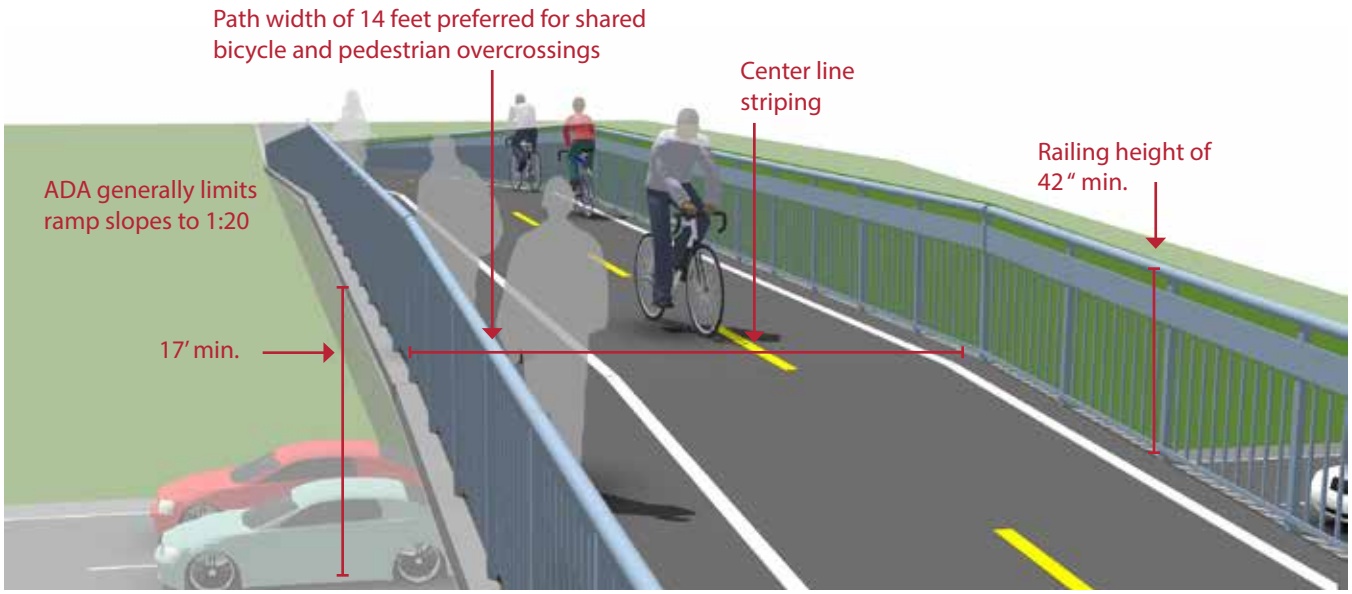
Guidance

8 foot minimum width, 14 feet preferred. If overcrossing has any scenic vistas additional width should be provided to allow for stopping. A separate 5 foot pedestrian area may be provided for facilities with high bicycle and pedestrian use.

10 foot headroom on overcrossing; clearance below will vary depending on feature being crossed.

Roadway:	17 feet
Freeway:	18.5 feet
Heavy Rail Line:	23 feet

The overcrossing should have a centerline stripe even if the rest of the path does not have one.



Discussion

Overcrossings for bicycles and pedestrians typically fall under the Americans with Disabilities Act (ADA), which strictly limits ramp slopes to 5% (1:20) with landings at 400 foot intervals, or 8.33% (1:12) with landings every 30 feet.

Overcrossings pose potential concerns about visual impact and functional appeal, as well as space requirements necessary to meet ADA guidelines for slope.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities*. 2012.
AASHTO. *Guide for the Planning, Design, and Operation of Pedestrian Facilities.* 2004.

Materials and Maintenance

Potential issues with vandalism.

Overcrossings can be more difficult to clear of snow than undercrossings.

Bicycle Support Facilities

Bicycle Parking

Bicyclists expect a safe, convenient place to secure their bicycle when they reach their destination. This may be short-term parking of 2 hours or less, or long-term parking for employees, students, residents, and commuters.


Bicycle Parking

Bicycle Racks

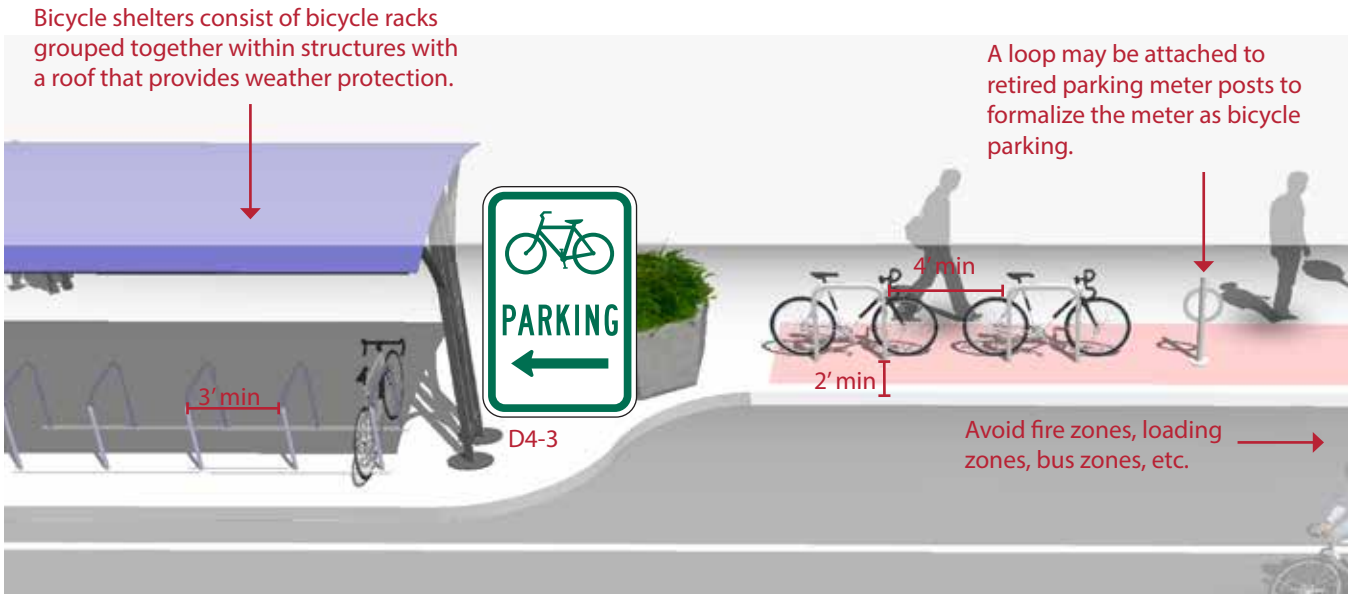
Description

Short-term bicycle parking is meant to accommodate visitors, customers, and others expected to depart within two hours. It should have an approved standard rack, appropriate location and placement, and weather protection. The Association for Pedestrian and Bicycle Professionals (APBP) recommends selecting a bicycle rack that:

- Supports the bicycle in at least two places, preventing it from falling over.
- Allows locking of the frame and one or both wheels with a U-lock.
- Is securely anchored to ground.
- Resists cutting, rusting and bending or deformation.

Guidance

- 2' minimum from the curb face to avoid 'dooring.'
- Close to destinations; 50' maximum distance from main building entrance.
- Minimum clear distance of 6' should be provided between the bicycle rack and the property line.
- Should be highly visible from adjacent bicycle routes and pedestrian traffic.
- Locate racks in areas that cyclists are most likely to travel.



Discussion

Where the placement of racks on sidewalks is not possible (due to narrow sidewalk width, sidewalk obstructions, street trees, etc.), bicycle parking can be provided in the street where on-street vehicle parking is allowed in the form of on-street bicycle corrals.

Some types of bicycle racks may meet design criteria, but are discouraged except in limited situations. This includes undulating "wave" racks, schoolyard "wheel bender" racks, and spiral racks.

Additional References and Guidelines

AASHTO. *Guide for the Development of Bicycle Facilities.* 2012.
APBP. *Bicycle Parking Guide 2nd Edition.* 2010.

Materials and Maintenance

Use of proper anchors will prevent vandalism and theft. Racks and anchors should be regularly inspected for damage. Educate snow removal crews to avoid burying racks during winter months.

Bikeway Maintenance

Regular bicycle facility maintenance includes sweeping, maintaining a smooth roadway, ensuring that the gutter-to-pavement transition remains relatively flush, and installing bicycle-friendly drainage grates. Pavement overlays are a good opportunity to improve bicycle facilities. The following recommendations provide a menu of options to consider to enhance a maintenance regimen.

Recommended Walkway and Bikeway Maintenance Activities

Maintenance Activity	Frequency
Inspections	Seasonal – at beginning and end of Summer
Pavement sweeping/ blowing	As needed, with higher frequency in the early Spring and Fall
Pavement sealing	5 - 15 years
Pothole repair	1 week – 1 month after report
Culvert and drainage grate inspection	Before Winter and after major storms
Pavement markings replacement	As needed
Signage replacement	As needed
Shoulder plant trimming (weeds, trees, brambles)	Twice a year; middle of growing season and early Fall
Tree and shrub plantings, trimming	1 – 3 years
Major damage response (washouts, fallen trees, flooding)	As soon as possible

This Section Includes:

- Sweeping
- Signage
- Roadway Surface
- Pavement Overlays
- Drainage Grates
- Gutter to Pavement Transition
- Landscaping
- Maintenance Management Plan


Sweeping


Roadway Surface


Gutter to Pavement Transition


Drainage Grates


Landscaping


Maintenance Management Plan

Sweeping

Description

Bicyclists often avoid shoulders and bike lanes filled with gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, potentially causing conflicts with motorists. Debris from the roadway should not be swept onto sidewalks (pedestrians need a clean walking surface), nor should debris be swept from the sidewalk onto the roadway. A regularly scheduled inspection and maintenance program helps ensure that roadway debris is regularly picked up or swept.

Guidance

- Establish a seasonal sweeping schedule that prioritizes roadways with major bicycle routes.
- Sweep walkways and bikeways whenever there is an accumulation of debris on the facility.
- In curbed sections, sweepers should pick up debris; on open shoulders, debris can be swept onto gravel shoulders.
- Pave gravel driveway approaches to minimize loose gravel on paved roadway shoulders.
- Perform additional sweeping in the Spring to remove debris from the Winter.
- Perform additional sweeping in the Fall in areas where leaves accumulate .

Signage

Description

Bike lanes, shared shoulders, Bicycle Boulevards and paths all have different signage types for wayfinding and regulations. Such signage is vulnerable to vandalism or wear, and requires periodic maintenance and replacement as needed.

Guidance

- Check regulatory and wayfinding signage along bikeways for signs of vandalism, graffiti, or normal wear.
- Replace signage along the bikeway network as-needed.
- Perform a regularly-scheduled check on the status of signage with follow-up as necessary.
- Create a Maintenance Management Plan.

Roadway Surface

Description

Bicycles are much more sensitive to subtle changes in roadway surface than are motor vehicles. Various materials are used to pave roadways, and some are smoother than others. Compaction is also an important issue after trenches and other construction holes are filled. Uneven settlement after trenching can affect the roadway surface nearest the curb where bicycles travel. Sometimes compaction is not achieved to a satisfactory level, and an uneven pavement surface can result due to settling over the course of days or weeks. When resurfacing streets, use the smallest chip size and ensure that the surface is as smooth as possible to improve safety and comfort for bicyclists.

Guidance

- Maintain a smooth pothole-free surface.
- Ensure that on new roadway construction, the finished surface on bikeways does not vary more than ¼".
- Maintain pavement so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.
- If chip sealing is to be performed, use the smallest possible chip on bike lanes and shoulders. Sweep loose chips regularly following application.
- During chip seal maintenance projects, if the pavement condition of the bike lane is satisfactory, it may be appropriate to chip seal the travel lanes only. However, use caution when doing this so as not to create an unacceptable ridge between the bike lane and travel lane.

Pavement Overlays

Description

Pavement overlays represent good opportunities to improve conditions for bicyclists if done carefully. A ridge should not be left in the area where bicyclists ride (this occurs where an overlay extends part-way into a shoulder bikeway or bike lane). Overlay projects also offer opportunities to widen a roadway, or to re-stripe a roadway with bike lanes.

Guidance

- Extend the overlay over the entire roadway surface to avoid leaving an abrupt edge.
- If the shoulder or bike lane pavement is of good quality, it may be appropriate to end the overlay at the shoulder or bike lane stripe provided no abrupt ridge remains.
- Ensure that inlet grates, manhole and valve covers are within ¼ inch of the finished pavement surface and are made or treated with slip resistant materials.
- Pave gravel driveways to property lines to prevent gravel from being tracked onto shoulders or bike lanes.

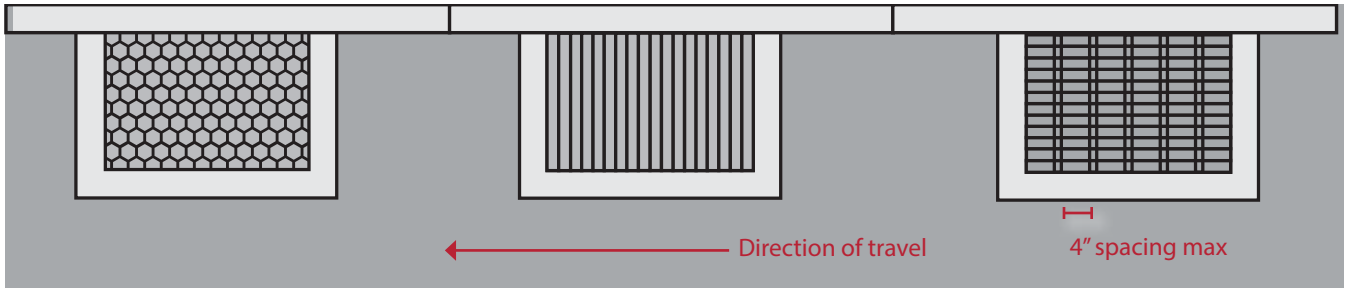
Drainage Grates

Description

Drainage grates are typically located in the gutter area near the curb of a roadway. Drainage grates typically have slots through which water drains into the municipal storm sewer system. Many older grates were designed with linear parallel bars spread wide enough for a tire to become caught so that if a bicyclist were to ride on them, the front tire could become caught in the slot. This would cause the bicyclist to tumble over the handlebars and sustain potentially serious injuries.

Guidance

- Require all new drainage grates be bicycle-friendly, including grates that have horizontal slats on them so that bicycle tires and assistive devices do not fall through the vertical slats.
- Create a program to inventory all existing drainage grates, and replace hazardous grates as necessary – temporary modifications such as installing rebar horizontally across the grate should not be an acceptable alternative to replacement.



Gutter to Pavement Transition

Description

On streets with concrete curbs and gutters, 1 to 2 feet of the curbside area is typically devoted to the gutter pan, where water collects and drains into catch basins. On many streets, the bikeway is situated near the transition between the gutter pan and the pavement edge. This transition can be susceptible to erosion, creating potholes and a rough surface for travel.

The pavement on many streets is not flush with the gutter, creating a vertical transition between these segments. This area can buckle over time, creating a hazardous condition for bicyclists.

Guidance

- Ensure that gutter-to-pavement transitions have no more than a ¼" vertical transition.
- Examine pavement transitions during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets.
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.
- Provide at least 3 feet of pavement outside of the gutter seam.

Landscaping

Description

Bikeways can become inaccessible due to overgrown vegetation. All landscaping needs to be designed and maintained to ensure compatibility with the use of the bikeways. After a flood or major storm, bikeways should be checked along with other roads, and fallen trees or other debris should be removed promptly.

Guidance

- Ensure that shoulder plants do not hang into or impede passage along bikeways
- After major damage incidents, remove fallen trees or other debris from bikeways as quickly as possible

Maintenance Management Plan

Description

Bikeway users need accommodation during construction and maintenance activities when bikeways may be closed or unavailable. Users must be warned of bikeway closures and given adequate detour information to bypass the closed section. Users should be warned through the use of standard signing approaching each affected section (e.g., "Bike Lane Closed," "Trail Closed"), including information on alternate routes and dates of closure. Alternate routes should provide reasonable directness, equivalent traffic characteristics, and be signed.

Guidance

- Provide fire and police departments with map of system, along with access points to gates/bollards
- Enforce speed limits and other rules of the road
- Enforce all trespassing laws for people attempting to enter adjacent private properties