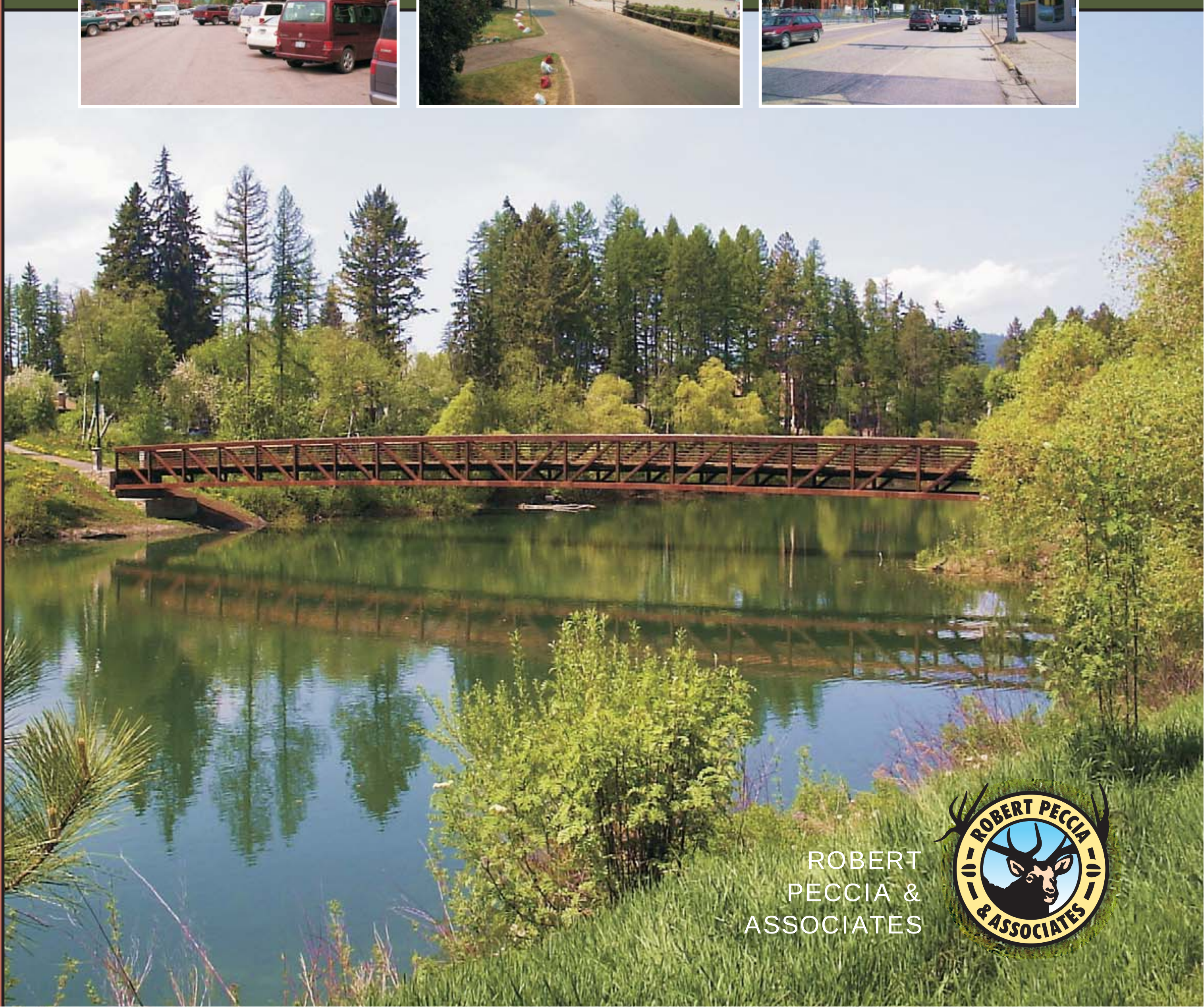
# WHITEFISH

## TRANSPORTATION PLAN - 2007

Public Draft

January 1, 2008



ROBERT PECCIA & ASSOCIATES

# WHITEFISH
# TRANSPORTATION PLAN - 2007

*Prepared For:*
City of Whitefish
Whitefish, Montana

*In Cooperation With:*
City of Whitefish
Montana Department of Transportation
Federal Highway Administration

*Adopted By:*
Whitefish City-County Planning Board, February ____, 2008
Whitefish City Council, March _____, 2008


*Prepared By:*
Robert Peccia & Associates
825 Custer Avenue
P.O. Box 5653
Helena, MT 59604

January 1st, 2008

# ACKNOWLEDGEMENTS

The successful completion of this project was made possible through the cooperation and assistance of many individuals. The following people provided guidance and support throughout the course of this study:

## PROJECT OVERSIGHT COMMITTEE (POC) MEMBERS

Sheila Ludlow, *MDT Statewide and Urban Planning Section*
Shane Stack, *MDT Missoula District*
John Wilson, *City of Whitefish Public Works Department*
Bob Horne, *City of Whitefish Planning Department*
Karin Hilding, *City of Whitefish Engineering Department*
Bob Burkhardt, *Federal Highway Administration*
Craig Genzlinger, *Federal Highway Administration*

## CITIZEN ADVISORY COMMITTEE (CAC) MEMBERS

Sabine Brigette, C*itizen*
Shirley Jacobson, *Whitefish City Council*
Don Spivey, *Citizen*
Nick Polumbus, *Big Mountain Resort*
Jerry House, *Whitefish School District*
Gary Stephens, *Whitefish Business Owner/Heart of Whitefish*
Bridger Kelch, *Whitefish Fire Department*
Monte Gilman, *Realtor*
Dale Duff, *Rocky Mountains Transportation*
Mary Jo Look, *Citizen*
Mary Person, *Business Owner*
George S. Gardner, *Citizen*

## WHITEFISH CITY COUNCIL MEMBERS

Cris Coughlin, *Mayor*
Nancy Woodruff, *Deputy Mayor & Council Member*
Velvet Phillips-Sullivan, *Council Member*
Shirley Jacobson, *Council Member*
Nick Palmer, *Council Member*
John Muhlfeld, *Council Member*
Jan Metzmaker, *Council Member*

## WHITEFISH CITY-COUNTY PLANNING BOARD MEMBERS

Lisa Horowitz
Scott Sorensen
Martin McGrew, *Chair*

John Quatman
Peggy Sue Amelon
Steve Qunell
Frank Sweeney
Kerry Crittenden
Ole Netteberg, *Vice Chair*

## OTHER IMPORTANT CONTRIBUTORS TO THE WHITEFISH TRANSPORTATION PLAN

Lynn Zanto, *MDT Statewide and Urban Planning Section*
Tom Kahle, *MDT Statewide and Urban Planning Section*
Jean Riley, P.E., *MDT Program and Policy Analysis Section*

## LIST OF PREPARERS

The Traffic & Transportation Division of the consulting firm of Robert Peccia & Associates, Inc., Helena, Montana prepared this study. The following members of our firm were major contributors to this study or helped prepare the document:

Keith Jensen, P.E., *President*
Jeffrey A. Key, P.E., *Project Manager/Senior Traffic Engineer*
Dan Norderud, A.I.C.P., *Planner*
Ryan Mitchell, P.E., P.L.S., *Kalispell Office Manager*
Brandon Thies, P.E., *Kalispell Office Project Engineer*
Scott Randall, E.I., *Engineering Designer/Planner*
Trisha Jensen, *Transportation Planning Technician*
Gary Lesofski, *CADD Division Manager*
Kelly P. Quinn, *Computer System Manager*
Jennifer Loobey, *Production & Support Services Manager*

# EXECUTIVE SUMMARY

It is the intent of this Transportation Plan to serve as a guide for the future of the Whitefish area transportation system. The Plan describes the existing system, and identifies large and small improvements for the transportation network. The recommendations made in this document cover all modes of transportation, including travel by private vehicle, public transportation, foot and bicycle modes. Recommended projects are intended to relieve existing problems and prepare the Whitefish transportation system to meet future needs.

Transportation issues have been elevated in the past few years. The community has had several important master planning projects in process and/or completed. Because of the focus on community planning, coupled with the heightened awareness of growth and transportation impacts, it was decided that a comprehensive Transportation Plan should be assembled in the community. Although the Transportation Plan can be viewed as a "fresh look" at transportation issues, it also serves to assemble appropriate recommendations from all the previous planning efforts and incorporate them into one succinct document. The community has changed over the years, and growth issues seem to dominate local newspapers and media attention. Managing growth is an important component of the *Whitefish Growth Policy*. Providing amenities that keep people in the community is a quality of life issue.

Another reason that has necessitated the development of the Transportation Plan has to do with the issue of Wisconsin Avenue. The City of Whitefish has been collecting funds for eventual improvements to this roadway for several years under the "Urban Highway System (STPU)" funding program. To date, the City has a balance of $773,006 and continues to be allocated $117,074 on an annual basis from the Federal and State. Since this available money will not be enough to fund a full corridor reconstruction project, the intent was for this Transportation Plan to offer incremental improvements along the corridor to satisfy safety and operational needs until which time a major project could be contemplated.

Perhaps the biggest catalyst for undertaking this Transportation Plan effort was the recent completion of the Whitefish *Downtown Business District Master Plan*. This important planning document "…*identifies opportunities to increase the vitality of the downtown business district*". This master plan has a transportation component, and outlines the direction the community would like to head for its transportation system within the downtown core. The Plan was prepared around the same time as the *Environmental Impact Statement (EIS) Re-Evaluation* of the US Highway 93 corridor that was being completed by the consulting firm of WGM Group (Missoula, Montana). This parallel project was assessing the recommendations for traffic flow provided in the early 1990's via the *US Highway 93 Somers to Whitefish West Environmental Impact Statement (EIS)*. This document set forth a direction for transportation improvements for the downtown core. The conclusions reached by WGM Group were that the preferred alternative provided for in the original EIS was no longer suitable based on traffic operations parameters (turning movements, geometry, turning vehicles), as well as based on community preferences and changes over the past decade. This did cause community and State planners to step back and question how best to proceed with public money expenditures. Because of this conclusion, it was decided that due to the heightened relevance of the recent *Downtown Business District Master Plan*, and due to the conclusion that the original preferred alternative from the 1993 EIS may no longer be appropriate, that additional study of the downtown US Highway 93 corridor would be warranted. This was to be in the form of a "Pre-NEPA" corridor study.

NEPA stands for the National Environmental Protection Act, and is the Federal legislation that guides the development of transportation projects and the subsequent expenditures of Federal money for such projects. Rather than opening up a formal Environmental Impact Statement (EIS) process to examine the downtown core, the Pre-NEPA studies allow greater flexibility in examining options for a roadway system.

To complete the Pre-NEPA corridor study, Robert Peccia & Associates was retained in January of 2007. It was decided that before detailed work on the downtown corridor could commence, though, a **parallel project of completing the community-wide Transportation Plan should be entertained**. Therefore, this document is the result of that effort, and looks at the greater community and its transportation needs, absent of a detailed look at the downtown core. **The downtown Pre-NEPA corridor study is thus contained in a separate, companion document and is referenced as such herein**.

The development and implementation of a Transportation Plan is a good tool for managing growth and accommodating development needs. Not only do Transportation Plans provide analysis and mitigation for the existing transportation system currently being utilized, it also provides an opportunity to "look into the crystal ball" to try and predict future growth – where it is likely to happen, when it is likely to happen, and how much of it is likely to occur. More importantly, by predicting this growth the community can be primed to deal with it before infrastructure problems become apparent. This is one of the fundamental goals of developing a Transportation Plan – identifying transportation system needs before it is too late. By doing so, planners and community leaders can begin to plan and program needed infrastructure improvements pertinent to the transportation system.

Through the *Whitefish Growth Policy*, several transportation goals and issues were identified as being important to the community. These were confirmed through the development of this project. The Growth Policy Update did a commendable job at capturing the flavor and issues important to the community's citizens. The identified issues related to "transportation" as identified in the *Whitefish Growth Policy* are contained herein, along with a brief statement offering how and/or if the issue has been addressed via this Transportation Plan:

- Off-street routes called for in the Pedestrian and Bikeway Master Plan are often located along the Whitefish River, cross local streams, or traverse environmentally sensitive areas.

  *This Transportation Plan supports the planned on-street and off-street non-motorized system. This information is documented in both* ***section 2.8*** *of* ***chapter 2****, and also* ***section 8.5*** *of* ***chapter 8****.*

- Parallel collectors along both sides of Hwy. 93 South are not yet complete. This adds to congestion on Hwy. 93 South (Spokane Avenue) during peak hours.

  *This Transportation Plan supports the concept of parallel collectors to US Highway 93. Parallel collector roadways have been modeled using the travel demand model (see* ***chapter 3****), and projects have been recommended (****MSN-1*** *and* ***MSN-3*** *in* ***chapter 8****) to support this concept.*

- Mainly because of the Whitefish River, east-west street access is limited.

  *This Transportation Plan recognizes the lack of east-west connectivity in the community. Several different crossings of the Whitefish river have been modeled using the travel demand model (see* ***chapter 3****), and projects have been recommended (****MSN-4*** *and* ***MSN-10*** *in* ***chapter 8****) to support this important need in the community.*

- Whitefish High School and Muldown Elementary are located within the eastside residential neighborhood. Therefore, daily traffic generated by the two schools infiltrates surrounding neighborhoods, and is a source of frequent complaints.

  *This Transportation Plan recognizes the impact that school related traffic has on the surrounding neighborhoods. Issues associated with school related traffic have been identified in chapter 6 of this Transportation Plan. Specific projects have been developed to strengthen the transportation network in this area in hopes of providing choices for private automobile travel. Specific projects in the school area that will help to alleviate these complaints are projects* ***MSN-5****,* ***MSN-15****, and* ***TSM-2*** *described later in* ***chapter 8****.*

- Big Mountain Road provides the only general access for the Whitefish Mountain Resort as well as the many residential subdivisions on Big Mountain.

  *This Transportation Plan supports the conclusions portrayed in the* <u>*Big Mountain Neighborhood Plan*</u> *regarding primary and secondary access to the resort. Due to topography and other constraints, it is likely not feasible to develop an additional primary access serving the Big Mountain Resort. Allowances for secondary emergency access (mainly egress) is in place and should accommodate emergency situations that could potentially arise.*

- The Wisconsin Avenue viaduct is the only grade-separated crossing of the BNSF rail facilities connecting downtown Whitefish to the northern neighborhoods of the city, to Iron Horse, and to Big Mountain.

  *This Transportation Plan recognizes the impact that having only one grade separated crossing of the BNSF rail facilities has on overall traffic flow. Different locations for additional crossings were modeled in* ***chapter 3****. It is recommended in the Transportation Plan to plan for an additional crossing near the theoretical extension of Kalner Lane (Cow Creek area). This will be a feasible location in that it will only cross one rail line and will benefit both existing and the future land uses towards the southeast and northeast parts of the community (reference projects* ***MSN-6*** *and* ***MSN-7*** *in* ***chapter 8****).*

- Street standards should be "neighborhood sensitive" in much the same manner as land development regulations. Also, flexibility is needed in infill projects and in environmentally sensitive areas.

  *This Transportation Plan recognizes this desire and agrees with the neighborhood, local context street standards presented in the Growth Policy. They are reiterated in this Transportation Plan in* ***chapter 9****. It must be made clear, though, that for most local streets, the local government entity (in this case the City of Whitefish) has direct control over roadway geometry and function, and can therefore dictate roadway typical section appearance. For roadways that are generally collector and above (i.e. minor arterial, principal arterial, interstate), if the facilities are on the Federally adopted "urban aid system" then the roadway geometry is* *dictated by Montana Department of Transportation (MDT) roadway standards. This is an important point, because the MDT does utilize "urban design standards" for the various roadway types classified as collectors and above based on dialogue and consensus with many local Montana governments dating back to the early 1990's.*

- Residential collectors should be designed to carry traffic efficiently, but also to control vehicle speeds through residential neighborhoods.

  *This Transportation Plan recognizes this concept and offers general guidance on types of traffic calming features that may be appropriate for the community to consider on various roadways. This guidance is contained in* ***chapter 7*** *of the Transportation Plan.*

- U.S. Hwy 93 runs through the middle of downtown, dividing it into a north half and south half at 2nd Street. A by-pass of some kind has long been discussed in the community, but transportation planning thus far has shown it to be infeasible.

- *The concept of a "by-pass" is not carried forward in this Transportation Plan. For a "by-pass" project to be justifiable, it must prove to be a substantial benefit under both present day and future conditions, and be weighted heavily against all impacts (i.e. environmental, financial, neighborhood sensitivity, etc.). A discussion of the effort made regarding a "by-pass" in this Transportation Plan is presented in* ***chapter 3****, and also summarized in* ***chapter 9****. The approved US Highway 93 Somers to Whitefish West Final Environmental Impact Statement (FEIS) concluded a potential "by-pass" to be unwarranted.*

A few words must also be made about the concept of a bypass in the community. **This Transportation Plan does not recommend the development of a bypass corridor** to the existing US Highway 93 facility through the community. The concept of a bypass has historically been debated. Proponents of the bypass have stated that it will reduce overall traffic volumes in the downtown, detour high truck traffic and make the business district more "community oriented". Opponents of the bypass have stated that a bypass would never be built, would likely cause unacceptable environmental consequences and would be financially unattainable.

This Transportation Plan did examine a potential westerly bypass via a travel demand modeling exercise, and also has looked at other constraints associated with potential routes. These have been explained in **chapter 3** of this Transportation Plan. From a pure traffic analysis discussion, a bypass does not solve the future traffic issues examined out to the planning horizon (year 2030) along US Highway 93. Although proponents find this hard to believe, the fact is that if a bypass is to be considered as feasible, it must show significant traffic reduction to its parallel facility to warrant the expense and environmental consequences of its development. Travel demand modeling of the various bypass alternatives do not show a bypass as a "cure-all" to the future traffic issues associated with US Highway 93 traffic flow. The community of Whitefish is better served by strengthening the transportation grid system, providing additional east/west connectivity, and requiring roadway corridor development in vacant land **if and when** the land develops.

The recommended projects contained in **chapter 8** will all serve to contribute to a strong grid street system that will provide choices for the traveling public. This should be tempered with other transportation system improvements and policies, such as public transit and non-motorized facilities, that have been recommended elsewhere in this Transportation Plan.

It must be acknowledged that under current funding conditions, the focus should be on getting the most out of the existing transportation system. The bigger projects should come in parallel to private development requests (with some exceptions). Outside of the development realm, the following **opportunities** should be fully considered with each and every transportation project:

- Continue to make pedestrian and bicycle travel amenities a normal part of transportation system planning. There will of course be cases where non-motorized travel modes may not be feasible due to right-of-way constraints, topography, etc., but as a matter of practice every effort should be made to incorporate non-motorized facilities in planning activities.

- In newly developing areas, plan for a "grid" transportation system wherever possible.

- Continue to support transit activities wherever possible. Planning for the future with transit needs in developments, actively seeking out grants, and heightening awareness of the community's transit system can ensure that transit will not get "left behind" as the community goes forward with their transportation system.

- It is crucial to forge partnerships amongst all governmental jurisdictions as the future transportation system is created.

Regarding growth, it is intuitive that the connection between land use and transportation is of the utmost importance. The Whitefish area, and the Flathead Valley in general, is one of the fastest growing areas within Montana. Development patterns are aggressive, and potential land use changes estimated for this transportation planning exercise mimic those projections made for the *Whitefish Growth Policy*. Known and potential development projects were examined both within the planning study area boundary as well as outside the study area boundary. This was extremely important, since this becomes the input for the travel demand model that allows future traffic conditions to be developed and known. The model relies on future housing (dwelling units), "retail" employment (jobs), and "non-retail" employment (jobs).

The result of all of this combined residential and employment growth translates into additional traffic and higher demands on the transportation system. Traffic volume growth in the greater Whitefish area was projected using a computer traffic model. The model used current socio-economic data and growth trends to project traffic volumes. These projected traffic volumes were used to help identify future traffic problems within the area.

This Plan also supports the concept of "traffic calming". Historically used as a response to transportation issues on local streets, traffic calming is increasingly being used in new street design to provide pedestrian amenities and ward off future problems associated with vehicle speeds and cut-thru traffic. The City of Whitefish has used certain forms of traffic calming (for example in the Creekwood neighborhood), and this Transportation Plan takes this subject one step further and presents a petition process by which a neighborhood can go forward with a traffic calming request. Also included are examples and guidelines for what types of traffic calming might be appropriate and when.

The analysis of the existing and future traffic conditions indicated a need for a variety of improvements in the area. These improvements are presented in two categories: Transportation System Management (TSM) improvements and Major Street Network (MSN) improvements (contained in **chapter 8**). A total of seven TSM projects are recommended, at an **estimated cost of about $1,050,000**. The MSN projects focus on upgrading entire road corridors and the construction and/or rehabilitation of roadways. Twenty-one MSN improvements are recommended, at an **estimated cost of approximately $61,040,000**. Future prioritization of projects presented in this document are at the discretion of the various governing authorities within the planning area.

Although this document is a tool that can be used to guide development of the transportation system in the future, local and state planners must continually re-evaluate the findings and recommendations in this document as growth is realized and development occurs. If higher than anticipated growth is realized in the community, or if growth occurs in areas not originally planned for, transportation needs may be different from those analyzed in this plan. An update and re-evaluation of this document should occur every five years, at a minimum, due to the explosive growth that is occurring within the community.

Lastly, tough decisions regarding allowable land use and associated mitigation measures will be in need of constant evaluation as the community grows. The potential for "growth management" areas could be quite feasible in the study area boundary, given the growth predicted and the inability of transportation infrastructure to keep up with the growth.

# TABLE OF CONTENTS

# LIST OF TABLES

## List of Figures

# DEFINITIONS / ACRONYMS

## DEFINITIONS

**Access Management/Control** – Controlling or limiting the types of access or the locations of access on major roadways to help improve the carrying capacity of a roadway, reduce potential conflicts, and facilitate proper land usage.

**Average Daily Traffic (ADT)** – The total amount of traffic observed, counted or estimated during a single, 24-hour period.

**Annual Average Daily Traffic (AADT)** – The average daily traffic averaged over a full year.

**Americans with Disabilities Act (ADA)** – The Federal regulations which govern minimum requirements for ensuring that transportation facilities and buildings are accessible to individuals with disabilities.

**Bikeway -** Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

**Bike Path** - A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right of way or within an independent right of way.

**Bike Lane** – a portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

**Bike Route** – A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number.

**Capacity** – The maximum sustainable flow rate at which vehicles can be expected to traverse a roadway during a specific time period given roadway, geometric, traffic, environmental, and control conditions. Capacity is usually expressed in vehicles per day (vpd) or vehicles per hour (vph).

**Collector Street** – Provides for land access and traffic circulation within and between residential neighborhoods, and commercial and industrial areas. It provides for the equal priority of the movement of traffic, coupled with access to residential, business and industrial areas. A collector roadway may at times traverse residential neighborhoods. Collectors are generally defined as Urban Collectors or Rural Minor/Major Collectors. <u>Urban Collectors</u> provides a channel for local street traffic to access arterials. <u>Rural Major Collectors</u> serves important travel generators (i.e. County Seats, consolidated schools, etc.) while <u>Rural Minor Collectors</u> provide land use access and are spaced at intervals consistent with population density. Posted speed limits on collectors typically range from 25 mph to 45 mph.

**Congested Flow** - A traffic flow condition caused by a downstream bottleneck unable to pass through unsignalized intersections.

**Context Sensitive Design (CSD)** - A fairly new concept in transportation planning and highway design that integrates transportation infrastructure improvements to the context of the adjacent land uses and functions, with a greater sensitivity to transportation impacts on the environment and communities being realized.

**Delay** - The amount of time spent not moving due to a traffic signal being red, or being unable to pass through an unsignalized intersection.

**Facility** – A length of highway composed of connected section, segments, and points.

**Level of Service (LOS) -** A qualitative measure of how well an intersection or road segment is operating based on traffic volume and geometric conditions. The level of service "scale" represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using it, and can be used for both existing and projected conditions. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion.

**Local Street** – Comprises all facilities not included in a higher system. Its primary purpose is to permit direct access to abutting lands and connections to higher systems. Usually through-traffic movements are intentionally discouraged. Local streets can be defined as either Urban or Rural. Urban Local Streets are all remaining streets in an urban area that link to higher classifications. Rural Local Streets are all remaining streets outside the urban areas that provide access to adjacent land. Posted speed limits on local roads typically range from 25 mph to 35 mph.

**Major Street Network (MSN)** – The network of roadways defined for the Transportation Plan effort that include the interstate, principal arterials, minor arterials, collectors and some local streets.

**Minor Arterial Street** – Interconnects with and augments the Principal Arterial system. It also provides access to lower classifications of roads on the system and may allow for traffic to directly access destinations. They provide for movement within sub-areas of the city, whose boundaries are largely defined by the Principal Arterial road system. They serve through traffic, while at the same time providing direct access for commercial, industrial, office and multifamily development but, generally, not for single-family residential properties. The purpose of this classification of road is to increase traffic mobility by connecting to both the Principal Arterial system and also providing access to adjacent land uses. Minor Arterials are generally defines as either Urban Minor Arterials or Rural Minor Arterials. Urban Minor Arterials interconnect with Urban Principal Arterials. Rural Minor Arterials link cities and larger towns and interconnects the network of arterial highways. Posted speed limits on minor arterials typically range from 25 mph to 55 mph.

**Multi-modal** – A transportation facility for different types of users or vehicles, including passenger cars and trucks, transit vehicles, bicycles, and pedestrians.

**Oversaturation** – A traffic condition in which the arrival flow rate exceeds capacity on a roadway lane or segment.

**Peak Hour** – The hour of greatest traffic flow at an intersection or on a road segment. Typically broken down into AM and PM peak hours.

**Road Failure** – A condition by which a road has reached maximum capacity or has experienced structural failure.

**Principal Arterial Street** – Is the basic element of a city's road system. All other functional classifications supplement the Principal Arterial network. Access to a Principal Arterial is generally limited to intersections with other principal arterials or to the interstate system. Direct access is minimal and controlled. Principal Arterials are generally defined as either Urban Principal Arterials or Rural Principal Arterials. Urban Principal Arterials serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in an urbanized area. This classification of roads carries a high proportion of the total traffic within an urban area. Rural Principal Arterials serve as the predominant route between major activity centers, have long trip distances, experience heavy travel densities and provide service to most large urban areas. The major purpose of Principal Arterials is to provide for the expedient movement of traffic. Posted speed limits on principal arterials typically range from 25 mph to 70 mph.

**Running speed** - The actual vehicle speed while the vehicle is in motion (travel speed minus delay).

**Service Life** – The design life span of roadway based on capacity or physical characteristics.

**Project Oversight Committee (POC)** – The oversight committee that guided the development of this Transportation Plan. The committee is comprised of 7 members and includes representatives from the City of Whitefish, the Montana Department of Transportation (MDT), and the Federal Highway Administration (FHWA). The committee is not a standing committee in the community and was set up to oversee this project's development only.

**Transportation Analysis Zone (TAZ)** – Geographical zones identified throughout the study area based on land use characteristics and natural physical features for use in the traffic model developed for this project.

**Transportation Demand Management (TDM)** - Programs designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel.

**Travel speed** - The speed at which a vehicle travels between two points including all intersection delay.

**Volume to Capacity (V/C) Ratio** – A qualitative measure comparing a roads theoretical maximum capacity to the existing (or future) volumes. Commonly described as the result of the flow rate of a roadway lane divided by the capacity of the roadway lane.

## ACRONYMS

| | |
|---|---|
| **AASHTO** | **A**merican **A**ssociation of **S**tate **H**ighway and **T**ransportation **O**fficials |
| **CAC** | **C**itizen **A**dvisory **C**ommittee |
| **CFR** | **C**ode of **F**ederal **R**egulations |
| **CIP** | **C**apital **I**mprovement **P**rogram |
| **FAA** | **F**ederal **A**viation **A**dministration |
| **FHWA** | **F**ederal **H**igh**w**ay **A**dministration |
| **HCM** | **H**ighway **C**apacity **M**anual |
| **HCS** | **H**ighway **C**apacity **S**oftware |
| **ISTEA** | **I**ntermodal **S**urface **T**ransportation **E**fficiency **A**ct |
| **ITE** | **I**nstitute of **T**ransportation **E**ngineers |
| **MDT** | **M**ontana **D**epartment of **T**ransportation |
| **MUTCD** | **M**anual on **U**niform **T**raffic **C**ontrol **D**evices |
| **NEPA** | **N**ational **E**nvironmental **P**olicy **A**ct |
| **POC** | **P**roject **O**versight **C**ommittee |
| **TEA-21** | **T**ransportation **E**fficiency **A**ct for the **21**st Century |
| **SAFETEA-LU** | **S**afe, **A**ccountable, **F**lexible, **E**fficient **T**ransportation **E**quity **A**ct: A **L**egacy for **U**sers |



CHAPTER 1:

# Introduction and Background

# CHAPTER 1: INTRODUCTION AND BACKGROUND

Whitefish is a vibrant, scenic, and engaging western community in the foothills of the Rocky Mountains. Located in one of the fastest growing areas of Montana, it is experiencing growth and identity issues that are increasingly common in our rural western communities. Perhaps the most visible symptom of growth and livability concerns is the impact to the area's transportation system. Due to many constraints, transportation infrastructure is not keeping pace with the growth that drives it. Because of this historical pattern, many rural communities are at a cross roads in that transportation systems are in need of improvements, however they are increasingly in need of sensitive improvements that focus on certain amenities of value.

Whitefish is an example of a community that prides itself on livability, character, sensitivity to the environment, and creating a sense of place for its citizens and visitors. These issues can be manifested through a variety of components, but the transportation system is one such area that is in need of attention as the community continues to grow. Planning for the future transportation system is an endeavor that, although not simple, can allow the community to handle its growth in a sensitive manner and still serve the needs of the traveling public.

Whitefish is also somewhat unique in that the predominate transportation issues in the community are largely driven by their seasonal tourism traffic in the summer months (especially July and August). Summer peak traffic is large and causes a variety of intersection and corridor issues, especially in the downtown area. One theme that is contained within this Transportation Plan is that the community should strive to reduce the dependence on private automobile travel wherever possible. Programs and options for doing this should extend to the occasional summer visitor that may want to spend less time in their vehicle and more time experiencing the joys and attributes of the Whitefish community. Transportation issues identified within this document are not necessarily related to "commuter-type" traffic issues, which is also unique to the community of Whitefish.

Although there presently does not exist a comprehensive "citywide" Transportation Plan for the Whitefish community, there has been some community transportation planning completed in segments. Several previous studies have analyzed transportation needs in the community. These include the following:

- Whitefish Growth Policy (2007 Update);
- Whitefish Downtown Business District Master Plan;
- Southeast Whitefish Transportation Plan;
- South Whitefish Transportation Planning Project;
- Whitefish Traffic Operations Study;
- Whitefish Transportation and Storm Drainage Master Plan (RPA 1998); and
- US Highway 93 Somers to Whitefish West Environmental Impact Statement;

It is the intent of this Transportation Plan to serve as a guide for the future of the Whitefish area transportation system. The Plan describes the existing system, and identifies large and small improvements for the transportation network. The recommendations made in this document cover all modes of transportation, including travel by private vehicle, public transportation, foot and bicycle modes. Recommended projects are intended to relieve existing problems and prepare the Whitefish transportation system to meet future needs.

This Plan also includes a detailed discussion of transportation demand management strategies including the methods that will provide the greatest benefit to the Whitefish area. Traffic calming is also addressed in detail, including a comprehensive list of available measures, along with recommendations of methods most likely to benefit the Whitefish community.

## 1.1 PROJECT BACKGROUND

Transportation issues have been elevated in the past few years. The community has had several important master planning projects in process and/or completed. Because of the focus on community planning, coupled with the heightened awareness of growth and transportation impacts, it was decided that a comprehensive Transportation Plan should be assembled in the community. Although the Transportation Plan can be viewed as a "fresh look" at transportation issues, it also will serve to assemble appropriate recommendations from all the previous planning efforts and incorporate them into one succinct document. The community has changed over the years, and growth issues seem to dominate local newspapers and media attention. Managing growth is an important component of the ongoing Whitefish *Growth Policy (2007 Update)*. Providing amenities that keep people in the community is a quality of life issue.

Another reason that has necessitated the development of the Transportation Plan has to do with the issue of Wisconsin Avenue. The City of Whitefish has been collecting funds for eventual improvements to this roadway for several years under the "Urban Highway System (STPU)" funding program. To date, the City has a balance of $773,006 and continues to be allocated $117,074 on an annual basis from the Federal and State. Since this available money will not be enough to fund a full corridor reconstruction project, the intent was for this Transportation Plan to offer incremental improvements along the corridor to satisfy safety and operational needs until which time a major project could be contemplated.

Perhaps the biggest catalyst for undertaking this Transportation Plan effort was the recent completion of the Whitefish *Downtown Business District Master Plan*. This important planning document "…*identifies opportunities to increase the vitality of the downtown business district*". This master plan has a transportation component, and outlines the direction the community would like to head for its transportation system within the downtown core. The Plan was prepared around the same time as the *Environmental Impact Statement (EIS) Re-Evaluation* of the US Highway 93 corridor that was being completed by the consulting firm of WGM Group (Missoula, Montana). This parallel project was assessing the recommendations for traffic flow provided in the early 1990's via the *US Highway 93 Somers to Whitefish West Environmental Impact Statement (EIS)*. This document set forth a direction for transportation improvements for the downtown core. The conclusions reached by WGM Group were that the preferred alternative provided for in the original EIS was no longer suitable based on traffic operations parameters (turning movements, geometry, turning vehicles), as well as based on community preferences and changes over the past decade. This did cause community and State planners to step back and question how best to proceed with public money expenditures.

It was then decided that due to the heightened relevance of the recent *Downtown Business District Master Plan*, and due to the conclusion that the original preferred alternative from the 1993 EIS may no longer be appropriate, that additional study of the downtown US Highway 93 corridor would be warranted. This was to be in the form of a "Pre-NEPA" corridor study. NEPA stands for the National Environmental Protection Act, and is the Federal legislation that guides the development of transportation projects and the subsequent expenditures of Federal money for such projects. Rather than opening up a formal Environmental Impact Statement (EIS) process to examine the downtown core, the Pre-NEPA studies allow greater flexibility in examining options for a roadway system.

To complete this Pre-NEPA corridor study, Robert Peccia & Associates was retained in January of 2007. It was decided that before detailed work on the downtown corridor could commence, though, a parallel project of completing the community-wide Transportation Plan should be entertained. This document is the result of that effort, and looks at the greater community and its transportation needs, absent of a detailed look at the downtown core. The downtown Pre-NEPA corridor study is thus contained in a separate, companion document and is referenced as such herein.

Lastly, it should be mentioned that there is substantial design work being completed in the community for the US Highway 93 (Whitefish-West) corridor. This project is currently in the design phase and encompasses US Highway 93 west of the downtown proper. The project is being guided by a Citizens Working Group (CWG), and the need for the project is well documented to improve safety, operational characteristics, and increase connectivity in the community. Issues still being resolved are the character of the roadway (urban, transitional and/or rural), how to handle the needed utilities, and the high cost of right-of-way to accommodate the necessary improvements.

## 1.2 STUDY AREA

All transportation plans begin by defining the study area. Sometimes this study area follows governmental boundaries such as city limits, but most often they include land outside city limits in which future growth is seen as likely to occur. The *Transportation Plan* study area boundary follows the City's 2007 Growth Policy study area boundary.

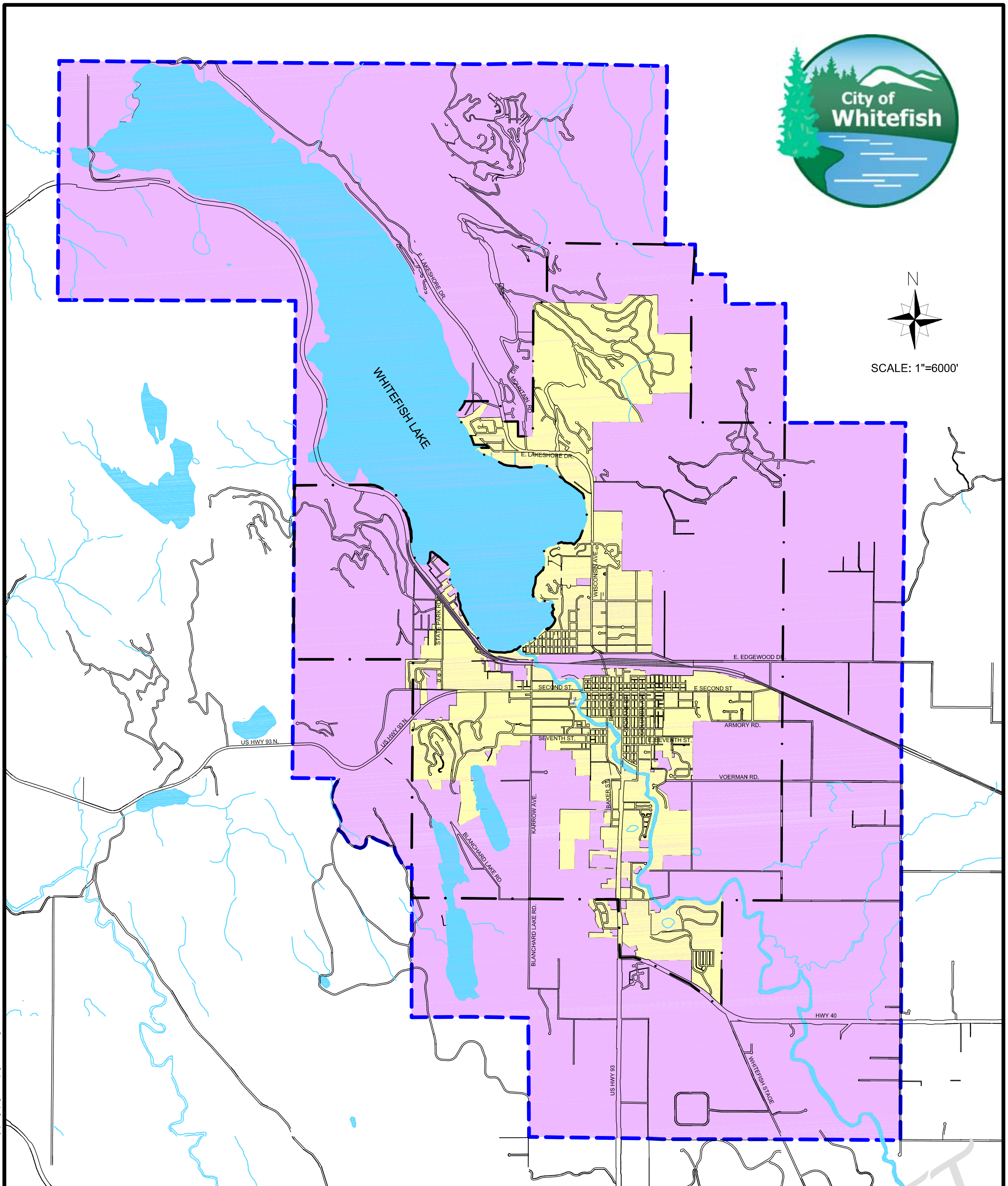
For Whitefish, the study area boundary includes the entire City limits of Whitefish, as well as a substantial portion of unincorporated lands surrounding the City. These lands include the area surrounding Whitefish Lake, the Big Mountain Resort area, as well as additional areas that are developing and/or forecast to develop over the planning horizon of the study (i.e. the year 2030)

The study area boundary was developed for two primary reasons. First, to include land where recent growth has occurred or is anticipated to occur in the foreseeable future and second, to incorporate a study area boundary that matches other recent and relevant City of Whitefish studies (i.e. the City of Whitefish Growth Policy).

It should be recognized that there are many other areas that are not formally included in the study area boundary that will exhibit development patterns affecting the area transportation system. These areas include, but are not limited to, south along US Highway 93 and east along Montana Highway 40. These are not included in the study area due to both funding and jurisdictional constraints, however cursory attempts at land use forecasting will be made to evaluate overall transportation impacts through the travel demand modeling process.

The study area includes all outlying land that will develop during the next 20 years (2030) on the outskirts of Whitefish, as well as areas where transportation issues are expected to impact or influence the City's community and growth needs.

The study boundary is shown on **Figure 1-1** and has been used for all aspects of the *Whitefish Transportation Plan*. This study boundary includes all of the major employers in the area, and includes all of the land that may be used for employment centers in the next twenty years. It also includes developing residential land uses in the area, and those areas likely to increase the housing supply in the future and subsequently add traffic onto the transportation network. Again, the study area boundary for this Transportation Plan follows the planning area boundary used in the recently adopted Whitefish *Growth Policy*.




Notes:
1. Study Area Boundary follows current Growth Policy Update Plan Boundary.

*Whitefish Transportation Plan (2007)*

TRANSPORTATION PLAN BOUNDARY
CITY LIMITS
WATER
URBAN BOUNDARY





Figure 1-1
**Study Area Boundary**

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 1-1.dwg Dec 20, 2007

## 1.3 TRANSPORTATION PLANNING, GOALS, OBJECTIVES AND POLICIES

An excerpt from the Institute of Transportation Engineers (ITE) "Transportation Planning Handbook":

*"…early in the planning program, the goals and objectives for community growth and development should have been identified. Community development goals will likely have been prepared as part of the comprehensive planning program (i.e. Growth Policies). An effort to prepare community development goals as part of the transportation planning process is necessary only if such goals have not already been prepared.*

*The future transportation system will be designed to serve the future community so the transportation goals should follow logically from the comprehensive goals for community development (i.e. Growth Policies). Support for the transportation plan, be it political or financial, will depend on the community recognizing that the transportation plan is an inherent part of and a necessity for realizing the community development plan."*

**Goals** – a purpose or need that should be attained to address a transportation issue.

**Objectives** – a specific method or activity that is designed to achieve an identified goal.

### 1.3.1 Community "Transportation Related" Goals and Objectives

Whitefish Growth Policy

- Provide an efficient and effective transportation system to serve the present and future needs of the Whitefish area.
- Integrate transportation and land use planning so that choices of transportation modes are optimized.
- The City shall explore support of improved public transit, both in the city, and inter-city, through support of the expansion of existing systems and support for new enterprises, using capital improvement planning, grants, and other means.
- The City shall be open and receptive to the use of alternative street standards that preserve and enhance the character and qualities of neighborhoods while still meeting general transportation and public safety needs.
- The community shall encourage sustainability in all aspects of the transportation system so that the needs of the present are met, while ensuring that future generations have the same or better opportunities.
- Through integrated community planning, transportation system enhancements, and a viable non-motorized transportation system, work to reduce the Whitefish community's carbon footprint.

Whitefish Downtown Business District Master Plan

- Ensure the Highway 93 improvements enhance and support downtown businesses.
- Accommodate increasing traffic volumes without degrading downtown businesses and the retail environment.
- Locate new parking facilities to support downtown businesses and retail.

- Strengthen alternative transportation modes to reduce traffic congestion, including pedestrian, bicycle, and transit.

Flathead County Growth Policy

- Maintain safe and efficient traffic flow and mobility on county roadways.
- Develop a quality transportation network to meet the present and future needs of the public.
- Identify and support alternative modes of transportation.

Big Mountain Neighborhood Plan

- Create an entrance to Big Mountain at the intersection of Big Mountain Road and the Day Lodge Road. The entrance may include a staffed information building with a destination accommodations desk.
- Maintain adequate parking for the day skier/visitor.
- Develop parking in the Village for the new and existing accommodations.
- Develop a trail system and facilities on the lower mountain that provide and support a variety of opportunities for hiking, walking, biking, cross country skiing, trail riding, etc.
- Off Mountain housing would be served by the SNOW bus to reduce traffic volumes on Wisconsin Avenue and Big Mountain Road and reduce parking needs at the mountain.

### 1.3.2 Goals

The Transportation Element of the *Growth Policy Update* includes the following goals.

- Provide an efficient and effective transportation system to serve the present and future needs of the Whitefish area.
- Integrate transportation and land use planning so that choices of transportation modes are optimized.
- The City shall explore support of improved public transit, both in the city, and inter-city, through support of the expansion of existing systems and support for new enterprises, using capital improvement planning, grants, and other means.
- The City shall be open and receptive to the use of alternative street standards that preserve and enhance the character and qualities of neighborhoods while still meeting general transportation and public safety needs.
- The community shall encourage sustainability in all aspects of the transportation system so that the needs of the present are met, while ensuring that future generations have the same or better opportunities.
- Through integrated community planning, transportation system enhancements, and a viable non-motorized transportation system, work to reduce the Whitefish community's carbon footprint.

### 1.3.3 Policies

In order to achieve the Goals, the following policies are needed to guide decision-making and address issues within the community.

- It shall be the policy of the City of Whitefish to support non-motorized transportation through community planning and capital improvement planning and programming.
- The City shall seek ways to reduce the community's carbon footprint through efficiencies in the transportations system, reduction of vehicle miles traveled, and through promoting non-motorized transportation.
- The City shall be open and receptive to the use of alternative street standards that preserve and enhance the character and qualities of neighborhoods while still meeting general transportation and public safety needs.
- The community shall encourage sustainability in all aspects of the transportations system so that the needs of the present are met, while ensuring that future generations have the same or better opportunities.

### 1.3.4 Objectives (Recommended Actions)

These objectives (recommended actions) are designed to provide measurable milestones regarding transportation planning and to assist in achieving the goals and policies as stated above.

- Make construction of new sidewalks and pathways a priority in areas where they do not currently exist.
- Plan for through, continuous streets to the extent possible. When cul-de-sacs are appropriate due to ownership, topography, or other constraints, ensure that a future street extension can be made via a right-of-way dedication, or at the very least, a pedestrian connection.
- It is highly recommended that no additional land in the Monegan Road area be designated for urban or suburban development until such time as an additional east-west connection is made available.
- Through the community-wide transportation plan, explore possibilities for an additional grade separated crossing of the BNSF rail facilities.
- The City shall make the provision of sidewalks, pathways, and other non-motorized transportation facilities part of a concurrency program and policy.
- The City shall research and develop a set of alternative "neighborhood sensitive" designs for local residential streets.
- The City shall develop a menu of traffic calming measures for use on residential collector streets.
- Through the community-wide transportation plan, the City shall assess the need and feasibility of a highway by-pass to alleviate through traffic in the downtown area.
- Continue support for federal funding that will keep Amtrak passenger service operating in Montana.
- Continue to support agreements with Eagle Transit and the Snow Bus, and encourage them or other enterprises to expand existing services to provide daily and year-round public transportation options in Whitefish.

- Coordinate with the Montana Department of Transportation in developing corridor studies for state highways within the planning jurisdiction.
- Explore alternative vehicular routes to the Whitefish Mountain Village.

## 1.4 PREVIOUS TRANSPORTATION PLANNING EFFORTS

In the course of data collection, past plans and studies were obtained. From the review of these documents, applicable issues were incorporated into this Whitefish Transportation Plan. The contributing documents are as follows:

- Whitefish Growth Policy (2007 Update)
- Whitefish Downtown Business District Master Plan;
- Whitefish City-County Master Plan (2020);
- Big Mountain Neighborhood Plan;
- Whitefish Zoning Map;
- Southeast Whitefish Transportation Plan;
- South Whitefish Transportation Planning Project;
- Whitefish Traffic Operations Study;
- Armory Park Master Plan;
- Whitefish Transportation and Storm Drainage Master Plan (RPA 1998);
- Whitefish Stormwater System Utility Plan (HDR 2006);
- Whitefish Wetlands Delineation Study (currently underway);
- US Highway 93 Somers to Whitefish West Environmental Impact Statement;
- Eagle Transit Transportation Development Plan Update (2006 Update);
- Flathead County Growth Policy;
- Flathead County Zoning Regulations;
- Flathead County Subdivision Regulations;
- Kalispell Area Transportation Plan (2006 Update);
- Kalispell Area Transportation Plan (1993 Update);
- Miscellaneous Traffic Impact Studies (Flathead County & City of Whitefish) to include “Bridgewater TIS”, “Boardwalk TIS”, and “Wisconsin TIS” completed by Abelin Traffic Services in the year 2006;
- City of Whitefish Engineering Standards;
- Flathead County Road Standards;
- School Bus Routes;
- Postal Routes;
- Fire District Maps;
- Whitefish Deaconess Hospital “Sub-area” Plan;
- Locally adopted master plans, public facility plans, and related development regulations;
- Official Code of the City of Whitefish;
- Montana Department of Transportation STIP and other Local Planning Documents
- U.S. Bureau of Census data; and
- City building permits, County location and conformance permits, and utility records.

## 1.5 PUBLIC INVOLVEMENT

The primary goal of the communications program for the Whitefish Transportation Plan was to keep the public informed and involved in the project. A second goal of the process was to integrate the opinions and issues identified by the public, as a result of the program, into the project approach and methodology, wherever feasible. The methods that were used to achieve these goals included: guidance from the Project Oversight Committee (POC); feedback from the Citizens Advisory Committee (CAC); outreach to key constituencies (i.e. general public); education of decision-makers (i.e. City Council); project newsletters (two total); news releases; and public events. Below is a brief summary of some of the project outreach activities utilized during the projects development:

### *1.5.1 Summary of Program Components*

- **Project Oversight Committee (POC)**

A project oversight committee (POC) was established to oversee the development of this transportation plan. The POC met face-to-face on two occasions, with the majority of oversight completed via regular, conference call meetings. The regular conference call meetings occurred on the first and third Wednesdays of each month, and generally ran between 9:30 am and 10:00 am.

Membership was composed of individuals as noted on the acknowledgements page of this document, and generally included representatives from the Montana Department of Transportation, the City of Whitefish, and the Federal Highway Administration. The POC was the principal guiding force behind this Transportation Plan.

- **Citizen Advisory Committee (CAC)**

The CAC was set up for this project under the charge of acting as a sounding board to the Consultant team developing the community Transportation Plan as they develop recommendations and identify solutions for the community's transportation system. The CAC was asked to look at the "bigger picture" regarding comprehensive transportation needs and issues in the larger community. The CAC was an advisory group and was not in a position to formally "endorse" the resulting Transportation Plan. The overarching role of the CAC for this project was to:

- Help identify critical issues relating to the transportation system in the Whitefish study area boundary, including the US Highway 93 urban corridor.
- Represent the diverse interests of the Whitefish community.
- Review project deliverables & comment as appropriate.
- Convey other citizen input that may be received to the Consultant team.

The CAC met for a total of four (4) times over the course of the project, with the last interaction (i.e. 4th meeting) focused on the downtown US Highway 93 corridor study.

### ❍ Public Meetings

Three formal public meetings were held during the study process. The first meeting was held at a time when the data collection process was nearing completion. This meeting focused on informing the public about the current transportation problems that had been identified to date, and receiving public comment on which issues should be addressed in the Plan. A variety of key issues were identified. The issues generally fell within four categories: 1) the need to plan for future growth; 2) to relieve traffic congestion; 3) to improve traffic safety; and 4) to provide alternatives to the automobile. Specific problem intersections and roadway corridors were identified and presented at this first meeting.

The second public meeting was held after the analysis of the existing transportation system was completed. Additionally, the effects of population growth on traffic volumes and transportation infrastructure were discussed. Where and potentially when future land use changes (i.e. growth) were also defined and discussed. Again, the public had the opportunity to give their opinions on transportation system issues in the study area, as well as any other concerns they might have.

The third public meeting was held after the draft Transportation Plan document was completed, and gave the public the opportunity to review the draft document in its entirety, including a thorough review of recommended projects that not only offered mitigation measures to solve existing transportation issues, but also measures to accommodate future growth issues.

The first two public meetings were held in the Whitefish City Council chamber, while the third public meeting was held at the O'Shaughnessy Center.

### ❍ Other Public Outreach Activities

Formal and informal meeting and presentations occurred many times over the course of the project. These are specifically listed in **Table 1-2** later in this chapter.

### ❍ Public Hearing (Not yet completed)

One public hearing was conducted near the completion of this planning process to obtain formal public comment on the draft document before the City Council. The public hearing covered all elements of the draft and significant additional time for public comment was provided after the public hearing closed. After reviewing the comments received at the public hearing, the POC met with the consultant to provide comments and direction in revising the draft document, and developing the final version of the Plan.

### ❍ News Releases

Television and newspaper articles were used several times during the planning process to help keep the public informed. These news releases generally were issued prior to public meetings (and the public hearing), to generate interest in the process, and to encourage participation by the public.

- **Internet Access**

The results of the traffic studies and analyses conducted during the study process were made available to the public on the Internet website. As sections of the report and graphic displays became available, they were posted on the web site for public review and comment. This enabled the public to stay abreast of the developments occurring during the planning process. It also provided an opportunity for the public to submit comments.

- **Project Newsletters**

One (1) project newsletter was created and distributed that announced the project. The newsletter was sent by mail to everybody in the 59903 zip code area. This equated to a total of 7,500 newsletters being distributed. They were also made available at all public meetings and presentations made through the outreach program.

## 1.6 COORDINATION SUMMARY

The following tables (**Table 1-1** thru **Table 1-2**) summarize all of the coordination that occurred over the course of this planning project. They encompass all formal and informal meetings, including but not limited to Project Oversight Committee (POC) meetings and workshops, formal public meetings, and others.

**Table 1-1**

**Summary of POC & CAC Activities**

| Date | Agency or Individual |
|---|---|
| 10/17/06 | POC Scoping Meeting |
| 01/30/07 | POC Kick-off Meeting |
| 02/07/07 | POC Conference Call |
| 02/21/07 | POC Conference Call |
| 03/07/07 | POC Conference Call |
| 03/21/07 | POC Conference Call |
| 04/04/07 | POC Conference Call |
| 04/17/07 | CAC Meeting No. 1 |
| 04/18/07 | POC Conference Call |
| 05/16/07 | POC Conference Call |
| 06/06/07 | POC Conference Call |
| 06/20/07 | POC Conference Call |
| 07/16/07 | CAC Meeting No. 2 |
| 07/18/07 | POC Conference Call |
| 08/01/07 | POC Conference Call |
| 08/15/07 | POC Conference Call |

| | |
|---|---|
| 09/05/07 | POC Conference Call |
| 10/03/07 | POC Conference Call |
| 10/17/07 | POC Conference Call |
| 11/07/07 | POC Conference Call |
| 11/21/07 | POC Conference Call |
| 12/05/07 | POC Conference Call |
| 12/19/07 | POC Conference Call |
| 01/02/08 | POC Conference Call |
| 01/08/08 | CAC Meeting No. 3 |
| 01/16/08 | POC Conference Call (tentative) |

**Table 1-2**

**Summary of Public Outreach Activities**

| Date | Agency or Individual |
|---|---|
| 03/23/07 | City of Whitefish – Engineering Dept. |
| 04/16/07 | Public Meeting No. 1 |
| 04/16/07 | City Council Presentation No. 1 |
| 05/16/07 | City of Whitefish / Glacier NP |
| 05/24/07 | Resource Agency Meeting No. 1 |
| 05/30/07 | USFWS Coordination Meeting |
| 07/11/07 | Eagle Transit |
| 07/12/07 | US Highway 93 Business Owner |
| 07/13/07 | Whitefish School Superintendent |
| 07/17/07 | City of Whitefish – Streets Dept. |
| 07/17/07 | US Highway 93 Beautification Committee |
| 07/17/07 | Public Meeting No. 2 |
| 09/25/07 | MDT/City Meeting on Screening |
| 01/10/08 | Public Meeting No. 3 |
| 01/17/08 | Planning Board Work Session (tentative) |
| ??/??/?? | Planning Board Public Hearing (?) |
| ??/??/?? | City Council Public Hearing (?) |

CHAPTER 2:

# Existing Conditions

# CHAPTER 2: EXISTING CONDITIONS

## 2.1 INTRODUCTION

This chapter provides a compilation of data describing the physical characteristics and operation of the existing transportation system. The data includes roadway widths, intersection geometrics, lane usage, signal timing, and design features on the major street network. In subsequent portions of the Transportation Plan, this data was evaluated to identify existing or future problems and deficiencies in the major street network.

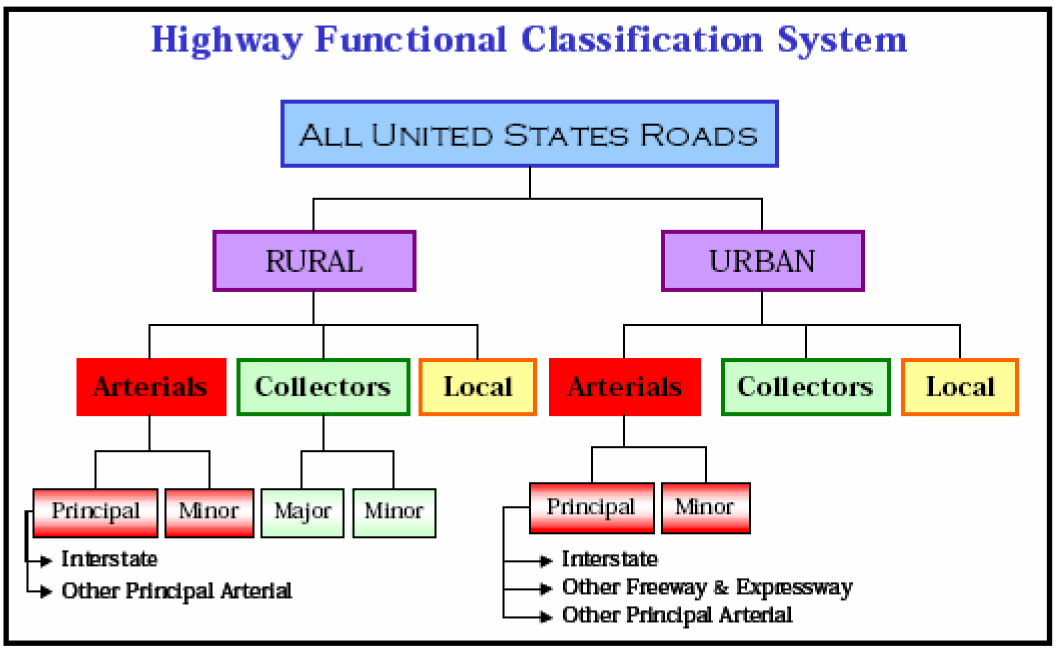
Information on the current transportation system was gathered in order to clearly understand the existing traffic conditions. The information described different aspects of the existing transportation system. Existing traffic volume data were used to determine the annual average daily traffic (AADT) volumes on the major street network. This data helps to determine current operational characteristics. Current or future traffic problems could then be identified. Only the major street network was examined in any detail. The information gathered and analyses performed include the following:

- Existing functional classifications & study roadways review;
- Traffic volume counts;
- Corridor facility size;
- Current traffic signal system/operation;
- Traffic crash data;
- Past transportation planning projects;
- Past non-motorized transportation projects; and
- Peak hour turning movement counts & existing intersection "Level of Service".

## 2.2 EXISTING FUNCTIONAL CLASSIFICATIONS & STUDY ROADWAYS

One of the initial steps in trying to understand a community's existing transportation system is to first identify what roadways will be evaluated as part of the larger planning process. A community's transportation system is made up of a hierarchy of roadways, with each roadway being classified according to certain parameters. Some of these parameters are geometric configuration, traffic volumes, spacing in the community transportation grid, speeds, etc. It is standard practice to examine roadways that are functionally classified as a collector, minor arterial, or principal arterial in a regional transportation plan project. These functional classifications can be encountered in both the "urban" and "rural" setting. The reasoning for examining the collector, minor arterial and principal arterial roadways, and not local roadways, is that when the major roadway system (i.e. collectors or above) is functioning to an acceptable level, than the local roadways are not used beyond their intended function. When problems begin to occur on the major roadway system, then vehicles and resulting issues begin to infiltrate neighborhood routes (i.e. local routes). As such, the overall health of a regional transportation system can be typically characterized by the health of the major roadway network. The roadways being studied under this Transportation Plan update, along with the appropriate functional classifications, are shown on **Figure 2-1** and **Figure 2-2**.

Roadway functional classifications within the city of Whitefish include interstate highways; principal arterials; minor arterials; collector routes; and local streets. The rural areas of Flathead County are also served by a similar hierarchy of streets. However, due to their rural nature the volumes on these streets are generally smaller than in urban areas. Although volumes may differ on urban and rural sections of a street, it is important to maintain coordinated right-of-way standards to allow for efficient operation of urban development. A description of these classifications is provided in the following sections. In addition, a flow chart is presented below that shows the basic hierarchy of the "Highway Functional Classification System" by rural and urban setting. The classes are defined by certain characteristics as well as the level of access and the type of travel mobility the roads provide. The three roadway classes are arterials, collectors, and local. Urban and rural areas have different characteristics as to density and types of land use, nature of travel patterns, density of street and highway networks, and the way in which all these elements are related to highway function. Federal regulations recognize these differences through separate urban and rural functional classification system and associated criteria. (*Source: A Guide to Functional Classification, Highway Systems And Other Route Designations In Montana – MDT*)




## Interstate Highways

The sole purpose of an interstate highway is to provide for regional and interstate travel. Interstate highways are access-controlled facilities with access provided only at a limited number of interchanges. The interstate system has been designed as a high-speed facility with all road intersections being grade separated. An Interstate in Montana is generally a four-lane divided highway with a posted speed limit of 75 miles per hour (mph) for automobiles, and 70 mph for trucks.

Principal Arterial System

The purpose of the principal arterial is to serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in an urbanized area. This group of roads carries a high proportion of the total traffic within the urban area. Most of the vehicles entering and leaving the urban area, as well as most of the through traffic bypassing the central business district, utilize principal arterials. Significant intra-area travel, such as between central business districts and outlying residential areas, and between major suburban centers, are served by principal arterials.

The spacing between principal arterials may vary from less than one mile in highly developed areas (e.g., the central business district), to five miles or more on the urban fringes. Principal arterials connect only to other principal arterials or to the interstate system.

The major purpose of the principal arterial is to provide for the expedient movement of traffic. Service to abutting land is a secondary concern. It is desirable to restrict on-street parking along principal arterial corridors. The speed limit on a principal arterial could range from 25 to 70 mph depending on the area setting.

Minor Arterial Street System

The minor arterial street system interconnects with and augments the urban principal arterial system. It accommodates trips of moderate length at a somewhat lower level of travel mobility than principal arterials, and it distributes travel to smaller geographic areas. With an emphasis on traffic mobility, this street network includes all arterials not classified as principal arterials while providing access to adjacent lands.

The spacing of minor arterial streets may vary from several blocks to a half-mile in the highly developed areas of town, to several miles in the suburban fringes. They are not normally spaced more than one mile apart in fully developed areas.

On-street parking may be allowed on minor arterials if space is available. In many areas on-street parking along minor arterials is prohibited during peak travel periods. Posted speed limits on minor arterials would typically range between 25 and 55 mph, depending on the setting.

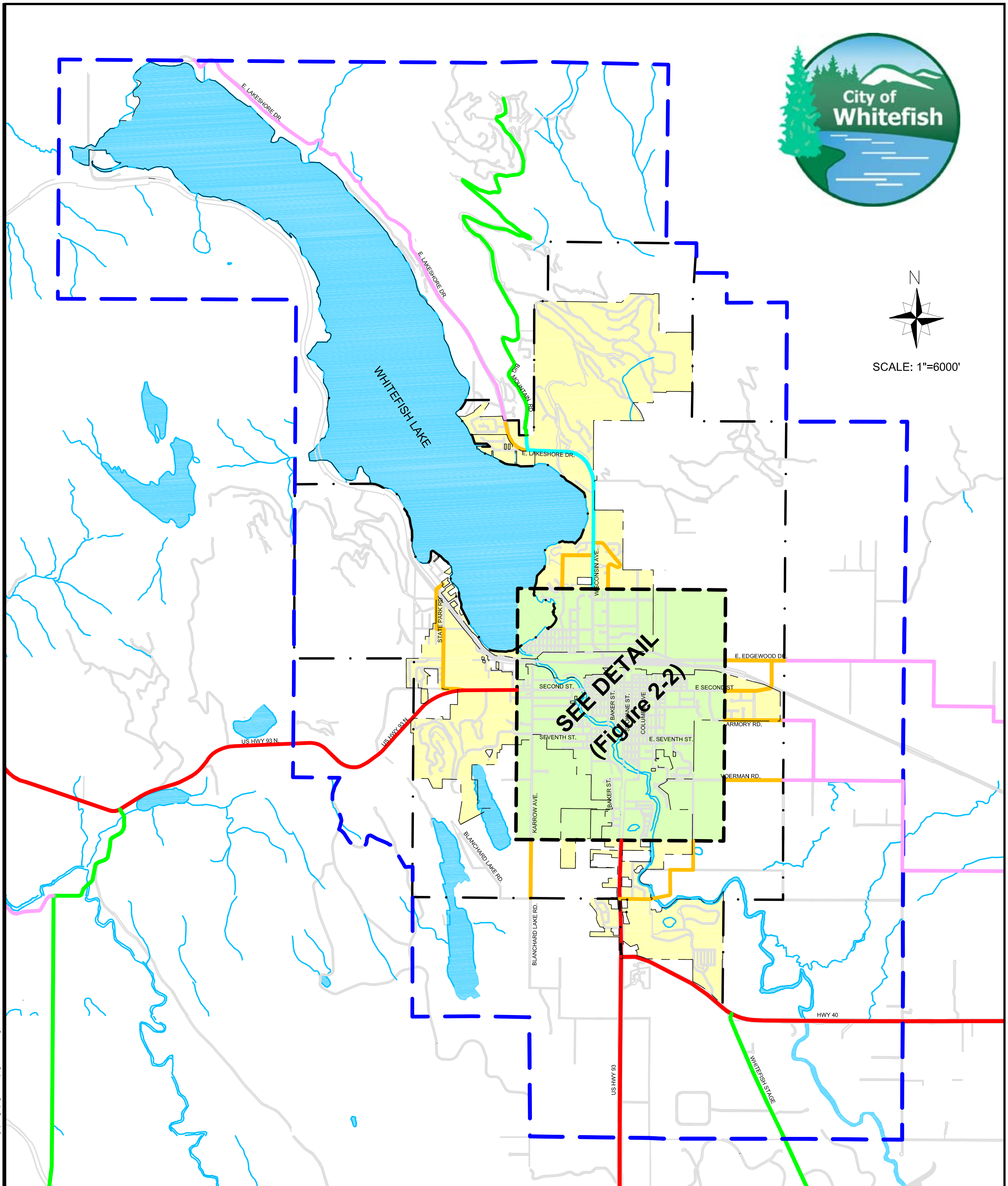
Collector Street System

The urban collector street network serves a joint purpose. It provides equal priority to the movement of traffic, and to the access of residential, business, and industrial areas. This type of roadway differs from those of the arterial system in that collector roadways may traverse residential neighborhoods. The collector system distributes trips from the arterials to ultimate destinations. The collector streets also collect traffic from local streets in the residential neighborhoods, channeling it into the arterial system. On-street parking is usually allowed on most collector streets if space is available. Posted speed limits on collectors typically range between 25 and 45 mph.

The rural collector street network serves the same access and movement functions as the urban collector street network – a link between the arterial system and local access roads. Collectors penetrate but should not have continuity through residential neighborhoods. The actual location of collectors should be flexible to best serve developing areas and the public. Several design guidelines should be kept in mind as new subdivisions are designed and reviewed. The most important concept is that long segments of continuous collector streets are not compatible with a good functional classification of streets. Long, continuous collectors will encourage through traffic, essentially turning them into arterials. This, in turn, results in the undesirable interface of local streets with arterials, causing safety problems and increased costs of construction and maintenance. The collector street system should intersect arterial streets at a uniform spacing of one-half to one-quarter mile in order to maintain good progression on the arterial network. Ideally, collectors should be no longer than one to two miles without discontinuities. Opportunities need to be identified through good design and review of subdivisions to create appropriate collector streets in developing areas.

### Local Street System

The local street network comprises all facilities not included in the higher systems. Its primary purpose is to permit direct access to abutting lands and connections to higher systems. Usually service to through-traffic movements are intentionally discouraged. On-street parking is usually allowed on the local street system. The speed limit on local streets is usually 25 mph.




Notes:
1. Functional Classifications shown on this figure are the "Federally Approved" Classifications. These are different than the City of Whitefish's Roadway Classifications.

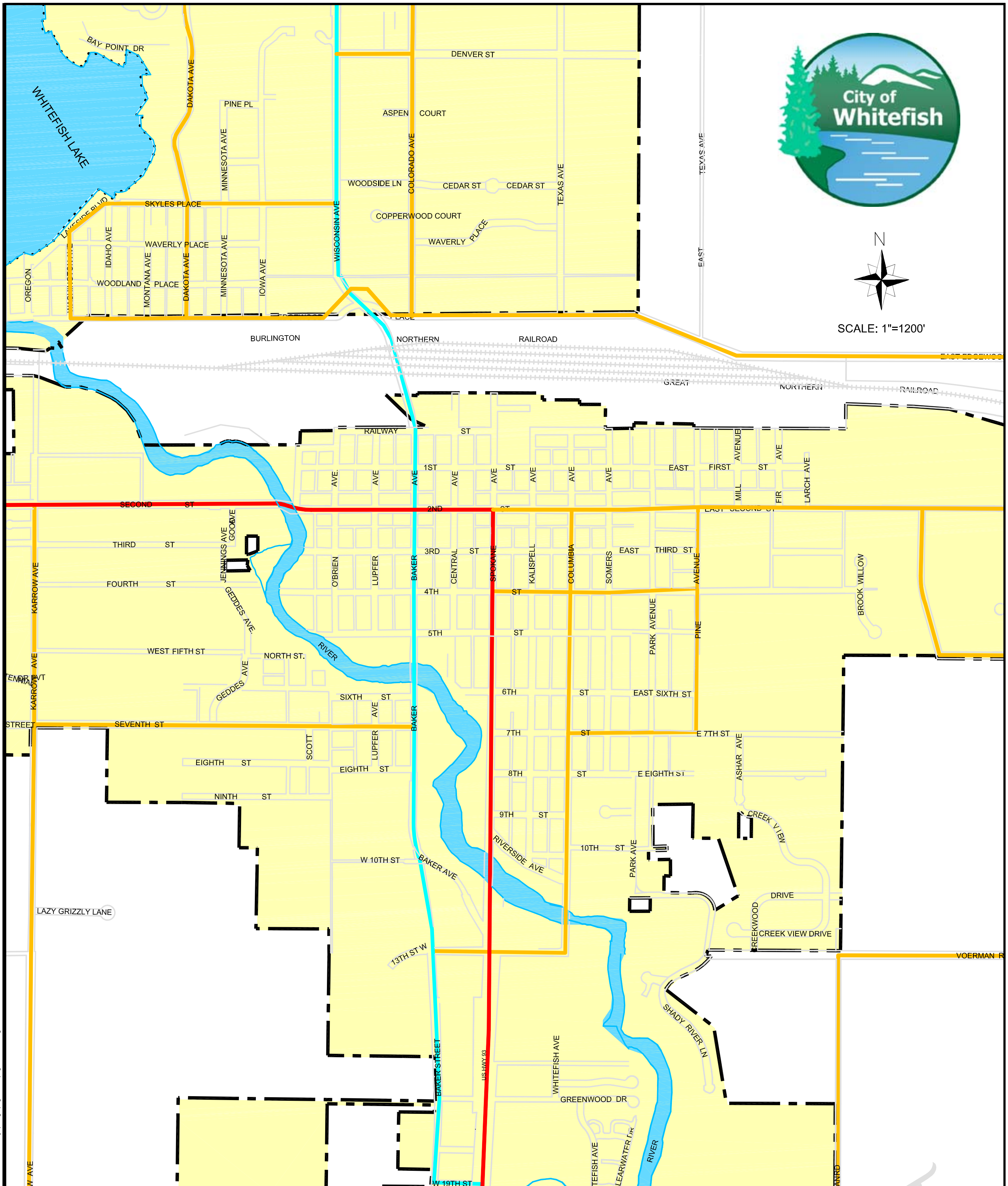
PRINCIPAL ARTERIAL
MINOR ARTERIAL
COLLECTOR (URBAN)
MAJOR COLLECTOR (RURAL)
MINOR COLLECTOR (RURAL)
TRANSPORTATION PLAN BOUNDARY
URBAN BOUNDARY

*Whitefish Transportation Plan (2007)*

Figure 2-1
**Federal Functional Classification Map**



F: \TRANS\WHITEFISH\Transportation Plan\WhiteFish-Proj\dwg\figures\fig 2-1.dwg Dec 20, 2007




F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-2.dwg Dec 20, 2007

*Whitefish Transportation Plan (2007)*

DRAFT

Notes:
1. Functional Classifications shown on this figure are the "Federally Approved" Classifications. These are different than the City of Whitefish's Roadway Classifications.

- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- COLLECTOR
- WHITEFISH CITY LIMITS

Figure 2-2
**Federal Functional Classification Map**

ROBERT PECCIA & ASSOCIATES

## 2.3 EXISTING TRAFFIC VOLUMES

Traffic volumes within the Whitefish area were collected by the Montana Department of Transportation (MDT) and WGM Group, Inc. as part of the *U.S. Highway 93 – Whitefish Urban Preliminary Traffic Report* prepared in February 2006. The traffic volumes collected are used to determine current traffic conditions and to provide reliable data on historic traffic volumes. Year 2003 traffic volumes were selected for analysis on the major road segments within the community. This information is shown on **Figure 2-3** and **Figure 2-4**. These figures show that the high volume corridors are US Highway 93 , Baker Avenue, Second Street, Wisconsin Avenue and Montana Highway 40.

## 2.4 CORRIDOR FACILITY SIZE

Corridor facility size was also identified and is shown on **Figure 2-5** and **Figure 2-6**. The largest facility in the community of US Highway 93 as it enters Whitefish from the south. This five-lane principal arterial reduces in geometry as it intersects with 13th Street just before crossing the Whitefish River. Most roadways are urban two-lane roadways.

Different size corridors can accommodate different amounts of traffic. Traffic volumes on a given roadway, should fall within the range shown on **Table 2-1**.

**Table 2-1**

**Optimal Traffic Volume**

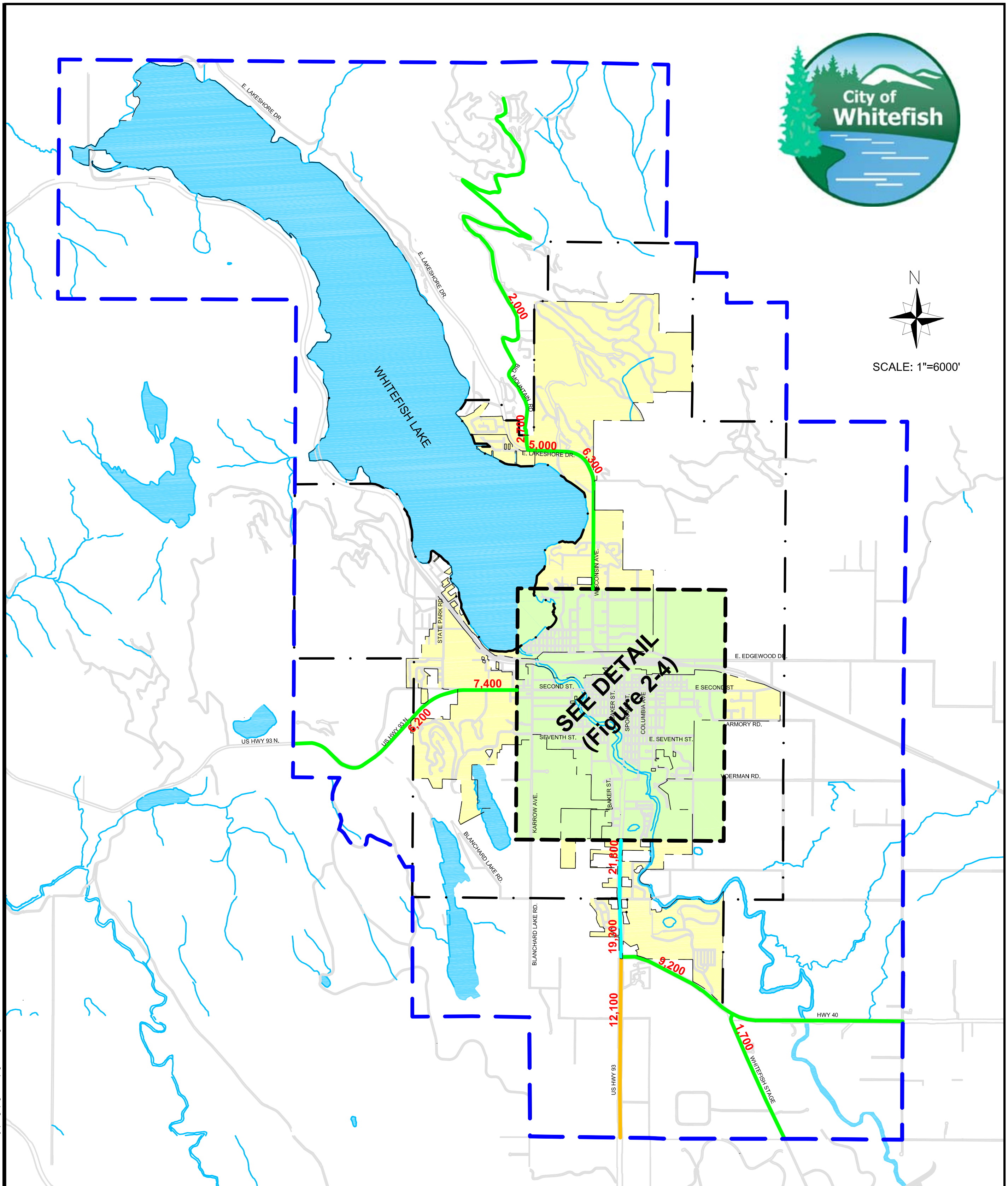
| Number of Lanes | Traffic Volume |
|---|---|
| 2 | < 12,000 |
| 3 | 12,000 - 18,000 |
| 4 | 18,000 - 24,000 |
| 5 | 24,000 - 36,000 |
| 6 | > 36,000 |

At the present time, there are only two locations where traffic volumes exceed what would normally be expected from a capacity standpoint given the current geometry of the roadway. This situation exists on the US Highway 93 corridor north of 13th Street to Second Street, and also on Baker Avenue between Second Street and 13th Street. As was mentioned in Chapter 1, these segments are being studied under a parallel planning effort called a "Pre-NEPA" Corridor Study.

## 2.5 EXISTING TRAFFIC SIGNAL SYSTEM

The street network is often limited by the operation of its major signalized intersections. Currently, there are 7 signalized intersections in the Whitefish area. All traffic signals are owned and operated by the Montana Department of Transportation with the exception of the traffic signal at Wisconsin Avenue and Edgewood Place. The majority of the signals are located along Second Street in the downtown core. These signals are pre-timed signals that are in need of optimization to improve traffic flow (discussed later in this document). The locations of the 7 signalized intersections are as shown on **Figure 2-7** and **Figure 2-8**.

**THIS PAGE INTENTIONALLY LEFT BLANK**



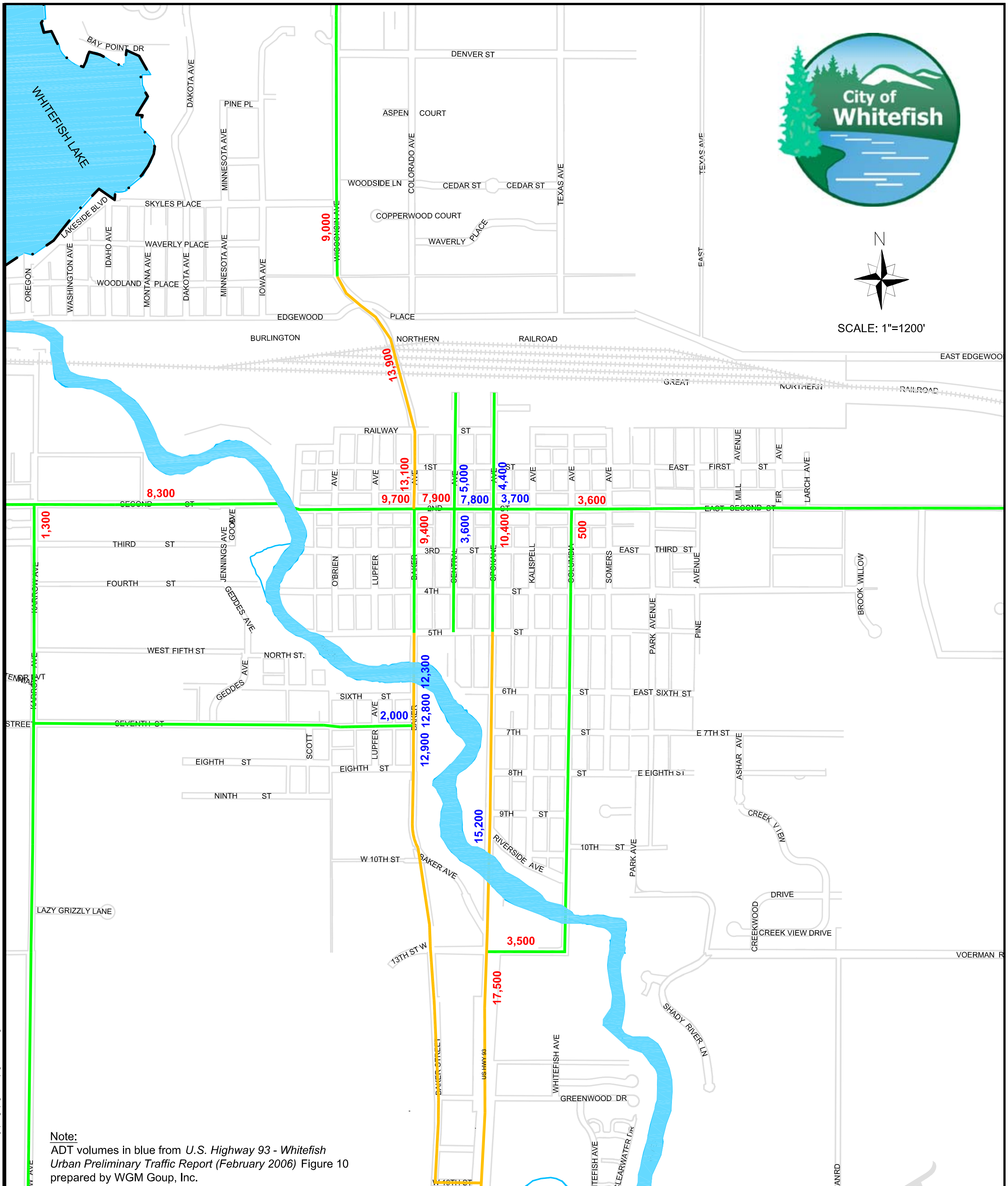

| | |
|---|---|
| green line | 0 - 12,000 (CONSISTENT WITH 2-LANE ROAD) |
| orange line | 12,000 - 18,000 (CONSISTENT WITH 3-LANE ROAD) |
| cyan line | 18,000 - 24,000 (CONSISTENT WITH 4-LANE ROAD) |
| red line | 24,000 - 36,000 (CONSISTENT WITH 5-LANE ROAD) |
| 12,080 | = 2003 TRAFFIC VOLUME (ANNUAL AVERAGE DAILY TRAFFIC - AADT) |
| blue dashed line | TRANSPORTATION PLAN BOUNDARY |
| black dash-dot line | URBAN BOUNDARY |

*Whitefish Transportation Plan (2007)*

DRAFT

Figure 2-3
**2003 Existing Average Daily Traffic (ADT)**

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-3.dwg Dec 20, 2007




ROBERT PECCIA & ASSOCIATES

| | |
|---|---|
| (green line) | 0 - 12,000 (CONSISTENT WITH 2-LANE ROAD) |
| (orange line) | 12,000 - 18,000 (CONSISTENT WITH 3-LANE ROAD) |
| (cyan line) | 18,000 - 24,000 (CONSISTENT WITH 4-LANE ROAD) |
| (red line) | 24,000 - 36,000 (CONSISTENT WITH 5-LANE ROAD) |
| 12,080 | = 2003 TRAFFIC VOLUME (ANNUAL AVERAGE DAILY TRAFFIC - AADT) |
| (blue dashed line) | TRANSPORTATION PLAN BOUNDARY |
| (black dash-dot line) | URBAN BOUNDARY |

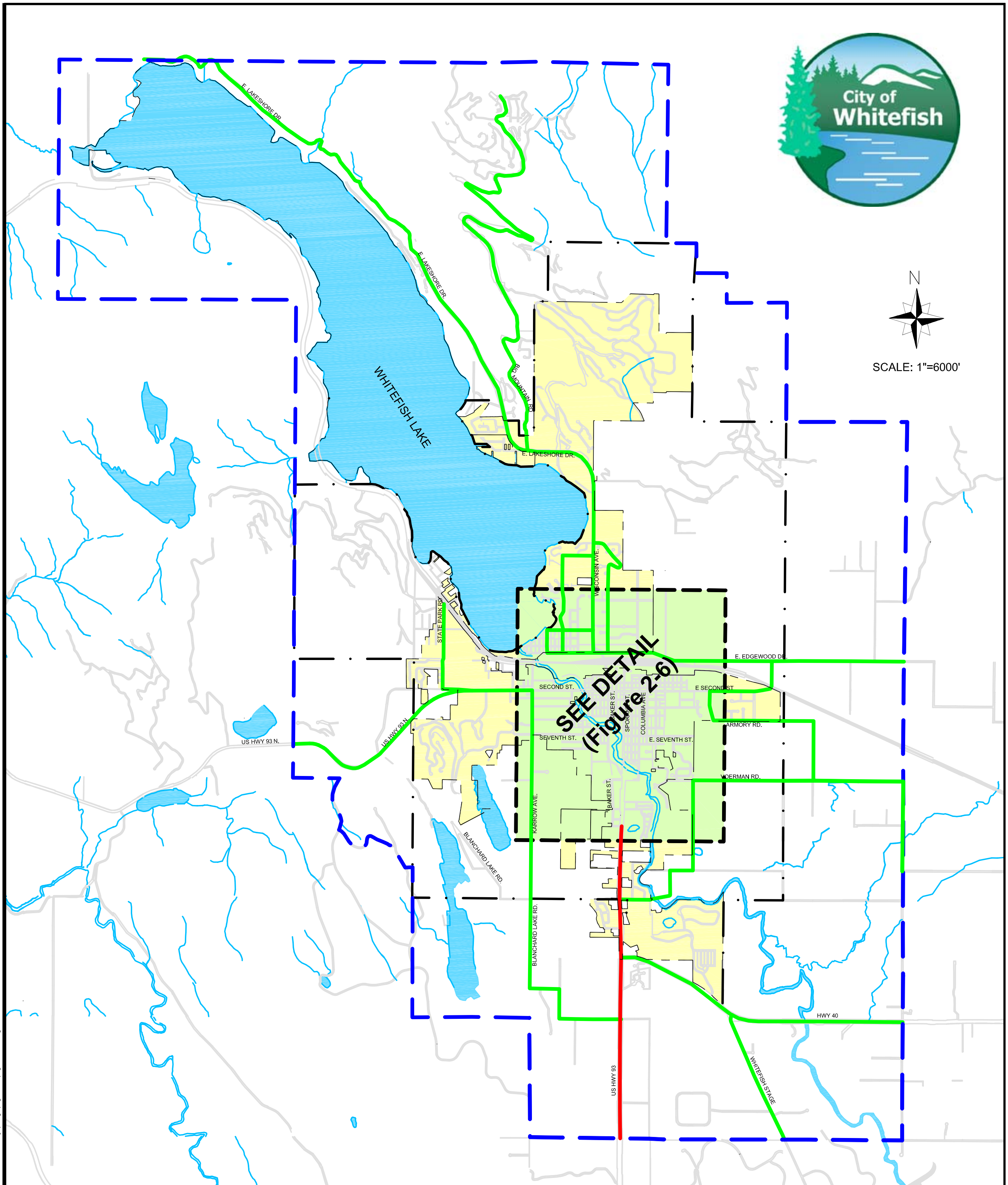
*Whitefish Transportation Plan (2007)*

DRAFT

Figure 2-4

**2003 Existing Average Daily Traffic (ADT)**

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-4.dwg Dec 20, 2007




F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Proj\dwg\figures\fig 2-5.dwg Dec 20, 2007

Notes:

1. Roadways not shown as colored on this figure are generally 2-LANE local roads.

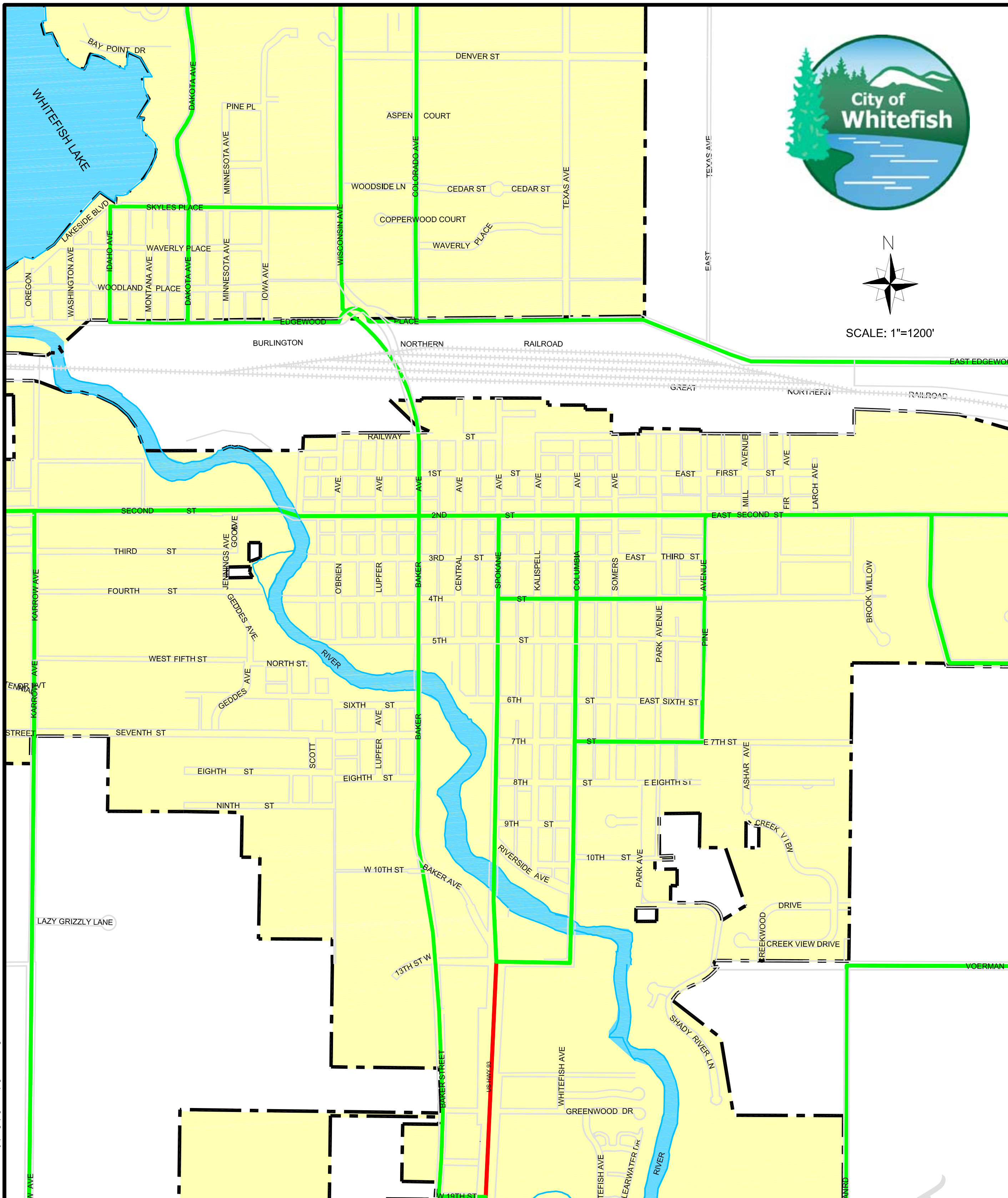
2. 3-LANE & 5-LANE roads generally include a Two Way, Center Turn Lane.

- 2-LANE
- 3-LANE
- 4-LANE
- 5-LANE
- TRANSPORTATION PLAN BOUNDARY
- URBAN BOUNDARY

*Whitefish Transportation Plan (2007)*

Figure 2-5

**Existing Corridor Size**




Notes:
1. Roadways not shown as colored on this figure are generally 2-LANE local roads.
2. 3-LANE & 5-LANE roads generally include a Two Way, Center Turn Lane.

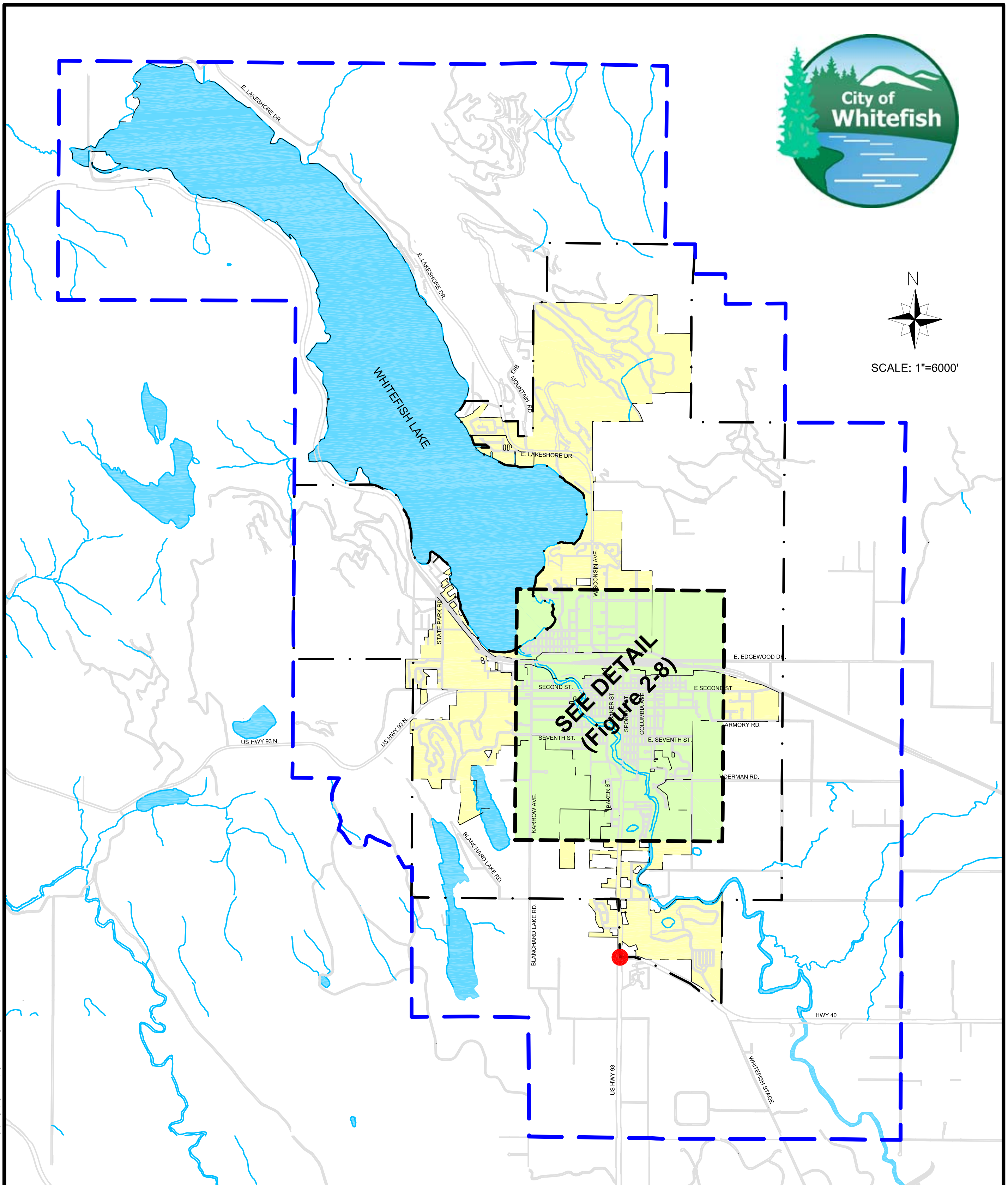
- 2-LANE
- 3-LANE
- 4-LANE
- 5-LANE
- WHITEFISH CITY LIMITS

*Whitefish Transportation Plan (2007)*

DRAFT

Figure 2-6
**Existing Corridor Size**

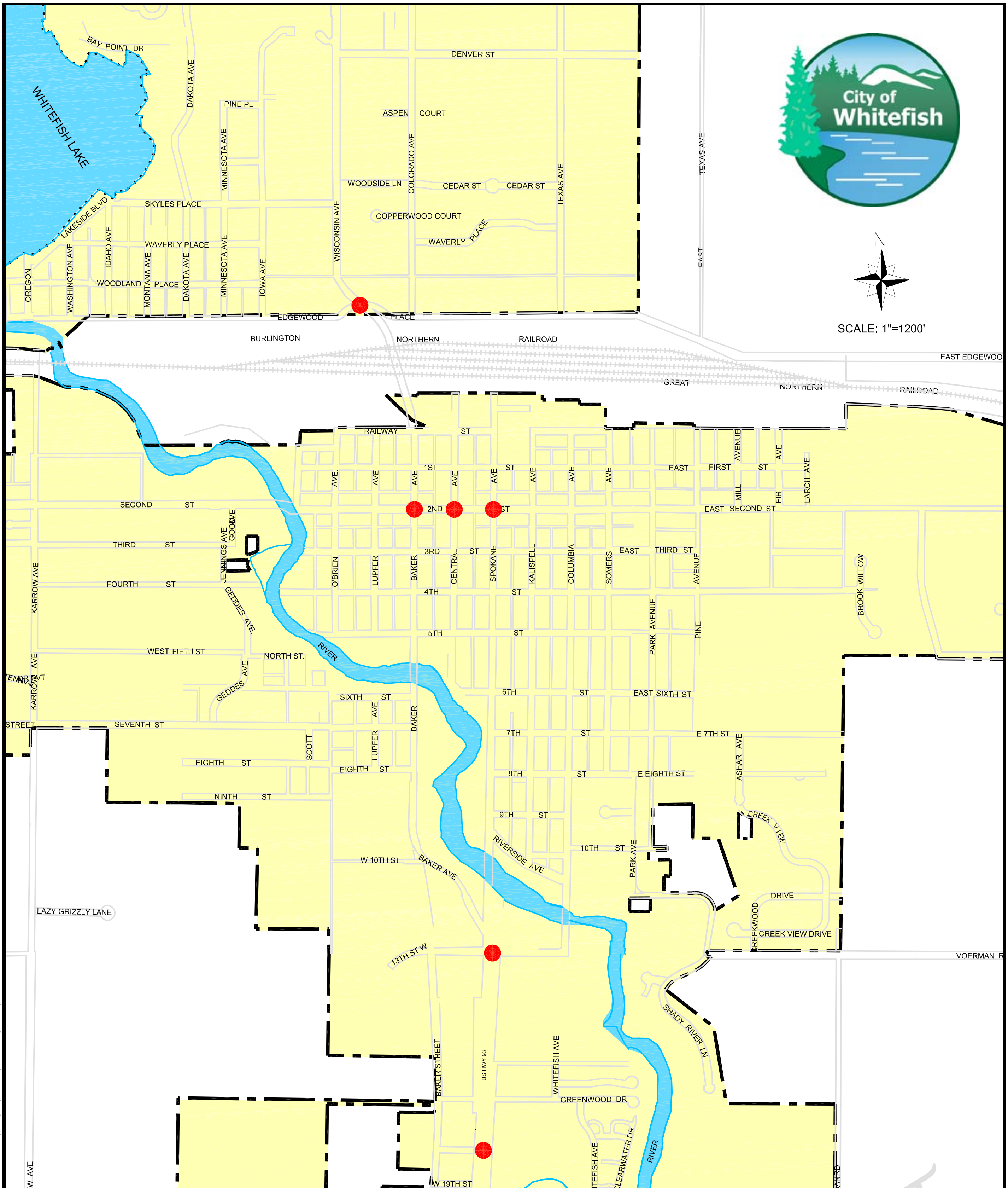
F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-6.dwg Dec 20, 2007




| | |
|---|---|
| (red dot) | SIGNALIZED INTERSECTION |
| (blue dashed line) | TRANSPORTATION PLAN BOUNDARY |
| (black dash-dot line) | URBAN BOUNDARY |

*Whitefish Transportation Plan (2007)*

Figure 2-7
**Traffic Signal System Map**




SIGNALIZED INTERSECTION

WHITEFISH CITY LIMITS

*Whitefish Transportation Plan (2007)*

DRAFT

Figure 2-8
**Traffic Signal System Map**

ROBERT PECCIA & ASSOCIATES

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Proj\dwg\figures\fig 2-8.dwg May 25, 2007

## 2.6 CRASH ANALYSIS

The MDT Traffic and Safety Bureau provided crash information and data for use in the Whitefish Transportation Plan (2007). The crash information was analyzed to identify intersections with crash characteristics that may warrant further study. General crash characteristics were determined along with probable roadway deficiencies. The crash information covers the three-year time period from October 1st, 2003 to September 30th, 2006.

Three analyses were performed to rank the intersections based on different crash characteristics. First, the intersections were ranked by number of crashes. Using crash information provided by the MDT Traffic and Safety Bureau, the number of crashes was calculated for each intersections within the transportation planning boundary. For this analysis, intersections with 10 or more crashes in the three-year period were included. If an intersection did not have 10 crashes in the three-year period the data was available, it was not included at all in this analysis. A summary of these intersections, along with the number of crashes at each intersection, is shown in **Table 2-2**.

The second analysis involved a more detailed look at the crashes to determine the MDT "severity index rating". The severity index is a rating that allows the analyst to see where the most severe types of crashes occur. Crashes were broken into three categories of severity: property damage only (PDO), non-incapacitating and possible injury crash, and fatality or incapacitating injury. Each of these three types is given a different rating: one (1) for a property damage only crash; three (3) for an injury crash; and eight (8) for a crash that resulted in a fatality.

The MDT severity index rating for the intersections in the analysis is shown in **Table 2-3**. The calculation used to arrive at the severity index rating is as follows:

$$\frac{[(\text{\# PDO for intersection}) \times (1)] + [(\text{\# non-incapacitating and possible injury crashes for intersection}) \times (3)] + [(\text{\# fatalities or incapacitating crashes for intersection}) \times (8)]}{\text{Total number of crashes in three-year period}} = (\text{MDT Severity Index Rating})$$

The third analysis ranked the number of crashes against the annual average daily traffic (AADT) at each intersection, expressed in crashes per million entering vehicles (MEV). A summary of the intersections in the analysis is shown in **Table 2-4**. The calculation used to arrive at the crash rates, expressed in crashes per million entering vehicles (MEV), as shown in **Table 2-4**, is as follows:

$$\frac{\text{Total number of crashes in three-year period}}{(\text{AADT for Intersection}) \times (3 \text{ years}) \times (365 \text{ days/year}) / (1{,}000{,}000 \text{ vehicles})} = (\text{Crash Rate})$$

## Table 2-2

### Intersections with 10 or More Crashes in the Three-Year Period (October 1, 2003 – September 30, 2006)

| Intersection | Type of Control* | # Crashes |
|---|---|---|
| U.S. Hwy 93 & Montana Hwy 40 | S | 30 |
| 2nd Street & Central Avenue | S | 14 |
| U.S. Hwy 93 & 13th Street | S | 14 |
| U.S. Hwy 93 & 2nd Street | S | 11 |

*"S"=Signalized, "U-2W"=Unsignalized two-way stop controlled, "U-3W"=Unsignalized three-way stop controlled, "U-4W"=Unsignalized four-way stop controlled.*

## Table 2-3

### Intersection Crash Analysis – MDT Severity Index Rating

| Intersection | Type of Control* | PDO | Injury | Severity Index |
|---|---|---|---|---|
| U.S. Hwy 93 & Montana Hwy 40 | S | 19 | 11 | 1.73 |
| U.S. Hwy 93 & 13th Street | S | 10 | 4 | 1.57 |
| 2nd Street & Central Avenue | S | 12 | 2 | 1.29 |
| U.S. Hwy 93 & 2nd Street | S | 10 | 1 | 1.18 |

*"S"=Signalized, "U-2W"=Unsignalized two-way stop controlled, "U-3W"=Unsignalized three-way stop controlled, "U-4W"=Unsignalized four-way stop controlled.*

## Table 2-4

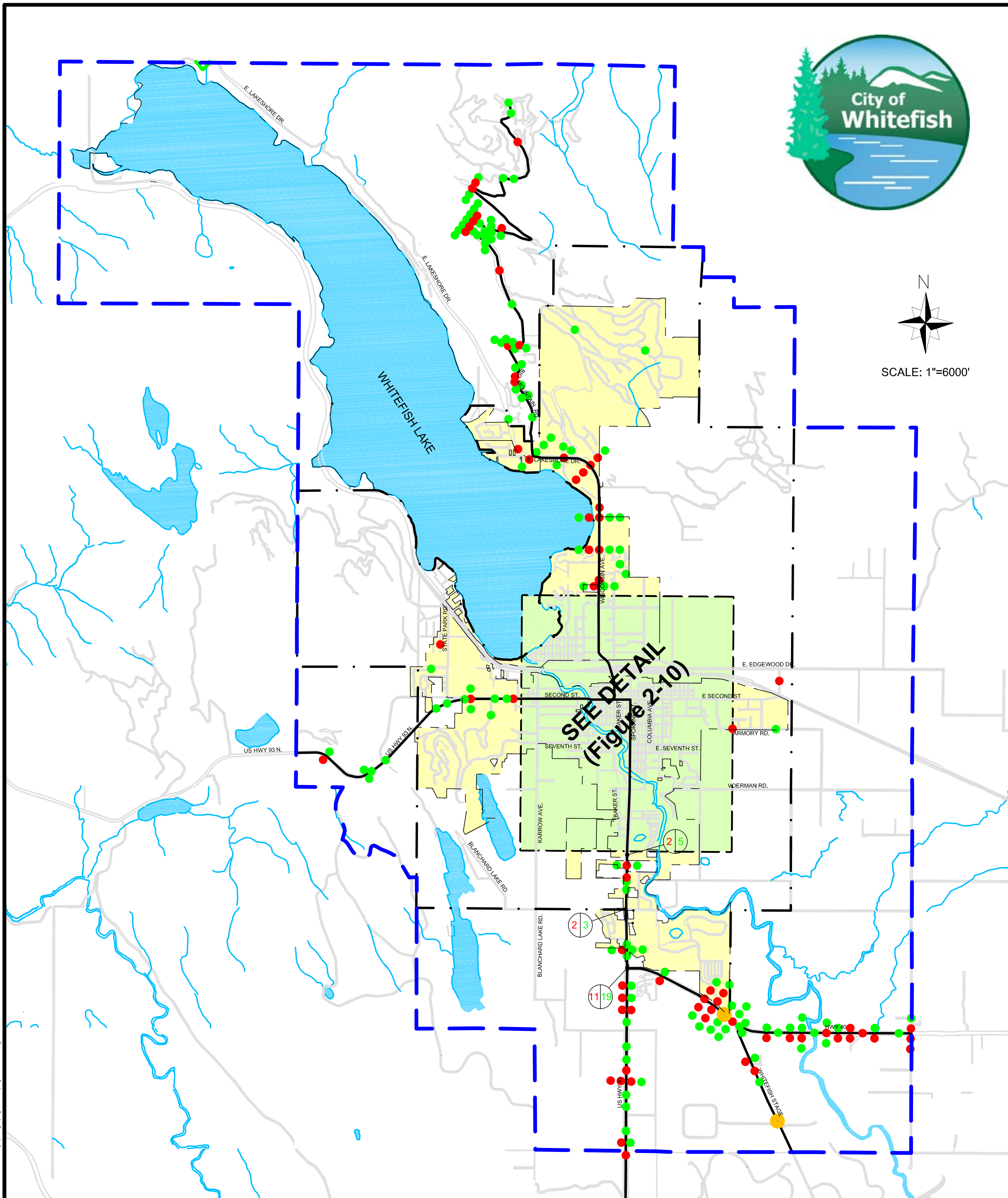
### Intersection Crash Analysis Crash Rate

| Intersection | Type of Control* | # of Crashes | Volume* (vpd) | Rate |
|---|---|---|---|---|
| U.S. Hwy 93 & Montana Hwy 40 | S | 30 | 32,510 | 0.84 |
| 2nd Street & Central Avenue | S | 14 | 20,242 | 0.63 |
| U.S. Hwy 93 & 13th Street | S | 14 | 28,610 | 0.45 |
| U.S. Hwy 93 & 2nd Street | S | 11 | 23,632 | 0.43 |

*Volume determined using MDT 2003 AADT counts. "vpd" stands for "vehicles per day".*

*"S"=Signalized, "U-2W"=Unsignalized two-way stop controlled, "U-3W"=Unsignalized three-way stop controlled, "U-4W"=Unsignalized four-way stop controlled.*

It is customary to give the intersections included in the crash analysis an even rating, a composite rating score is typically developed based on the three analyses presented above. This composite rating score requires the following criteria: First, the intersection would have a minimum crash rate of 1.0 crash per MEV. Second it must have 10 or more crashes in the three years combined. Third, it must rate in the top 10 of one of the three previous categories. Using these criteria, the intersections would then rated based on their position on each of the three previous tables, giving each equal weight. None of the intersections identified in this analysis, however, had a minimum crash rate of 1.0 crash per MEV required to develop a composite rating as described above. The intersections that were identified in the previous tables are shown on **Figure 2-9** and **Figure 2-10** as are all crashes within the study area for the *Whitefish Transportation Plan* during the three-year time period.




ACCIDENT - PROPERTY

ACCIDENT - INJURY

1 6 ACCIDENT - INTERSECTION (INJ/PROP)

ACCIDENT - FATALITY

WHITEFISH CITY LIMITS

*Whitefish Transportation Plan (2007)*

Notes:

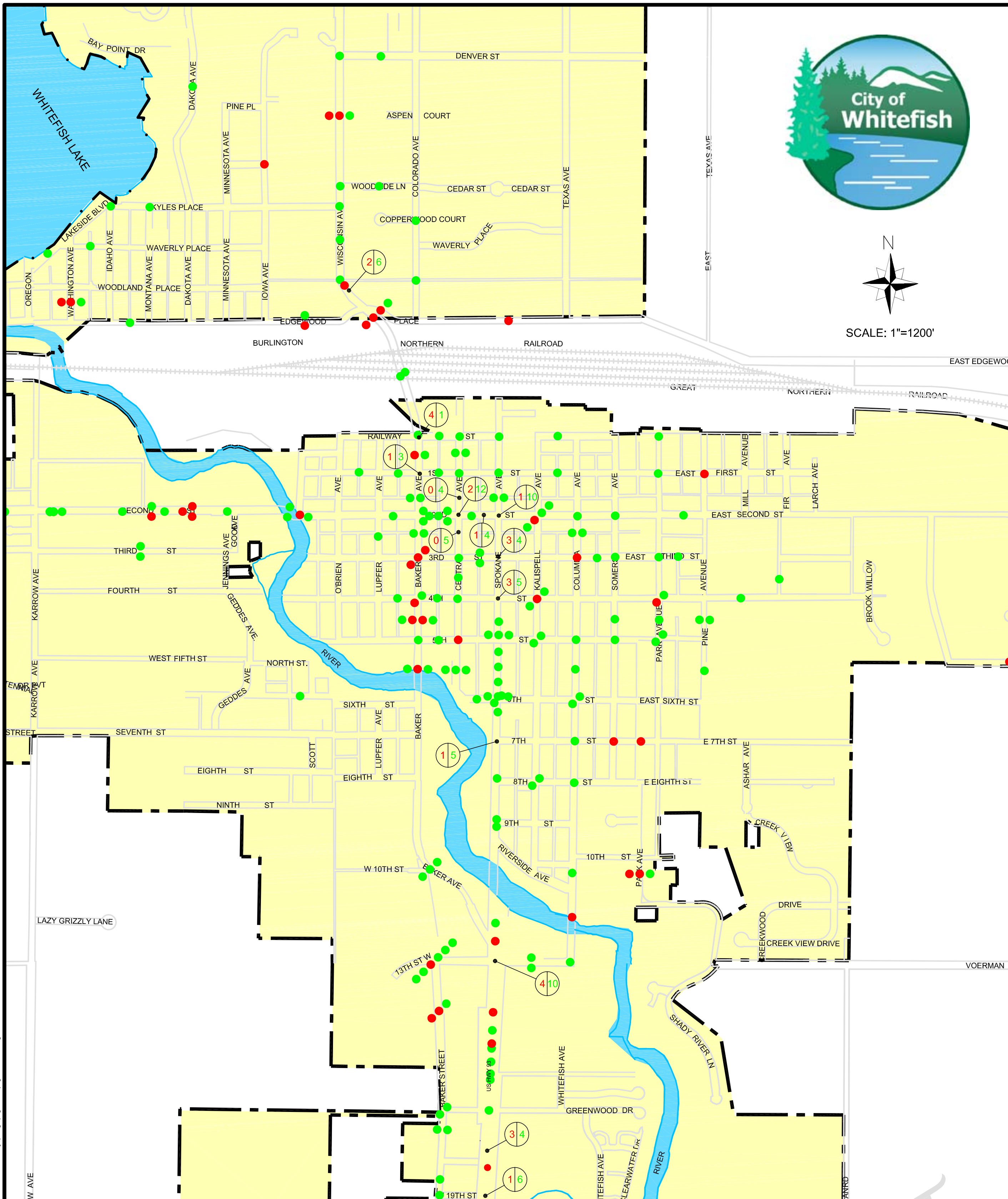
1. Period of record for analysis was October 1, 2003 to September 30, 2006.

DRAFT

Figure 2-9

**Crash Locations**

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-9.dwg Dec 20, 2007




| | |
|---|---|
| (green dot) | ACCIDENT - PROPERTY |
| (red dot) | ACCIDENT - INJURY |
| (circle 1\|6) | ACCIDENT - INTERSECTION (INJ/PROP) |
| (orange dot) | ACCIDENT - FATALITY |
| (dashed line) | WHITEFISH CITY LIMITS |

*Whitefish Transportation Plan (2007)*

Notes:
1. Period of record for analysis was October 1, 2003 to September 30, 2006.

Figure 2-10
**Crash Locations**

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-10.dwg Dec 20, 2007

## 2.7 Past Transportation Planning Projects

This section provides a list of past transportation planning projects listed for the Whitefish area. These projects were compiled from a variety of sources as listed on **Figures 2-11** and **2-12**. **Table 2-5** gives a brief description of these projects as well as their status. The table is presented graphically in **Figures 2-11** and **2-12**.

### Table 2-5

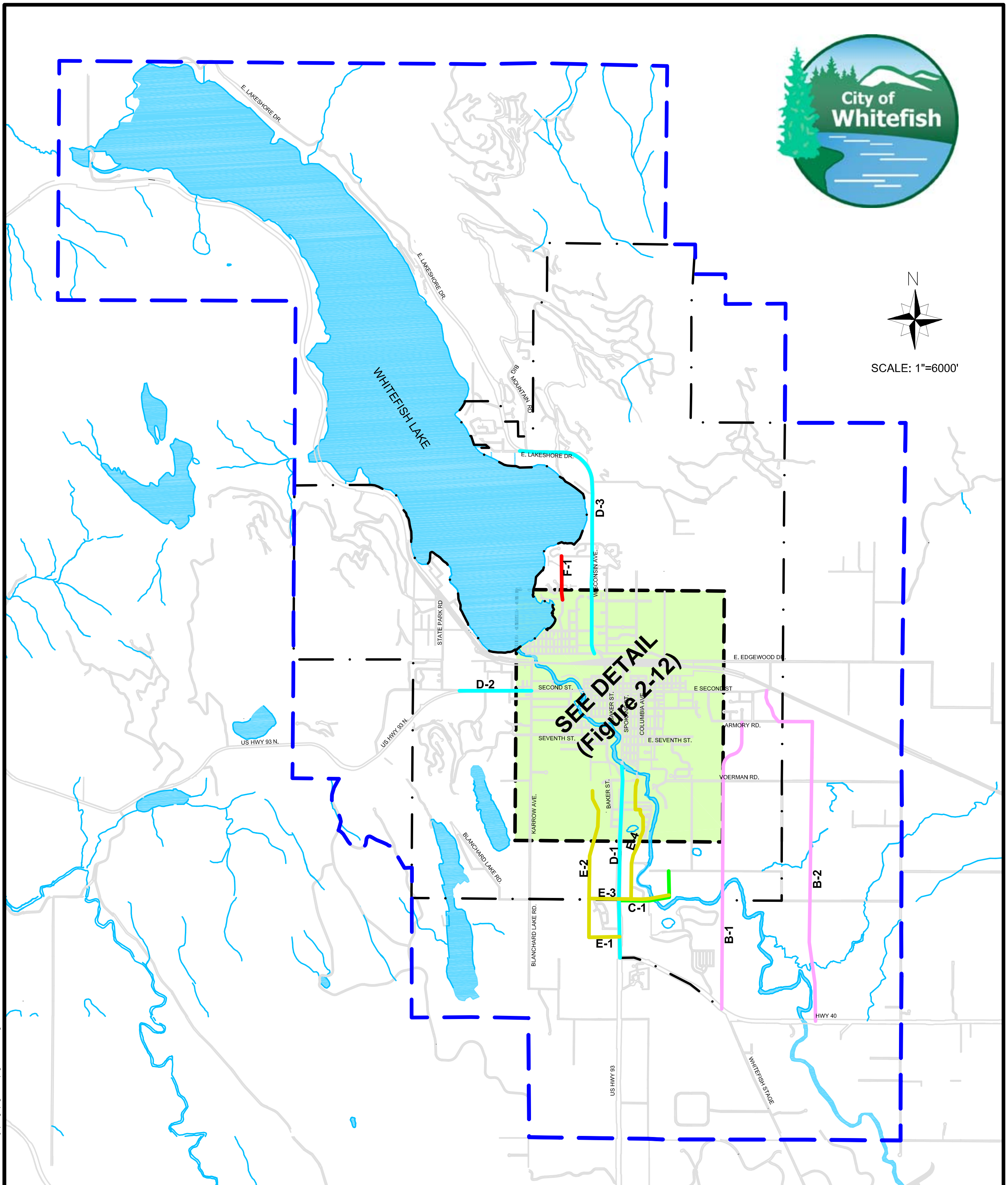
**Past Area Transportation Planning Projects**

| # | Project | Description | Status | Comments |
|---|---|---|---|---|
| A-1 | HWY 93 Couplet | Provide a "contra-flow" lane along Baker Avenue to improve access options. Provide a couplet along Spokane Avenue and Baker Avenue. | Incomplete | |
| A-2 | New 7th Street Bridge | Provide a new bridge crossing at Seventh Street that would connect Baker Avenue and Spokane Avenue. | Incomplete | Included as MSN-4 |
| A-3 | 2nd Street Improvements Between Spokane Ave and Baker Ave | Provide turn lanes and improve truck-turning radii at the intersection of Second Street and Baker Avenue. Prohibit left turn lanes from Second Street onto Central Avenue. | Incomplete | |
| B-1 | Kalner Lane (Alternative E) | Provide a new route beginning at the intersection of Peregrine Lane and Armory Road then continue west then south along the half section line. The route then continues south across Voerman Road and Monegan Road then travels across the river along the eastern boundary of the Riverside at Whitefish development to intersect with Route 40. | Incomplete | Modified and included as MSN-6 |
| B-2 | (Alternative F) | Provide a new route that would begin at East Second Street between Armory Fields and the airport. The route would then follow the east side of the Armory Fields and extend south along the section line to connect with Armory Road. Armory Road would then be extended from the intersection with Voerman Road south to intersect with Route 40. | Incomplete | |
| B-3 | Seventh Street (Alternative B) | Extend Seventh Street to the east and south to connect with Voerman Road at the intersection of Monegan Road. | Incomplete | Included as MSN-5 |
| B-4 | Voerman Road (Alternative C) | Extend Voerman Road to the west across the river to connect with Columbia Avenue. | Incomplete | Included as MSN-10 |
| C-1 | JP Road Reconstruction | Street Reconstruction | Complete | |
| C-2 | Central Avenue Reconstruction | Railway to 5th Street | Incomplete | 2009 start |
| C-3 | Flint Avenue & 6th Street | Culvert and channel improvements | Incomplete | Part of 6th and Geddes (2011-2012) |
| C-4 | Colorado Avenue Reconstruction | Edgewood to Woodside replacement/upgrade street and utility upgrades in accordance with street reconstruction priorities | Complete | |
| D-1 | HWY 93 Widening (1) | Widen US 93 from MT 40 north to the Whitefish River to accommodate two through travel lanes in each direction and a center landscaped median incorporating left-turn lanes where needed. | Incomplete | |
| D-2 | HWY 93 Widening (2) | Widen US 93 from Karrow Avenue west to Lion Mountain Road to incorporate a center landscaped median with left-turn lanes where needed and one through lane in each direction. | Incomplete | |
| D-3 | Wisconsin Avenue | Between the viaduct and Big Mountain Road, add detached bicycle paths and turn lanes at high volume intersections, striping and signage to prohibit passing on the entire length, and caution pedestrian/bicycle signage. Prepare an alignment study for widening, boulevard landscaping, and storm sewer facilities. | Incomplete | Bid not awarded, rebidding 2008 |
| D-4 | Spokane Ave | Between the Whitefish River and 7th Street, restripe and prohibit on-street parking to accommodate four through traffic lanes. | Incomplete | |
| D-5 | 2nd Street | Widen west of the Whitefish River to incorporate a center median with left-turns without restricting the numerous adjacent residences and small businesses. | Incomplete | 2009 Start |

| | | | | |
|---|---|---|---|---|
| D-6 | 7th Street (1) | Construct an extension of 7th Street east of Spokane Ave to Kalispell Ave to accommodate one lane in each direction. Repave and install sidewalks between Spokane Avenue and Pine Avenue. Designate as route to Whitefish schools. | Incomplete | |
| D-7 | 6th Street | Repave and install sidewalks between Spokane Avenue and Pine Avenue. | Incomplete | |
| D-8 | 7th Street (2) | Add 25 mph speed limit signage and increase speed enforcement between Karrow and Baker. Install curve warning sign for east and westbound traffic at O'Brien Avenue. | Complete | |
| D-9 | Baker Ave | Stripe left-turn lane from southbound Baker Avenue to eastbound 1st Street to reduce turn movements at the intersection of 2nd Street and Baker Avenue. | Incomplete | |
| D-10 | East 2nd Street | Include curb, gutter and sidewalk in the developed areas and widened shoulders for pedestrians and bicyclists in the more rural areas. | Incomplete | |
| E-1 | Just south of and parallel to the western portion of JP Road | | Incomplete | |
| E-2 | To the west of and parallel to HWY 93 | | Incomplete | |
| E-3 | JP Road | | Complete | |
| E-4 | To the east of and parallel to HWY 93 | | Incomplete | |
| E-5 | 13th Street West | | Incomplete | |
| E-6 | Greenwood Drive / 18th Street | | Partially complete | East of Highway 93 complete |
| E-7 | Commerce Street | | Incomplete | |
| E-8 | West 19th Street | | Incomplete | |
| E-9 | O'Brien Avenue | | Incomplete | |
| F-1 | Dakota Avenue Reconstruction 2 | Reconstruction of Dakota Avenue from Bay Point Drive to Glenwood Road | Incomplete | |
| F-2 | Dakota Avenue Reconstruction 1 | Reconstruction of Dakota Avenue from Skyles Place to Bay Point Drive. New pedestrian/bicycle facilities to be included. | Incomplete | |
| F-3 | Skyles Place One-Way | Convert to a one-way street during the summer between Idaho Avenue and Dakota Avenue to provide a pedestrian/bicycle route to City Beach | Incomplete | Modified and included as MSN-14 |
| F-4 | Washington Avenue Reconstruction | Reconstruction of roadway and sidewalks between Edgewood Place and Lakeside Boulevard. | Incomplete | |
| F-5 | Woodland Place Reconstruction | Reconstruction between Dakota Avenue and Iowa Avenue with new sidewalks. | Incomplete | |
| F-6 | Minnesota Avenue Reconstruction | Reconstruction of roadway and sidewalks between Edgewood Place and Skyles Place. | Incomplete | |
| F-7 | Colorado Avenue Reconstruction & Pedestrian/Bicycle Facilities | Reconstruction from Edgewood Place to Denver street with new pedestrian/bicycle facilities being constructed from Edgewood Place to Mountain Trails Park. Sidewalk will also be included on the opposite side of the street from the pedestrian/bicycle path. | Complete | |
| F-8 | Texas Avenue Reconstruction | Reconstruction between Edgewood Place and Denver Street. | Incomplete | |
| F-9 | Railway Street Reconstruction | Reconstruction between O'Brien Avenue and Baker Avenue. | Complete | |
| F-10 | 1st Street Reconstruction 1 | Reconstruction of roadway and sidewalks between Miles Avenue and Central Avenue. | Complete | |
| F-11 | 2nd Street Pedestrian Facilities | New sidewalk installation on the south side from Good Avenue to approximately one half block west of Lupfer Avenue. | Incomplete | |
| F-12 | Lupfer Avenue Reconstruction | Reconstruction of roadway and sidewalks from 2nd Street to 5th Street. | Incomplete | |
| F-13 | 4th Street Reconstruction | Reconstruction of roadway and sidewalks from the Mountain View Manor to Baker Avenue. | Incomplete | |
| F-14 | 1st Street Reconstruction 2 | Reconstruction of roadway and sidewalks from Kalispell Avenue to Fir Avenue. | Incomplete | |

| | | | | |
|---|---|---|---|---|
| F-15 | East 2nd Street Reconstruction | Reconstruction of roadway and sidewalks from Spokane Avenue and Larch Avenue with new sidewalks being installed on the south side between Pine and Larch and on the north side for the half block west of Larch. | Complete | |
| F-16 | 3rd Street Reconstruction/Overlay | Reconstruction of roadway and sidewalks from Kalispell Avenue to Park Avenue and a pavement overlay between Park Avenue and Pine Avenue. | Incomplete | |
| F-17 | 4th Street Reconstruction | Reconstruction from Pine Avenue to Fir Avenue with curb and gutter being placed on the south side inline with that on adjacent blocks to separate the high school parking area from the roadway. | Incomplete | |
| F-18 | Columbia Avenue Reconstruction | Reconstruction of roadway and sidewalks between Railway Street and 7th Street. | Complete | |
| F-19 | 6th Street Reconstruction | Reconstruction from Central Avenue to Pine Avenue with new sidewalks to be included. | Incomplete | |
| F-20 | 7th Street Reconstruction | Roadway and Sidewalk reconstruction from Pine Avenue to Cow Creek with the sidewalks being separated from the curb by a four to five foot grass boulevard if possible. | Complete | |
| F-21 | Kalispell Avenue Reconstruction | Reconstruction with new sidewalks from 4th Street to Riverside Avenue. | Incomplete | |
| F-22 | 9th Street Reconstruction | Reconstruction with new sidewalks from Spokane Avenue and Columbia Avenue. | Incomplete | |
| F-23 | Park Avenue Reconstruction | Reconstruction with new sidewalks from 8th Street to 450 feet south of 10th Street. | Incomplete | |
| F-24 | Riverside Avenue Reconstruction | Reconstruction with new sidewalks from Spokane Avenue and Columbia Avenue. | Incomplete | |
| F-25 | Greenwood Drive | | Complete | |

**THIS PAGE INTENTIONALLY LEFT BLANK**



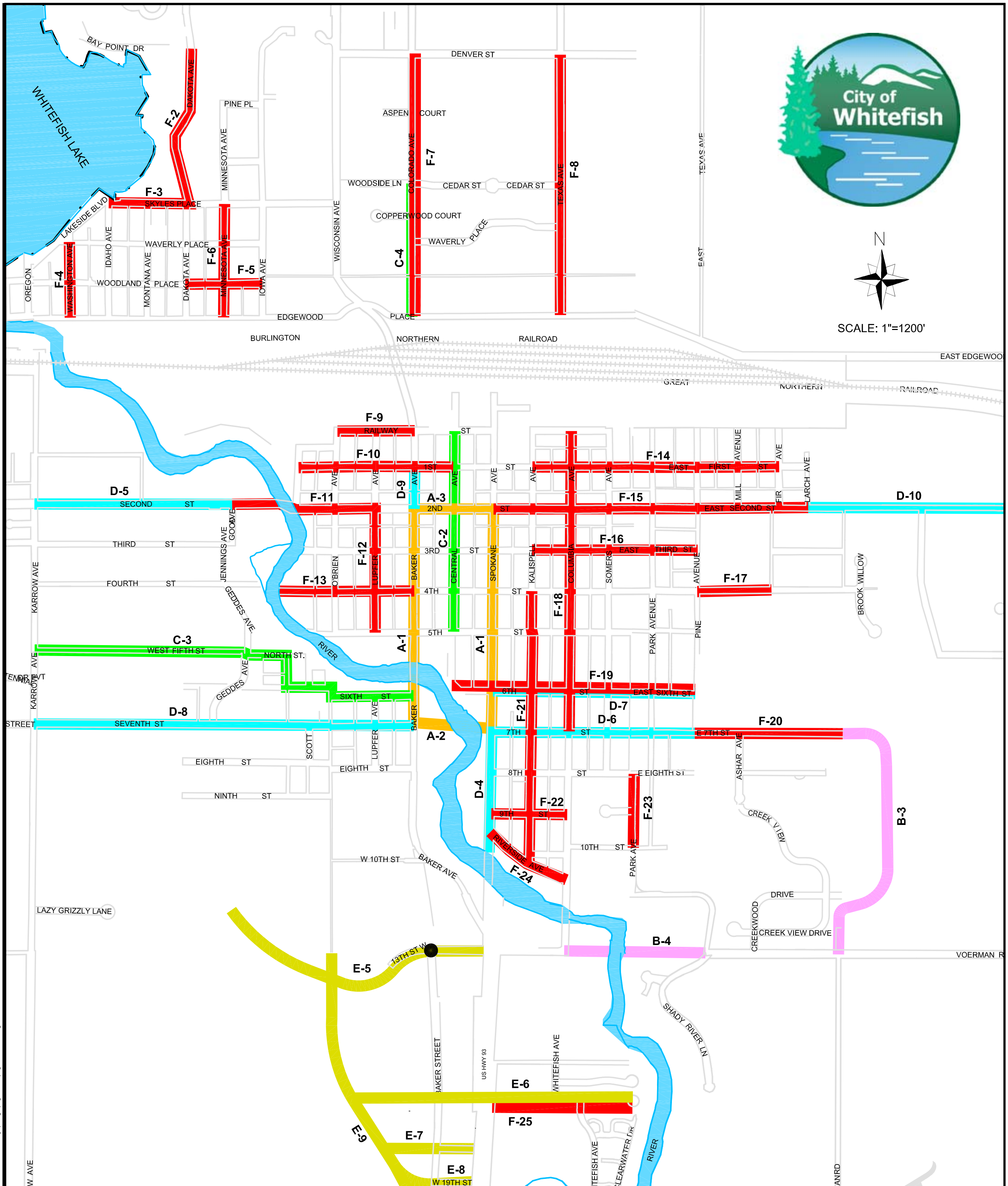

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-11.dwg Dec 20, 2007

- WHITEFISH DOWNTOWN BUSINESS DISTRICT MASTER PLAN
- SOUTHEAST WHITEFISH TRANSPORTATION PLAN
- CAPITAL IMPROVEMENTS PROJECT
- WHITEFISH CITY / COUNTY MASTER PLAN
- SOUTH WHITEFISH TRANSPORTATION PLANNING PROJECT
- TRANSPORTATION & STORM DRAINAGE MASTER PLAN. WHITEFISH, MONTANA
- TRAFFIC IMPACT STUDY O'BRIEN BWFF RESIDENTIAL DEVELOPMENT

*Whitefish Transportation Plan (2007)*

Figure 2-11

**Past Area Transportation Planning Projects**




- WHITEFISH DOWNTOWN BUSINESS DISTRICT MASTER PLAN
- SOUTHEAST WHITEFISH TRANSPORTATION PLAN
- CAPITAL IMPROVEMENTS PROJECT
- WHITEFISH CITY / COUNTY MASTER PLAN
- SOUTH WHITEFISH TRANSPORTATION PLANNING PROJECT
- TRANSPORTATION & STORM DRAINAGE MASTER PLAN. WHITEFISH, MONTANA
- ● TRAFFIC IMPACT STUDY O'BRIEN BWFF RESIDENTIAL DEVELOPMENT

*Whitefish Transportation Plan (2007)*

Figure 2-12

**Past Area Transportation Planning Projects**



F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Proj\dwg\figures\fig 2-12.dwg Dec 20, 2007

## 2.8 NON-MOTORIZED TRANSPORTATION PROJECTS

This section provides a list of past non-motorized transportation planning projects listed for the Whitefish area. **Tables 2-5** and **2-6** give a brief description of these projects. The tables are presented graphically in **Figures 2-13** and **2-14**.

### Table 2-6
### Trails Listed in the Whitefish Bicycle and Pedestrian Master Plan

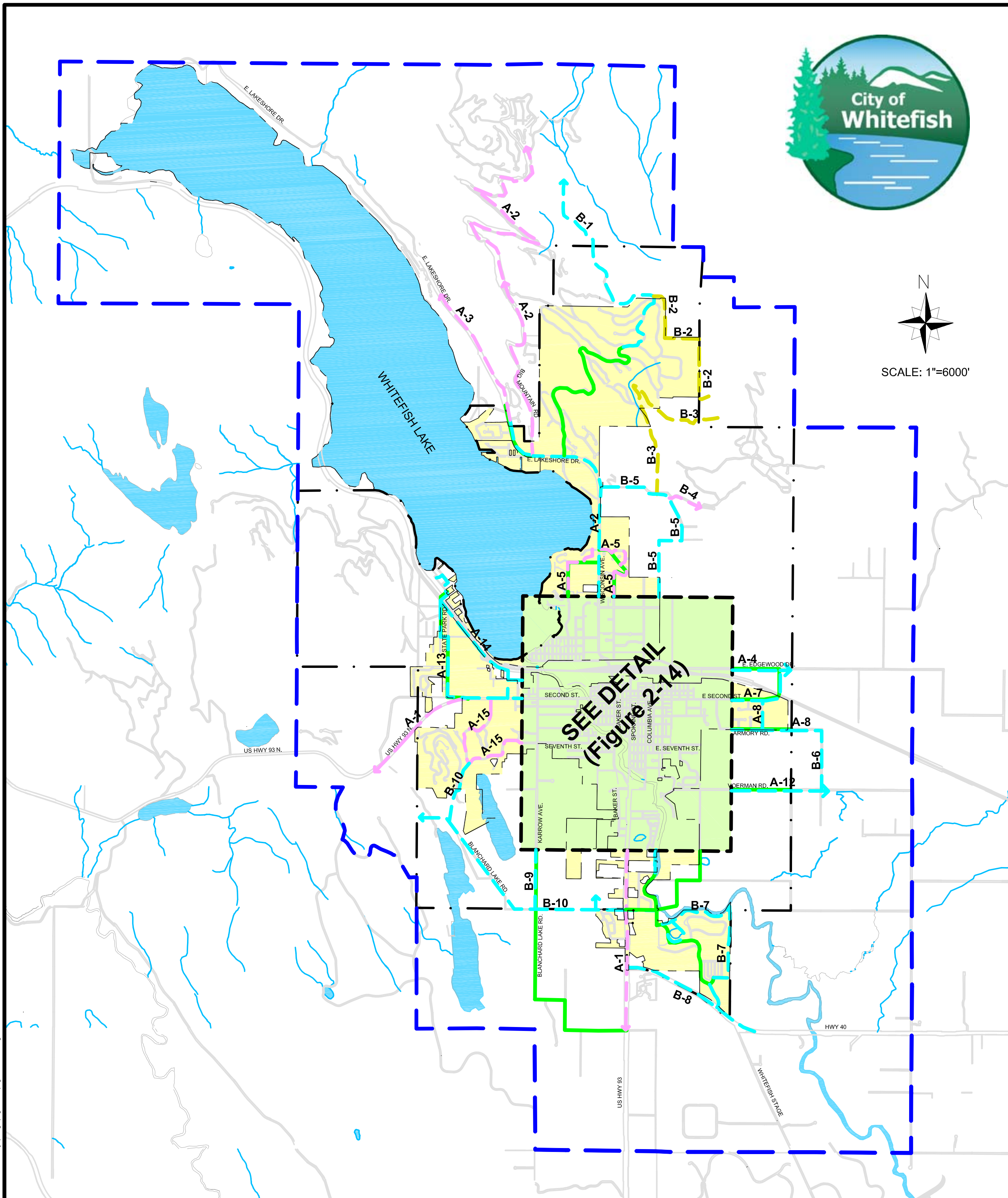
| # | Identification | Description | Location | Trail Type | Preferred Facility |
|---|---|---|---|---|---|
| A-1 | U.S. Highway 93 Corridor | This trail begins south of Whitefish and extends northerly through the City along Spokane Avenue. The trail joins Second Street and follows the route westerly through the City past Whitefish Lake Golf Course. U.S. Highway 93 is on the National Highway System (NHS). | On-Street | Bikeway and Walkway | Bike Lane Sidewalk/Ped Path |
| A-2 | Wisconsin Avenue - Big Mountain Road | This trail begins at the intersection of Baker Avenue and Second Street and extends northerly across the BNSF viaduct to join with Wisconsin Avenue. The route extends northerly along Wisconsin Avenue and East Lakeshore Drive before joining Big Mountain Road. Big Mountain Road leads to the Big Mountain Ski Area. The trail segment is designated as Secondary 487 on the state highway system. | On-Street | Bikeway and Walkway | Shoulder Bikeway Ped/Bike Path |
| A-3 | East Lakeshore Drive | This trail begins at the intersection of East Lakeshore Drive and the Big Mountain Road (Secondary Highway 487) and continues north and west to end near Lakewood Estates. | On-Street | Bikeway | Shoulder Bikeway |
| A-4 | Edgewood Place - City Beach | This trail follows the northern perimeter of the BNSF property along Edgewood Place from Washington Avenue east to the intersection with Second Street East outside the City. Washington Avenue at the trails west end accesses City Beach. | On-Street | Bikeway and Walkway | Shared Road, Shoulder Bikeway Ped Path |
| A-5 | Dakota Avenue - Colorado Avenue | This trail begins and ends on Edgewood Place and runs parallel to Wisconsin Avenue via Dakota and Colorado Avenue. The trail crosses Wisconsin Avenue at Colorado Avenue's intersection with Parkway Avenue. | On-Street | Bikeway | Shared Road, Shoulder Bikeway |
| A-6 | Railway Street - Pine Avenue | This trail extends from the intersection of Railway Street and O'Brien Avenue easterly along Railway Street to Pine and then runs southerly along Pine to end at the intersection of Pine and Seventh Street East. | On-Street | Bikeway and Walkway | Shared Road Sidewalk |
| A-7 | Second Street East | The trail follows Second Street from Spokane Avenue east past Armory Fields and across the BNSF before joining Edgewood Place outside the City. | On-Street | Bikeway | Shared Road, Bike Lane, Wide Curb Lane |
| A-8 | Armory Road - Armory Fields | This trail extends southward from the intersection of Armory Road and Second Street and then easterly to end at the Armory Fields complex. The trail includes Dodger Avenue between Armory Road and Second Street East. | On-Street | Bikeway | Shared Road, Wide Curb Lane |
| A-9 | Seventh Street - Columbia Avenue | The trail includes Seventh Street between Spokane Avenue and the Cow Creek Trail and a segment of Columbia Avenue between the Whitefish River bridge and Seventh Street. The trail then follows Thirteenth Street from U.S. Highway 93 to Columbia Avenue. | On-Street | Bikeway | Shared Road |
| A-10 | Baker Street - Riverside/Baker Parks | This north-south trail extends along Baker Street from Second Street past Riverside and Baker Parks to Commerce Street. A short segment along Commerce connects the trail to U.S. Highway 93. | On-Street | Bikeway | Shared Road |
| A-11 | Karrow Avenue - Seventh Street | The trail runs from U.S. Highway 93 (Second Street) southward along Karrow Avenue to Seventh Street and then eastward to Riverside Park. | On-Street | Bikeway and Walkway | Shared Road, Ped/Bike Path |
| A-12 | Tenth Street - Voerman Road | This trails extends easterly from the intersection of Tenth Street and Columbia Avenue through neighborhoods adjoining the Whitefish River and across Cow Creek to join Voerman Road. The trail then proceeds due east for about a mile along Voerman Road. | On-Street | Bikeway and Walkway | Shared Road, Sidewalk, Shoulder |

| | | | | | |
|---|---|---|---|---|---|
| A-13 | Golf Course - Whitefish State Park | The trail runs from the Whitefish River Trail near City Beach around the perimeter of Whitefish Lake Golf Course along U.S. Highway 93 and State Park Road to end at Whitefish State Park. | On-Street | Bikeway and Walkway | Shared Road Ped Path |
| A-14 | Edgewood-Birch Drive - State Park Road | This trail begins at the proposed Whitefish River Crossing at Edgewood near the BNSF trestle, crosses the tracks via Birch Drive, and continues to State Park Road via the 30-foot-wide Lakeside Avenue right-of-way and through City Park (golf course) property. | On-Street | Bikeway and Walkway | Shared Road, Ped/Bike Path |
| A-15 | Grouse Mountain - Seventh Street | This trail winds through the Grouse Mountain development and connects U.S. Highway 93 with Karrow Avenue via Fairway Drive and Seventh Street. | On-Street | Bikeway | Shared Road, Wide Curb Lane |
| A-16 | Fifth Street | The trail extends from Baker Park due east along Fifth Street to Muldown Elementary and Whitefish High Schools. | On-Street | Bikeway and Walkway | Bike Lane Sidewalk |
| A-17 | Whitefish River Trail | This trail follows the Whitefish River from the BNSF through the community to where the river is joined by Cow Creek. The River Trail includes segments developed as part of the City's planned trail projects in Riverside Park and from Riverside Park through the Duck Inn property adjacent to Columbia Avenue. | Off-Street | Bikeway and Walkway | Two-Direction Ped/Bike Path |
| A-18 | Cow Creek Trail | The Cow Creek Trail generally parallels the creek and extends from Second Street East southwesterly along the city limits before joining the Whitefish River Trail near the Duck Inn. | Off-Street | Bikeway and Walkway | Two-Direction Ped/Bike Path |

## Table 2-7

### Trails Not Listed in the Whitefish Bicycle and Pedestrian Master Plan

| # | Identification | Description | Location | Trail Type |
|---|---|---|---|---|
| B-1 | Iron Horse | Extension of Iron Horse to the North. | On-Street | Bikeway and Walkway |
| B-2 | | Runs along the northeast part of the City boundary. | | Bikeway and Walkway |
| B-3 | Huckleberry Ln | | On-Street | Bikeway and Walkway |
| B-4 | Reservoir Rd | Runs east along Reservoir Rd. | On-Street | Bikeway |
| B-5 | Texas Ave | Starts at the intersection of Texas Ave and Edgewood Dr then heads north and east to connect with Reservoir Dr. | | Bikeway and Walkway |
| B-6 | Armory Rd | Follows Armory Rd south to connect with Voerman Rd. | On-Street | Bikeway and Walkway |
| B-7 | | Follows the south east city boundary along the river then heads south to connect with hwy 40. | | Bikeway and Walkway |
| B-8 | HWY 40 | Starts at the intersection of HWY 40 and HWY 93 then heads east along HWY 40 to the intersection with Whitefish Stage. | On-Street | Bikeway and Walkway |
| B-9 | Karrow Ave | Follows Karrow north from intersection with Blanchard Lake to intersection with 7th Street. | On-Street | Bikeway and Walkway |
| B-10 | | Starts at the intersection of Mountainside Dr and Fairway Dr then follows Mountainside Dr south to Blanchard Lake Rd. Follows Blanchard Lake south and east to Karrow Ave then goes east to connect to JP Road. | On-Street | Bikeway and Walkway |
| B-11 | Waverly Place | Follows Waverly Place from Washington Ave to Dakota Ave. | On-Street | Bikeway and walkway from Washington Ave to Idaho Ave, then Bikeway only to Dakota Ave |
| B-12 | Denver Street | Follows Denver Street from Wisconsin Ave to Texas Ave | On-Street | Bikeway and Walkway |
| B-13 | | From 1st Street West to 2nd Street West. | On-Street | Bikeway and Walkway |
| B-14 | Spokane Ave | Follows Spokane Ave from 2nd St to Railway St. | On-Street | Bikeway and Walkway |
| B-15 | 6th St | Follows 6th St from 5th Street to Whitefish River Trail. | On-Street | Bikeway and Walkway |
| B-16 | | Connects the east end of 7th St to Voerman Rd at the intersection with Windy Flats Rd. | | Bikeway and Walkway |
| B-17 | 13th St | Starts at the intersection of 13th St and Baker St then heads southwest. | | Bikeway and Walkway |
| B-18 | | Follows the Whitefish River south and starts at the intersection of the Whitefish River Trail and Cow Creek Trail. | | Bikeway and Walkway |




F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Proj\dwg\figures\fig 2-13.dwg Dec 20, 2007

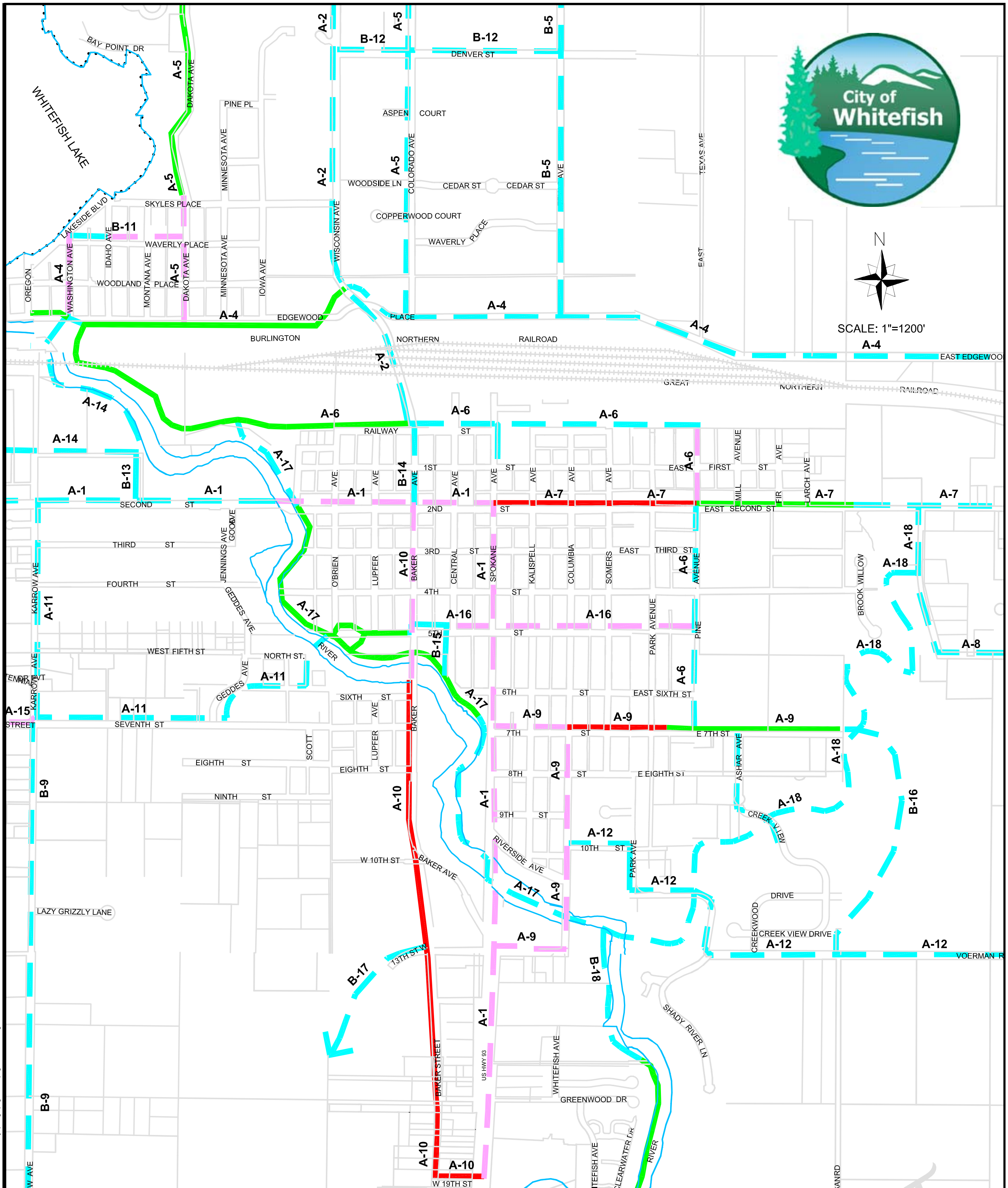
- BIKE ROUTE (ON ROAD)
- PROPOSED BIKE ROUTE
- PEDESTRIAN AND BICYCLE PATH (PAVED)
- PROPOSED PEDESTRIAN AND BICYCLE PATH (PAVED)
- PEDESTRIAN AND BICYCLE PATH (UNPAVED)
- PROPOSED PEDESTRIAN AND BICYCLE PATH (UNPAVED)
- URBAN BOUNDARY

ROBERT PECCIA & ASSOCIATES

*Whitefish Transportation Plan (2007)*

DRAFT

Figure 2-13
**Non-Motorized Transportation Facilities**




BICYCLE ROUTE (ON ROAD)
PROPOSED BICYCLE ROUTE
PEDESTRIAN AND BICYCLE PATH (PAVED)
PROPOSED PEDESTRIAN AND BICYCLE PATH (PAVED)
PEDESTRIAN AND BICYCLE PATH (UNPAVED)
PROPOSED PEDESTRIAN AND BICYCLE PATH (UNPAVED)

*Whitefish Transportation Plan (2007)*



Figure 2-14
**Non-Motorized Transportation Facilities**

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\figures\fig 2-14.dwg Oct 05, 2007

## 2.9 EXISTING INTERSECTION LEVELS OF SERVICE

Urban road systems are ultimately controlled by the function of the major intersections. Intersection failure directly reduces the number of vehicles that can be accommodated during the peak hours that have the highest demand and the total daily capacity of a corridor. As a result of this strong impact on corridor function, intersection improvements can be a very cost-effective means of increasing a corridor's traffic volume capacity. In some circumstances, corridor expansion projects may be able to be delayed with correct intersection improvements. Due to the significant portion of total expense for road construction projects used for project design, construction, mobilization, and adjacent area rehabilitation, a careful analysis must be made of the expected service life from intersection-only improvements. If adequate design life can be achieved with only improvements to the intersection, then a corridor expansion may not be the most efficient solution. With that in mind, it is important to determine how well the major intersections are functioning by determining their Level of Service (LOS).

In order to calculate the LOS, 25 intersections on the major street network were counted during the spring/summer of 2007. An additional 10 intersections included in this report were counted as part of previous projects. These intersections included all signalized intersections and selected high-volume unsignalized intersections. Each intersection was counted between 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., to ensure that the intersection's peak volumes were represented. Based upon this data, the operational characteristics of each intersection were obtained.

The intersections counted included Whitefish's 7 signalized intersections and 28 unsignalized intersections in the city and the county. Level of service (LOS) is a qualitative measure developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. It provides a scale that is intended to match the perception by motorists of the operation of the intersection. Level of Service provides a means for identifying intersections that are experiencing operational difficulties, as well as providing a scale to compare intersections with each other. The LOS analysis for the existing intersections was conducted according to the procedures outlined in the Transportation Research Board's ***Highway Capacity Manual – Special Report 209*** using the Highway Capacity Software, version 4.1f.

The level of service scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using it. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion. Under most circumstances, a level of service of C or better (i.e. A, B or C) is considered to be the standard by which traffic operations are judged. It must be recognized that the level of service scale relates to traffic operations, and do not necessarily take into account the concept of desirable "community values". For example, some communities may accept a lower level of service standard from a traffic operational perspective if other amenities are provided (i.e. sidewalks, bicycle lanes, street trees, etc.). In many smaller communities, the particular level of service that is deemed acceptable may be based on factors other than facilitating traffic flow and transportation operations.

### 2.9.1 Signalized Intersections

For signalized intersections, recent research has determined that average stopped delay per vehicle is the best available measure of level of service. The following table identifies the relationship between level of service and average stopped delay per vehicle. The procedures used to evaluate signalized intersections use detailed information on geometry, lane use, signal timing, peak hour volumes, arrival types and other parameters. This information is then used to calculate delays and determine the capacity of each intersection. An intersection is determined to be functioning adequately if operating at LOS C or better. **Table 2-8** shows the LOS by stopped delay for signalized intersections.

**Table 2-8**

**Level of Service Criteria (Signalized Intersections)**

| Level of Service | Stopped Delay per Vehicle (sec) |
|---|---|
| A | < 01 |
| B | 10 to 20 |
| C | 20 to 35 |
| D | 35 to 50 |
| E | 50 to 80 |
| F | > 80 |

Using these techniques and the data collected in the spring/summer of 2007, the LOS for the signalized intersections was calculated. **Tables 2-9 & 2- 10** show the AM and PM peak hour LOS for each individual leg of the intersections, as well as the intersections as a whole. The intersection LOS is shown graphically in **Figure 2-15** and **Figure 2-16**.

**Table 2-9**

**2007 AM Peak LOS (Signalized Intersections)**

| Intersection | EB | WB | NB | SB | INT |
|---|---|---|---|---|---|
| Baker Avenue & 2nd Street | D | C | A | B | C |
| Central Avenue & 2nd Street | B | C | A | A | B |
| Spokane Avenue & 2nd Street | B | B | D | B | C |
| Spokane Avenue & 13th Street | C | C | B | C | C |
| Spokane Avenue & Commerce Street | C | C | C | C | C |
| U.S. Hwy 93 & Montana Hwy 40 | C | F | C | C | F |
| Wisconsin Avenue & Edgewood Place* | B | B | A | A | A |

**intersection not counted by RPA*

**Table 2-10**
**2007 PM Peak LOS (Signalized Intersections)**

| Intersection | EB | WB | NB | SB | INT |
|---|---|---|---|---|---|
| Baker Avenue & 2nd Street | F | D | B | B | E |
| Central Avenue & 2nd Street | C | C | A | A | C |
| Spokane Avenue & 2nd Street | B | B | F | C | F |
| Spokane Avenue & 13th Street | C | C | B | D | C |
| Spokane Avenue & Commerce Street | C | C | C | C | C |
| U.S. Hwy 93 & Montana Hwy 40 | C | F | C | E | F |
| Wisconsin Avenue & Edgewood Place* | B | B | A | A | A |

**intersection not counted by RPA*

### 2.9.2 Unsignalized Intersections

Level of service for unsignalized intersections is based on the delay experienced by each movement within the intersection, rather than on the overall stopped delay per vehicle at the intersection. This difference from the method used for signalized intersections is necessary since the operating characteristics of a stop-controlled intersection are substantially different. Driver expectations and perceptions are also entirely different. For two-way stop controlled intersections, the through traffic on the major (uncontrolled) street experiences no delay at the intersection. Conversely, vehicles turning left from the minor street experience more delay than other movements and at times can experience significant delay. Vehicles on the minor street, which are turning right or going across the major street, experience less delay than those turning left from the same approach. Due to this situation, the level of service assigned to a two-way stop controlled intersection is based on the average delay for vehicles on the minor street approach.

Levels of service for all-way stop controlled intersections are also based on delay experienced by the vehicles at the intersection. Since there is no major street, the highest delay could be experienced by any of the approaching streets. Therefore, the level of service is based on the approach with the highest delay as shown in **Table 2-11**. This table shows the LOS criteria for both the all-way and two-way stop controlled intersections.

**Table 2-11**
**Level of Service Criteria (Stop Controlled Intersections)**

| Level of Service | Stopped Delay per Vehicle (sec) |
|---|---|
| A | < 01 |
| B | 10 to 15 |
| C | 15 to 25 |
| D | 25 to 35 |
| E | 35 to 50 |
| F | > 50 |

Using the above guidelines, the data collected in the spring/summer of 2007, and calculation techniques for two-way stop controls and all-way stop controls, the LOS for the unsignalized intersection was counted. The results of these calculations are shown in **Table 2-12**. The intersection LOS is shown graphically in **Figure 2-15** and **Figure 2-16**.

## Table 2-12
**2007 LOS (Stop-Controlled Intersections)**

| Intersection | AM | PM | Intersection | AM | PM |
|---|---|---|---|---|---|
| Ashar Avenue & 7th Street | A | B | Pine Avenue & 7th Street | B | B |
| Baker Avenue & 4th Street | B | D | Spokane Avenue & 1st Street | A | A |
| Baker Avenue & 5th Street | B | C | Spokane Avenue & 4th Street | C | C |
| Baker Avenue & 7th Street | B | C | Spokane Avenue & 5th Street | C | D |
| Baker Avenue & 10th Street* | B | B | Wisconsin Avenue & Colorado Avenue* | B | C |
| Baker Avenue & 13th Street* | B | C | Wisconsin Avenue & Denver Street* | B | C |
| Baker Avenue & 15th Street* | B | B | Wisconsin Avenue & Glenwood Road* | B | B |
| Columbia Avenue & 7th Street | B | B | Wisconsin Avenue & Reservoir Road* | B | C |
| Fir Avenue & 2nd Street | B | B | Wisconsin Avenue & Skyles Place* | B | C |
| Fir Avenue & 4th Street | B | B | Wisconsin Avenue & Woodside Lane* | C | C |
| Kalispell Avenue & 2nd Street | C | C | U.S. Highway 93 & Blanchard Lake Road | B | B |
| Karrow Avenue & 7th Avenue | A | A | U.S. Highway 93 & JP Road | C | C |
| Pine Avenue & 2nd Street | C | C | U.S. Highway 93 & Karrow Avenue | B | D |
| Pine Avenue & 4th Street | B | B | U.S. Highway 93 & State Park Road | B | C |

** intersection not counted by RPA*

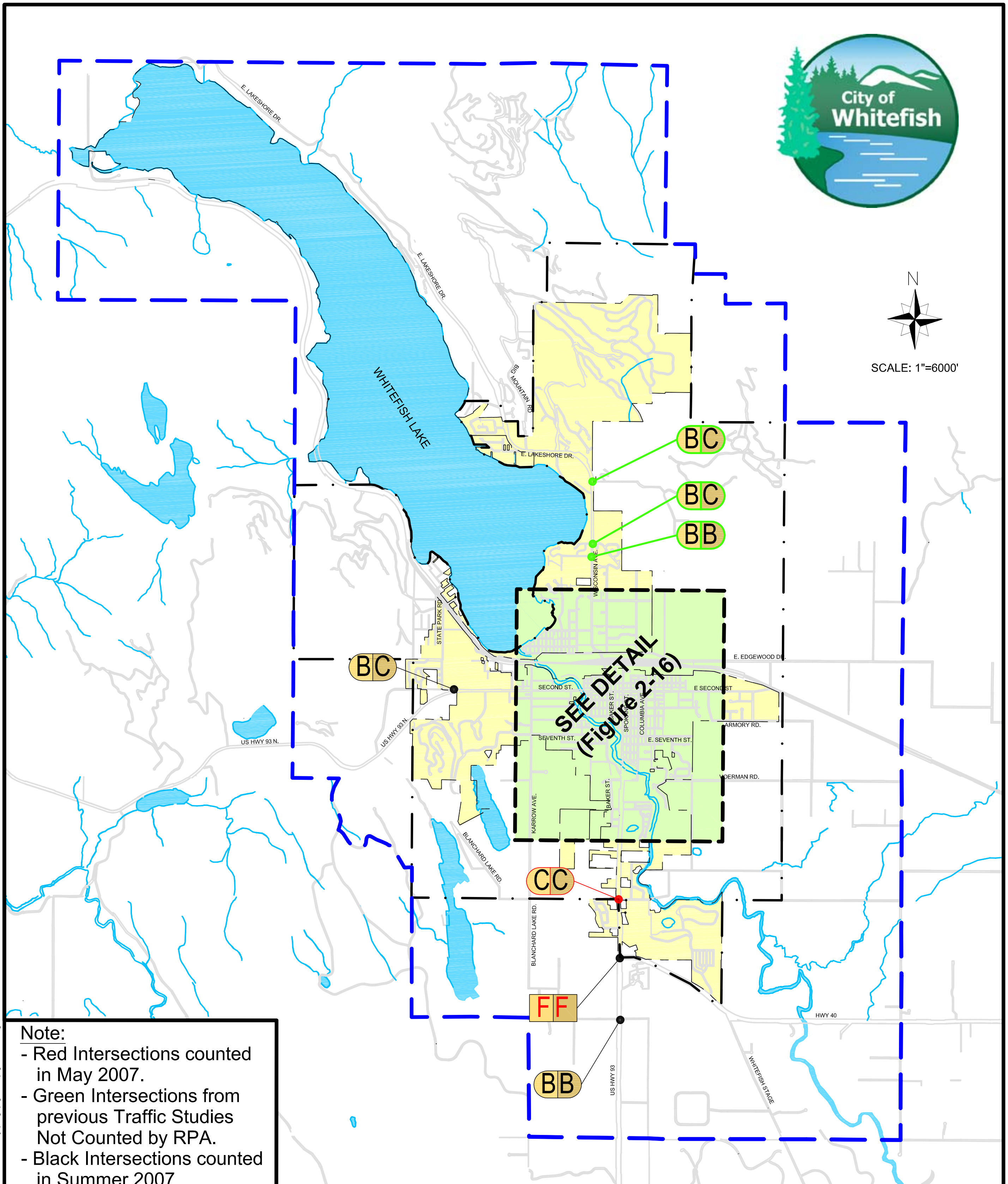
The LOS analyses of the existing conditions in the Whitefish area reveals that some signalized and unsignalized intersections are currently functioning at LOS D or lower. These intersections are shown in **Table 2-13** and are ideal candidates for closer examination and potential intersection improvements measures.

## Table 2-13
**Existing Intersections Functioning at LOS D or Lower**

| Intersection | | AM Peak Hour LOS | PM Peak Hour LOS |
|---|---|---|---|
| Baker Avenue & 2nd Street | S | C | E |
| Baker Avenue & 4th Street | U | B | D |
| Spokane Avenue & 2nd Street | S | C | F |
| Spokane Avenue & 5th Street | S | C | D |
| U.S. Hwy 93 & Karrow Avenue | U | B | D |
| U.S. Hwy 93 & Montana Hwy 40 | S | F | F |

*(S)ignalized*

*(U)nsignalized*




Note:
- Red Intersections counted in May 2007.
- Green Intersections from previous Traffic Studies Not Counted by RPA.
- Black Intersections counted in Summer 2007.

SIGNALIZED INTERSECTION
A.M. → A A ← P.M.

UNSIGNALIZED INTERSECTION
A.M. → A A ← P.M.

A,B,C,D,E,F = LEVEL OF SERVICE

TRANSPORTATION PLAN BOUNDARY
URBAN BOUNDARY

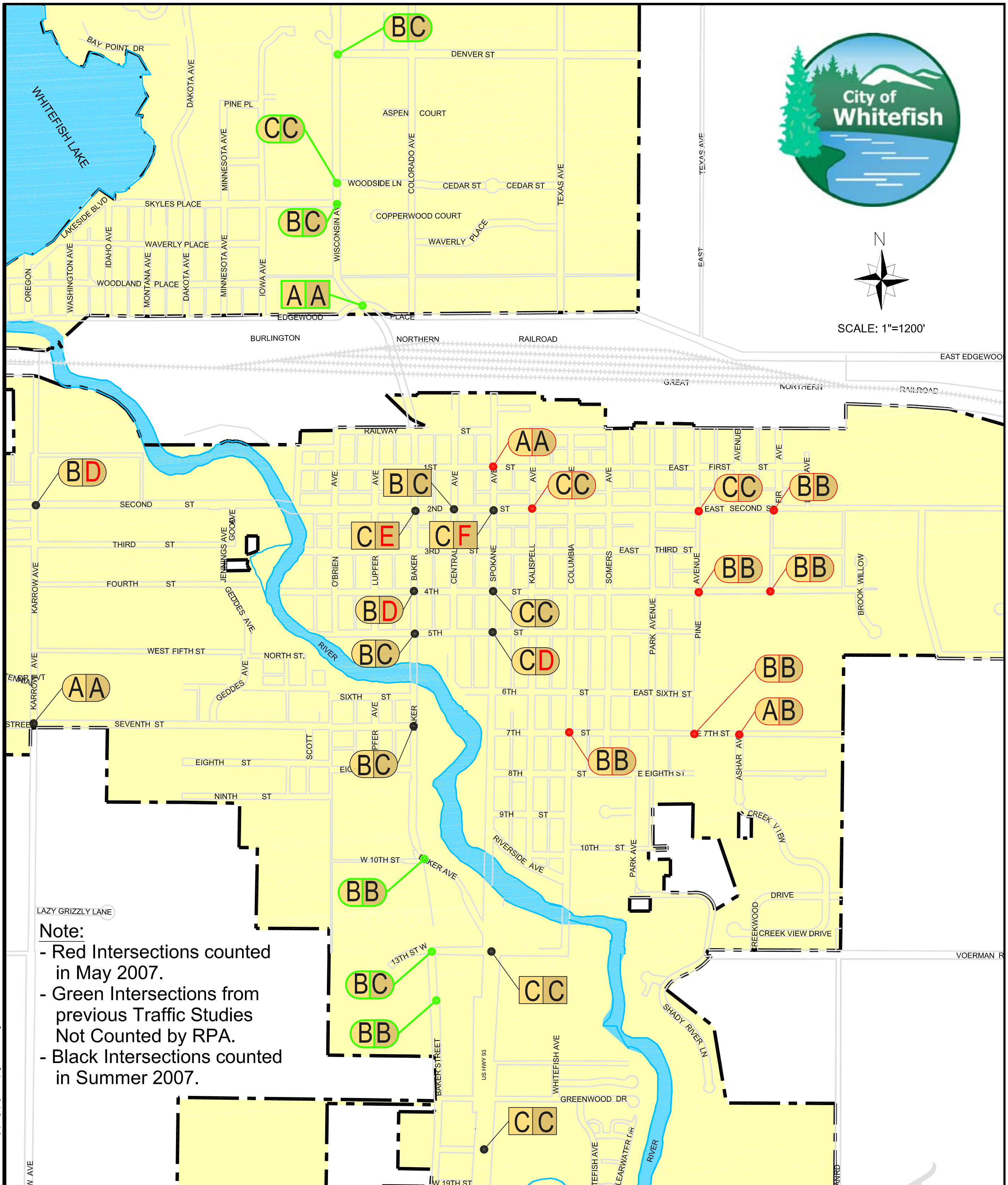
ROBERT PECCIA & ASSOCIATES

*Whitefish Transportation Plan (2007)*

Figure 2-15
**Existing Level of Service**



F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Proj\dwg\figures\fig 2-15.dwg Dec 20, 2007




SIGNALIZED INTERSECTION

A.M. → A A ← P.M.

UNSIGNALIZED INTERSECTION

A.M. → A A ← P.M.

A,B,C,D,E,F = LEVEL OF SERVICE

WHITEFISH CITY LIMITS

*Whitefish Transportation Plan (2007)*

DRAFT

Figure 2-16

**Existing Level of Service**

F:\TRANS\WHITEFISH\Transportation Plan\Whitefish-Pro\dwg\figures\fig 2-16.dwg Dec 20, 2007

## 2.10 RECENT TRAFFIC IMPACT STUDIES (TIS'S)

Several Traffic Impact Studies (TIS's) have been completed in the community just prior to the beginning of this Transportation Plan project. These TIS's are typically developer driven, and assess the transportation system immediately adjacent to the development project. The following three (3) TIS's were made available and reviewed during this project's development.

### *O'Brien Bluff Residential Development (January 2007)*

This Traffic Impact Study (TIS) looked at the possible effects on the surrounding roadway system from a proposed 10-acre residential development on the west side of O'Brien Avenue. The following intersections were studied as part of this TIS:

- Baker Avenue and 10th Street
- Baker Avenue and 13th Street
- Baker Avenue and 15th Street

As a result of this study it was determined that the O'Brien Bluff Development would have a minimal impact on the studied intersections. However, the intersection of Baker Avenue and 13th Street will show operational problems regardless of the proposed project and will need to be signalized. The operational problems are due to normal growth as well as other developments in the area such as the Baker Commons development, the Wave expansion, and other projects currently planning for this area.

### *Wisconsin 20 Residential Development (October 2006)*

This Traffic Impact Study (TIS) looked at the possible effects on the surrounding roadway system from a proposed 20-acre residential development located on the western side of Wisconsin Avenue. The development would include up to 122 new residential units, 30% of which would likely be "recreational" or second homes. This TIS looked at a number of intersections that would be impacted by the proposed development. These intersections included:

- Wisconsin Avenue and Reservoir Road
- Wisconsin Avenue and Colorado Avenue
- Wisconsin Avenue and Glenwood Road
- Wisconsin Avenue and the Gas Station
- Wisconsin Avenue and the Alpine Plaza
- Wisconsin Avenue and Denver Street
- Wisconsin Avenue and Woodside Lane
- Wisconsin Avenue and Skyles Place
- Wisconsin Avenue and Edgewood Place

As a result of this study it was determined that when the Wisconsin 20 residential development is completed the new intersection of Marina Way at the Alpine Market will experience delays, however, this delay will be mainly on the eastern approach from the Alpine Market, not the new approach from the proposed development. This delay would best be mitigated by the installation of a traffic signal at Marina Way and left-turning lanes on Wisconsin Avenue when signalization warrants are met. The TIS also suggested modifying the eastern side of the roadway to connect Marina Way through to Colorado Avenue, which would increase the chances of this intersection meeting a signalization warrant. The TIS also determined that although the intersection of Wisconsin Avenue and Woodside Lane will experience delay due to the proposed project, no mitigation measures would be feasible to correct this problem.

### *Boardwalk at Whitefish Lake Development (November 2005)*

This Traffic Impact Study (TIS) looked at the possible effects on the surrounding roadway system from a proposed 40-acre residential and commercial resort development along Wisconsin Avenue. The property would be developed to include a variety of resort residential condominiums, townhouses, cabins, a spa/recreation center, and a restaurant. The intersections studied as part of this TIS included:

- Wisconsin Avenue and Reservoir Road
- Wisconsin Avenue and the entrance to Whitefish Lake Lodge
- Wisconsin Avenue and Colorado Avenue
- Wisconsin Avenue and Glenwood Road
- Wisconsin Avenue and Woodside Lane
- Wisconsin Avenue and Skyles Place
- Wisconsin Avenue and Edgewood Place

Although no mitigation measures were recommended to address roadway capacity issues under typical conditions, it was suggested that improvements to Wisconsin Avenue adjacent to the development to address peak-season, winter traffic, and pedestrian needs may be desirable. The TIS suggested the installation of raised medians at this location to improve pedestrian safety, decrease vehicle speeds, and provide better roadway operations under peak conditions. However, the installation of a median would also necessitate restricting turning movements at some intersections associated with the Whitefish Lake Lodge.



CHAPTER 3:

# Travel Demand Forecasting

# CHAPTER 3: TRAVEL DEMAND FORECASTING

The method and process developed to predict growth in the Whitefish area over the next twenty years is described in this chapter of the Transportation Plan. Using population, employment and other socio-economic trends as aids, the future transportation requirements of the Whitefish area was defined. A model of the transportation system of the Whitefish area was built, and the additions and changes to the system that are projected to occur over the next twenty years were entered into the model to forecast the future transportation conditions. From this, various scenarios were developed to test a range of transportation improvements to establish their affects on the transportation system.

## 3.1 SOCIOECONOMIC TRENDS

Motor vehicle travel growth is directly correlated to population and economic growth. In the greater Whitefish area, this is also supplemented by the large influx of tourist travel throughout the year. Recently, population growth has experienced a significant climb. This is evidenced by the extreme growth that occurred in Flathead County between 1990 and 2000, and accounted for a 25.8 percent increase in Flathead County population growth alone. **Table 3-1** shows that from 1970 through 2000, the county's population almost doubled, increasing by an estimated 35,011 persons. In 2005, the county's population is estimated to be 83,480. Likewise, the county's employment data indicate an increase of 33, 651 jobs, more than double that exhibited in 1970. **Figure 3-1** shows the Flathead County population and employment trends between 1970 and 2005 (estimated) in a graphical format.

**Table 3-1**

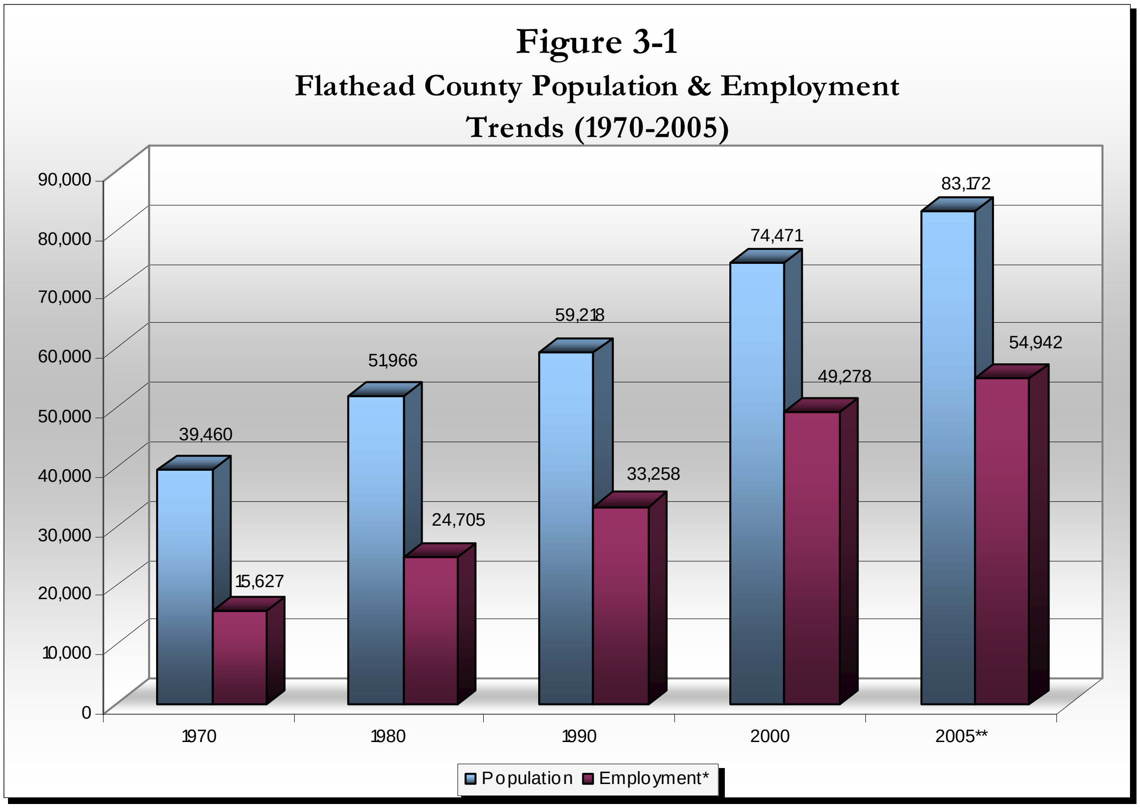
**Flathead County Population and Employment Trends (1970-2005)**

| Year | Population | Employment* |
|---|---|---|
| 1970 | 39,460 | 15,627 |
| 1980 | 51,966 | 24,705 |
| 1990 | 59,218 | 33,258 |
| 2000 | 74,471 | 49,278 |
| 2005** | 83,172 | 54,942 |

*Source: US Bureau of the Census, Census of Population (1970 thru 2000)*

**Employment data is number of jobs, not number of employed people.*

***Population and employment data for 2005 are estimates.*




These population trends can further be analyzed by examining the amount of population within the cities contained within Flathead County and the incorporated areas (i.e. Whitefish, Kalispell and Columbia Falls), in comparison to the total population of Flathead County. **Table 3-2** shows the historic population trends for the Whitefish area from 1970 through 2005. **Figure 3-2** presents this information graphically.

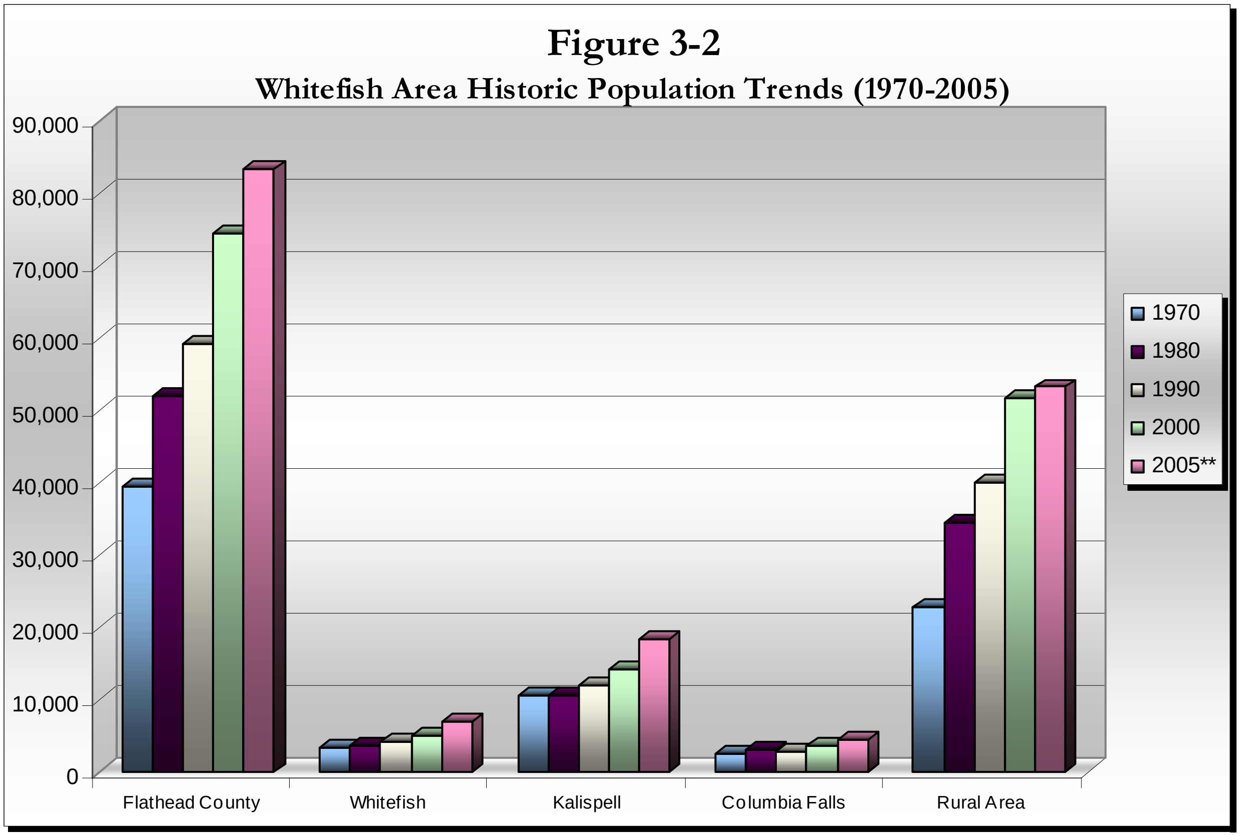
## Table 3-2

**Whitefish Area Historic Population Trends (1970-2005)**

| Year | Flathead County Population | City of Whitefish Population | City of Kalispell Population | City of Columbia Falls Population | Rural Flathead County Population |
|---|---|---|---|---|---|
| 1970 | 39,460 | 3,349 | 10,526 | 2,652 | 22,933 |
| 1980 | 51,966 | 3,703 | 10,689 | 3,112 | 34,462 |
| 1990 | 59,218 | 4,368 | 11,917 | 2,921 | 40,012 |
| 2000 | 74,471 | 5,032 | 14,223 | 3,645 | 51,571 |
| 2005** | 83,172 | 7,067 | 18,480 | 4,440 | 53,185 |

*Source: US Bureau of the Census, Census of Population (1970 thru 2000)*

*** Population data for 2005 are estimates as of July 1, 2005.*



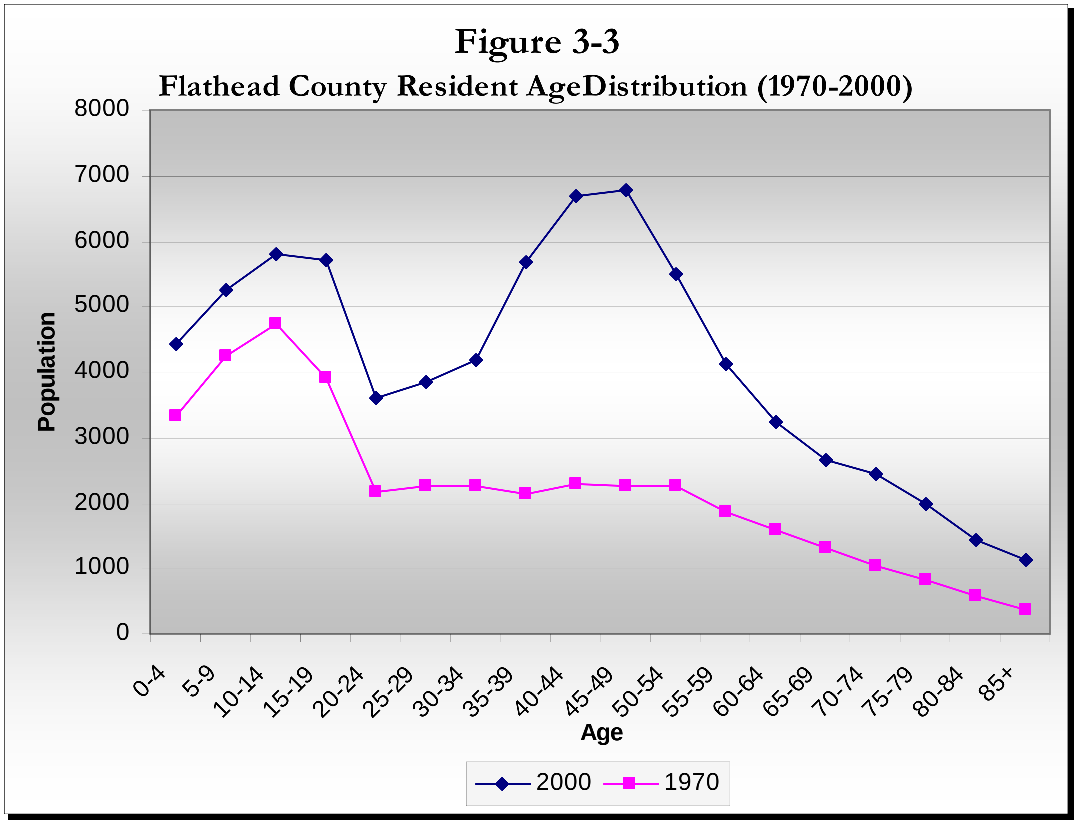

In recent decades there were other notable changes in Flathead County's population. In Flathead County, and elsewhere in Montana and the nation, the population's age profile got older. Between 1970 and 2000, the number of county residents under the age of 16 increased by 3,181 persons, residents age 16 to 64 increased by 26,298 persons, and residents 65 and older increased by 5,532 persons. This can be seen in **Table 3-3**. As "Baby Boomers" got older, they simply had fewer children than their parents. This information is also shown graphically on **Figure 3-3**.

## Table 3-3

**Flathead County Resident Age Distribution (1970-2000)**

| Age Group | 1970 | | 2000 | | 30-Yr Change |
|---|---|---|---|---|---|
| 0-15 | 12,306 | 31.2% | 15,487 | 20.8% | 3,181 |
| 16-64 | 23,030 | 58.4% | 49,328 | 66.2% | 26,298 |
| 65+ | 4,124 | 10.5% | 9,656 | 13.0% | 5,532 |
| Total | 39,460 | - | 74,471 | - | 35,011 |

*Source: US Bureau of the Census, Census of Population (1970 and 2000)*



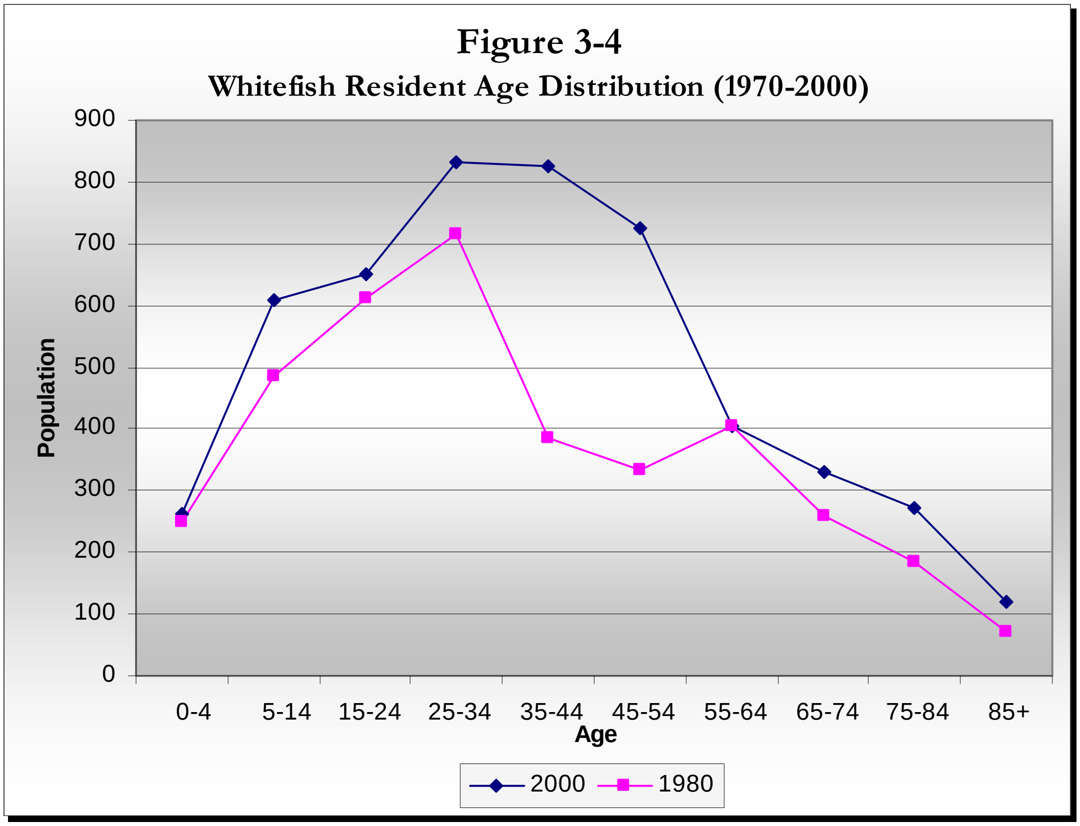

As seen in Flathead County, the age profile for the City of Whitefish has shifted as well. While age distribution data for the City of Whitefish is not available for 1970 as with Flathead County, **Table 3-4** shows the number of residents between 1980 and 2000 under the age of 16 increased 135 persons, residents age 16 to 64 increased by 987 persons, and residents 65 and older increased by 207. This information is shown graphically on **Figure 3-4.**

## Table 3-4

### Whitefish Resident Age Distribution (1980-2000)

| Age Group | 1980 | | 2000 | | 20-Yr Change |
|---|---|---|---|---|---|
| **0-15** | 735 | 19.8% | 870 | 17.3% | 135 |
| **16-64** | 2,452 | 66.2% | 3,439 | 68.3% | 987 |
| **65+** | 516 | 13.9% | 723 | 14.4% | 207 |
| **Total** | 3,703 | - | 5,032 | - | 1,329 |

*Source: US Bureau of the Census, Census of Population (1980 and 2000)*




In 2000, the Flathead County economy supported an estimated 49,278 jobs. From 1970 to 2000, the number of jobs in Flathead County more than doubled, from 15,627 jobs in 1970 to 49,278 jobs in 2000. **Table 3-5** displays countywide employment by economic sector from 1970 through 2000. This information is shown graphically in **Figure 3-5**.

Another interesting breakdown of employment sectors in Flathead County is as shown in **Figure 3-6**. This graphic presents the Flathead County 2004 Employment, by economic center, as classified by the *North American Industry Classification System (NAICS)*. This figure shows graphically what the highest employment sectors are in the County. Interestingly enough, the retail industry is the largest employment base in the County, followed by construction, health care, tourism and manufacturing rounding out the top five employment categories.

## Table 3-5
### Flathead County Employment Trends by Economic Sector (1970-2000)

| Economic Sector | 1970 | 1980 | 1990 | 2000 | Change (1970-2000) |
|---|---|---|---|---|---|
| Farm Employment | 730 | 975 | 994 | 1,124 | 394 |
| Agricultural Services & Forestry | 169 | 273 | 501 | 1,223 | 1,054 |
| Mining | 40 | 17 | 95 | 227 | 187 |
| Construction | 674 | 1,626 | 1,925 | 4,183 | 3,509 |
| Manufacturing | 3,345 | 4,095 | 4,127 | 5,106 | 1,761 |
| Transportation & Public Utilities | 1,327 | 1,928 | 1,803 | 2,205 | 878 |
| Wholesale Trade | 501 | 862 | 971 | 1,198 | 697 |
| Retail Trade | 2,831 | 4,634 | 6,443 | 9,873 | 7,042 |
| Finance, Insurance & Real Estate | 1,115 | 1,821 | 2,428 | 3,850 | 2,735 |
| Services | 2,484 | 4,969 | 9,832 | 15,600 | 13,116 |
| Federal, Civilian Government | 461 | 743 | 865 | 851 | 390 |
| Military | 416 | 318 | 459 | 389 | -27 |
| State Government** | 307 | 420 | 495 | 551 | 244 |
| Local Government** | 1,227 | 2,024 | 2,320 | 2,898 | 1,671 |
| **Totals** | **15,627** | **24,705** | **33,258** | **49,278** | **33,651** |

** Includes total full-time and part-time employment.*
*** For the year 1970, state & local government categories weren't separated. Numbers shown are estimates based on percentages observed from 1970 thru 2000.*
*Source: US Department of Commerce, Bureau of Economic Analysis, REIS Data Series, 2000.*

## Figure 3-5
### Flathead County Employment Trends by Economic Sector (1970-2000)

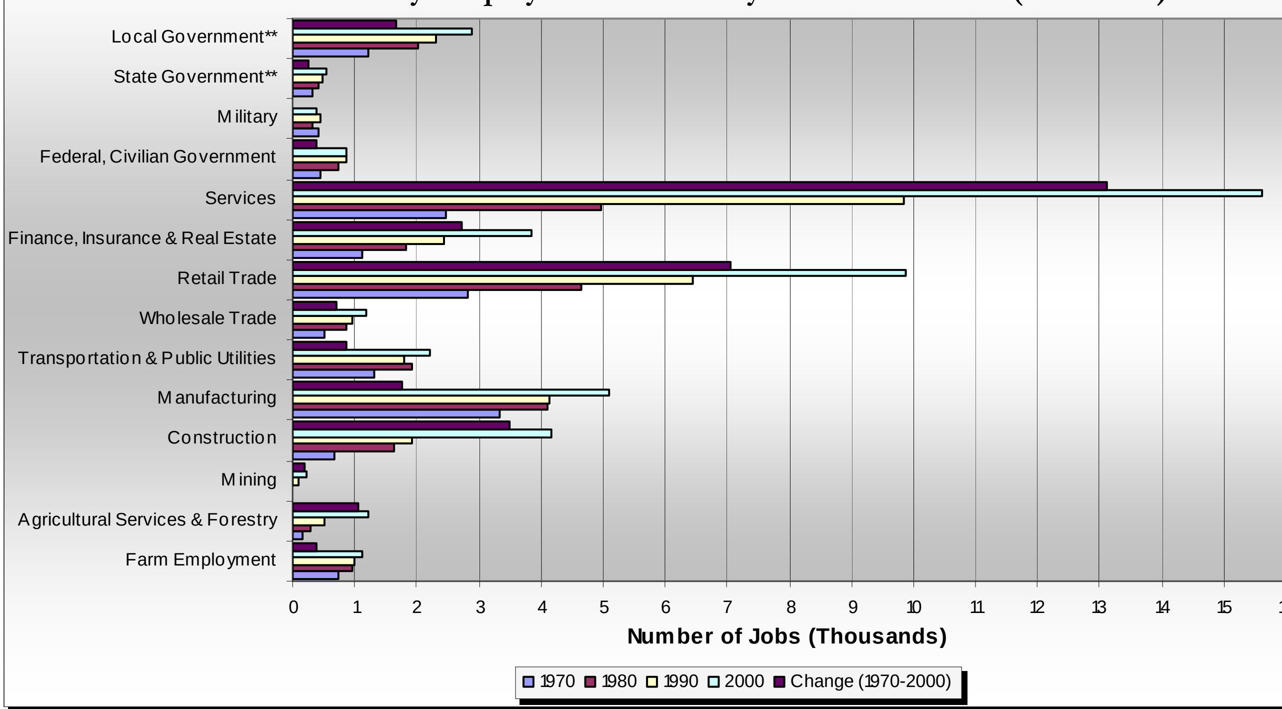
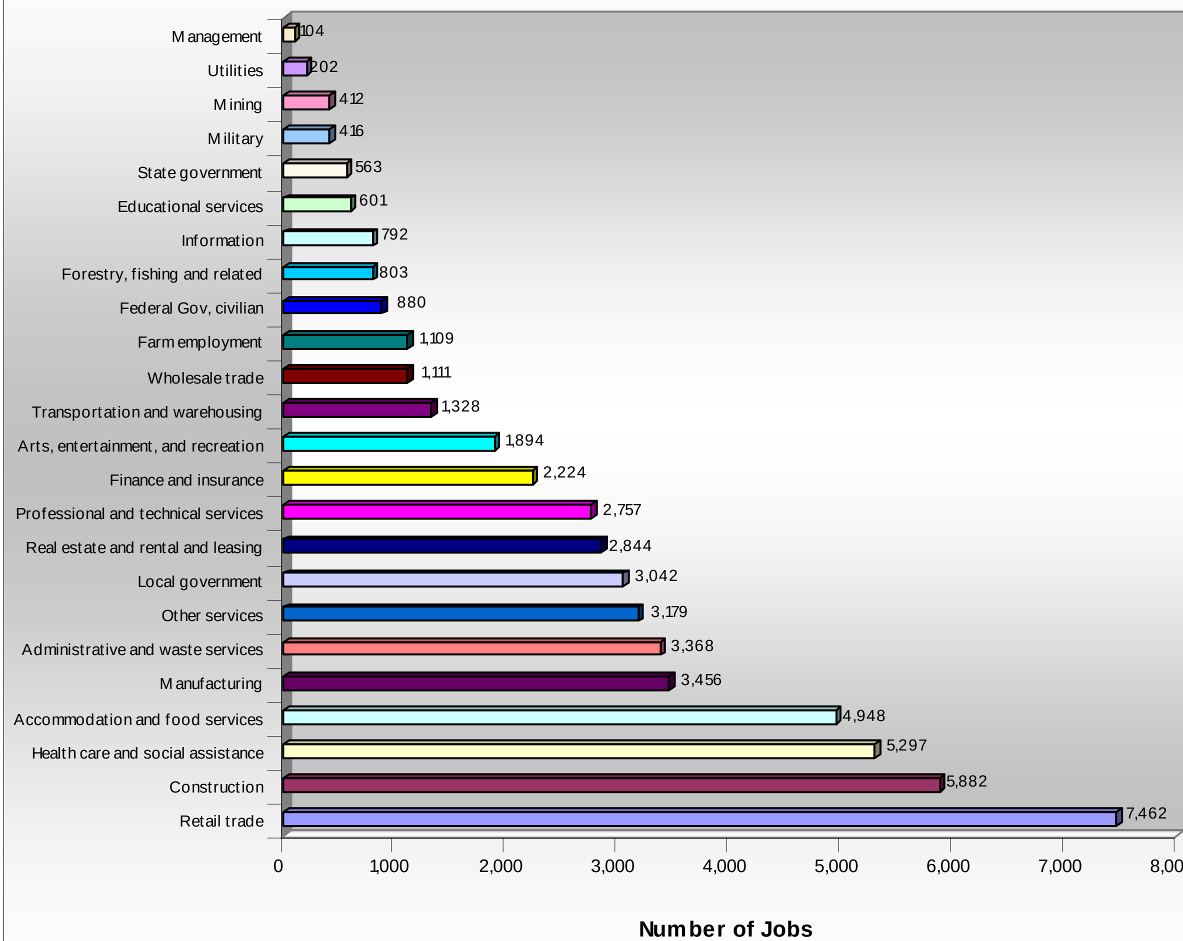


**Figure 3-6**

**Flathead County Employment Trends By NAIC Sector (2005)**




While there is not information for the City of Whitefish on the number of jobs available as with Flathead County, the U.S. Census Bureau does keep track of the number of employees in the City. **Table 3-6** shows the number of employees within each economic sector for the City of Whitefish for 1980, 1990, and 2000. This information is shown graphically in **Figure 3-7**. **Figure 3-8** shows the breakdown for employment sectors in the City of Whitefish for 2002. This graph presents for City of Whitefish 2002 number of employees by economic sector. Accommodations and food services is largest employment base in the City followed by retail trade.

## Table 3-6
### City of Whitefish Employment Trends by Economic Sector (1980-2000)

| Economic Sector | 1980 | 1990 | 2000 | Change (1980-2000) |
|---|---|---|---|---|
| Agricultural, Forestry, Fisheries, Mining | 76 | 47 | 25 | -51 |
| Construction | 114 | 136 | 180 | 60 |
| Manufacturing | 202 | 194 | 171 | -31 |
| Transportation | 260 | 199 | 138 | -122 |
| Communication, Other Public Utilities | 33 | 27 | 64 | 31 |
| Wholesale Trade | 12 | 22 | 49 | 37 |
| Retail Trade | 253 | 400 | 314 | 61 |
| Finance, Insurance & Real Estate | 50 | 106 | 200 | 150 |
| Business and Repair Services * | 8 | 42 | 182 | 174 |
| Personal, Entertainment, & Recreation | 160 | 288 | 449 | 289 |
| Professional Services | 320 | 385 | 529 | 209 |
| Public Administration | 40 | 18 | 53 | 13 |
| **Totals** | **1,528** | **1,864** | **2,354** | **760** |

** Business and Repair Services category changed to Professional, scientific, management, administrative and waste management services.*

## Figure 3-7
### City of Whitefish Employment Trends by Economic Sector (1980-2000)

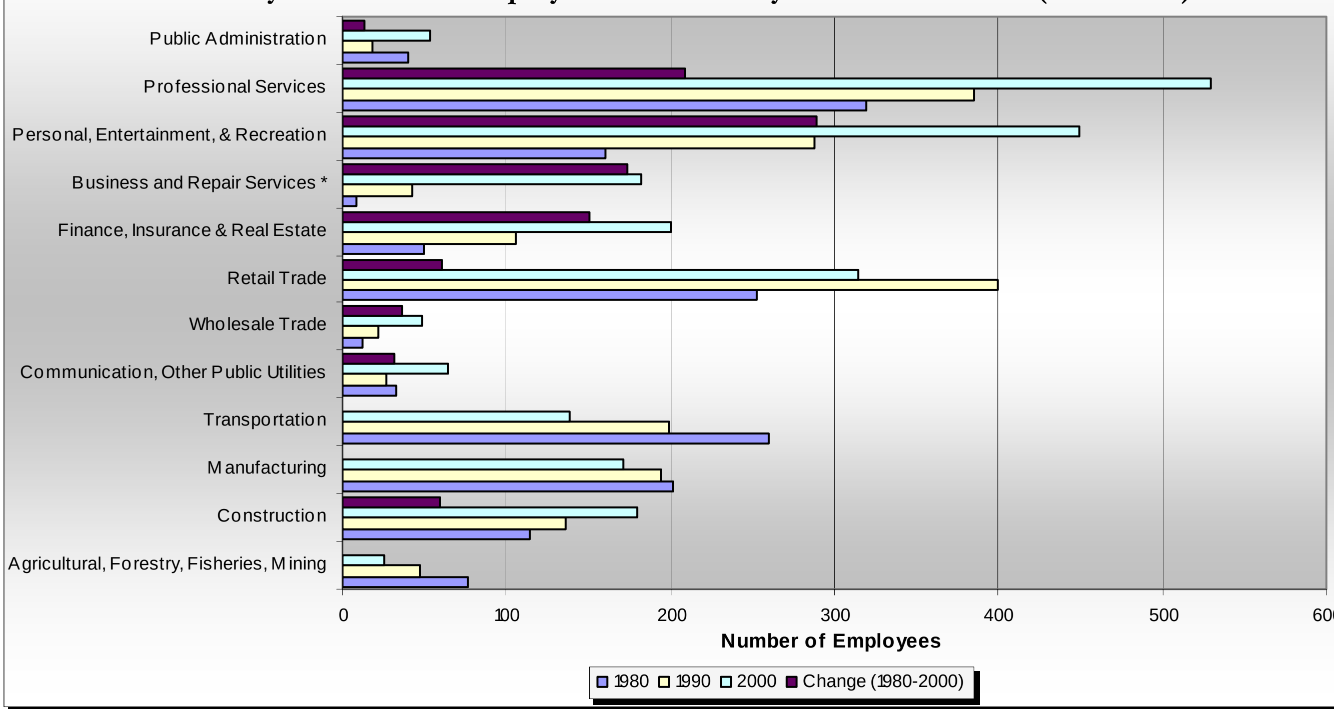
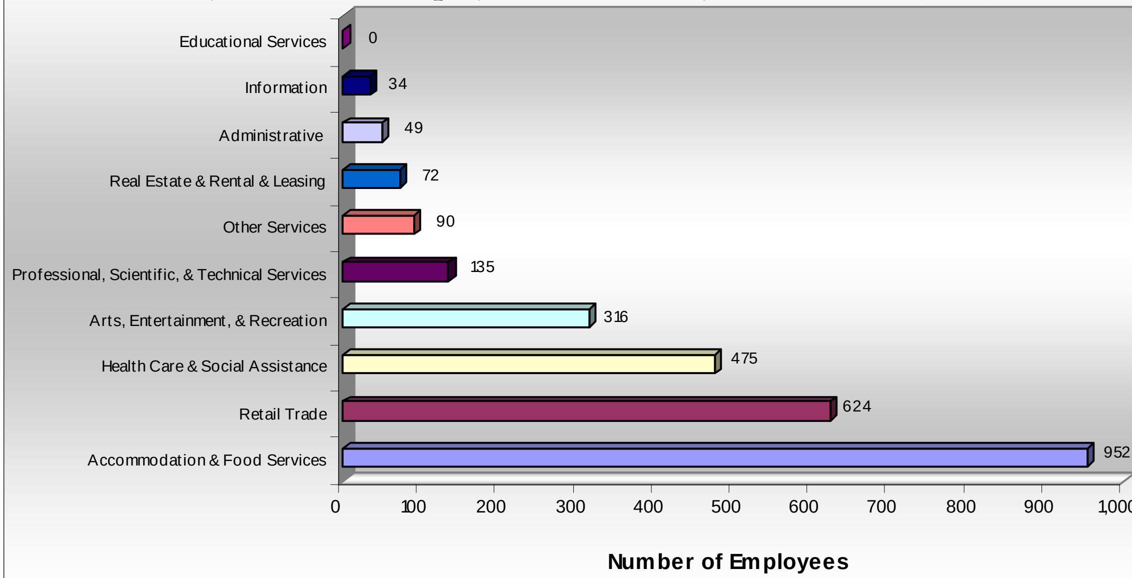


**Figure 3-8**

**City of Whitfish Employment Trends By NAIC Sector (2002)**




The economic trend data presented in **Figure 3-7** and **Figure 3-8** is not surprising, given the fact that the retail and tourism sectors are large attractions to the Whitefish area. Many of the top economic sectors are types of business that feed off of this sector and/or are directly dependent on this sector. The healthcare industry is also a booming industry. This trend is seen all over Montana, and is likely to continue. The boom in the healthcare industry especially is a "high-growth" sector both in the state of Montana and nationally. This is partly due to the aging of our population. The employment data presented in this section includes both full-time and part-time jobs. An interesting nuance over the past thirty years has been the change in workforce participation. There are many more women in the workforce now than there were thirty years ago. This relates partly to the change in demographics (families are having fewer children than thirty years ago) and also the availability of part-time jobs. Many part-time jobs include retail and tourism centered jobs, and these positions have attracted a greater proportion of women desiring part-time positions. In some cases, several part-time jobs are held. The fundamental importance of understanding economic trends is that eventually, the numbers and types of jobs equate to vehicle travel on our transportation system.

## 3.2 POPULATION AND EMPLOYMENT PROJECTIONS

Population and economic projections are used to predict future travel patterns, and to analyze the potential performance capabilities of the Whitefish area transportation system. Projections of the study area's future population and employment are developed from both Flathead County trends (regression line projections), and ongoing Growth Policy updates. These two projection scenarios are provided through the year 2030 (the planning horizon).

The basic scenario that is presented is referred to as the "Moderate Growth" scenario. This is the scenario that is most likely to occur, based on past trends and what has happened in other Montana community's over the past thirty years. This scenario was selected as the basis for the transportation modeling, and represents a continuation of the current population and growth trends already observed as presented in **Section 3.1**, such that adequate services and infrastructure will be planned for if the current levels of development continue. It assumes that the Flathead County population and economy will continue to grow at the same rate it has in the past decade. If this growth rate pattern does not develop further, or is not sustained, then demand will not occur as planned for in this Transportation Plan, and projects may be delayed or avoided. A second scenario was also developed, and is referred to as the "Low Growth" scenario. It builds from much of the population and employment trends that were realized in the 1980's, where economic growth was fairly flat due to many different circumstances. Lastly, a third growth scenario, referred to as a "High Growth" situation, was developed to reflect a more aggressive growth pattern in both population and employment. This growth trend is patterned after population and employment trends that were realized between 2000 and 2005, where economic growth was fairly higher than past years. A breakdown of the population and employment projections produced in each scenario, on a countywide basis for Flathead County, are presented in **Table 3-7** and shown graphically in **Figure 3-9** and **Figure 3-10**.

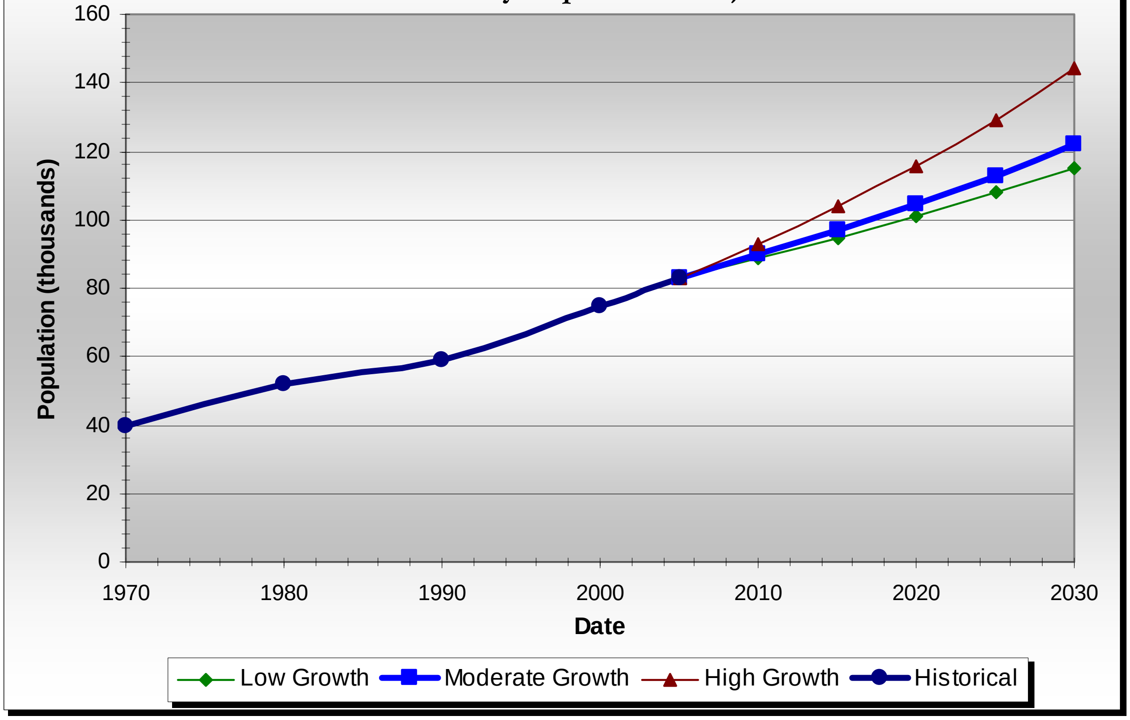
**Table 3-7**

**Flathead County Population and Employment Projections (2005-2030)**

| | Low Growth | | Moderate Growth | | High Growth | |
|---|---|---|---|---|---|---|
| | Population | Employment | Population | Employment | Population | Employment |
| Year | 1.31% | 1.00% | 1.59% | 1.88% | 2.23% | 4.01% |
| 2005 | 83,172 | 54,942 | 83,172 | 54,942 | 83,172 | 54,942 |
| 2010 | 88,764 | 57,745 | 89,675 | 60,313 | 92,869 | 66,877 |
| 2015 | 94,733 | 60,690 | 97,127 | 66,210 | 103,696 | 81,406 |
| 2020 | 101,102 | 63,786 | 104,713 | 72,683 | 115,785 | 99,090 |
| 2025 | 107,900 | 67,040 | 112,516 | 79,788 | 129,284 | 120,616 |
| 2030 | 115,156 | 70,459 | 121,778 | 87,589 | 144,356 | 146,819 |

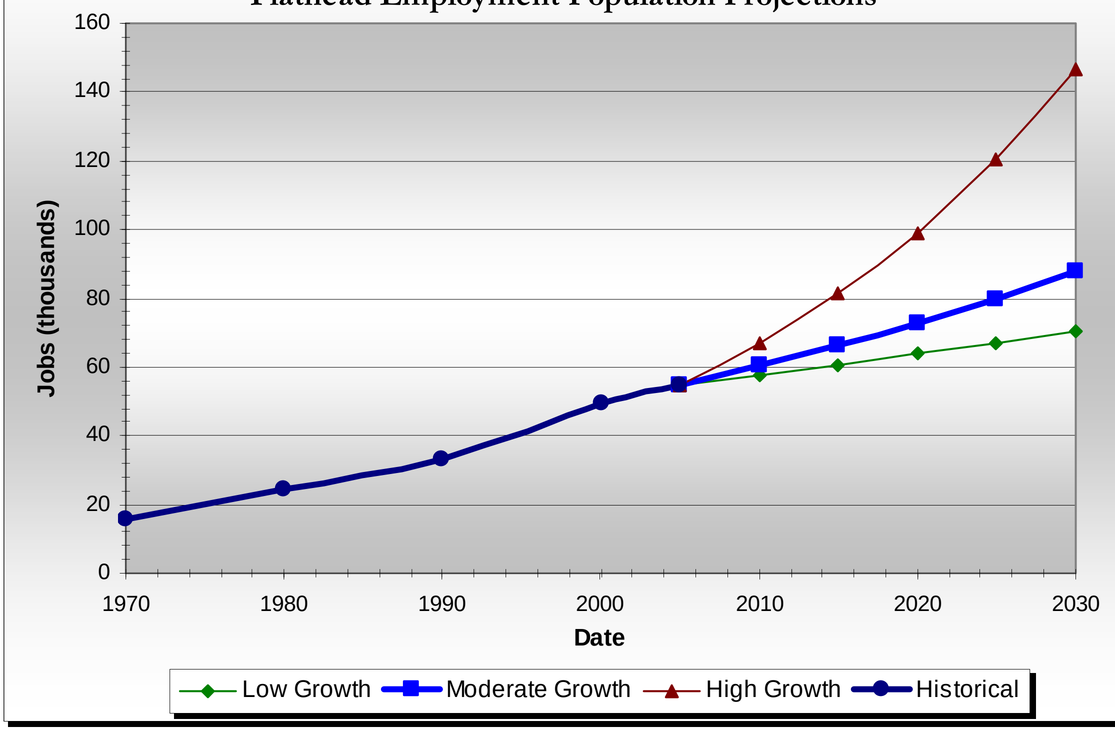
## Figure 3-9

### Flathead County Population Projections




## Figure 3-10

### Flathead Employment Population Projections



The projections of population and employment presented above are for the entire area of Flathead County. The study area boundary for this Transportation Plan, however, is much smaller. Although County level projections are satisfactory to establish the overall growth rates and scenarios for future population and employment, this data must be reduced to accommodate the area within the planning boundary of the Transportation Plan. Forecasting for areas within study area boundary is underway in the City of Whitefish *Growth Policy Update* currently being developed. This document, which has the same study area boundary as the Transportation Plan project, forecasts a population growth out to the year 2017. This growth scenario amounted to a growth rate of 3.6% per year within the study area boundary. This particular document estimated that in 2005 there was a population of 11,500 people within the study area boundary. A projected population of 17,500 was made within the study area boundary utilizing what the current rate of development and absorption is for the planning area. Although this projection was only forecasted to the year 2017, it is reasonable to assume that growth will continue at this rate of 3.6% per year to the planning year 2030. This gives the study area a projected population forecast of 27,841

**Table 3-8** presents population projections for the City of Whitefish and its planning jurisdictional area through the year 2030. Population projections for the years 2010, 2015, and 2020 represent proportional allocations of population over 5-year periods considering the total population growth over the 2005-2025 period under both low and high growth scenarios. The low scenario represents a growth rate of about 1% per year and the high scenario corresponds to a growth rate of about 3.6% per year. These growth rates were used to generate projections for the year 2030 under each scenario.

Future populations for the corridor study area were generated by first identifying the anticipated increases in dwelling (housing) units for each Census Block within the study area between the year 2000 and the year 2030. This data was conveniently obtained from inputs used for the urban travel demand model developed and maintained by the MDT with input provided by the Consultant. The total increase in dwelling units was multiplied by an average occupancy rate for dwelling units in the city to yield a total population increase for the corridor study area. This analysis identified an increase of nearly 630 housing units and a total population increase of about 1,290 residents by the year 2030. This total increase was then proportionally allocated over subsequent five-year periods starting between 2000 and 2030.

Please note the numbers shown in **Table 3-8** reflect the results of mathematical calculations to proportionately allocate population over time periods or reflect growth rates applied to known population totals. While the numbers suggest a high degree of accuracy, it is not possible to project future populations to the individual. It would be reasonable to round the projections to the nearest 50 or 100 for discussion purposes.

**Table 3-8**
**Population Projections for the City of Whitefish and Whitefish Planning Jurisdictional Area**

| Year | City of Whitefish | | Moderate Growth | |
|---|---|---|---|---|
| | Low | High | Low | High |
| 2000 Census | 5,032 | 5,032 | -- | -- |
| 2005(1)/(2) | 7,092 | 7,092 | 11,500 | 11,500 |
| 2006(1) | 7,723 | 7,723 | -- | -- |
| 2010(3) | 7,429 | 8,481 | 12,141 | 14,462 |
| 2015(3) | 7,766 | 9,871 | 12,783 | 17,424 |
| 2020(3) | 8,102 | 11,260 | 13,424 | 20,386 |
| 2025(2) | 8,439 | 12,649 | 14,065 | 23,348 |
| 2030(4) | 8,813 | 14,617 | 14,791 | 27,841 |

**Notes and Assumptions:**

**(1)** 2005 and 2006 estimates of population for City of Whitefish from Annual Estimates of the Population for Incorporated Places in Montana, by County: April 1, 2000 to July 1, 2006. Source: Population Division, U.S. Census Bureau Release Date: June 28, 2007

**(2)** Projected 2005 population for the Whitefish Jurisdictional Area, and Year 2025 projections of population for the City of Whitefish and Whitefish Planning Jurisdictional Area from City's draft Growth Policy Update documents released in February 2007.

**(3)** Population increases under the "Low" and "High" growth scenarios for the City of Whitefish and its planning jurisdictional area were proportionally allocated over 5-year periods based on the total population growth projected over the 2005-2025 period under each scenario.

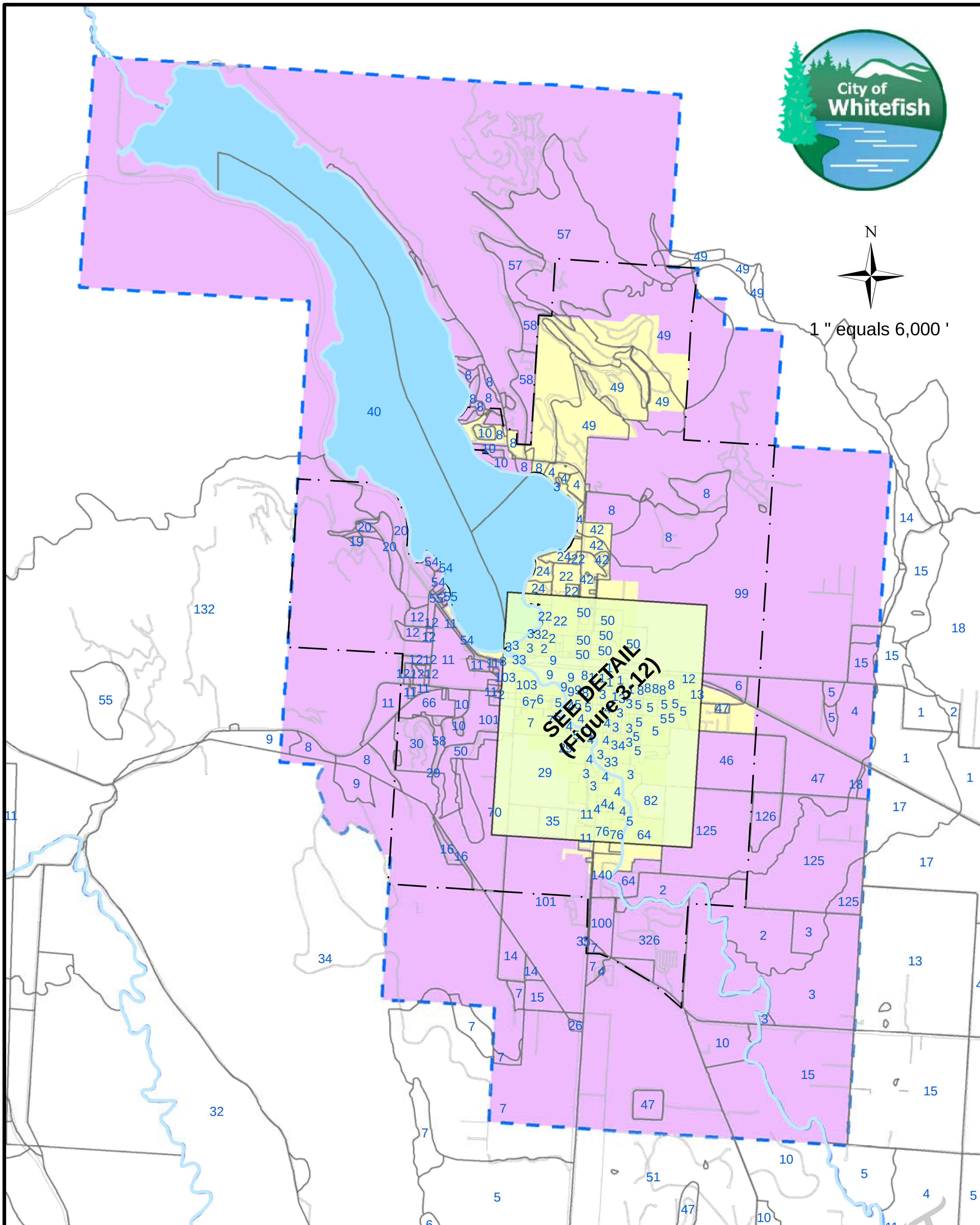
**(4)** Populations were projected for the year 2030 assuming a continuation of growth rates for the year 2005 through 2025 under the "Low" and "High" growth scenarios for the City of Whitefish and its planning jurisdictional area.

**(5)** The corridor study area population was projected by examining projected increase in dwelling (housing) units for the year 2030 in each Census Block and applying an average population per housing unit for 2000 Census Blocks in the corridor study area to yield a total population increase by the year 2030. The total increase in population was then proportionally allocated over five-year periods between 2000 and 2030.

## 3.3 Allocation of Growth Within the Study Area

Montana Department of Transportation's modeling of future traveling patterns out to the year 2030 planning horizon required identification of future socioeconomic characteristics within each census tract and census block. County population and employment projections, coupled with the current Whitefish *Growth Policy Update*, were translated to predictions of increases in housing and employment within the Greater Whitefish area. This information was developed through a parallel project - the Montana Department of Transportation's "*Whitefish – Urban*" design project. For that particular project, a land use committee was set up to discuss future dwelling units, retail and non-retail employment assignments. This information was projected out to the year 2030, and the subsequent data was entered into the urban travel demand model. This data was reviewed by RPA and is in close compliance with the current Whitefish *Growth Policy Update* findings and Census Bureau forecasts. **Figure 3-11** and **Figure 3-12** show approximate locations of predicted residential growth over the planning horizon (i.e. year 2030). **Figure 3-13** and **Figure 3-14** show approximate locations of predicted "non-retail" employment growth over the planning horizon (i.e. year 2030). **Figure 3-15** and **Figure 3-16** show approximate locations of predicted "retail" employment growth over the planning horizon (i.e. year 2030).

**THIS PAGE INTENTIONALLY LEFT BLANK**

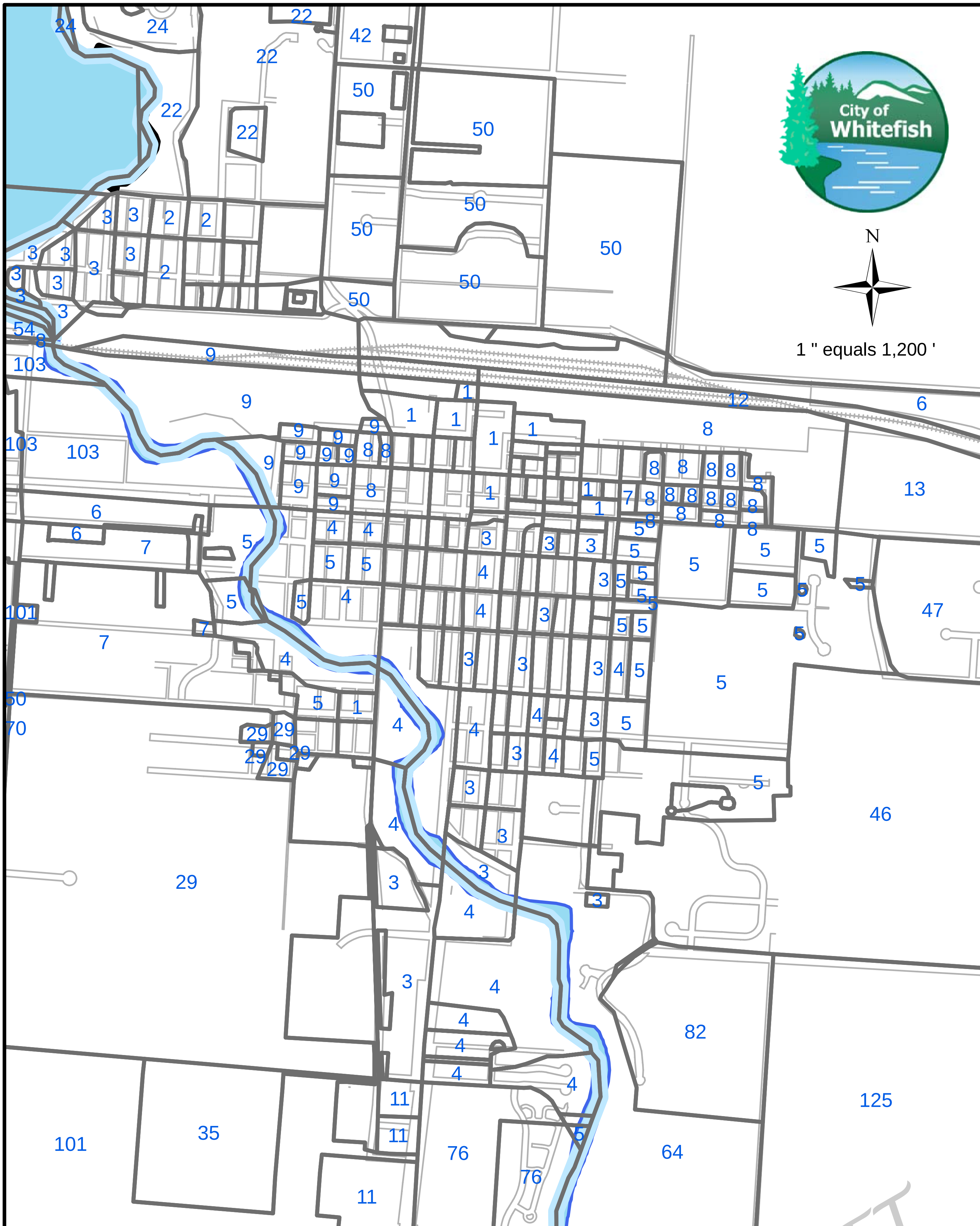



CITY LIMITS
STUDY BOUNDARY
URBAN BOUNDARY
Census Blocks
24 Addditional Dwelling Units

*Whitefish Transportation Plan (2007)*

**Figure 3-11**
**Projected Dwelling Units**
**(Year 2030)**

DRAFT

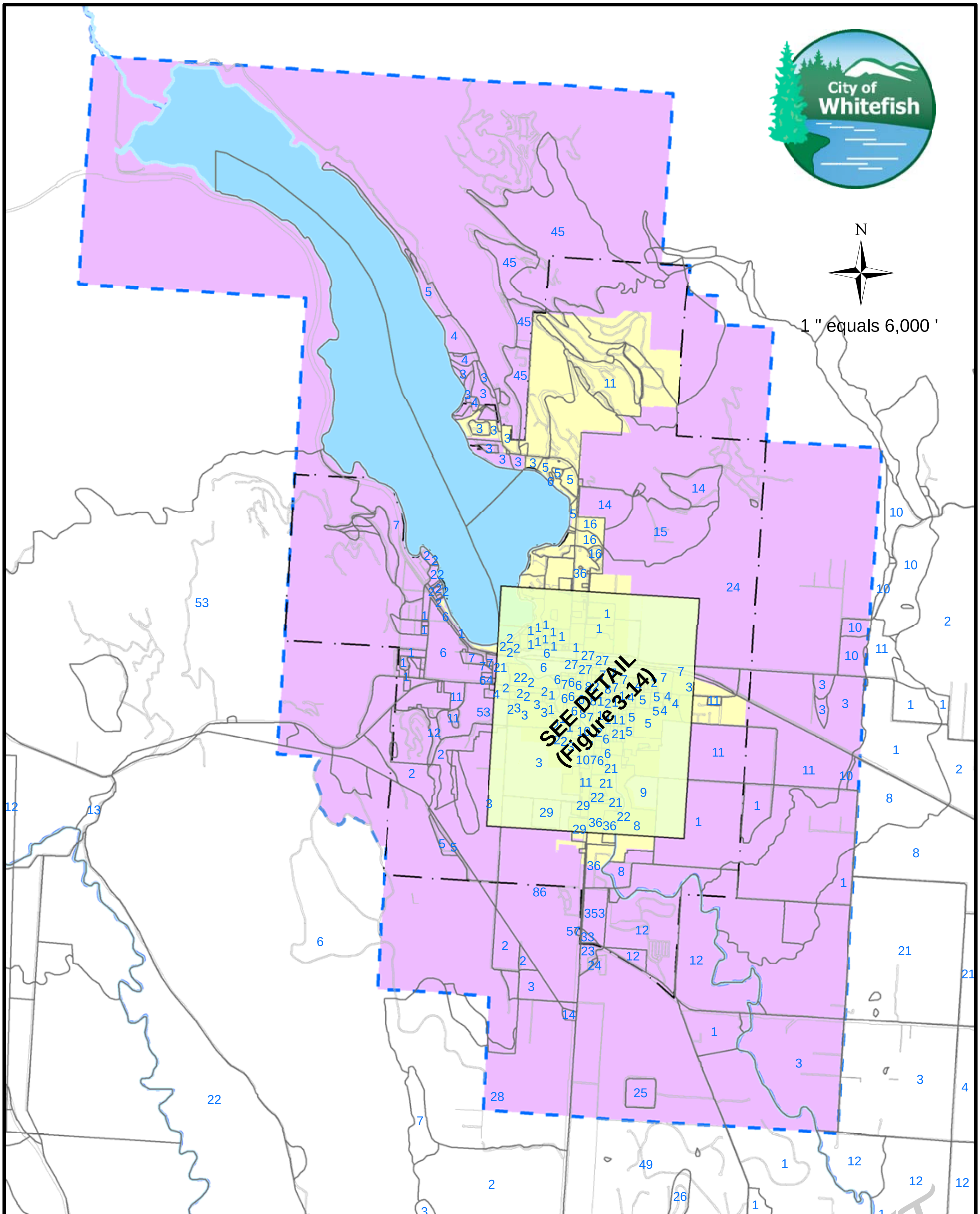



*Whitefish Transportation Plan (2007)*

DRAFT

**Figure 3-12**
**Projected Dwelling Units**
**(Year 2030)**

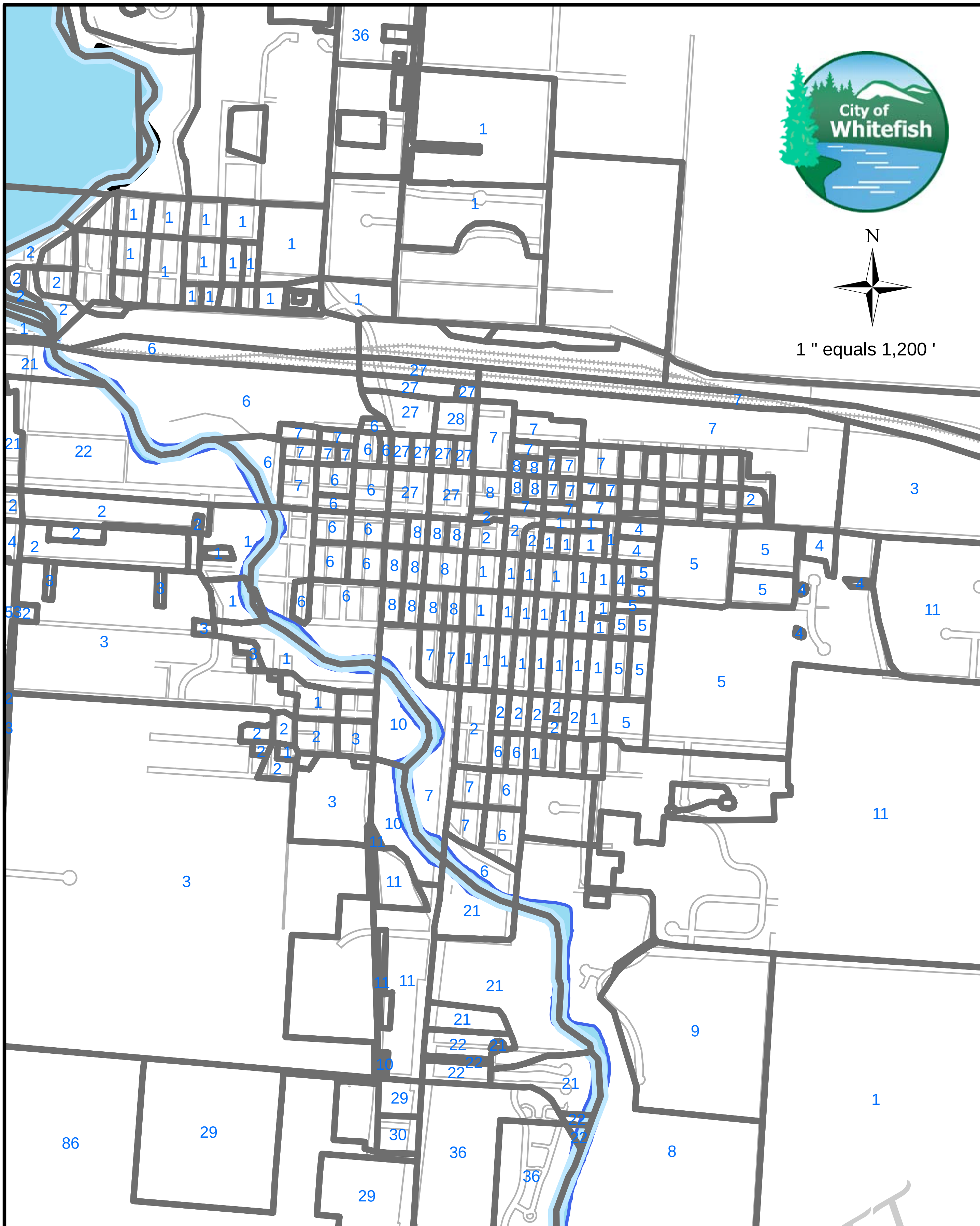
| | |
|---|---|
| (line symbol) | Census Blocks |
| 35 | Additional Dwelling Units |




CITY LIMITS
STUDY BOUNDARY
URBAN BOUNDARY
Census Blocks
22 Non-Retail Employment Units

*Whitefish Transportation Plan (2007)*

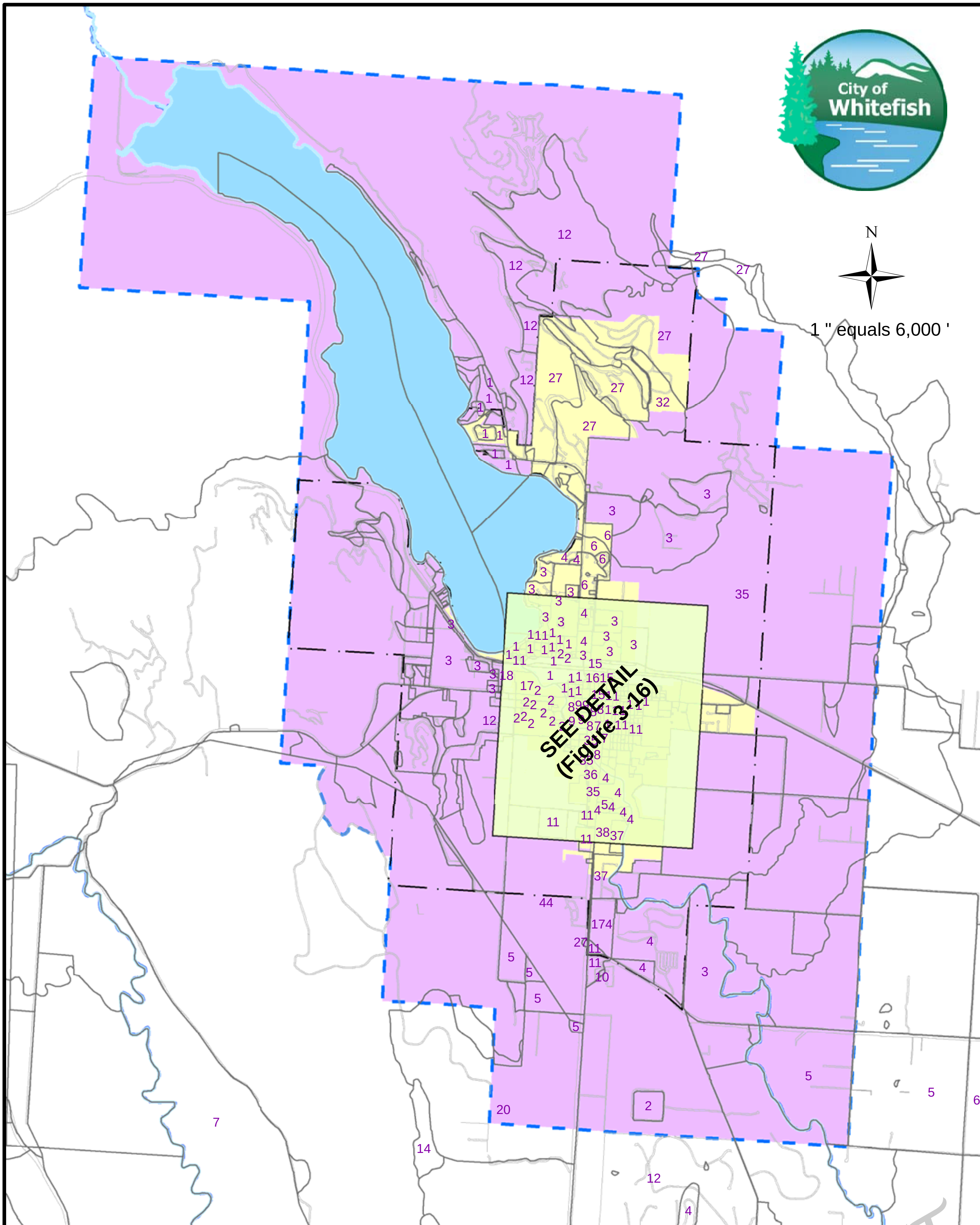
**Figure 3-13**
**Projected Non-Retail Employment**
**(Year 2030)**




| | |
|---|---|
| (box symbol) | Census Blocks |
| 29 | Non-Retail Employment Units |

*Whitefish Transportation Plan (2007)*

**Figure 3-14**
**Projected Non-Retail Employment**
**(Year 2030)**

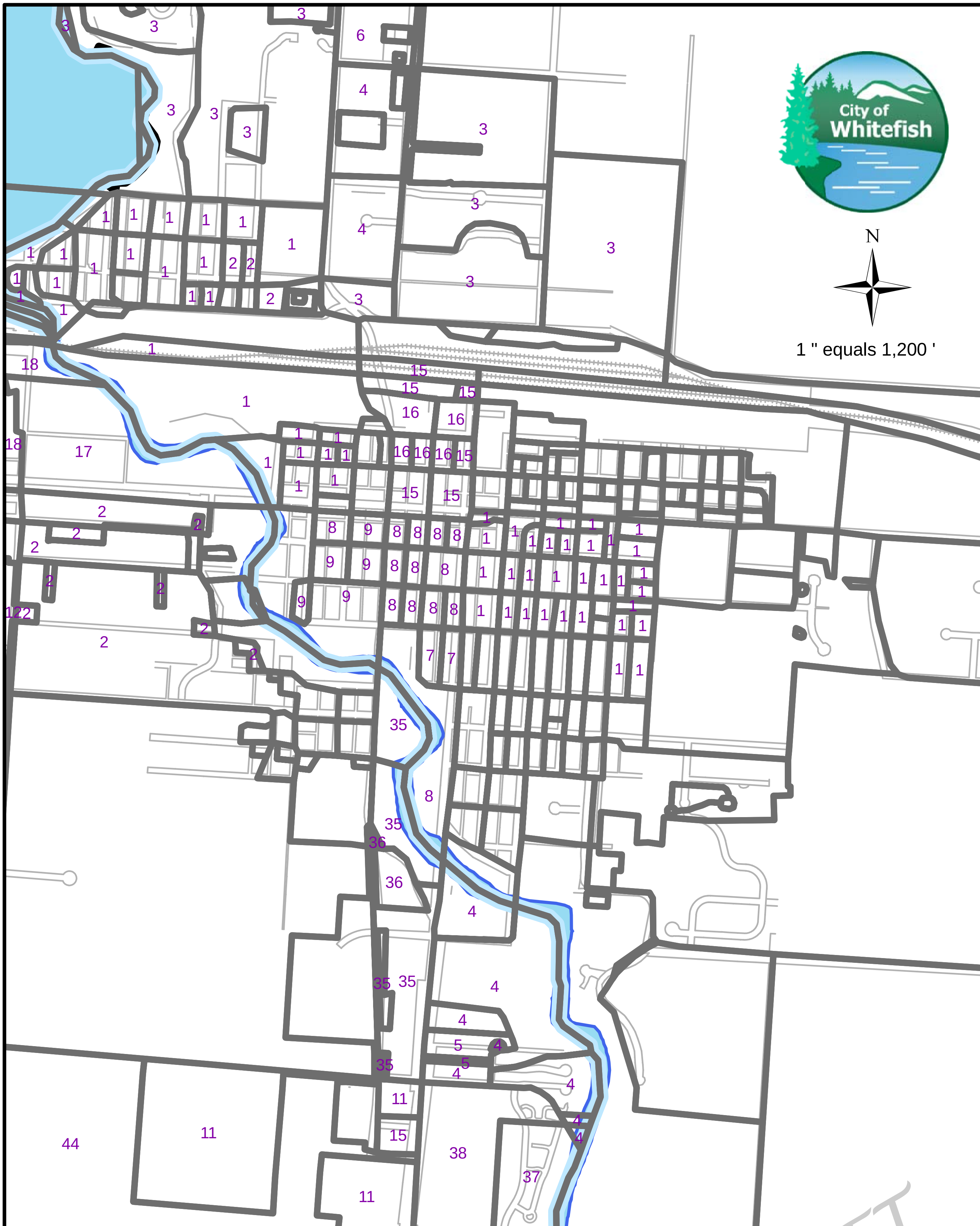



ROBERT PECCIA & ASSOCIATES

CITY LIMITS
STUDY BOUNDARY
URBAN BOUNDARY
Census Blocks
14 Retail Employment Units

*Whitefish Transportation Plan (2007)*

**Figure 3-15**
**Projected Retail Employment**
**(Year 2030)**




*Whitefish Transportation Plan (2007)*

**Figure 3-16**
**Projected Retail Employment**
**(Year 2030)**

| | |
|---|---|
| (line symbol) | Census Blocks |
| 11 | Retail Employment Units |



ROBERT PECCIA & ASSOCIATES

## 3.4 COMMITTED TRANSPORTATION IMPROVEMENTS

During the development of the traffic model, the existing road network is coded into the computer. This existing network is often called the "E Network." Once the "E Network" is developed, the next step is to consider and incorporate (as appropriate) all committed improvement projects. Generally, committed improvements listed herein are only considered if they are likely to be constructed within a five-year timeframe (i.e. year 2007 through the year 2012), and a funding source has been identified and is assigned to the specific project. Committed projects are only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. The addition of the committed improvements through year 2012 with the existing roadway network produces what is known as the "Existing plus Committed" network (referred to as the E+C Network). It is the E+C Network that is used for all future year analyses. In the Whitefish area, the following projects are "committed" projects for purposes of the travel demand modeling exercise:

CMSN-1 US Highway 93 (Whitefish-West)
This project includes the complete reconstruction of US Highway 93 west of Whitefish. The project is planned for construction beginning in the year 2011 and is estimated to cost $5.4 million dollars. The project is currently in the design phase.

CMSN-2 Wisconsin Avenue Bike/Pedestrian Path
This CTEP project includes the construction of a shared-use bike/pedestrian path along Wisconsin Avenue. The project will be built during the summer of 2008 and is estimated to cost $1.6 million dollars.

CMSN-3 Central Avenue (Railway to 3rd Street)
City of Whitefish project to enhance Central Avenue streetscape through mid-block crossings, decorative concrete, angled parking and elevated intersections. Some turn lane restrictions and curb bulb-outs will be incorporated into the project. The project is currently in the design phase.

CMSN-4 6th Street and Geddes Avenue
City of Whitefish reconstruction project of 6th Street and Geddes Avenue. Currently in design phase and being prepared for bid advertisement.

## 3.5 TRAFFIC MODEL DEVELOPMENT

All of the characteristics of the various areas of the greater Whitefish area combine to create the traffic patterns present in the community today. To build a model to represent this condition, the population information was collected from the 2000 census, and employment information was gathered from the Montana Department of Labor and Industry, second quarter of 2007, and was carefully scrutinized by local agency planners and MDT modeling staff.

The roadway network / centerline information was provided by the Flathead County GIS office. This information was substantially supplemented by input from staff at the City of Whitefish, Flathead County, and the Montana Department of Transportation who have substantial local knowledge and were able to increase the accuracy of the base model.

The GIS files, population census information, and employment information are readily available. The TransCAD software is designed to use this information as input data. TransCAD has been developed by the Caliper Corporation of Newton, Massachusetts, and version 4.0 was used as the transportation modeling software for this project. TransCAD performs a normal modeling process of generating, distributing and assigning traffic in order to generate traffic volumes. These traffic volumes are then compared to actual ground counts and adjustments are made to "calibrate", or ensure the accuracy of, the model. This is further explained below.

**It should be noted that since these models are based on forecasted land uses and existing travel patterns, the resulting traffic volumes are not expected to be completely accurate but only to assist in the evaluation of projected future conditions.**

**<u>Trip Generation</u>** - Trip Generation consists of applying nationally developed trip rates to land use quantities by the type of land use in the area. The trip generation step actually consists of two individual steps: trip production and trip attraction. Trip production and trip attraction helps to "explain" why the trip is made. Trip production is based on relating trips to various household characteristics. Trip attraction considers activities that might attract trip makers, such as offices, shopping centers, schools, hospitals and other households. The number of productions and attractions in the area is determined and is then used in the distribution phase.

**<u>Trip Distribution</u>** - Trip distribution is the process in which a trip from one area is connected with a trip from another area. These trips are referred to as trip exchanges.

**<u>Mode Split</u>** - Mode choice is the process by which the amount of travel will be made by each available mode of transportation. There are two major types: automobile and transit. The automobile mode is generally split into drive alone and shared ride modes. For the Whitefish travel demand model, there were no "mode split" assignments (i.e. all trips are assumed to be automobile mode).

**<u>Trip Assignment</u>** - Once the trip distribution element is completed, the trip assignment tags those trips to the Major Street Network (MSN). The variable that influence this are travel time, length, and capacity.

Due to the inherent characteristics of a traffic model, it is easy to add a road segment, or "link", where none exists now or widen an existing road and see what affect these changes will have on the transportation system. Additional housing and employment centers can be added to the system to model future conditions, and moved to different parts of the model area to see what affect different growth scenarios have on the transportation system. Thus the land use changes anticipated between now and 2030 can be added to the transportation system, and the needed additions to the transportation system can then be identified.

Additionally, different scenarios for how the Greater Whitefish area may grow between now and 2030 can be examined to determine the need for additional infrastructure depending upon which one most accurately represents actual growth.

To develop a transportation model, the modeling area must be established. The modeling area is, by necessity, much larger than the Study Area. Traffic generated from outlying communities or areas contributes to the traffic load within the Study Area, and is therefore important to accuracy of the model. Additionally, it is desirable to have a large model area for use in future projects.

The future year model was developed specifically for the year 2030 planning horizon. The 2030 model is used in this document to evaluate future traffic volumes, since 2030 is the horizon year for this document. The information contained in **Sections 3.1**, **3.2** and **3.3** was used to determine the additions and changes to the traffic volumes in 2030.

The modeling area was subdivided by using census tracts and census blocks, as previously described in this chapter. Census blocks are typically small in the downtown and existing neighborhood areas, and grow geographically larger in the less densely developed areas. The census blocks & census tracts were used to divide the population and employment growth anticipated to occur between now and 2030.

## 3.6 TRAFFIC VOLUME PROJECTIONS

The traffic model was used to produce traffic forecasts for the planning horizon year of 2030. The model also presented values for v/c (volume/capacity) ratios. The v/c ratio gives a numeric value for the level of actual volume on the roadway compared to the capacity of the roadway. A v/c level above 1.0, for example, means that the volume on the roadway is past the capacity level that the roadway is intended to handle.

Traffic model results for the calibration year on 2003 are presented in **Figure 3-17** and **Figure 3-18** with the v/c levels for 2003 being shown graphically in **Figure 3-19** and **Figure 3-20**. Year 2030 traffic volume projections are presented in **Figure 3-21** and **Figure 3-22** with 2030 projected v/c levels presented in **Figure 3-23** and **Figure 3-24**. These projections indicate that the traffic volumes on some of the major corridors will increase significantly over the next 23 years. Projected volumes indicate that numerous roadways will have a v/c ratio greater than one by the year 2030.

It is important to recognize that the volumes and v/c ratios shown in **Figures 3-21** thru **3-24** are based on the "Existing plus Committed" roadway network. In other words, these are the volumes and v/c ratios if no changes to the transportation system are made.

Also note that the data presented in **Figure 3-17** thru **Figure 3-24** is also shown in tabular format in **Table 4-3** in **chapter 4** of this Transportation Plan.

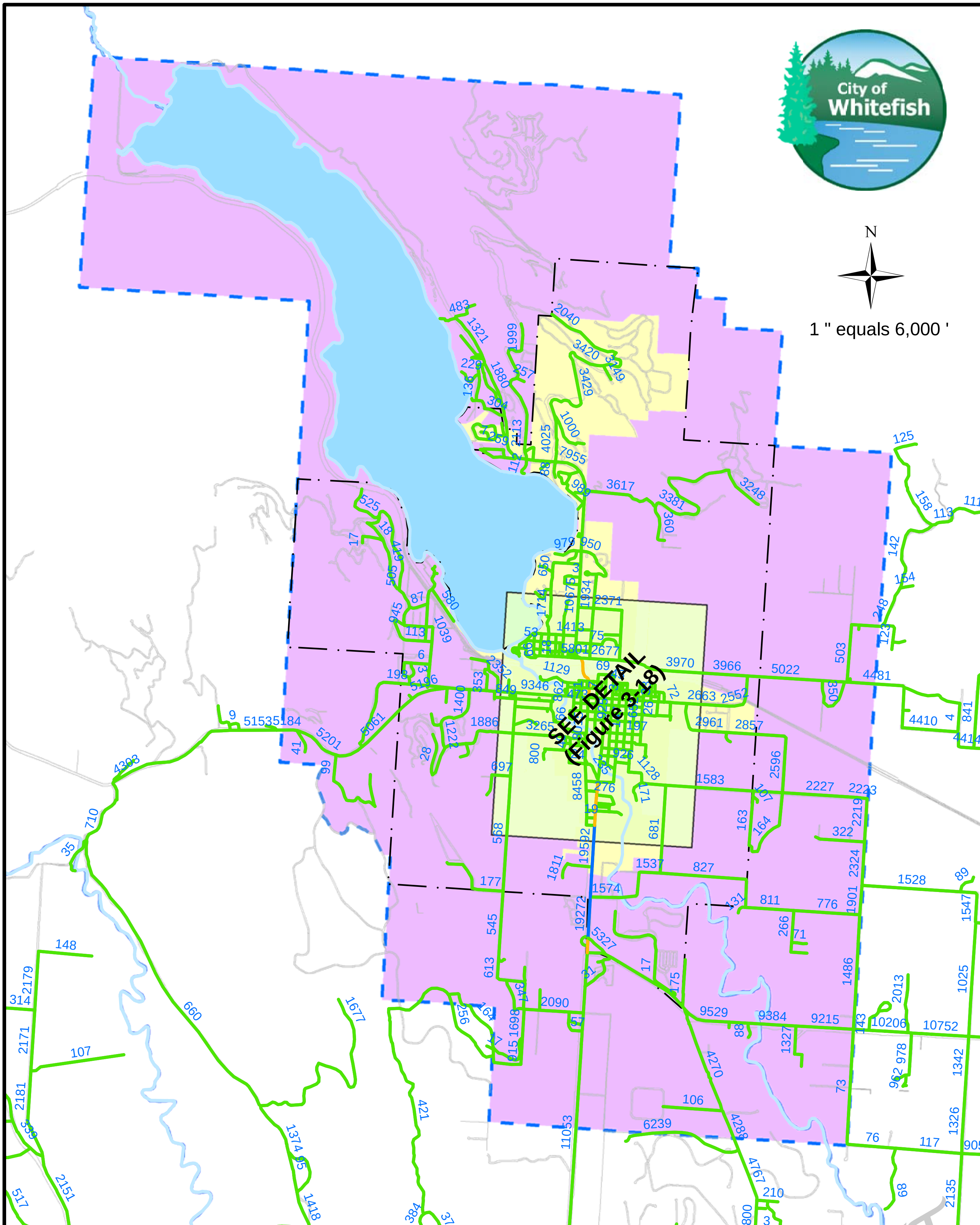
## Table 3-9

### Roadways At or Above Capacity Level by 2030

| Roadway | | Volume | V/C Ratio |
|---|---|---|---|
| Murdock Ln. | E. Lakeshore Dr. to Ridgecrest Dr. | 9,715 | 2.43 |
| Wisconsin Ave. | Colorado Ave. to Reservoir Rd. | 23,938 | 2.18 |
| Iron Horse Dr. | Ridgecrest Dr. to Yampah Ln. | 8,244 | 2.06 |
| U.S. Highway 93 | Lion Mountain Rd. to Fairway Dr. | 21,344 | 1.94 |
| U.S. Highway 93 | Fairway Dr. to Karrow Ave. | 20,448 | 1.86 |
| Viaduct | Railway St. to Edgwood Pl. | 27,473 | 1.83 |
| E. Lakeshore Dr. | Reservoir Dr. to Huston Dr. | 19,194 | 1.74 |
| Iron Horse Dr. | Yampah Ln. to Lookout Ln. | 6,802 | 1.70 |
| 2nd St. | Good Ave. to Lupfer Ave | 16,927 | 1.54 |
| Railway St. | Baker Ave. to Central Ave. | 6,154 | 1.54 |
| Stage Line Rd. | MT. Highway 40 to the end | 7,669 | 1.53 |
| Parkhill Dr. | U.S. Highway 93 to W. 3rd St. | 7,668 | 1.53 |
| W. 3rd St. | Parkhill Dr. to Karrow Ave. | 7,652 | 1.53 |
| Baker Ave. | W. 8th St. to W. 13th St. | 15,827 | 1.44 |
| MT. Highway 40 | U.S. Highway 93 to Kalner Ln. | 15,534 | 1.41 |
| W. 6th St. | Scott Ave. to Baker Ave. | 5,636 | 1.41 |
| Edgewood Dr. | E. 2nd St. to E. Texas Dr. | 13,975 | 1.40 |
| 5th St. | Baker Ave. to Central Ave. | 5,393 | 1.35 |
| Spokane Ave. | 13th St. to 9th St. | 14,729 | 1.34 |
| Texas Ave. | Edgewood Pl. to Waverly Pl. | 6,710 | 1.34 |
| Blanchard Lake Rd. | U.S. Highway 93 to Meadows Rd. | 6,671 | 1.33 |
| Baker Ave. | 1st St. to Railway St. | 19,827 | 1.32 |
| Armory Rd. | Southern portion of Armory Rd. to Voerman Rd. | 6,604 | 1.32 |
| E. 2nd St. | Larch Ave. to Armory Rd. | 13,128 | 1.31 |
| Reservoir Rd. | Wisconsin Ave. to Rick Oshay Rd. | 6,550 | 1.31 |
| Spokane Ave. | 9th St. to 8th St. | 14,160 | 1.29 |
| E. 2nd St. | Armory Rd. to Edgewood Dr. | 12,887 | 1.29 |
| Spokane Ave. | 8th St. to 6th St. | 14,066 | 1.28 |
| Edgewood Pl. | E. Texas Dr. to Texas Ave. | 12,789 | 1.28 |
| Spokane Ave. | 1st St. to 2nd St. | 5,134 | 1.28 |
| Texas Ave. | Waverly Pl. to Cedar St. | 6,362 | 1.27 |
| W. 5th St. | Geddes Ave. to Scott Ave. | 5,094 | 1.27 |
| U.S. Highway 93 | JP Road to MT. Highway 40 | 36,610 | 1.26 |
| Baker Ave. | W. 7th St. to W. 8th St. | 13,851 | 1.26 |
| Greenwood Dr. | Entrance to Greenwood Mobile Home Park to the end | 5,002 | 1.25 |

| | | | |
|---|---|---|---|
| Park Ave. | 10th St. to Voerman Rd. | 4,976 | 1.24 |
| U.S. Highway 93 | 19th St. to JP Road | 35,650 | 1.23 |
| Reservoir Rd. | Rick Oshay Rd. to Northwoods Dr. | 6,150 | 1.23 |
| Kalner Ln. | MT. Highway 40 to the end | 6,129 | 1.23 |
| Central Ave. | 2nd St. to 1st St. | 4,912 | 1.23 |
| 3rd St. | Baker Ave. to Central Ave. | 4,891 | 1.22 |
| 4th St. | Baker Ave. to Spokane Ave. | 4,888 | 1.22 |
| 1st St. | Baker Ave. to Spokane Ave. | 4,879 | 1.22 |
| Lion Mountain Rd. | State Park Rd. to U.S. Highway 93 | 12,113 | 1.21 |
| Wisconsin Ave. | Denver St. to Colorado Ave. | 10,675 | 1.21 |
| Park Knoll Ln. | U.S. Highway 93 to the end | 6,034 | 1.21 |
| MT. Highway 40 | West of River Bluff to the west of Dillon Rd. | 13,176 | 1.20 |
| Fairway Dr. | Tides Way to Karrow Ave. | 4,740 | 1.19 |
| Voerman Rd. | Monegan Rd. to Shady River Ln. | 4,739 | 1.18 |
| W. 2nd St. | Karrow Ave. to Good Ave. | 12,883 | 1.17 |
| 1st St. | Lupfer Ave. to Baker Ave. | 4,696 | 1.17 |
| 3rd St. | Central Ave. to Spokane Ave. | 4,657 | 1.16 |
| 5th St. | Central Ave. to Spokane Ave. | 4,598 | 1.15 |
| W. 7th St. | Karrow Ave. to Scott Ave. | 11,373 | 1.14 |
| Miles Ave. | 2nd St. to 1st St. | 4,551 | 1.14 |
| Baker Ave. | W. 13th St. to W. 15th St. | 12,482 | 1.13 |
| State Park Rd. | Haugen Heights R. to Lion Mountain Rd. | 11,253 | 1.13 |
| Blanchard Lake Rd. | Meadows Rd. to the south of Blanchard Lake Dr. | 5,670 | 1.13 |
| Good Ave. | W. 2nd St. to W. 3rd St. | 4,511 | 1.13 |
| Baker Ave. | 2nd St. to 1st St. | 16,657 | 1.11 |
| Wisconsin Ave. | Woodland Pl. to the north of Woodside Ln. | 12,195 | 1.11 |
| W. 7th St. | Scott Ave. to Baker Ave. | 11,101 | 1.11 |
| E. Lakeshore Dr. | Mason Park to Huston Pt. | 5,440 | 1.09 |
| Baker Ave. | W. 6th St. to W. 7th St. | 11,802 | 1.07 |
| Dillon Rd. | Braig Rd. to Monegan Rd. | 5,342 | 1.07 |
| Dillon Rd. | Monegan Rd. to Braig Rd. | 5,342 | 1.07 |
| Colorado Ave. | Denver St. to Crestwood Ct. | 10,615 | 1.06 |
| Edgewood Pl. | Iowa Ave. east | 10,571 | 1.06 |
| JP Road | U.S. Highway 93 to the east of Whitefish River | 10,557 | 1.06 |
| Fairway Dr. | U.S. Highway 93 to Green Pl. | 4,230 | 1.06 |
| Columbia Ave. | 10th St. to 7th St. | 10,424 | 1.04 |
| Edgewood Dr. | Haskill Basin Rd. to E. 2nd St. | 10,423 | 1.04 |
| Karrow Ave. | W. 3rd Ave. to W. 4th Ave. | 10,334 | 1.03 |

| | | | |
|---|---|---|---|
| Lookout Ln. | Iron Horse Dr. to the urban boundary | 4,139 | 1.03 |
| 6th St. | Spokane Ave. to Central Ave. | 4,133 | 1.03 |
| Central Ave. | 6th Ave. to 2nd St. | 4,133 | 1.03 |
| Kalispell Ave. | 8th St. to 7th St. | 4,128 | 1.03 |
| Baker Ave. | W. 15th St. to W. 18th St. | 11,250 | 1.02 |
| Geddes Ave. | W. 4th St. to W. 5th St. | 5,110 | 1.02 |
| Haugen Heights | Patio N. Ln. to State Park Rd. | 5,089 | 1.02 |
| 2nd St. | Spokane Ave. to Baker Ave. | 12,192 | 1.01 |
| Edgewood Pl. | Colorado Ave. East | 10,137 | 1.01 |
| E. 2nd St. | Pine Ave. to Mill Ave. | 9,978 | 1.00 |
| Fairway Dr. | Fairview Dr. to Tides Way | 4,017 | 1.00 |
| Barkley Ln. | Wisconsin Ave. to Harbor Ct. | 3,987 | 1.00 |



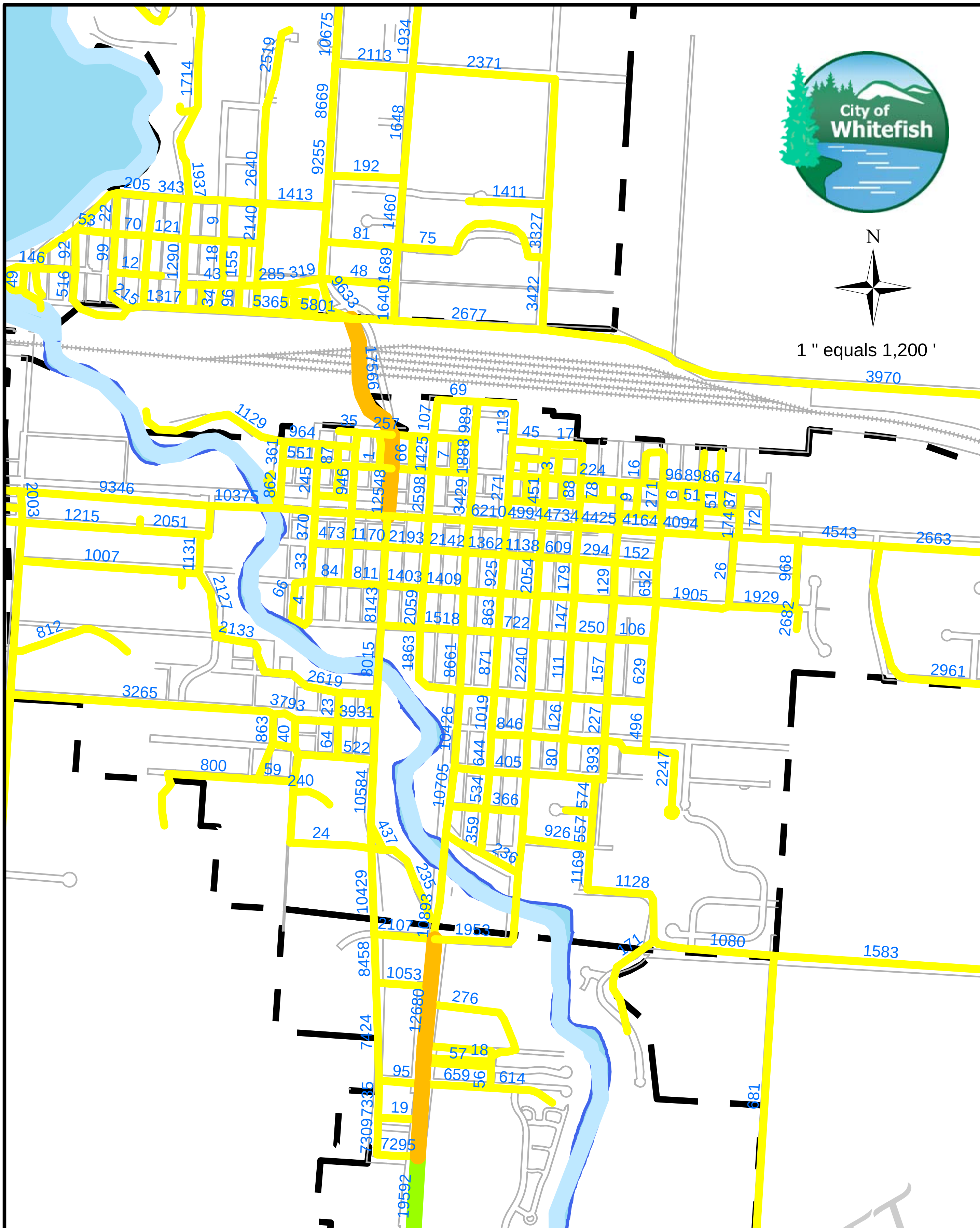

- 0 - 12000 (CONSISTENT WITH 2-LANE ROAD)
- 12001 - 18000 (CONSISTENT WITH 3-LANE ROAD)
- 18001 - 24000 (CONSISTENT WITH 4-LANE ROAD)
- 24001 - 36000 (CONSISTENT WITH 5-LANE ROAD)
- CITY LIMITS
- STUDY BOUNDARY
- URBAN BOUNDARY

ROBERT PECCIA & ASSOCIATES

*Whitefish Transportation Plan (2007)*



**Figure 3-17**
**2003 Traffic Volumes**

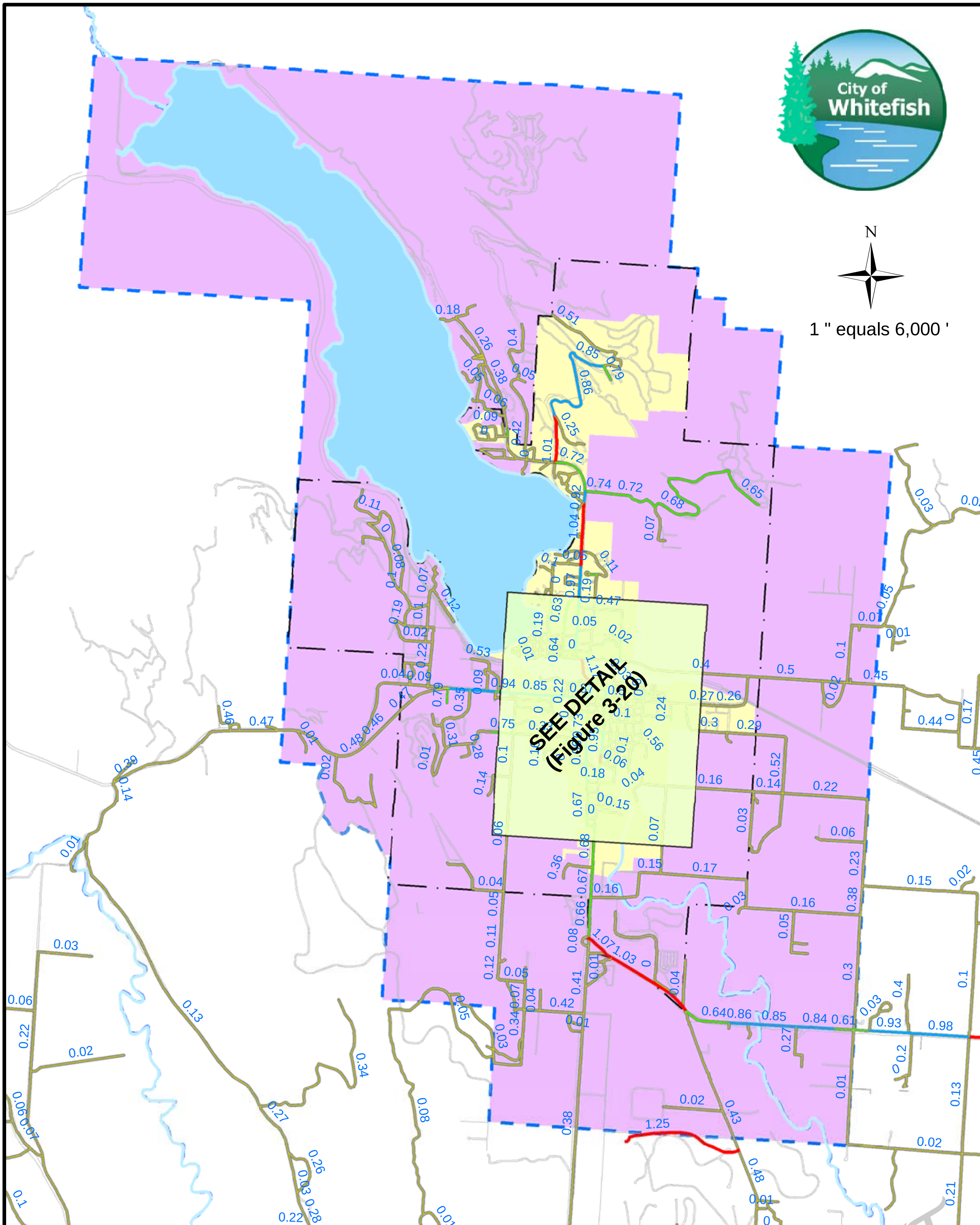



Legend:
- 0 - 12000
- 12000 - 18000
- 18000 - 24000
- 24000 - 36000
- 36000 - 48000
- CITY LIMITS

*Whitefish Transportation Plan (2007)*



**Figure 3-18**
**2003 Traffic Volumes**



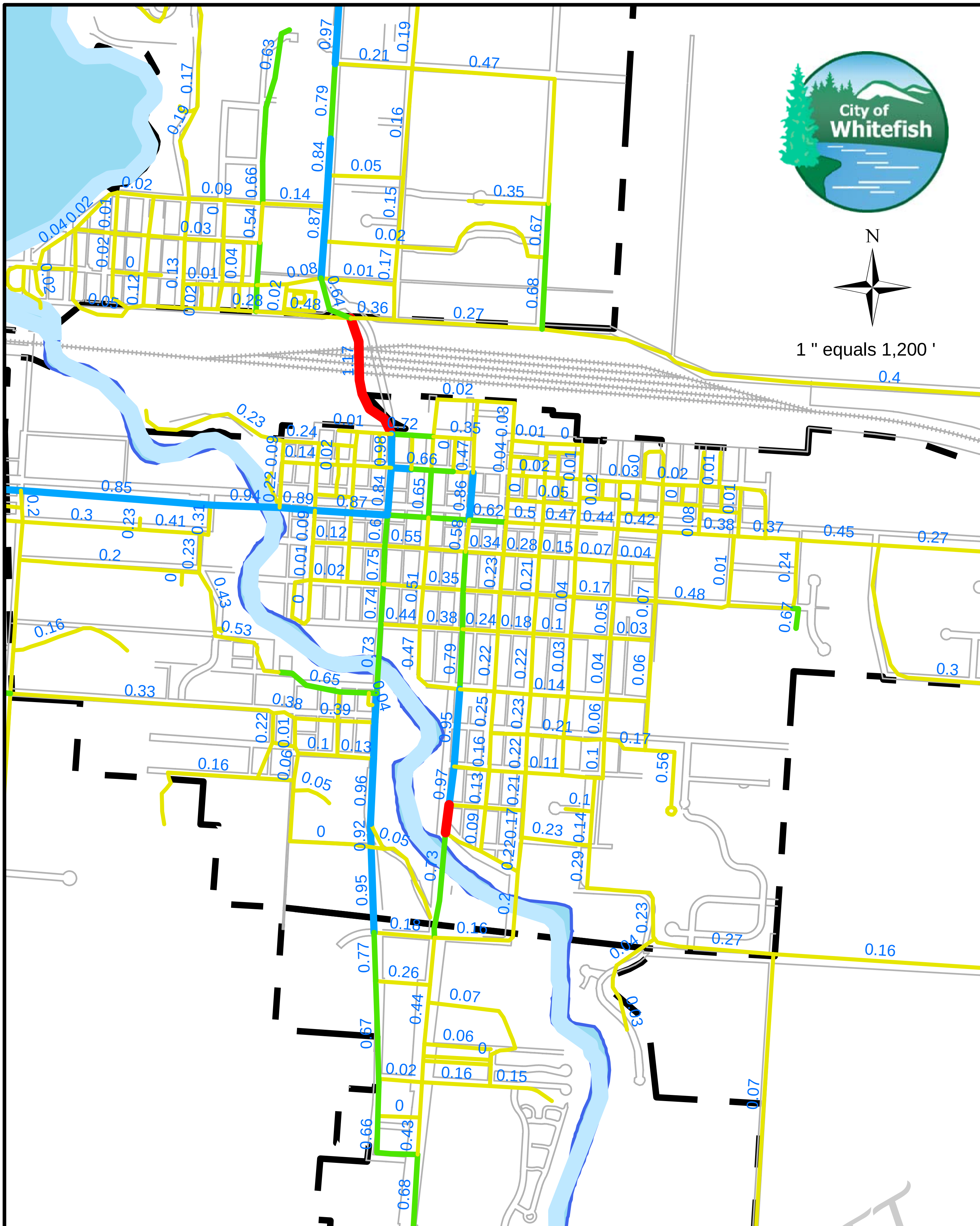

*Whitefish Transportation Plan (2007)*

- <0.59 Well Under Capacity (LOS A, B)
- >0.60 - 0.79 Under Capacity (LOS C)
- >0.80 - 0.99 At Or Nearing Capacity (LOS D, E)
- >1.00 Over Capacity (LOS F)
- CITY LIMITS
- STUDY BOUNDARY
- URBAN BOUNDARY

ROBERT PECCIA & ASSOCIATES



**Figure 3-19**
**2003 V/C Ratios**

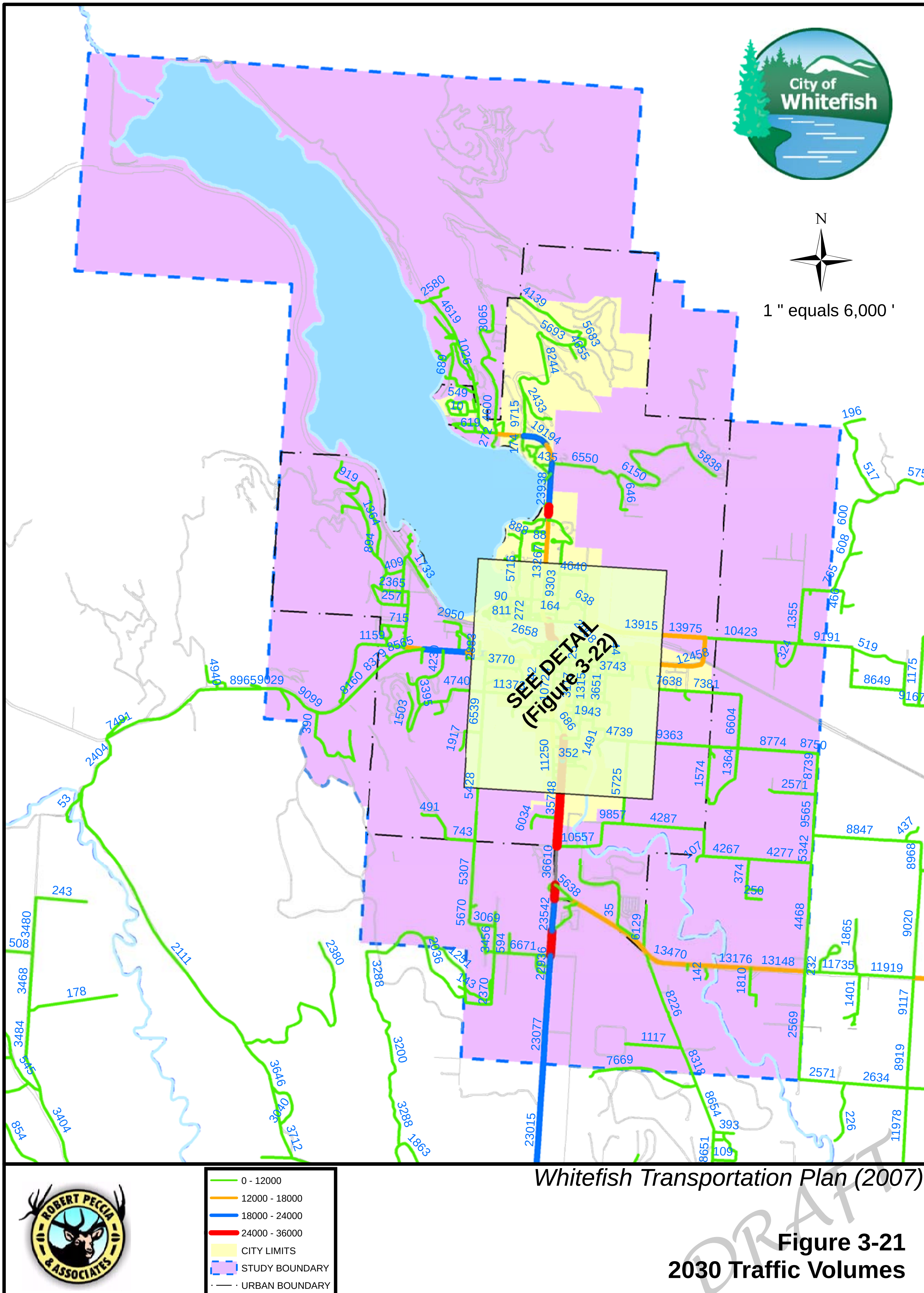



*Whitefish Transportation Plan (2007)*

- <0.59 Well Under Capacity (LOS A, B)
- >0.60 - 0.79 Under Capacity (LOS C)
- >0.80 - 0.99 At Or Nearing Capacity (LOS D, E)
- >1.00 Over Capacity (LOS F)
- CITY LIMITS



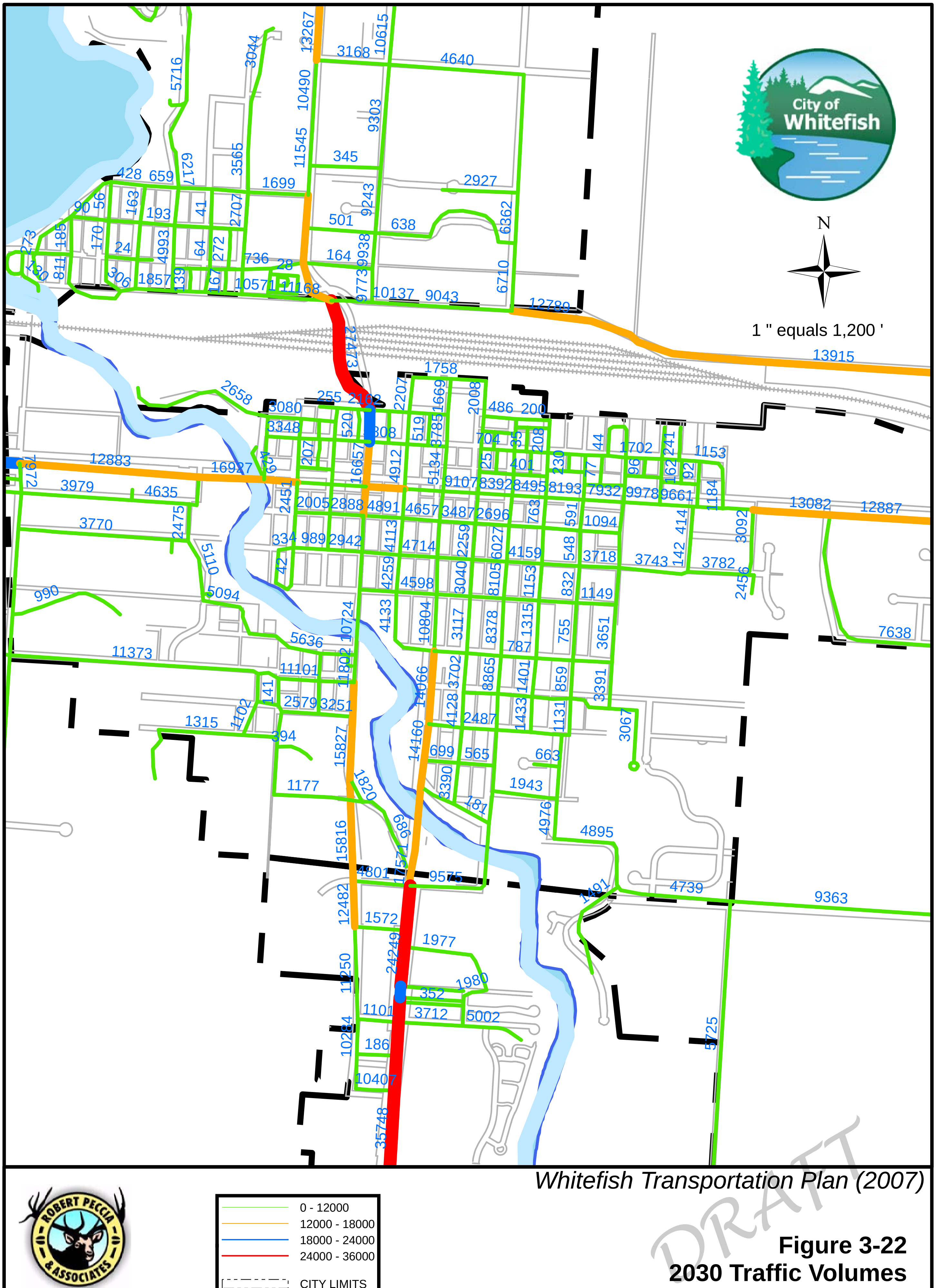
**Figure 3-20**
**2003 V/C Ratios**




*Whitefish Transportation Plan (2007)*



**Figure 3-21**
**2030 Traffic Volumes**

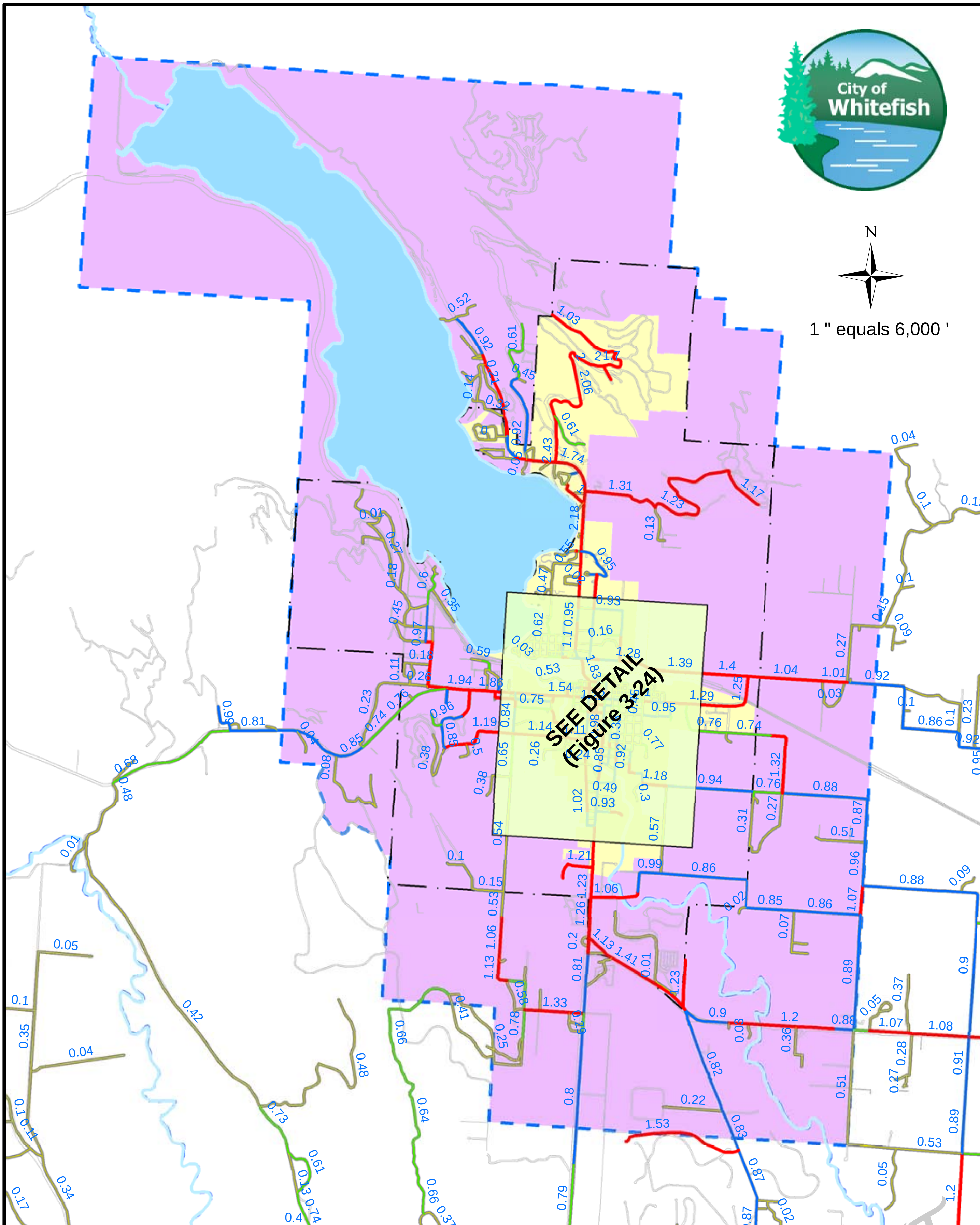



ROBERT PECCIA & ASSOCIATES

*Whitefish Transportation Plan (2007)*

DRAFT

**Figure 3-22**
**2030 Traffic Volumes**



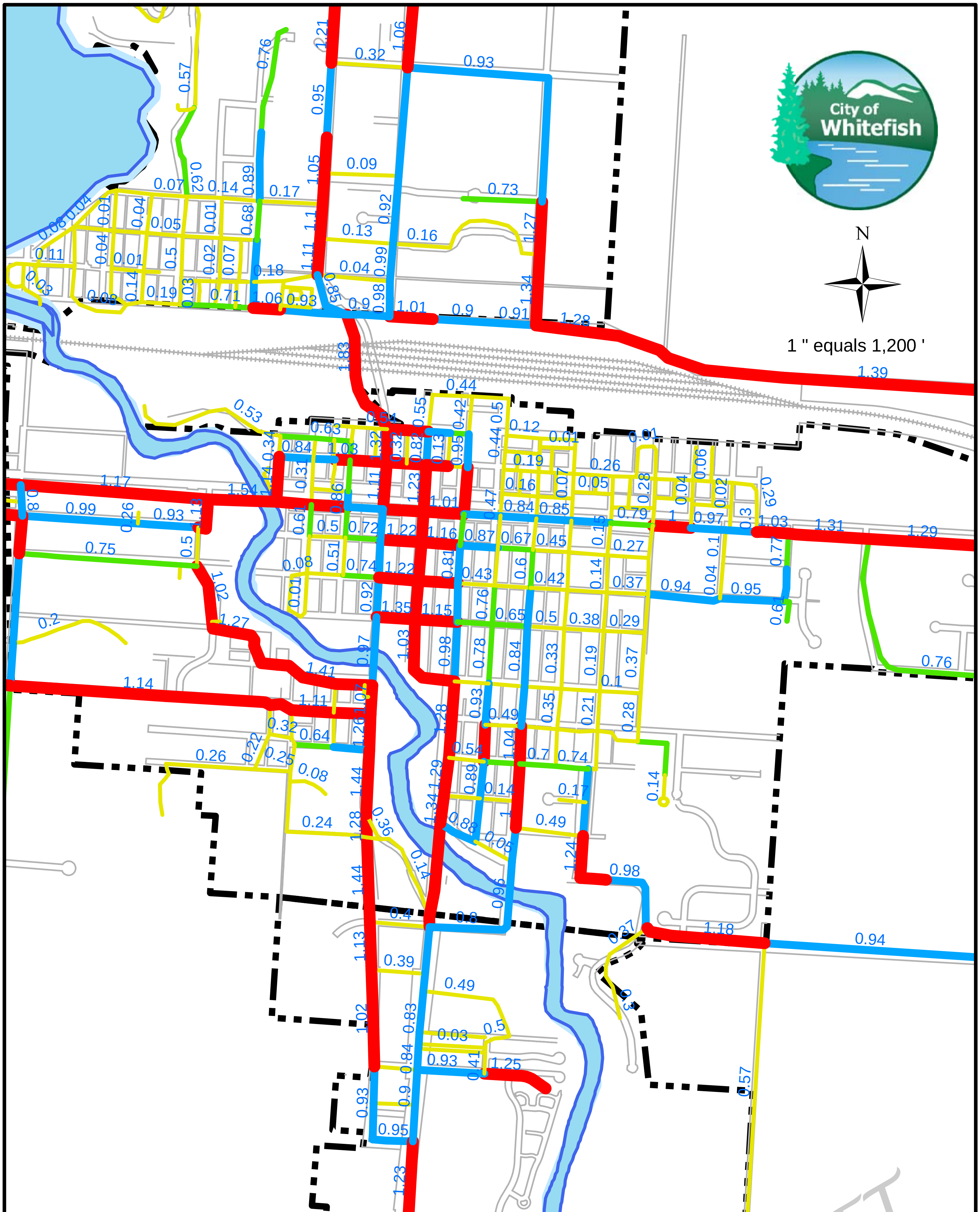

- <0.59 Well Under Capacity (LOS A, B)
- >0.60 - 0.79 Under Capacity (LOS C)
- >0.80 - 0.99 At Or Nearing Capacity (LOS D, E)
- >1.00 Over Capacity (LOS F)
- CITY LIMITS
- STUDY BOUNDARY
- URBAN BOUNDARY

ROBERT PECCIA & ASSOCIATES

*Whitefish Transportation Plan (2007)*

DRAFT

**Figure 3-23**
**2030 V/C Ratios**




*Whitefish Transportation Plan (2007)*

ROBERT PECCIA & ASSOCIATES

- <0.59 Well Under Capacity (LOS A, B)
- >0.60 - 0.79 Under Capacity (LOS C)
- >0.80 - 0.99 At Or Nearing Capacity (LOS D, E)
- >1.00 Over Capacity (LOS F)
- CITY LIMITS



**Figure 3-24**
**2030 V/C Ratios**

## 3.7 NETWORK ALTERNATIVES TEST RUN ANALYSIS

Using the traffic model provided by MDT, it is possible to produce traffic assignments that predict the effects of major modifications and additions to the street network. Alternatives such as the addition of new arterial links, street closures, or the extension of existing routes were identified and discussed. Major improvements can then be grouped together and superimposed on the existing network. The impacts of implementing the alternative actions can then be determined for each test run. These tests help determine possible benefits and drawbacks of a variety of potential changes to the major street network.

Seventeen (17) "alternative scenarios" have been test modeled. This section of the Plan contains the descriptions of the proposed modifications included in each model run, along with a brief description of the resulting traffic volume changes. All results reflect year 2030 projected traffic volumes from the *TransCAD* traffic model. **Table 3-10** gives a brief description and location for the alternative scenarios. **Figure 3-25** graphically shows the location of each alternative scenario.

**Again, it must be noted that since these models are based on forecasted land uses and existing travel patterns, the resulting traffic volumes are not expected to be completely accurate but only to assist in the evaluation of projected future conditions.**

# Table 3-10

## Whitefish Alternative Scenarios

| I.D. | Name | Description |
|---|---|---|
| AS-1 | Western Route Alternative A | Begins at an intersection with US 93 approximately 1.7 miles (2.73 kilometers) south of the US 93 intersection with MT 40. Alternative A travels in a northwesterly direction and follows an existing dirt road for the first 1.7 miles (2.73 kilometers). The alternative then proceeds north through natural drainage swales to connect back with US 93. |
| AS-2 | Western Route Alternative B | Begins at the intersection of MT 40 and US 93. The alternative would then proceed west to meet with Blanchard Lake where a bridge would be required to cross the lake. After the bridge, the alternative would head northwest to connect back with US 93. |
| AS-3 | Western Route Alternative C | Begins at the intersection of MT 40 and US 93. The alternative would then follow the same alignment as Alternative B for the first 1.5 miles (2.41 kilometers). At this point the alternative would then follow the eastern side of Blanchard Lake along existing power lines to a point where it would meet back up with US 93. |
| AS-4 | Western Route Alternative D | Begins at the intersection of MT 40 and US 93 and would follow the same alignment as Alternative B until it intersects with Karrow Avenue (approximately 1.4 miles). The alternative would then proceed north along Karrow Avenue to intersect with US 93. |
| AS-5 | Baker Avenue Extension | This alternative would extend Baker south from 19th Street to a connection with J.P. Road. The approximate length of this extension is 0.68 miles. |
| AS-6 | 13th Street Bridge | This alternative would consist of adding a bridge across the Whitefish River to connect 13th Street and Voerman Road. The extension would be approximately 0.23 miles long. |
| AS-7 | 7th Street Extension | This alternative starts at the eastern end of 7th street. The route would head east across Cow Creek then would head south to connect with Voerman Road at the intersection with Monegan Road. |
| AS-8 | Kalner Lane Extension | Under this scenario, Kalner Lane would be extended to the north to cross Voerman Road. The road would then continue to connect with Armory Road at the intersection with Peregrine Lane. A bridge would be needed to cross the Whitefish River just south of Monegan Road. |
| AS-9 | Texas/Columbia Railroad Crossing | This alternative consists of adding an elevated railroad crossing to connect Texas Avenue with Columbia Avenue. |
| AS-10 | Cow Creek Railroad Crossing | This alternative consists of extending Kalner Lane north to intersect with Armory Road. The alternative would then travel along the existing Armory road to the intersection with 2nd Street. An elevated railroad crossing would then be added at this location to connect with East Edgewood Drive. |
| AS-11 | Armory Road Extension | This scenario calls for an extension of Armory Road to be built starting at the intersection with Voerman Road and heading south along Reimer Road across Monegan Road to intersect with MT Highway 40. This alternative also consists of a northern connection from Armory Road to East 2nd Street to access the railroad crossing. |
| AS-12 | 7th Street Bridge | This alternative would consist of adding a bridge across the Whitefish River to connect 7th street at the intersections of Baker Avenue and Kalispell Avenue. |
| AS-13 | Wisconsin Avenue Improvements | Under this scenario, Wisconsin Avenue would be upgraded to a 3-lane urban design standard. This would create a center left-turn bay. |
| AS-14 (a) | NE Extension to Texas Avenue (a) | This alternative creates an extension from Wisconsin Avenue to Texas Avenue. |
| AS-14 (b) | NE Extension to Texas Avenue (b) | This alternative uses the same extension as **AS-14 (a)** but adds the railroad crossing as described in **AS-9**. |
| AS-15 (a) | NE Extension to Cow Creek (a) | This alternative would be an extension of Denver Avenue to the east and then south to intersect with East Edgewood Drive. |
| AS-15 (b) | NE Extension to Cow Creek (b) | This alternative has the same extension to Denver Avenue as **AS-15 (a)** but adds the railroad crossing as described in **AS-10**. |


# Whitefish Alternative Scenarios

Figure 3-25

### ❍ Alternative Scenario 1 (Western Route Alternative A)

**AS-1** consists of a western route that begins at an intersection with Highway 93 approximately 1.7 miles south of the intersection of Highway 93 and MT Highway 40. The route would travel in a northwesterly direction along an existing dirt road and through natural drainage swales to connect back with Highway 93. Adding this route serves traffic on Highway 93 that does not need to pass through Whitefish for its intended destination. This route creates a notable drop in traffic along Highway 93 in the Whitefish area and also decreases traffic volumes around Karrow Ave.

## Table 3-11

**Alternative Scenario 1 (Western Route Alternative A)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| HWY 93 (north of AS-1) | 23,100 | 20,200 | -2,900 | -12.6% |
| Blanchard Lake Rd (west of HWY 93) | 5,900 | 4,600 | -1,300 | -22.0% |
| 13th Street West (west of HWY 93) | 4,800 | 4,000 | -800 | -16.7% |
| Spokane Ave just (south of 2nd St) | 8,100 | 7,400 | -700 | -8.6% |
| Baker Ave (south of 2nd St) | 12,300 | 11,900 | -400 | -3.3% |
| 2nd St (west of Baker Ave) | 10,500 | 9,700 | -800 | -7.6% |
| Karrow Ave (south of HWY 93) | 8,000 | 2,700 | -5,300 | -66.3% |
| HWY 93 (west of Karrow Ave) | 18,300 | 13,900 | -4,400 | -24.0% |
| HWY 93 (east of AS-1) | 9,000 | 10,300 | 1,300 | 14.4% |
| AS-1 (south of HWY 93) | - | 10,900 | - | - |
| AS-1 (west of HWY 93) | - | 8,900 | - | - |

This western route alternative was **not carried further** in this Transportation Plan in the form of a recommendation due to the significant environmental impacts associated with its construction, coupled with the lack of providing any significant benefits to the traffic volumes in the downtown core. Costs associated with this alternative were excessively high as well, due to expected right-of-way costs. Also, significant public resistance was expressed relative to this route and by affected residents in the Whitefish Hills development.

### ❍ Alternative Scenario 2 (Western Route Alternative B)

**AS-2** consists of a western route that begins at the intersection of MT Highway 40 and Highway 93. The route would then proceed to the northwest to meet with Blanchard Lake where a bridge would be needed to cross the lake. After the bridge, the alternative would head northwest to connect back with Highway 93. Adding this route serves traffic on Highway 93 that does not need to pass through Whitefish for its intended destination. This route causes a notable decrease in traffic volume north of the intersection with MT Highway 40 on Highway 93. There is also a significant traffic volume reduction on Karrow Avenue.

**Table 3-12**

**Alternative Scenario 2 (Western Route Alternative B)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| HWY 93 (north of AS-2) | 29,300 | 25,700 | -3,600 | -12.3% |
| 13th Street West (west of HWY 93) | 4,800 | 3,900 | -900 | -18.8% |
| Spokane Ave just (south of 2nd St) | 8,100 | 7,600 | -500 | -6.2% |
| Baker Ave (south of 2nd St) | 12,300 | 12,000 | -300 | -2.4% |
| 2nd St (west of Baker Ave) | 10,500 | 9,500 | -1,000 | -9.5% |
| Karrow Ave (north of AS-2) | 5,400 | 4,600 | -800 | -14.8% |
| Karrow Ave (south of HWY 93) | 8,000 | 2,700 | -5,300 | -66.3% |
| HWY 93 (west of Karrow Ave) | 18,300 | 13,900 | -4,400 | -24.0% |
| HWY 93 (east of AS-2) | 9,100 | 5,500 | -3,600 | -39.6% |
| AS-2 (south of HWY 93) | - | 6,800 | - | - |
| AS-2 (west of HWY 93) | - | 14,900 | - | - |

This western route alternative was **not carried further** in this Transportation Plan in the form of a recommendation due to the significant environmental impacts associated with its construction, coupled with the lack of providing any significant benefits to the traffic volumes in the downtown core. Significant public resistance was expressed relative to this route and by affected residents in the Whitefish Hills development. Costs associated with this alternative were excessively high as well, due to a crossing of Blanchard Lake and expected right-of-way costs. The route did not relieve traffic volume issues in the downtown core.

- ### Alternative Scenario 3 (Western Route Alternative C)

**AS-3** is similar to **AS-2** and consists of a route that begins at the intersection of Highway 93 and MT Highway 40. The route then travels northwest along an existing power line easement on the eastern side of Blanchard Lake. The route ends at an intersection with Highway 93. This scenario has similar affects on traffic volumes as **AS-2**. Just like **AS-1** and **AS-2**, this route serves traffic on Highway 93 that does not need to pass through Whitefish, however it does not provide any significant relief to the downtown core in the future. This western route alternative was **not carried further** in this Transportation Plan in the form of a recommendation due to the significant environmental impacts associated with its construction.

## Table 3-13

**Alternative Scenario 3 (Western Route Alternative C)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| HWY 93 (north of AS-3) | 29,300 | 25,600 | -3,700 | -12.6% |
| 13th Street West (west of HWY 93) | 4,800 | 3,900 | -900 | -18.8% |
| Spokane Ave just (south of 2nd St) | 8,100 | 7,200 | -900 | -11.1% |
| Baker Ave (south of 2nd St) | 12,300 | 12,300 | 0 | 0.0% |
| 2nd St (west of Baker Ave) | 10,500 | 9,500 | -1,000 | -9.5% |
| Karrow Ave (north of AS-3) | 5,400 | 3,900 | -1,500 | -27.8% |
| Karrow Ave (south of HWY 93) | 8,000 | 2,500 | -5,500 | -68.8% |
| HWY 93 (west of Karrow Ave) | 18,300 | 13,800 | -4,500 | -24.6% |
| HWY 93 (east of AS-3) | 8,200 | 9,000 | 800 | 9.8% |
| AS-3 (south of HWY 93) | - | 12,600 | - | - |
| AS-3 (west of HWY 93) | - | 15,000 | - | - |

### ❍ Alternative Scenario 4 (Western Route Alternative D)

**AS-4** starts in the same place and follows the same alignment as **AS-2** and **AS-3** until it intersects with Karrow Avenue, where it travels north to intersect with Highway 93. This alternative scenario provides additional south & west connectivity around Whitefish. This connection does lower some traffic volume levels around the downtown area, and most notably traffic volumes on Highway 93 north of the intersection with MT Highway 40. This scenario would cause a significant traffic volume increase on Karrow Avenue however

Although this western route alternative had the most benefits in terms of affecting downtown traffic volume relief out of the four considered alternatives, there are significant hurdles pertinent to its implementation. This includes traffic volume increases to Karrow Avenue, environmental impacts and funding limitations.

Karrow Avenue will be in need of improvements out to the planning horizon (year 2030) based on potential land use changes and resulting growth, however it is not recommended to reconstruct Karrow Avenue in the form of a "Bypass". Significant public resistance was expressed relative to this route and by affected residents along Karrow Avenue.

This western route alternative was **not carried further** in this Transportation Plan in the form of a recommendation.

## Table 3-14
**Alternative Scenario 4 (Western Route Alternative D)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| HWY 93 (north of AS-4) | 29,300 | 24,800 | -4,500 | -15.4% |
| 13th Street West (west of HWY 93) | 4,800 | 4,200 | -600 | -12.5% |
| Spokane Ave just (south of 2nd St) | 8,100 | 7,400 | -700 | -8.6% |
| Baker Ave (south of 2nd St) | 12,300 | 12,300 | 0 | 0.0% |
| 2nd St (west of Baker Ave) | 10,500 | 9,600 | -900 | -8.6% |
| Karrow Ave (north of Blanchard Lake Dr) | 5,400 | 13,900 | 8,500 | 157.4% |
| Karrow Ave (south of HWY 93) | 8,000 | 8,600 | 600 | 7.5% |
| HWY 93 (east of Karrow Ave) | 12,900 | 11,500 | -1,400 | -10.9% |
| AS-4 (west of HWY 93) | - | 12,800 | - | - |

- ### Alternative Scenario 5 (Baker Avenue Extension)

**AS-5** consists of a southern extension to Baker Avenue. The extension would start at 19th Street and would head south to connect with J.P. Road; approximately 0.68 miles long. This scenario creates another north south alternative to Highway 93. The model for this scenario shows a significant reduction in traffic volumes on Highway 93 and 19th Avenue with only a modest addition to traffic volumes on Baker Avenue north of 19th Street. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-3** in **chapter 8**).

## Table 3-15
**Alternative Scenario 5 (Baker Avenue Extension)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| HWY 93 (north of J P Road) | 10,600 | 9,200 | -1,400 | -13.2% |
| HWY 93 (south of 19th St) | 35,700 | 26,300 | -9,400 | -26.3% |
| 19th St (between Baker Ave and HWY 93) | 10,400 | 2,700 | -7,700 | -74.0% |
| Baker Ave (north of 19th St) | 10,200 | 10,500 | 300 | 2.9% |
| AS-5 (south of 19th St) | - | 8,200 | - | - |
| AS-5 (west of HWY 93) | - | 7,700 | - | - |

- ### Alternative Scenario 6 (13th Street Bridge)

**AS-6** calls for the addition of a bridge across the Whitefish River that would connect 13th Street and Voerman Road. This would allow for better east-west connectivity, especially in the southern portion of the city. 13th Street would see an increase in traffic volumes, while 10th Street traffic volumes would be reduced due to the increase in alternate east-west

connection roads. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-10** in **chapter 8**).
.

## Table 3-16

**Alternative Scenario 6 (13th Street Bridge)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| 13th Street (east of HWY 93) | 9,600 | 11,200 | 1,600 | 16.7% |
| Shady River Ln (south of Voerman Rd) | 1,500 | 1,600 | 100 | 6.7% |
| Voerman Rd (north of AS-6) | 4,900 | 3,500 | -1,400 | -28.6% |
| Voerman Rd (east of AS-6) | 4,700 | 5,300 | 600 | 12.8% |
| Columbia Ave (north of 13th St) | 9,600 | 9,600 | 0 | 0.0% |
| 10th St (between Columbia Ave and Park Ave) | 5,000 | 3,400 | -1,600 | -32.0% |
| AS-6 (between 13th St and Voerman Rd) | - | 3,100 | - | - |

- **Alternative Scenario 7 (7th Street Extension)**

**AS-7** begins at the eastern end of 7th Street. The route would extend 7th Street to the east across Cow Creek, then to the south to connect with Voerman Road at the intersection with Monegan Road. This scenario adds connection to the south eastern side of Whitefish. The result of this scenario would cause a decrease in traffic volumes on 8th Street, Voerman Road, and 7th Street, but would increase traffic volumes on Pine Avenue and Monegan Road. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-5** in **chapter 8**).

## Table 3-17

**Alternative Scenario 7 (7th Street Extension)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| 8th St (between Somers Ave and Park Ave) | 3,000 | 1,900 | -1,100 | -36.6% |
| Pine Ave (north of 7th St) | 3,400 | 4,900 | 1,500 | 44.1% |
| Voerman Rd (west of Monegan Rd) | 4,700 | 3,800 | -900 | -19.1% |
| Voerman Rd (east of Monegan Rd) | 9,400 | 8,300 | -1,100 | -11.7% |
| Monegan Rd (south of Voerman Rd) | 5,700 | 6,700 | 1,000 | 17.5% |
| 7th St (west of Pine Ave) | 3,600 | 2,700 | -900 | -25.0% |
| AS-7 (east of 7th St and north of Voerman Rd) | - | 4,700 | - | - |

### ❍ Alternative Scenario 8 (Kalner Lane Extension)

**AS-8** creates an extension to Kalner Lane that heads north to cross Voerman Road. The extension would keep heading north until it connects with Armory Road at the intersection with Peregrine Lane. This scenario would call for a bridge to be built in order to cross the Whitefish River. This route would serve to connect the southern and eastern portions of Whitefish. The results of this scenario would be a decrease in traffic volumes on Highway 93 north of MT Highway 40, as well as a decrease in traffic volumes on Voerman Road. The scenario would also increase traffic on Armory Road and Monegan Road to the west of the extension. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-6** in **chapter 8**).

**Table 3-18**

**Alternative Scenario 8 (Kalner Lane Extension)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| MT HWY 40 (west of Kalner Ln) | 15,500 | 13,900 | -1,600 | -10.3% |
| HWY 93 (north of MT HWY 40) | 29,300 | 24,400 | -4,900 | -16.7% |
| Kalner Ln (north of MT HWY 40) | 6,100 | 6,300 | 200 | 3.3% |
| Monegan Rd (west of AS-8) | 4,300 | 5,900 | 1,600 | 37.2% |
| Monegan Rd (east of AS-8) | 4,300 | 3,000 | -1,300 | -30.2% |
| Voerman Rd (west of AS-8) | 9,400 | 8,300 | -1,100 | -11.7% |
| Voerman Rd (east of AS-8) | 9,400 | 5,800 | -3,600 | -38.3% |
| Armory Rd (west of AS-8) | 7,600 | 12,700 | 5,100 | 67.1% |
| AS-8 (south of Armory Rd) | - | 10,200 | - | - |
| AS-8 (north of MT HWY 40) | - | 6,400 | - | - |

### ❍ Alternative Scenario 9 (Texas/Columbia Railroad Crossing)

**AS-9** calls for an elevated railroad crossing to be added to connect Texas Avenue with Columbia Avenue. This would create a link between parts of Whitefish to the south of the railroad tracks and the parts to the north. Currently the only links across the railroad tracks are the viaduct on 2nd Street, and the East 2nd Street ground-level railroad crossing. This scenario creates a substantial decrease in traffic volumes along the 2nd Street viaduct and East 2nd Street railroad crossing, as well as reducing traffic volumes along Edgewood Place east of Texas Avenue. Increases in traffic would most notably occur on Columbia Avenue north of 2nd Street and Edgewood Place, west of Texas Avenue.

This connection was **not carried further in** this Transportation Plan, however, due to its significant financial implications and impacts to the surrounding neighborhoods. This potential crossing would occur over many rail lines and would not serve any future development in the community that is likely to happen to the northeast or southeast of its current limits.

## Table 3-19
**Alternative Scenario 9 (Texas/Columbia Railroad Crossing)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| 2nd St R/R crossing | 27,500 | 20,900 | -6,600 | -24.0% |
| 2nd St (west of Columbia Ave) | 8,400 | 7,700 | -700 | -8.3% |
| East 2nd St R/R crossing | 12,500 | 6,300 | -6,200 | -49.6% |
| Columbia Ave (north of 2nd St) | 1,900 | 5,500 | 3,600 | 189.5% |
| Edgewood Pl (west of Texas Ave) | 9,100 | 12,100 | 3,000 | 33.0% |
| Edgewood Pl (east of Texas Ave) | 12,800 | 7,200 | -5,600 | -43.8% |
| Texas Ave (north of Edgewood Pl) | 6,700 | 7,100 | 400 | 6.0% |
| AS-9 (south of Edgewood Pl) | - | 13,700 | - | - |

### ❍ Alternative Scenario 10 (Cow Creek Railroad Crossing)

**AS-10** is an extension of Kalner Lane to the north to intersect with Armory Road. The route then continues along the existing Armory Road to intersect with 2nd Street. The scenario then calls for an elevated railroad crossing to connect with East Edgewood Drive. The model for this alternative scenario shows substantial decreases in traffic volumes along E Edgewood Drive east of **AS-10**, East 2nd Street to the east of Armory Road, Armory Road to the East of **AS-10**, and a somewhat more modest decrease along Highway 93 just north of MT Highway 40. Traffic volume increases are shown on Monegan Road to the west of **AS-10**, E Edgewood Drive west of **AS-10**, and a significant increase on Armory Road along **AS-10**. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-6** in **chapter 8**).

## Table 3-20
**Alternative Scenario 10 (Cow Creek Railroad Crossing)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| HWY 93 (north of MT HWY 40) | 29,300 | 25,100 | -4,200 | -14.3% |
| MT HWY 40 (west of Kalner Ln) | 15,500 | 14,000 | -1,500 | -9.7% |
| Kalner Ln (north of MT HWY 40) | 6,100 | 6,500 | 400 | 6.6% |
| Monegan Rd (west of AS-10) | 4,300 | 5,800 | 1,500 | 34.9% |
| Monegan Rd (east of AS-10) | 4,300 | 3,300 | -1,000 | -22.3% |
| Armory Rd (east of AS-10) | 7,600 | 5,000 | -2,600 | -34.2% |
| Armory Rd (along of AS-10) | 7,600 | 15,900 | 8,300 | 109.2% |
| E 2nd St (west of Armory Rd) | 13,100 | 11,500 | -1,600 | -12.2% |
| E 2nd St (east of Armory Rd) | 12,900 | 6,200 | -6,700 | -51.9% |
| E Edgewood Dr (west of AS-10) | 13,900 | 16,100 | 2,200 | 15.8% |

| | | | | |
|---|---|---|---|---|
| E Edgewood Dr (east of AS-10) | 13,900 | 4,200 | -9,700 | -69.8% |
| AS-10 (Cow Creek R/R Crossing) | - | 12,500 | - | - |
| AS-10 (south of Armory Rd) | - | 13,100 | - | - |
| AS-10 (north of MT HWY 40) | - | 6,900 | - | - |

- **Alternative Scenario 11 (Armory Road Extension)**

**AS-11** consists of extending Armory Road to the south along Reimer Lane to connect with MT Highway 40, and the addition of an extension heading north to connect Armory Road to East 2nd Street at the railroad crossing. This scenario provides additional eastern and southeastern connectivity. The results show a decrease in traffic volumes along Highway 93 north of MT Highway 40, Dillon Road, Voerman Road, E Edgewood Drive, and Armory Road west of **AS-11**. Significant traffic volume increases occur along Armory Road east of **AS-11** and along Reimer Lane, which is part of **AS-11**.

This connection was **not carried further** in this Transportation Plan, however, due to its difficulty in implementation and the benefits likely to be realized with **AS-10** and the associated recommended project (**MSN-6** in **chapter 8**).

**Table 3-21**

**Alternative Scenario 11 (Armory Road Extension)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| HWY 93 (north of MT HWY 40) | 29,300 | 24,700 | -4,600 | -15.7% |
| MT Hwy 40 (west of AS-11) | 13,200 | 14,000 | 800 | 6.1% |
| Dillon Rd (north of MT HWY 40) | 4,500 | 2,600 | -1,900 | -42.2% |
| Voerman Rd (west of Armory Rd) | 7,600 | 7,200 | -400 | -5.3% |
| Voerman Rd (east of Armory Rd) | 8,800 | 6,100 | -2,700 | -30.7% |
| E Edgewood Dr (east of AS-11) | 10,400 | 8,600 | -1,800 | -17.3% |
| Armory Rd (west of AS-11) | 7,400 | 4,600 | -2,800 | -37.8% |
| Armory Rd (east of AS-11) | 7,400 | 13,500 | 6,100 | 82.4% |
| Reimer Ln (south of Armory Rd) | 1,400 | 7,100 | 5,700 | 407.1% |
| AS-11 (south of Reimer Ln) | - | 8,100 | - | - |
| AS-11 (north of MT HWY 40) | - | 7,400 | - | - |

### ❍ Alternative Scenario 12 (7th Street Bridge)

**AS-12** requires the addition of a bridge across the Whitefish River to connect 7th Street at the intersections of Baker Avenue and Kalispell Avenue. This scenario creates added connectivity between the east and west sides of Whitefish across the Whitefish River. Overall traffic volume changes are minimal throughout the network under this scenario. However, it is felt that this scenario would help to create better flow throughout the system. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-4** in **chapter 8**).

**Table 3-22**

**Alternative Scenario 12 (7th Street Bridge)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| 13th St W (west of HWY 93) | 4,800 | 3,100 | -1,700 | -35.4% |
| HWY 93 (south of AS-12) | 14,100 | 15,100 | 1,000 | 7.1% |
| HWY 93 (north of AS-12) | 14,100 | 11,900 | -2,200 | -15.6% |
| 2nd St (west of Spokane Ave) | 11,100 | 9,300 | -1,800 | -16.2% |
| Baker Ave (north of 7th St) | 11,800 | 13,000 | 1,200 | 10.2% |
| Karrow Ave (south of 7th St) | 6,500 | 5,600 | -900 | -13.8% |
| Karrow Ave (north of 7th St) | 8,600 | 8,500 | -100 | -1.2% |
| W 7th St (east of Karrow Ave) | 11,400 | 10,800 | -600 | -5.3% |
| W 7th St (west of Baker Ave) | 10,400 | 11,400 | 1,000 | 9.6% |
| AS-12 (between Baker Ave and Spokane Ave) | - | 10,700 | - | - |

### ❍ Alternative Scenario 13 (Wisconsin Avenue Improvements)

**AS-13** calls for Wisconsin Avenue to be upgraded to a 3-lane urban design standard. This would create a center left-turn bay. This allows Wisconsin Avenue to have a higher vehicle capacity and better flow characteristics. The model of this scenario shows modest decreases in traffic volumes in the area, with moderate increases along Wisconsin Avenue. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-9** in **chapter 8**).

**Table 3-23**
**Alternative Scenario 13 (Wisconsin Avenue Improvements)**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| Edgewood Pl (west of Wisconsin Ave) | 11,200 | 9,200 | -2,000 | -17.9% |
| Edgewood Pl (east of Wisconsin Ave) | 10,800 | 9,400 | -1,400 | -13.0% |
| Parkway Ave (west of Wisconsin Ave) | 3,000 | 1,300 | -1,700 | -56.7% |
| Colorado Ave (east of Wisconsin Ave) | 9,100 | 6,600 | -2,500 | -27.5% |
| Reservoir Rd (east of Lakeshore Dr) | 6,800 | 5,800 | -1,000 | -14.7% |
| Wisconsin Ave (north of Edgewood Pl) | 12,800 | 16,000 | 3,200 | 25.0% |
| Wisconsin Ave (south of Colorado Ave) | 15,000 | 18,100 | 3,100 | 20.7% |
| E Lakeshore Dr (east of Murdock Ln) | 19,200 | 18,300 | -900 | -4.7% |

- ### Alternative Scenario 14 (a) (NE Extension to Texas Avenue (a))

**AS-14 (a)** creates a connection between Texas Avenue and Wisconsin Avenue. This scenario allows for better connectivity for the northern part of Whitefish. This scenario creates substantial traffic volume drops along Denver Street, and more moderate drops along Wisconsin Avenue and Colorado Avenue. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-8** in **chapter 8**).

**Table 3-24**
**Alternative Scenario 14 (a) (NE Extension to Texas Ave (a))**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| Edgewood Pl (east of Wisconsin Ave) | 10,800 | 9,800 | -1,000 | -9.3% |
| Wisconsin Ave (south of AS-14 (a)) | 13,000 | 10,600 | -2,400 | -18.5% |
| Denver St (east of Wisconsin Ave) | 3,200 | 100 | -3,100 | -96.9% |
| Denver St (west of Texas Ave) | 4,600 | 200 | -4,400 | -95.7% |
| Colorado Ave (north of Denver St) | 10,600 | 9,100 | -1,500 | -14.2% |
| AS-14 (a) (east of Wisconsin Ave) | - | 4,300 | - | - |
| AS-14 (a) (west of Texas Ave) | - | 4,500 | - | - |

- ### Alternative Scenario 14 (b) (NE Extension to Texas Avenue (b))

**AS-14 (b)** consists of the Texas/Columbia Railroad Crossing in **AS-9** and adds it to the scenario described in **AS-14 (a)**. These combined scenarios provide improved connectivity for northern Whitefish. The results indicate drops in traffic volumes along the 2nd Street viaduct, along Edgewood Place east of Wisconsin Avenue and east of Texas Avenue, along the East 2nd Street railroad crossing, and along Denver Street west of Texas Avenue. Traffic volume increases occur along Edgewood Place west of Texas Avenue and along Columbia Avenue north of East 2nd Street. This connection was **not carried further** in this Transportation Plan.

**Table 3-25**

**Alternative Scenario 14 (b) (NE Extension to Texas Avenue (b))**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| 2nd St R/R Crossing | 27,500 | 20,900 | -6,600 | -24.0% |
| Edgewood Pl (east of Wisconsin Ave) | 10,800 | 7,000 | -3,800 | -35.2% |
| Edgewood Pl (west of Texas Ave) | 9,100 | 11,900 | 2,800 | 30.8% |
| Edgewood Pl (east of Texas Ave) | 12,800 | 7,100 | -5,700 | -44.5% |
| Columbia Ave (north of 2nd St E) | 1,900 | 5,500 | 3,600 | 189.5% |
| East 2nd St R/R crossing | 12,500 | 6,300 | -6,200 | -49.6% |
| Denver St (west of Texas Ave) | 4,600 | 200 | -4,400 | -95.7% |
| Texas Ave (north of Edgewood Pl) | 6,700 | 7,400 | 700 | 10.4% |
| AS-12 (b) (east of Wisconsin Ave) | - | 4,600 | - | - |
| AS-12 (b) (west of Texas Ave) | - | 4,700 | - | - |

- **Alternative Scenario 15 (a) (NE Extension to Cow Creek (a))**

**AS-15 (a)** consists of an extension to Denver Avenue to the east and then south to intersect with East Edgewood Drive. This extension provides added connectivity for northeastern Whitefish. The model shows significant traffic volume decreases along Texas Avenue south of Denver Street and along E Edgewood Drive west of **AS-15**. Traffic volume increases would result along Denver Street. This connection was **deemed desirable and was carried forward** in the Transportation Plan (**MSN-7** in **chapter 8**).

**Table 3-26**

**Alternative Scenario 15 (a) (NE Extension to Cow Creek (a))**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| Denver St (east of Wisconsin Ave) | 3,200 | 3,600 | 400 | 12.5% |
| Denver St (west of Texas Ave) | 4,600 | 6,400 | 1,800 | 39.1% |
| Colorado Ave (south of Denver St) | 9,300 | 7,500 | -1,800 | -19.4% |
| Texas Ave (south of Denver St) | 4,600 | 200 | -4,400 | -95.6% |
| E Edgewood Dr (west of AS-15) | 13,900 | 6,900 | -7,000 | -50.4% |
| E Edgewood Dr (east of AS-15) | 13,900 | 13,100 | -800 | -5.8% |
| AS-15 (a) (extension between Denver St and E Edgewood Dr) | - | 6,200 | - | - |

- **Alternative Scenario 15 (b) (NE Extension to Cow Creek (b))**

**AS-15 (b)** consists of the extension to Denver Avenue described in **AS-15 (a)** and includes the Cow Creek Railroad Crossing found in **AS-10**. This scenario provides connectivity between northern and eastern Whitefish. The model indicates that there would be substantial drops in traffic volume on E Edgewood Drive and along the East 2nd Street railroad crossing. The 2nd Street viaduct would see a modest drop while Denver Street would see an increase in traffic volumes. This connection was **not carried further** in this Transportation Plan.

**Table 3-27**
**Alternative Scenario 15 (b) (NE Extension to Cow Creek (b))**

| Location | Year 2030 Volume with No Action | Year 2030 Volume with Alternative | Change in Volume | Percent Change |
|---|---|---|---|---|
| 2nd Street R/R Crossing | 27,500 | 24,800 | -2,700 | -9.8% |
| East 2nd Street R/R Crossing | 12,500 | 5,100 | -7,400 | -59.2% |
| Armory Road (South of E 2nd St) | 7,600 | 7,700 | 100 | 1.3% |
| E Edgewood Dr (east of AS-15) | 13,900 | 5,100 | -8,800 | -63.3% |
| E Edgewood Dr (west of AS-15) | 13,900 | 9,300 | -4,600 | -33.1% |
| Denver Street (east of Wisconsin Ave) | 3,200 | 4,200 | 1,000 | 31.3% |
| AS-15 (b) (east of Texas Ave) | - | 6,400 | - | - |
| AS-15 (b) (Cow Creek R/R Crossing) | - | 11,000 | - | - |

## 3.8 TRAFFIC MODEL DEVELOPMENT CONCLUSIONS

The alternative scenarios modeled, and described above, are reflective of major street network (MSN) projects that may or may not have considerable value to the transportation conditions in the community. Most of the alternative scenarios modeled will be carried forward later in the Plan in the form of specific recommendations. These are primarily found in **Chapter 8**. A few of the scenarios do not appear to have substantial value, so will not be considered further. Ultimately, the recommended projects defined in **Chapter 8** will transform into what is known as the community's "Recommended Major Street Network". This network is shown graphically in **Chapter 8**, along with travel demand model volume outputs. The "Recommended Major Street Network" is the future transportation system network that the community should be planning towards as land use changes occur over the planning horizon (year 2030).



CHAPTER 4:

# Projected Traffic Conditions (2030)

# CHAPTER 4: PROJECTED TRAFFIC CONDITIONS (2030)

This chapter of the Transportation Plan examines projected traffic conditions in the year 2030. The year 2030 is the extent of the planning horizon for this Transportation Plan. By using socio-economic and land use projections described earlier in **Chapter 3**, traffic conditions and traffic volumes can be predicted out to the planning horizon. Through this endeavor, potential future problems to the transportation system can be identified and corresponding solutions can be planned.

## 4.1 PROJECTED CORRIDOR FACILITY SIZE VERSUS TRAFFIC VOLUME (2030)

Roadway capacity is of critical importance when looking at the growth of a community. As traffic volume increases, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, the road begins to fail. For this reason it is important to look at the size and configuration of the current roadways and determine if these roads need to be expanded or reconfigured to accommodate the existing or future traffic needs. The capacity of a road is a function of a number of factors including intersection function, land use adjacent to the road, access and intersection spacing, road alignment and grade, speed, turning movements, vehicle fleet mix, adequate road design, land use controls, street network management, and good planning and maintenance. Proper use of all of these tools will increase the number of vehicles that a specific lane segment may carry. However, the number of lanes is the primary factor in evaluating road capacity, since any lane configuration has an upper volume limit regardless of how carefully it has been designed. The function of intersections is a very critical element and can artificially limit lane capacity. The model discussed in **Chapter 3** assumed that intersections will not artificially limit corridor capacity. The approximate volume capacity of typical existing road segments was discussed in **Chapter 2**. **Table 4-1** shows a range of volumes for roadways developed in the future.

**Table 4-1**

**Approximate Volumes for Planning of Future Roadway Improvements**

| Road Segment | Volumes [1] | Volumes [2] |
|---|---|---|
| Two Lane Road | Up to 12,000 VPD | Up to 15,000 VPD* |
| Three Lane Road | Up to 18,000 VPD | Up to 22,500 VPD* |
| Four Lane Road | Up to 24,000 VPD | Up to 30,000 VPD* |
| Five Lane Road | Up to 35,000 VPD | Up to 43,750 VPD* |

[1] Historical management conditions // [2] Ideal management conditions // * Additional volumes may be obtained in some locations with adequate road design, access control, and other capacity enhancing methods.

**Table 4-1** is a capacity level which is appropriate for planning purposes in growth areas of the study area. In newly developing areas there are opportunities to achieve additional lane capacity improvements. The careful, appropriate, and consistent use of the capacity enhancing mechanisms listed above can provide for long-term cost savings and help maintain roads at a scale comfortable to the community.

Using the traffic model developed for this project, it was possible to determine projected traffics volume on all major roads within the study area. These roads were analyzed for the base year 2003 and for the future year 2030 to determine if the roads have adequate numbers of lanes for the traffic volumes. The best tool generated by the traffic model for comparing the future traffic volumes to the existing number of travel lanes on the major corridors is the volume to capacity ratio (v/c ratio). By definition, the "v/c ratio" is the result of the flow rate of a roadway lane divided by the capacity of the roadway lane. **Table 4-2** shows "v/c ratios" and their corresponding roadway corridor "level-of-service" designations.

## Table 4-2

### v/c Ratios & LOS Designations

| v/c Ratio | Description | Corridor LOS |
|---|---|---|
| < 0.60 | Well Under Capacity | LOS A and B |
| 0.60 – 0.79 | Under Capacity | LOS C |
| 0.80 – 0.99 | At or Nearing Capacity | LOS D and E |
| > 0.99 | Over Capacity | LOS F |

The roadways in the Whitefish area that experience a v/c ratio 1.0 or greater, and are therefore over capacity, are listed in **Table 4-3**. The roadways listed in **Table 4-3** are currently undersized for the expected traffic volume increases by the year 2030. Values for v/c ratios as well as traffic volumes for the year 2003 and 2030 are found in **Chapter 3** in **Figures 3-17** thru **3-24**.

## Table 4-3

### Roadways Exceeding v/c Ratio of 1.0 by Year 2030

| Roadway Name | Roadway Capacity (Assigned in MDT Model) | Year 2003 ADT Volume | Year 2003 V/C Ratio | Year 2030 ADT Volume | Year 2030 V/C Ratio | Starting Point | Ending Point |
|---|---|---|---|---|---|---|---|
| 1ST ST | 4000 | 3223 | 0.81 | 5808 | 1.45 | O'Brien Ave | Spokane Ave |
| 2ND ST | 11000 | 10375 | 0.94 | 16927 | 1.54 | Good Ave | Lupfer Ave |
| 2ND ST | 11000 | 7908 | 0.72 | 12191 | 1.11 | Baker Ave | Highway 93 |
| 2ND ST E | 10000 | 4543 | 0.45 | 13128 | 1.31 | Larch Ave | Half Moon Rd |
| 2ND ST E | 10000 | 4094 | 0.41 | 9978 | 1.00 | Pine Ave | Mill Ave |
| 3RD ST | 4000 | 2193 | 0.55 | 4891 | 1.22 | Baker Ave | Spokane Ave |
| 4TH ST | 4000 | 1403 | 0.35 | 4888 | 1.22 | Baker Ave | Spokane Ave |
| 5TH ST | 4000 | 1775 | 0.44 | 5393 | 1.35 | Baker Ave | Spokane Ave |
| 6TH ST | 4000 | 1863 | 0.47 | 4133 | 1.03 | 5th St | Spokane Ave |
| ARMORY RD | 5000 | 2596 | 0.52 | 6604 | 1.32 | Voerman Rd | City Limit |
| BAKER AVE | 15000 | 14714 | 0.98 | 19827 | 1.32 | 2nd St | Railway St |
| BAKER AVE | 11000 | 10429 | 0.95 | 15816 | 1.44 | W 18th St | 6th St |
| BARKLEY LN | 4000 | 989 | 0.25 | 3987 | 1.00 | All | |
| BLANCHARD LAKE RD | 5000 | 2090 | 0.42 | 6671 | 1.33 | Crane Marsh Wy | Highway 93 |
| BLANCHARD LAKE RD | 5000 | 613 | 0.12 | 5670 | 1.13 | Meadows Rd | Karrow Ave |
| CENTRAL AVE | 4000 | 2598 | 0.65 | 4912 | 1.23 | 5th St | 1st St |
| COLORADO AVE | 10000 | 1934 | 0.19 | 10615 | 1.06 | Denver St | Crestwood Ct |
| COLUMBIA AVE | 10000 | 2173 | 0.22 | 10424 | 1.04 | 10th St | 7th St |
| DILLON RD | 5000 | 1901 | 0.38 | 5342 | 1.07 | Monegan Rd | Braig Rd |
| E EDGEWOOD DR | 10000 | 3966 | 0.40 | 13975 | 1.40 | Texas Ave | Haskill Basin Rd |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E LAKESHORE DR | 11000 | 10145 | 0.92 | 19587 | 1.78 | Barkley Ln | Houston Dr |
| E LAKESHORE DR | 4000 | 2471 | 0.62 | 8283 | 2.07 | Houston Point Dr | Birch Glen Rd |
| EDGEWOOD PL | 10000 | 5365 | 0.54 | 10571 | 1.06 | Iowa Ave | 0.06 Miles East |
| EDGEWOOD PL | 10000 | 2677 | 0.27 | 10137 | 1.01 | Colorado Ave | 0.08 Miles East |
| FAIRWAY DR | 4000 | 1886 | 0.47 | 4740 | 1.19 | Mountain Side Dr | W 7th St |
| FAIRWAY DR | 4000 | 1400 | 0.35 | 4230 | 1.06 | Green Pl | Highway 93 |
| GEDDES AVE | 5000 | 2127 | 0.43 | 5110 | 1.02 | 5th St | 4th St |
| GOOD AVE | 4000 | 1252 | 0.31 | 4511 | 1.13 | 3rd St | 2nd St |
| GREENWOOD DR | 4000 | 614 | 0.15 | 5002 | 1.25 | Spruce Ct | End of road |
| HAUGEN HEIGHTS RD | 5000 | 1114 | 0.22 | 5089 | 1.02 | Patton Ln | Lion Mountain |
| HIGHLAND DR | 5000 | 3248 | 0.65 | 5838 | 1.17 | Northwoods Dr | End |
| IRON HORSE DR | 4000 | 3429 | 0.86 | 8244 | 2.06 | Murdock Ln | Lookout Ln |
| J P RD | 10000 | 1574 | 0.16 | 10557 | 1.06 | Highway 93 | Monegan Rd |
| KALISPELL AVE | 4000 | 644 | 0.16 | 4128 | 1.03 | 8th St | 7th St |
| KALNER LN | 5000 | 175 | 0.04 | 6129 | 1.23 | Highway 40 | 0.41 Miles North |
| KARROW AVE | 10000 | 2333 | 0.23 | 10334 | 1.03 | 4th St | W 3rd St |
| LION MOUNTAIN RD | 10000 | 2659 | 0.27 | 12113 | 1.21 | State Park Rd | Highway 93 |
| LOOKOUT LN | 4000 | 2040 | 0.51 | 4139 | 1.03 | Iron Horse Dr | Whitefish Lookout Rd |
| MILES AVE | 4000 | 862 | 0.22 | 4551 | 1.14 | 2nd St | 1st St |
| MT STATE HWY 40 W | 11000 | 9215 | 0.84 | 13148 | 1.20 | 0.35 Mi. E of Whitefish Stage Rd | 0.18 Mi. E of Voerman Rd |
| MT STATE HWY 40 W | 11000 | 11312 | 1.03 | 15534 | 1.41 | US Hwy 93 | Kalner Ln |
| MURDOCK LN | 4000 | 3429 | 0.86 | 8244 | 2.06 | Ridgecrest Dr | Kinnikinnik Cir |
| MURDOCK LN | 4000 | 4025 | 1.01 | 9715 | 2.43 | Wisconsin Ave | Ridgecrest Dr |
| NORTHWOODS DR | 5000 | 3248 | 0.65 | 5838 | 1.17 | N Valley Dr | Highland Dr |
| PARK AVE | 4000 | 1169 | 0.29 | 4976 | 1.24 | Voerman Rd | 10th St |
| PARK KNOLL LN | 5000 | 1811 | 0.36 | 6034 | 1.21 | All | |
| PARKHILL DR | 5000 | 941 | 0.19 | 7668 | 1.53 | W 3rd St | Highway 93 |
| PARKWAY AVE | 4000 | 979 | 0.24 | 4839 | 1.21 | 0.018 Miles East of Birch Hill Dr | Birch Hill Dr |
| RAILWAY ST | 4000 | 2886 | 0.72 | 6154 | 1.54 | Baker Ave | Central Ave |
| RESERVOIR RD | 5000 | 3676 | 0.74 | 6829 | 1.37 | E Lakeshore Dr | N Valley Dr |
| SPOKANE AVE | 15000 | 10893 | 0.73 | 17571 | 1.17 | 13th St | Riverside Ave |
| SPOKANE AVE | 11000 | 11247 | 1.02 | 14729 | 1.34 | Riverside Ave | 9th St |
| SPOKANE AVE | 11000 | 10705 | 0.97 | 14160 | 1.29 | 9th St | 6th St |
| SPOKANE AVE | 4000 | 3429 | 0.86 | 5134 | 1.28 | 2nd St | 1st St |
| STAGE LINE RD | 5000 | 6239 | 1.25 | 7669 | 1.53 | All | |
| STATE PARK RD | 10000 | 2216 | 0.22 | 11253 | 1.13 | Lion Mountain | Haugen Heights Rd |
| TEXAS AVE | 5000 | 3422 | 0.68 | 6710 | 1.34 | Edgewood Pl | Cedar St |
| US HIGHWAY 93 | 11000 | 9583 | 0.87 | 22449 | 2.04 | Lion Mountain | City Limit |
| US HIGHWAY 93 | 11000 | 9583 | 0.87 | 22449 | 2.04 | Highway 40 | W 19th St |
| VIADUCT | 15000 | 17566 | 1.17 | 27473 | 1.83 | Railway Avenue | Edgewood Place |
| VOERMAN RD | 4000 | 1169 | 0.29 | 4947 | 1.24 | Park Ave | Rivertrail Ct |
| VOERMAN RD | 4000 | 1080 | 0.27 | 4739 | 1.18 | Shady River Ln | Monegan Rd |
| W 2ND ST | 11000 | 10674 | 0.97 | 18316 | 1.67 | City Limit | Good Ave |
| W 3RD ST | 5000 | 849 | 0.17 | 7652 | 1.53 | Parkhill Dr | Karrow Ave |
| W 5TH ST | 4000 | 2133 | 0.53 | 5094 | 1.27 | 6th St | Geddes Ave |
| W 6TH ST | 4000 | 2619 | 0.65 | 5636 | 1.41 | Baker Ave | 5th St |
| W 7TH ST | 4000 | 2992 | 0.75 | 6750 | 1.69 | Fairway Dr | Baker Ave |
| WF LOOKOUT RD | 4000 | 2040 | 0.51 | 4139 | 1.03 | Lookout Ln | City Limit |
| WISCONSIN AVE | 11000 | 10675 | 0.97 | 13267 | 1.21 | Denver Ave | Glenwood Rd |
| WISCONSIN AVE | 11000 | 11391 | 1.04 | 23938 | 2.18 | Glenwood Rd | Barkley Ln |
| WISCONSIN AVE | 11000 | 9475 | 0.86 | 12195 | 1.11 | Woodland Pl | 0.08 Mi. N of Woodside Ln |
| YAMPAH LN | 4000 | 3149 | 0.79 | 4655 | 1.16 | All | |

**THIS PAGE INTENTIONALLY LEFT BLANK**



CHAPTER 5:

# Problem Identification

# CHAPTER 5: PROBLEM IDENTIFICATION

This chapter of the Transportation Plan identifies areas of the existing transportation system that do not meet the desires of the community. The deficiencies may fall into one or more of the following categories:

- Intersection levels of service;
- Signal warrant guidelines;
- Corridor volumes, capacity and levels of service;
- Crash analysis; and
- Growth Policy issues (transportation)

Each of these areas is explored in depth in this chapter.

## 5.1 INTERSECTION LEVELS OF SERVICE

Urban road systems are ultimately controlled by the function of the major intersections. Intersection failure directly reduces the number of vehicles that can be accommodated during the peak hours that have the highest demand and the total daily capacity of a corridor. As a result of this strong impact on corridor function, intersection improvements can be a very cost-effective means of increasing a corridor's traffic volume capacity. In some circumstances, corridor expansion projects may be able to be delayed with correct intersection improvements. Due to the significant expense of road construction projects, a careful analysis must be made of the expected service life from intersection-only improvements. If adequate service life can't be achieved with only improvements to the intersection, then a corridor expansion may not be the most efficient solution. With that in mind, it is important to determine how well the major intersections are functioning by determining their Level of Service (LOS).

The analysis of the existing intersections were presented in **Chapter 2** of this Transportation Plan (**section 2.9**). The intersections analyzed included seven (7) signalized intersections and twenty-eight (28) un-signalized intersections. Twenty-five (25) of the intersections were counted as part of the transportation Plan effort, while the remaining ten (10) intersections had data collected as part of previous projects in the area. For those that were counted, data was collected on an average weekday between the hours of 7:00 a.m. and 9:00 a.m., and between 4:00 p.m. and 6:00 p.m. Based upon this data, the operational characteristics of each intersection were obtained. It should be recognized that some of the intersections were counted between 2:00 p.m. and 3:30 p.m., as they were adjacent to and/or impacted significantly by school discharge time periods.

Level of Service (LOS) is a qualitative measure developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. It provides a scale that is intended to match the perception by motorists of the operation of the intersection. Level of Service provides a means for identifying intersections that are experiencing operational difficulties, as well as providing a scale to compare intersections with each other. The Level of Service scale represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using it. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion.

### *5.1.1 Signalized Intersections*

For signalized intersections, recent research has determined that average stopped delay per vehicle is the best available measure of Level of Service. The following table identifies the relationship between Level of Service and average stopped delay per vehicle. The procedures used to evaluate use of signalized intersections includes gathering detailed information on geometry, lane use, signal timing, peak hour volumes, arrival types and other parameters. This information was then used to calculate delays and determine the capacity of each intersection. An intersection functions adequately if it operates at LOS C or better. **Table 5-1** defines the LOS by stopped delay for signalized intersections.

**Table 5-1**

**Level of Service Criteria – Signalized Intersections**

| Level of Service | Stopped Delay per Vehicle (sec) |
|---|---|
| A | < 10 |
| B | 10 to 20 |
| C | 20 to 35 |
| D | 35 to 50 |
| E | 50 to 80 |
| F | > 80 |

Using these techniques and the data collected in the spring/summer of 2007, the LOS for the signalized intersections was calculated. **Tables 5-2** & **5-3** show the AM and PM peak hour LOS for each individual leg of the intersections, as well as the intersections as a whole. The intersection LOS is shown graphically in **Figure 2-15** and **Figure 2-16** in **Chapter 2**.

**Table 5-2**

**2007 AM Peak LOS (Signalized Intersections)**

| Intersection | EB | WB | NB | SB | INT |
|---|---|---|---|---|---|
| Baker Avenue & 2nd Street | D | C | A | B | C |
| Central Avenue & 2nd Street | B | C | A | A | B |
| Spokane Avenue & 2nd Street | B | B | D | B | C |
| Spokane Avenue & 13th Street | C | C | B | C | C |
| Spokane Avenue & Commerce Street | C | C | C | C | C |
| U.S. Hwy 93 & Montana Hwy 40 | C | F | C | C | F |
| Wisconsin Avenue & Edgewood Place* | B | B | A | A | A |

**intersection not counted by RPA*

**Table 5-3**
**2007 PM Peak LOS (Signalized Intersections)**

| Intersection | EB | WB | NB | SB | INT |
|---|---|---|---|---|---|
| Baker Avenue & 2nd Street | F | D | B | B | E |
| Central Avenue & 2nd Street | C | C | A | A | C |
| Spokane Avenue & 2nd Street | B | B | F | C | F |
| Spokane Avenue & 13th Street | C | C | B | D | C |
| Spokane Avenue & Commerce Street | C | C | C | C | C |
| U.S. Hwy 93 & Montana Hwy 40 | C | F | C | E | F |
| Wisconsin Avenue & Edgewood Place* | B | B | A | A | A |

**intersection not counted by RPA*

### 5.1.2 Unsignalized Intersections

Level of Service for unsignalized intersections is based on the delay experienced by each movement within the intersection, rather than on the overall stopped delay per vehicle at the intersection. This difference from the method used for signalized intersections is necessary since the operating characteristics of stop-controlled intersection are substantially different. Driver expectations and perceptions are also entirely different. For two-way stop controlled intersections the through traffic on the major (uncontrolled) street experiences no delay at the intersection. Conversely, vehicles turning left from the minor street experience more delay than other movements and at times can experience significant delay. Vehicles on the minor street which are turning right or going across the major street experience less delay than those turning left from the same approach. Due to this situation, the Level of Service assigned to a two-way stop controlled intersection is based on the average delay for vehicles on the minor street approach.

Levels of service for all-way stop controlled intersections are also based on delay experienced by the vehicles at the intersection. Since there is no major street, the highest delay could be experienced by any of the approaching streets. Therefore, the Level of Service is based on the approach with the highest delay. **Table 5-4** shows the LOS criteria for both the all-way and two-way stop controlled intersections.

**Table 5-4**
**Level of Service Criteria –Stop Controlled Intersections**

| Level of Service | Delay (sec / veh) |
|---|---|
| A | < 10 |
| B | 10 to 15 |
| C | 15 to 25 |
| D | 25 to 35 |
| E | 35 to 50 |
| F | > 50 |

Using the above guidelines, the data collected in the spring/summer of 2007, and calculation techniques for two-way stop controls and all-way stop controls, the LOS for the unsignalized intersection was counted. The results of these calculations are shown in **Table 5-5**. The intersection LOS is shown graphically in **Figures 2-15** and **2-16** in **Chapter 2**.

## Table 5-5
**2007 LOS (Stop-Controlled Intersections)**

| Intersection | AM | PM | Intersection | AM | PM |
|---|---|---|---|---|---|
| Ashar Avenue & 7th Street | A | B | Pine Avenue & 7th Street | B | B |
| Baker Avenue & 4th Street | B | D | Spokane Avenue & 1st Street | A | A |
| Baker Avenue & 5th Street | B | C | Spokane Avenue & 4th Street | C | C |
| Baker Avenue & 7th Street | B | C | Spokane Avenue & 5th Street | C | D |
| Baker Avenue & 10th Street* | B | B | Wisconsin Avenue & Colorado Avenue* | B | C |
| Baker Avenue & 13th Street* | B | C | Wisconsin Avenue & Denver Street* | B | C |
| Baker Avenue & 15th Street* | B | B | Wisconsin Avenue & Glenwood Road* | B | B |
| Columbia Avenue & 7th Street | B | B | Wisconsin Avenue & Reservoir Road* | B | C |
| Fir Avenue & 2nd Street | B | B | Wisconsin Avenue & Skyles Place* | B | C |
| Fir Avenue & 4th Street | B | B | Wisconsin Avenue & Woodside Lane* | C | C |
| Kalispell Avenue & 2nd Street | C | C | U.S. Highway 93 & Blanchard Lake Road | B | B |
| Karrow Avenue & 7th Avenue | A | A | U.S. Highway 93 & JP Road | C | C |
| Pine Avenue & 2nd Street | C | C | U.S. Highway 93 & Karrow Avenue | B | D |
| Pine Avenue & 4th Street | B | B | U.S. Highway 93 & State Park Road | B | C |

** intersection not counted by RPA*

The LOS analyses of the existing conditions in the Whitefish area reveals that some signalized and unsignalized intersections are currently functioning at LOS D or lower. These intersections are shown in **Table 5-6** and are ideal candidates for closer examination and potential intersection improvements measures.

## Table 5-6
**Existing Intersections Functioning at LOS D or Lower**

| Intersection | | AM Peak Hour LOS | PM Peak Hour LOS |
|---|---|---|---|
| Baker Avenue & 2nd Street | S | C | E |
| Baker Avenue & 4th Street | U | B | D |
| Spokane Avenue & 2nd Street | S | C | F |
| Spokane Avenue & 5th Street | S | C | D |
| U.S. Hwy 93 & Karrow Avenue | U | B | D |
| U.S. Hwy 93 & Montana Hwy 40 | S | F | F |

*(S)ignalized // (U)nsignalized*

## 5.2 SIGNAL WARRANT GUIDELINES

It is the intent of this section of **Chapter 5** to offer a brief narrative concerning traffic signal control at currently unsignalized intersections with poor LOS. Before a traffic signal control can be installed at a given intersection, at least one of eight "traffic signal warrants" must be met. These warrants are as contained in the ***Manual on Uniform Traffic Control Devices (Current Edition)***. The signal warrants are nationally accepted minimum standards that must be met in order for a traffic signal to be considered at an intersection. An intersection must meet at least one warrant to be eligible for signalization. The warrant descriptions from the ***Manual on Uniform Traffic Control Devices*** are as follows:

1. **Eight-Hour Vehicular Volume** -
   - The Minimum Vehicular Volume is intended for application where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.
   - The Interruption of Continuous Traffic is intended for application where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.
   - If 80% of the Minimum Vehicular Volume and 80% of the Interruption of Continuous Traffic criteria are met, this warrant is considered to be met.
2. **Four- Hour Vehicular Volume** - The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.
3. **Peak Hour** - The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of one hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.
4. **Pedestrian Volume** - The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.
5. **School Crossing** - The School Crossing signal warrant is intended for application where the fact that school children cross the major street is the principal reason to consider installing a traffic control signal.
6. **Coordinated Signal System** - Progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.
7. **Crash Experience** - The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

8. **Roadway Network** - Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

It is appropriate to recognize that traffic signals provide for a wide array of advantages to the overall transportation system and the various users. They also have inherent disadvantages. Listed below is a description of these advantages and disadvantages, as well as a discussion of potential alternatives to traffic control signals. This information was obtained from the *Manual on Uniform Traffic Control Devices (MUTCD)*.

### *5.2.1 Advantages of Traffic Control Signals*

When properly used, traffic control signals are valuable devices for the control of vehicular and pedestrian traffic. They assign the right-of-way to the various traffic movements and thereby profoundly influence traffic flow. Traffic control signals that are properly designed, located, operated, and maintained may have one or more of the following advantages:

- They provide for the orderly movement of traffic;
- They increase the traffic-handling capacity of the intersection if proper physical layouts and control measures are used, and if the signal timing is reviewed and updated on a regular basis (every 2 years) to ensure that it satisfies current traffic demands;
- They reduce the frequency and severity of certain types of crashes, especially right-angle collisions;
- They are coordinated to provide for continuous or nearly continuous movement of traffic at a definite speed along a given route under favorable conditions; and
- They are used to interrupt heavy traffic at intervals to permit other traffic, vehicular or pedestrian, to cross.

### *5.2.2 Disadvantages of Traffic Control Signals*

Traffic control signals are often considered a panacea for all traffic problems at intersections. This belief has led to traffic control signals being installed at many locations where they are not needed, adversely affecting the safety and efficiency of vehicular, bicycle, and pedestrian traffic. Traffic control signals, even when justified by traffic and roadway conditions, can be ill-designed, ineffectively placed, improperly operated, or poorly maintained. Improper or unjustified traffic control signals can result in one or more of the following disadvantages:

- Excessive delay;
- Excessive disobedience of the signal indications;
- Increased use of less adequate routes as road users attempt to avoid the traffic control signals;

- Significant increases in the frequency of collision (especially rear-end collisions); and
- Engineering studies of operating traffic control signals should be made to determine whether this type of installation and the timing program meet the current requirements of traffic.

### 5.2.3 Alternatives to Traffic Control Signals

Since vehicular delay and the frequency of some types of crashes are sometimes greater under traffic signal control than under STOP sign control, consideration should be given to providing alternatives to traffic control signals, even if one or more of the signal warrants has been satisfied. Some of the available alternatives may include, but are not limited to, the following:

- Installing signs along the major street to warn road users approaching the intersection;
- Relocating the stop line(s) and making other changes to improve the sight distance at the intersection;
- Installing measures designed to reduce speeds on the approaches;
- Installing a flashing beacon at the intersection to supplement STOP sign control;
- Installing flashing beacons on warning signs in advance of a STOP sign controlled intersection on major- and/or minor-street approaches;
- Adding one or more lanes on a minor-street approach to reduce the number of vehicles per lane on the approach;
- Revising the geometrics at the intersection to channelize vehicular movements and reduce the time required for a vehicle to complete a movement, which could also assist pedestrians;
- Installing roadway lighting if a disproportionate number of crashes occur at night;
- Restricting one or more turning movements, perhaps on a time-of-day basis, if alternate routes are available;
- If the warrant is satisfied, installing multi-way STOP sign control;
- Installing a roundabout; and
- Employing other alternatives, depending on conditions at the intersection.

### 5.2.4 Possible Traffic Signalization Control in Whitefish

Through the review of existing and expected traffic conditions for the Whitefish area, the following three (3) intersections were identified for further review of potential traffic signal warrants and subsequent traffic signal control:

- JP Road and US Highway 93;
- Baker Avenue and 13th Street; and
- Pine Avenue and 7th Street.

In reviewing the traffic signal warrants for the above three intersections, it was concluded that none of the intersections meet any traffic signal warrants under present day, existing traffic conditions. It was concluded, however, that two of the intersections will likely meet at least one of the eight traffic signal control warrants under future conditions. These two intersections are the intersections of JP Road / US Highway 93 and the intersection of Baker Avenue / 13th Street. Because of this, two projects are recommended in **chapter 8** (projects **TSM-5** and **TSM-6**, respectively).

Although some discussion was heard from the general public on provision of a traffic signal at the intersection of Pine Avenue and 7th Street, it does not appear that a traffic signal control warrant is met, or will be met under future conditions.

## 5.3 CORRIDOR VOLUMES, CAPACITY, AND LEVELS OF SERVICE

The corridors shown on **Figure 2-1** and **Figure 2-2** were evaluated for volume to capacity (v/c) ratios and levels of service. The number of lanes on each segment of road is shown on **Figure 2-5** and **Figure 2-6**. The volumes are shown on **Figure 2-3** and **Figure 2-4**. The resultant existing v/c ratios are shown on **Figure 3-19** and **Figure 3-20** for existing conditions. The preparation and analysis of these figures assisted in determining potential capacity deficiencies under the existing traffic conditions. Roadway capacity is of critical importance when looking at the growth of a community. As traffic volume increases, the vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, the road begins to "fail". For this reason it is important to look at the size and configuration of the current roadways and determine if these roads need to be expanded to accommodate the existing or future traffic needs. The capacity of a road is a function of a number of factors including intersection function, land use adjacent to the road, access and intersection spacing, road alignment and grade, speed, turning movements, vehicle fleet mix, adequate road design, land use controls, street network management, and good planning and maintenance. Proper use of all of these tools will increase the number of vehicles that a specific lane segment may carry. However, the number of lanes is the primary factor in evaluating road capacity since any lane configuration has an upper volume limit regardless of how carefully it has been designed. The function of intersections, as discussed in **Section 5.1**, is a very critical element and can artificially limit lane capacity.

The size of a roadway is based upon the anticipated traffic demand. It is desirable to size the arterial network to comfortably accommodate the traffic demand that is anticipated to occur 20 years from the time it is constructed. The selection of a 20-year design period represents a desire to receive the most benefit from an individual construction project's service life within reasonable planning limits. The design, bidding, mobilization, and repair to affected adjacent properties can consume a significant portion of an individual project's budget. Frequent projects to make minor adjustments to a roadway can therefore be prohibitively expensive. As roadway capacity generally is provided in large increments, a long term horizon is necessary. The collector and local street network are often sized to meet the local needs of the adjacent properties.

There are two measurements of a street's capacity, Annual Average Daily Traffic (AADT) and Peak Hour. AADT measures the average number of vehicles a given street carries over a 24-hour period. Since traffic does not usually flow continuously at the maximum rate, AADT is not a statement of maximum capacity. Peak Hour measures the number of vehicles that a street can physically accommodate during the busiest hour of the day. It is therefore more of a maximum traffic flow rate measurement than AADT. When the Peak Hour is exceeded, the traveling public will often perceive the street as "broken" even though the street's AADT is within the expected volume. Therefore, it is important to consider both elements during design of corridors and intersections.

Street size of the roadway and the required right-of-way is a function of the land use that will occur along the street corridor. These uses will dictate the vehicular traffic characteristics, travel by pedestrians and bicyclists, and need for on-street parking. The right-of-way required should always be based upon the ultimate facility size.
The actual amount of traffic that can be handled by a roadway is dependant upon the presence of parking, number of driveways and intersections, intersection traffic control, and roadway alignment. The data presented in **Table 5-7** below indicates the approximate volumes that can be accommodated by a particular roadway. As indicated in the differences between the two tables, the actual traffic that a road can handle will vary based upon a variety of elements including: road grade; alignment; pavement condition; number of intersections and driveways; the amount of turning movements; and the vehicle fleet mix.

Roadway capacities can be increased under "ideal management conditions" (**Column 2** in **Table 5-7**) that take into account such factors as limiting direct access points to a facility, adequate roadway geometrics and improvements to sight distance. By implementing these control features, vehicles can be expected to operate under an improved Level of Service and potentially safer operating conditions. **Table 5-7** shows a range of volumes for roadways developed in the future.

## Table 5-7

### Approximate Volumes for Planning of Future Roadway Improvements

| Road Segment | Volumes[1] | Volumes[2] |
|---|---|---|
| Two Lane Road | Up to 12,000 VPD | Up to 15,000 VPD* |
| Three Lane Road | Up to 18,000 VPD | Up to 22,500 VPD* |
| Four Lane Road | Up to 24,000 VPD | Up to 30,000 VPD* |
| Five Lane Road | Up to 35,000 VPD | Up to 43,750 VPD* |

[1] *Historical management conditions*

[2] *Ideal management conditions*

* *Additional volumes may be obtained in some locations with adequate road design, access control, and other capacity enhancing methods.*

**Table 5-7** shows capacity levels which are appropriate for planning purposes in developing areas within the study area. In newly developing areas, there are opportunities to achieve additional lane capacity improvements. The careful, appropriate, and consistent use of the capacity guidelines listed above can provide for long-term cost savings and help maintain roads at a scale comfortable to the community.

Two important factors to consider in achieving additional capacity are peak hour demand and access control. Traffic volumes shown in **Table 5-7** are 24-hour averages; however, traffic is not smoothly distributed during the day. The major street network shows significant peaks of demand, especially the work "rush" hour. These limited times create the greatest periods of stress on the transportation system. By concentrating large volumes in a brief period of time, a road's short-term capacity may be exceeded and a road user's perception of congestion is strongly influenced. The use of pedestrian and bicycle programs as discussed in **Chapter 2** and TDM measures discussed in **Chapter 6** can help to smooth out the peaks and thereby extend the adequate service life of a specific road configuration. The Transportation Plan strongly recommends the pursuit of such measures as low-cost means of meeting a portion of expected transportation demand.

Each time a roadway is intersected by a driveway or another street it raises the potential for conflicts between transportation users. The resulting conflicts can substantially reduce the roadway's ability to carry traffic if conflicts occur frequently. This basic principle is the design basis for the interstate highway system, which carefully restricts access to designated entrance and exit points. Arterial streets are intended to serve the longest trip distances in an urbanized area and the highest traffic volume corridors. Access control is therefore very important on the higher volume elements of a community's transportation system. Collector streets, and especially local streets, do provide higher levels of immediate property access required for transportation users to enter and exit the roadway network. In order to achieve volumes in excess of that shown in **Column 2** of **Table 5-7**, access controls should be put in place by the appropriate governing body. It is strongly recommended that access control standards appropriate to each classification of street be incorporated into the subdivision and zoning regulations of the City of Whitefish and Flathead County. Follow up monitoring of the effects of access control will aid in future transportation planning efforts.

Using the traffic model developed for this project, it was possible to project the traffic volumes on all major roads within the study area. These roads were analyzed for the current year (2003) and Year 2030 conditions to determine if the roads have an adequate number of lanes for the traffic volume. **Figure 3-21** and **Figure 3-22** presented in **Chapter 3** show the projected traffic volumes for the various years within the study area. The best tool generated by the traffic model for comparing the current traffic volumes to the existing number of travel lanes on the major corridors is the volume to capacity ratio (v/c ratio). By definition, the "v/c ratio" is the result of the flow rate of a roadway lane divided by the capacity of the roadway lane. **Table 5-8** shows "v/c ratios" and their corresponding roadway corridor "Level of Service" designations.

**Table 5-8**
**V/C Ratios & LOS Designations**

| V/C Ratio | Description | Corridor LOS |
|---|---|---|
| < 0.60 | Well Under Capacity | LOS A and B |
| 0.60 – 0.79 | Under Capacity | LOS C |
| 0.80 – 0.99 | At or Nearing Capacity | LOS D and E |
| > 0.99 | Over Capacity | LOS F |

An examination of the "v/c ratios" computed by the traffic model, and as shown graphically on **Figure 3-23** and **Figure 3-24**, shows several roadways that are either at, nearing, or over capacity in the community during the planning year horizon (2030). **Table 4-3** in **Chapter 4** shows the roadways that are exceeding capacity now and will be exceeding capacity by the planning year (2030).

## 5.4 CRASH ANALYSIS

The MDT Traffic and Safety Bureau provided crash information and data for use in this Whitefish Transportation Plan. The crash information was analyzed to find high crash locations. General crash characteristics were determined along with probable roadway deficiencies and solutions. The crash information covers the three-year time period from October 1st, 2003 to September 30th, 2006. **Section 2.6** in **Chapter 2** contains detailed information concerning the crash analysis prepared for this planning project.

## 5.5 GROWTH POLICY ISSUES - TRANSPORTATION

It is the intent of this portion of Chapter 5 to reiterate the transportation related issues as defined in the current Growth Policy Update (2007). This particular planning project was completed on a parallel track to the Transportation Plan, and was slightly ahead of schedule in terms of public participation, goal definition, and elected official reviews. As such, the Growth Policy Update did a commendable job at capturing the flavor and issues important to the community's citizens. For completeness, the identified issues related to "transportation" as identified in the Growth Policy Update (2007) are contained herein, along with a brief statement offering whether the issue has been or can be addressed via this Transportation Plan:

- Off-street routes called for in the Pedestrian and Bikeway Master Plan are often located along the Whitefish River, cross local streams, or traverse environmentally sensitive areas.

  *This Transportation Plan supports the planned on-street and off-street non-motorized system. This information is documented in both* ***section 2.8*** *of* ***chapter 2****, and also* ***section 8.5*** *of* ***chapter 8****.*

- Parallel collectors along both sides of Hwy. 93 South are not yet complete. This adds to congestion on Hwy. 93 South (Spokane Avenue) during peak hours.

  *This Transportation Plan supports the concept of parallel collectors to US Highway 93. Parallel collector roadways have been modeled using the travel demand model (see* ***chapter 3****), and projects have been recommended (****MSN-1*** *and* ***MSN-3*** *in* ***chapter 8****) to support this concept.*

- Mainly because of the Whitefish River, east-west street access is limited.

  *This Transportation Plan recognizes the lack of east-west connectivity in the community. Several different crossings of the Whitefish river have been modeled using the travel demand model (see* ***chapter 3****), and projects have been recommended (****MSN-4*** *and* ***MSN-10*** *in* ***chapter 8****) to support this important need in the community.*

- Whitefish High School and Muldown Elementary are located within the eastside residential neighborhood. Therefore, daily traffic generated by the two schools infiltrates surrounding neighborhoods, and is a source of frequent complaints.

  *This Transportation Plan recognizes the impact that school related traffic has on the surrounding neighborhoods. Issues associated with school related traffic have been identified in chapter 6 of this Transportation Plan. Specific projects have been developed to strengthen the transportation network in this area in hopes of providing choices for private automobile travel. Specific projects in the school area that will help to alleviate these complaints are projects* ***MSN-5****,* ***MSN-15****, and* ***TSM-2*** *described later in* ***chapter 8****.*

- Big Mountain Road provides the only general access for the Whitefish Mountain Resort as well as the many residential subdivisions on Big Mountain.

  *This Transportation Plan supports the conclusions portrayed in the Big Mountain Neighborhood Plan regarding primary and secondary access to the resort. Due to topography and other constraints, it is likely not feasible to develop an additional primary access serving the Big Mountain Resort. Allowances for secondary emergency access (mainly egress) is in place and should accommodate emergency situations that could potentially arise.*

- The Wisconsin Avenue viaduct is the only grade-separated crossing of the BNSF rail facilities connecting downtown Whitefish to the northern neighborhoods of the city, to Iron Horse, and to Big Mountain.

*This Transportation Plan recognizes the impact that having only one grade separated crossing of the BNSF rail facilities has on overall traffic flow. Different locations for additional crossings were modeled in* ***chapter 3****. It is recommended in the Transportation Plan to plan for an additional crossing near the theoretical extension of Kalner Lane (Cow Creek area). This will be a feasible location in that it will only cross one rail line and will benefit both existing and the future land uses towards the southeast and northeast parts of the community (reference projects* ***MSN-6*** *and* ***MSN-7*** *in* ***chapter 8****).*

- Street standards should be "neighborhood sensitive" in much the same manner as land development regulations. Also, flexibility is needed in infill projects and in environmentally sensitive areas.

  *This Transportation Plan recognizes this desire and agrees with the neighborhood, local context street standards presented in the Growth Policy. They are reiterated in this Transportation Plan in* ***chapter 9****. It must be made clear, though, that for most local streets, the local government entity (in this case the City of Whitefish) has direct control over roadway geometry and function, and can therefore dictate roadway typical section appearance. For roadways that are generally collector and above (i.e. minor arterial, principal arterial, interstate), if the facilities are on the Federally adopted "urban aid system" then the roadway geometry is dictated by Montana Department of Transportation (MDT) roadway standards. This is an important point, because the MDT does utilize "urban design standards" for the various roadway types classified as collectors and above based on dialogue and consensus with many local Montana governments dating back to the early 1990's.*

- Residential collectors should be designed to carry traffic efficiently, but also to control vehicle speeds through residential neighborhoods.

  *This Transportation Plan recognizes this concept and offers general guidance on types of traffic calming features that may be appropriate for the community to consider on various roadways. This guidance is contained in* ***chapter 7*** *of the Transportation Plan.*

- U.S. Hwy 93 runs through the middle of downtown, dividing it into a north half and south half at 2nd Street. A by-pass of some kind has long been discussed in the community, but transportation planning thus far has shown it to be infeasible.

- *The concept of a "by-pass" is not carried forward in this Transportation Plan. For a "by-pass" project to be justifiable, it must prove to be a substantial benefit under both present day and future conditions, and be weighted heavily against all impacts (i.e. environmental, financial, neighborhood sensitivity, etc.). A discussion of the effort made regarding a "by-pass" in this Transportation Plan is presented in* ***chapter 3****, and also summarized in* ***chapter 9****. The approved US Highway 93 Somers to Whitefish West Final Environmental Impact Statement (FEIS) concluded a potential "by-pass" to be unwarranted.*

**THIS PAGE INTIONALLY LEFT BLANK**



CHAPTER 6:

# School Transportation Considerations

# CHAPTER 6: SCHOOL TRANSPORTATION CONSIDERATIONS

## 6.1 IDENTIFICATION OF SCHOOL RELATED ISSUES

During the development of this Transportation Plan there were several issues identified from the public and the project oversight committee relative to the community's schools. This is often times the case in smaller communities, and Whitefish is no exception. Within the Whitefish School District, there are currently four (4) public schools as noted below:

- Muldown Elementary School (Kindergarten thru 4th Grade)
- Central School (5th Grade thru 8th Grade)
- Whitefish High School (9th Grade thru 12th Grade)
- Whitefish Independent High School (10th Grade thru 12th Grade)

In addition, there are several private schools in the community. These include the Whitefish Christian Academy and the Children's House Montessori School.

The following start and stop times are currently in place for the four (4) Whitefish public schools:

| | |
|---|---|
| Muldown Elementary School | |
| Kindergarten | 8:45 am to 3:15 pm |
| Grades 1 thru 4 | 8:35 am to 3:30 pm |
| Central School | |
| Grades 5 thru 8 | 8:30 am to 3:22 pm |
| Whitefish High School | |
| Grades 9 thru 12 | 8:40 am to 3:30 pm |
| Independent High School | |
| Grades 10 thru 12 | 8:15 am to 3:30 pm |

Many of the issues that have been identified by the public and the City of Whitefish staff are issues commonly expressed in other small communities. These issues are reiterated herein, however it must be recognized as a prelude to the narrative that funding is typically the biggest hurdle to accommodating many of these recognized and/or perceived problems. An example that is readily apparent is that of crossing guards. Almost all agree that crossing guards are a desirable feature around the community's schools, however funding the guards given limited school district financial resources are often a hurdle that cannot be overcome. Additionally, staggering school start and stop times appears proactive and easy to do, however academic requirements set forth in the "No Child Left Behind" legislation means optimizing available time and leaves little wiggle room for drastic changes.

The following items of concern were raised by members of the general public and the city of Whitefish staff – in no order of importance:

<u>School busing</u>
The overall perception is that there is very little busing of students in the community. Individual comments regarding this have centered on the potential for more busing of students in an effort to remove the private automobile as the mode of choice from the transportation system. The perception by those making this comment suggest the school district should increase the level of busing in the community. Implementation hurdles exist to this, though, chiefly revolving around funding limitations. As a long term goal, however, it may be something the community can work towards as time goes on.

<u>School Access</u>
There were several issues identified with overall access to some of the community's schools. This was chiefly centered on Muldown Elementary School and the Children's House Montessori School. Most of the traffic accessing these locations mingles with the Whitefish High School traffic at Pine Avenue and effects two major intersections (Pine Avenue / 7$^{th}$ Street and 7$^{th}$ Street / Ashar Avenue). It is recommended later in this plan (**chapter 8**) that two (2) additional connections be developed in this area to provide additional options to access these schools. Project number **MSN-5** in **chapter 8** is intended to provide an easterly extension of 7$^{th}$ Street and wrap southerly to connect with Voerman Road at the intersection with Monegan Road. Project number **MSN-15** is intended to provide a one-way exit route along 8$^{th}$ Street between Ashar Avenue (easterly project limit) and the existing 8$^{th}$ Street terminus (westerly project limit).

<u>School Crossing Guards</u>
The issue of the need for additional crossing guards in the community was made by several citizens, parents and city staff. Specific reference for additional crossing guards was made for the intersections of:

- Pine Avenue / 7$^{th}$ Street;
- 7$^{th}$ Street / Ashar Avenue; and
- 2$^{nd}$ Street / Baker Avenue

Again, the subject of additional crossing guards is generally accepted as desirable by all parties. Implementation hurdles are realized, though, based on lack of financial resources. Although a volunteer crossing guard program could be explored in the future, there are issues with volunteers not showing up (for example when ill) and not having a formal back-up process in place.

<u>Central School (Whitefish Middle School) Issues</u>
There were several comments made during the development of this Plan that the Middle School has major traffic issues. The school is located downtown and school traffic mixes with commuter traffic. Most parents drive their kids to school. Car-pooling could be better encouraged by the school and it would be helpful to have a school directory for the parents.

From a traffic flow perspective, the school is ahead of the game somewhat in that their bus loading and unloading zone is fairly separated from the major traffic obstacles. Their designated areas are on the east side of the school (Kalispell Avenue). Some thoughts have been to allocate a certain amount of school parking spaces and/or drop off space in the new parking garage being designed for construction on the west side of Spokane Avenue, however this may be tenuous at best. From a practical point of view, it would be desirable to segregate school staff parking away from the adjacent parking spots around the school in the new parking garage. In reality, though, preliminary discussions have questioned the fairness of allocating spots in the new garage to any specific user, but rather make all parking spaces available to the general public and downtown patrons. This is an item of negotiation between parties being most affected. Whatever the solution becomes, the recognition should be that the availability of parking along the street faces adjacent to the school are somewhat lacking, and this is compounded by parents tendency to always want to drop their children off as close as possible to the school front doors.

There is some planning in regards to the block immediately south of Central School, and initial concepts have shown angled parking along the south side of Second Street (between Spokane and Kalispell) with curb bulb-outs at the relevant intersections. Curb bulb-outs should be supported at these locations as they heighten the visibility of the pedestrians, narrow the lane width, and reduce the distances that pedestrians have to travel.

It may be beneficial to provide a map at the beginning of each school year showing parents where the school district would like to have students picked up and dropped off. It must be recognized, though, that parents generally will pick-up and drop-off their students where it is convenient for them to do so, and not necessarily where the District and/or city would like it to occur.

<u>Whitefish High School</u>
Issues associated with the Whitefish High School were also identified during the course of this Transportation Plan development. Concerns were expressed that due to the campus having no lunch facilities and being an "open" campus, that there is a lkarge exit of students over the lunch hour and as such students drive all over town very quickly to find a lunch spot. It was stated that the local PTA is very interested in closing the high school campus by next year for at least freshman and sophomores, although that group is typically of non-driving age or is beginning to drive.

Final comments have implied that there is very little incentive for high school kids to walk and/or bike to school, and also that there is very little busing of kids. Therefore, most kids drive to school, mainly by themselves. Public comments received have stated that the Creekwood neighborhood has become the main transportation route between school and the soccer/baseball fields and other activities. Apparently, the Creekwood Homeowners Association has complained numerous times to the police department concerning school traffic speeding thru the neighborhood. The homeowners association has resorted to making their own signs placed on tree stumps throughout the neighborhood asking drivers to please slow down. Suggestions have been made that the high school should consider some incentive for kids to walk and/or bike to school and that the speeding issue in this neighborhood should be given further attention.

## 6.2 SAFE ROUTES TO SCHOOL PROGRAM

Many of the issues identified in **section 6.1** could best be fleshed out through a formal *Safe Routes to School (SRTS)* program. Although many of the school related issues do fall within the purview of a citywide Transportation Plan, requests for incentives, traffic control and speeding relief are often symptoms of a greater issue that may not be resolved by infrastructure alone. The formal SRTS program is the logical venue to build community consensus on school related programs and issues.

In a nutshell, Safe Routes to School (SRTS) are a national effort to bring schools and communities together to make walking and bicycling to school safer and improve the health of our children. The Montana SRTS Program is in place and offers guidance on developing a successful SRTS program and showing how Montana's SRTS Program can help make a difference in the quality of life for children and in school neighborhoods. The overriding goal of SRTS is to increase the number of students that walk or bicycle to school along safe routes. Meeting this goal is critical to the health and welfare of our children.

The Montana Safe Routes to School Program is administered by the Montana Department of Transportation (MDT) and helps make positive changes that allow parents and children in grades K-8 to choose a safer and healthier way to get to school. A formal SRTS program will offer ways to help meet community goals and objectives by changing behaviors to ensure:

- The community, especially parents and school officials, believes in the value of walking and bicycling to school and encourages children to do so.
- The community considers the safety needs of children walking or bicycling in their neighborhoods when planning for residential and school areas.
- Streets and roads in the community are designed to encourage walking and bicycling, with sidewalks, bicycle paths or bicycle lanes, and traffic-calming measures.
- Drivers are educated to understand behaviors of child pedestrians and bicyclists and how safe driving can decrease traffic congestion and reduce the risk of injuries to children.
- Children and parents understand how to walk and bicycle safely and assertively.
- Officials enforce laws that support and protect walkers and bicyclists.

SRTS programs help change behaviors by combining aspects of health, fitness, traffic relief, environmental awareness and safety. Comprehensive and effective SRTS programs typically include **Evaluation**, **Education**, **Encouragement**, **Enforcement**, and **Engineering** strategies. These strategies (sometimes called the 5E's) are described below:

- **Evaluation**: Collecting data and assessing existing conditions to identify potential problems and collecting data after SRTS activities are introduced to measure the success of your efforts.

- **Education**: Teaching children about the broad range of transportation choices, instructing them in important lifelong bicycling and walking safety skills, and launching driver safety campaigns in the vicinity of schools. Educational components are also often directed at parents and drivers.

- **Encouragement**: Using events and activities to promote walking and bicycling.

- **Enforcement**: Partnering with local law enforcement to ensure traffic laws are obeyed in the vicinity of schools (this includes enforcement of speeds, yielding to pedestrians in crossings, and proper walking and bicycling behaviors), and initiating community enforcement, such as crossing guard programs.

- **Engineering**: Making operational changes or physical improvements to the infrastructure around schools to reduce speeds and conflicts between with motor vehicle traffic, and establish safer and fully accessible crossings, walkways, trails and bicycle facilities.

Although each strategy can be implemented by itself, the **most successful SRTS programs combine multiple strategies**. By directly or indirectly incorporating some or all of these strategies, SRTS programs offer parents a chance to work in partnership with their children's school, the community, local governments to create a healthy lifestyle for children and a safer environment for all.

Montana's SRTS Program offers funding through a competitive application process for non-infrastructure and infrastructure projects within a 2-mile radius of schools serving children in grades K-8. Non-infrastructure (or behavioral) projects generally include activities associated with **Education**, **Encouragement**, **Enforcement** and **Evaluation** strategies. Infrastructure projects are focused on specific facilities (crosswalks, sidewalks, and pathways) associated with the **Engineering** strategy.

It is highly recommended that a formal Safe Routes to School (SRTS) program be developed for the Whitefish Schools. Grant funds are available to assist with this through the Montana Department of Transportation (MDT). The MDT has prepared a very thorough SRTS Guidebook that provides technical assistance for schools and communities in Montana interested in establishing SRTS programs. Whether a school or community is new to the idea of SRTS or they have already identified problems and started working towards a plan, the Guidebook contains several needed anecdotes that will help the SRTS effort. This document is organized into chapters devoted to various aspects of SRTS and provides:

- An overview of SRTS and why it's needed in our communities;
- Guidance on how to start a program and establish goals;
- Ways to identify and document conditions limiting walking and bicycling to school;
- Ideas to educate and encourage safer walking and bicycling;

- Descriptions of different types of physical improvements that may create safe walking and bicycling routes to your school;
- Enforcement ideas to change hazardous driver behaviors; and
- Ideas to help you fund and implement SRTS activities and projects.

The Montana SRTS Guidebook outlines a proven process for developing and implementing SRTS plans. It highlights resources in Montana that can be accessed and use to support SRTS efforts in the community or school.

The Montana SRTS Guidebook can be viewed at the MDT SRTS website at the following address:

http://www.mdt.mt.gov/pubinvolve/saferoutes/docs/safe_routes_guidebook.pdf



CHAPTER 7:

# Traffic Calming

# CHAPTER 7: TRAFFIC CALMING

Traffic calming refers to a number of methods used to reduce vehicle speeds, improve safety, and enhance the quality of life. In the simplest definition, it is changing the physical environment to reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for pedestrians and other non-motorized street users. Recognizing the role that traffic calming may be able to play in addressing neighborhood and regional traffic concerns. This technical memorandum serves to delineate a process by which a traffic calming program can be carried out, as well as going further to discuss different traffic calming measures and their applicability to the Whitefish area.

The overriding goals of traffic calming are to:

- Improve the quality of life in an area;
- Address the wishes and needs of the people living in or using an area for purposes other than motorized transit;
- Create safe, attractive streets;
- Help to reduce the negative effects of motor vehicles on an area such as pollution and sprawl; and
- Promote pedestrian, cycle and transit use.

To that end, the following objectives are identified to assist in meeting the stated goals:

- Achieve slow speeds for motor vehicles;
- Reduce collision frequency and severity;
- Increase the safety, and the perception of safety, for non-motorized users of the street(s);
- Reduce the need for police traffic enforcement;
- Enhance the attractiveness of the street environment (street scaping);
- Encourage water absorption into the ground;
- Increase access for all modes of transportation; and
- Reduce cut-through motor vehicle traffic.

Traffic calming techniques cannot be used with the same degree of success on all roadway facilities. Traffic calming is rarely seen on roadway facilities higher than a collector roadway functional classification. This is primarily due to roadways functionally classified higher than a collector having the primary purpose of moving traffic, whereas for collector and local roadways the primary purpose tends to shift more towards serving adjacent land uses and infiltration into neighborhoods. In some circumstances, traffic calming can be applied to a minor arterial roadway with low traffic volumes.

## 7.1 PURPOSE OF TRAFFIC CALMING

Traffic calming is comprised of the three "E's," Education, Enforcement and Engineering. The Institute of Transportation Engineers (ITE) defines traffic calming as a "combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users." It is used on local streets to discourage non-local traffic. Non-local traffic is not invested in the neighborhood, and therefore has less respect for speed limits, and the non-vehicular elements of the street environment. Certain, limited traffic calming measures are appropriate for slowing traffic on collectors or minor arterials as well.

Because traffic calming includes an educational or enforcement campaign, or an engineering study, it can result in the physical construction of traffic elements designed to reinforce the perceived need for caution by the users of the transportation system. The need for physical traffic calming devices indicates the transportation user's consistent failure to appropriately interact with the surroundings. Regardless of any traffic calming measures installed, the primary responsibility for safe use of the streets lies with the individual driver, cyclist, or pedestrian.

The success of traffic calming measures on a local street depends upon strong support by residents in the immediate area. Additionally, the traffic calming measures need to address situations that a number of residents agree should be addressed. Situations that many people agree exist and that could respond to traffic calming techniques will have more support from the neighborhood, and will better enhance the neighborhood environment. Traffic calming projects which involve installing "hard" improvements should meet several criteria before being considered for implementation, because they can be disruptive to the residents in the surrounding area, difficult to fund and maintain, and difficult to remove once installed.

Traffic calming is a series of techniques designed to lower vehicle speeds, reduce the amount of cut-through or non-local traffic, and in certain cases, decrease truck traffic. The goal of these techniques is to keep traffic on a local street local. Other goals which traffic calming can achieve include the following:

- Reduce air and noise pollution caused by vehicles;
- Reduce the frequency and severity of accidents;
- Improve the street environment through increased landscaping;
- Improve the quality of life for residents;
- Promote walking and bicycling;
- Reduce the need for police enforcement;
- Address speeding or other problems on collectors or minor arterials; and
- Improve pedestrian safety.

Traffic calming elements can be incorporated into the initial design of subdivision, or can be retrofitted into existing subdivisions. The City of Whitefish has many streets which already contain Traffic calming measures. These include on-street parking, and sidewalks separated from the street by a planting strip. Other techniques can include landscaped medians, pedestrian bulb-outs at corners, traffic circles or other intersection design techniques as well as other mid-block design techniques.

There are however, several circumstances where traffic calming becomes necessary. One of the most common circumstances is when the arterial system is congested or has turn restrictions. This set of circumstances will lead to arterial traffic detouring into an adjacent neighborhood. Local streets near a heavily used arterial can experience arterial traffic.

During street construction traffic calming issues may be raised. Detours are necessary but frustrating for residents. However, when motorists use alternate routes instead of the designated detours, concerns with congestion, speed, pollution and enforcement become real. But these issues are temporary, and temporary measures are appropriate to address them. Some examples of temporary traffic calming measures includes:

- Removable median curbs to constrict, or choke, a roadway;
- Removable median curbs placed to form a traffic circle within an intersection;
- Removable median curb placed to form forced turn diverters;
- Temporary bollards to close off traffic to a roadway; and
- Temporary speed bumps.

Very few traffic calming techniques are appropriate for use on arterials, because they interfere with an arterial's ability to move people and vehicles quickly from one place to another. The techniques which are appropriate for the arterial system are summarized later in this technical memorandum.

## 7.2 HISTORY OF TRAFFIC CALMING

Traffic calming techniques originated in Germany in the 1960's with the "pedestrianization" of downtown shopping areas. This idea expanded to the Netherlands in the 1970's where the concept was applied to residential streets to better integrate motorized and non-motorized traffic. The Dutch believed the street served as an extension of the residents' yard. This philosophy resulted in giving pedestrians priority over automobiles. Based on this philosophy, the Dutch installed obstacles, bends, and bottlenecks at regular intervals to prevent vehicular traffic from moving at speeds higher than pedestrians could walk. Germany developed the more modern concept of area-wide traffic calming, which considers the entire road system in order to avoid merely shifting one problem to another location.

Over the past 30 years, traffic calming techniques have expanded throughout the globe, including Japan, Australia, and in North America. In Montana, the cities of Missoula and Bozeman both have formal traffic calming programs. These two programs are substantially different, but each community is satisfied with their program. In the Northwest, traffic calming techniques have been adopted in most of the larger cities, with active programs in Seattle and Bellevue, WA, and Portland and Eugene, OR.

In Missoula, and most of these Northwest communities, the concept of area-wide traffic calming has been adopted, with the emphasis on improving neighborhood street systems rather than alleviating a problem at a specific location. Due to this philosophy, these traffic-calming programs are known as Local Area Traffic Management Programs, Neighborhood Traffic Management Programs, Neighborhood Traffic Control Programs, or something similar.

## 7.3 TYPES OF TRAFFIC CALMING MEASURES

Traffic calming measures generally fit into one of the following six categories:

1. Passive measures
2. Education and enforcement
3. Signing and pavement marking
4. Vertical deflection
5. Horizontal deflection
6. Obstruction

### *7.3.1 Passive Measures*

Passive measures are described as measures which are built into the street environment. They are not immediately obvious to the traveling public, but nevertheless produce a calming effect on traffic. Some of these measures are listed below.

- Tree-lined streets;
- Streets with boulevards separating the sidewalks;
- Streets with raised center medians (usually landscaped);
- On-street parking (including angled parking);
- Highly visible pedestrian crossings; and
- Short building set-back distances.

These elements tend to slow traffic by giving motorists the impression that the street is narrow and that extra care is required, but these elements do not restrict or interfere with traffic flow. A combination of more than one of these techniques, or these techniques combined with measures from the other categories, will produce better results.

### *7.3.2 Education and Enforcement*

Several techniques are available to raise public awareness of traffic problems and change the behaviors contributing to problems. Some of these techniques are listed below.

- Neighborhood Speed Watch Program - A speed monitoring program where residents themselves measure vehicle speeds with a radar unit and record license plate numbers of speeding vehicles. Follow-up action of the data can include sending letters to the registered owners of the vehicles explaining the safety concerns within the neighborhood and requesting better observance of the speed limits.

- Radar Speed Monitoring Trailer - A pull-behind trailer equipped with speed detection equipment, a readout of vehicle speeds, and a sign with the posted speed limit is brought to an area with speeding problems. These trailers are usually unmanned; however better results are obtained if someone is present. Additionally, the trailer can be equipped with a camera that would record license plate information for possible follow-up.

- Neighborhood Traffic Safety Campaign - As a part of the normal neighborhood group activities, newsletters or other materials can be produced containing educational information regarding traffic issues. These materials can be tailored to issues of specific concern to different neighborhoods. These issues can then be addressed at regularly scheduled meetings or at special meetings and recommendations can be put forward to increase neighborhood traffic safety.

- Target Enforcement - This is a requested, time-limited addition of police enforcement within a neighborhood.

- Public Service Announcements (PSA's) - Video public service announcements on traffic issues, mainly related to safety, can be produced. These can include traffic calming information, and should be televised during local news programs, to inform the public on traffic issues and calming techniques identified in this technical memorandum.

### 7.3.3 Signage and Pavement Marking

Traffic control signs and pavement markings can be installed as non-intrusive traffic calming measures. These techniques are already in use in the Whitefish area. The signs can include speed limit signs, dead-end street signs, and signs indicating school crossings or general pedestrian crossing. Pavement markings can include marked crosswalks, delineation of (narrow) lanes, and speed limit markings. Traffic calming techniques which specifically fall in this category include:

- Truck Route Signing – Signs placed on routes where trucks are allowed, plus signs placed on routes where trucks are not allowed.
- Basket Weave Stop Sign Pattern – Stop signs placed at every intersection in a residential neighborhood with stops alternating between east west and north south. Note: this is appropriate for local access streets only, and it disregards MUTCD warrants.
- Additional speed limit signs.
- Edge Lines – Painted lines on the pavement which narrow traffic lanes and/or provide for bicycle lanes or on-street parking.
- Stop Bars – painted lines on the pavement that show motorists where to stop for stop signs.

### 7.3.4 Vertical Deflection, Horizontal Deflection, and Obstruction

There is a wide variety of physical traffic calming measures which fall under the categories of vertical deflection, horizontal deflection and installation of obstructions. Each measure has both advantages and disadvantages. A comprehensive description of a wide variety of these measures is presented on the tables at the end of this technical memorandum. These tables include a general cost for basic installation of each measure. Actual costs may increase, depending upon such additions as irrigation systems, street lighting, landscaping, installation of decorative brick pavers, etc. Acquisition of additional right-of-way can also raise the cost, sometimes dramatically so.

Several guidelines should be considered when deciding to implement these types of deflection and obstruction measures. These include:

- Attempt less restrictive measures before considering more restrictive measures such as road closures or other route modifications.
- Space devices 300-to-500 feet apart in order to contain speeds to a 20-to-25 mile-per-hour speed range.
- Make accommodations for drainage and snow removal.
- Make accommodations for emergency vehicles.
- Consider pedestrian and bicyclist needs.
- Address landscaping or other maintenance issues.

## 7.4 TRAFFIC CALMING PROGRAM SUMMARY

Many traffic calming programs are in place in the United States. The best programs provide a balance of citizen input and economic realities, and are standardized for fair treatment of all residents. These programs ensure that the traffic calming techniques proposed are necessary, attractive, effective, and safe, and are implemented at a minimal cost to the general public. The programs also provide citizens a regular and on-going opportunity to nominate, test, and implement improvements to address problems with the local street network in a timely, orderly, and efficient manner.

The City of Whitefish would like to implement such a program. A proposed traffic calming program should be broken down into three phases, each with multiple steps. Together they are designed to ensure that the physical construction is done only when truly necessary, and only when lesser measures have been tried first. Each phase would require the participation of neighborhood residents and the Public Works Department. The program's priority is the safe use of the streets for all users, be they vehicular, cyclist, or pedestrian.

For purposes of this discussion, the agency with jurisdiction will be the City of Whitefish. However, this does not preclude any similar program that may be implemented by Flathead County. Therefore, during the following discussion, the use of the term "the City" refers to whatever jurisdiction ultimately implements this procedure.

## 7.5 TRAFFIC CALMING TECHNIQUES APPLICABLE TO COLLECTORS AND MINOR ARTERIALS

A few of the measures depicted on the tables on the following pages are applicable to non-local street conditions. Installation of any of these measures will be done at the discretion of City staff. These measures do not fall under the process outlined previously. The measures are restricted to horizontal deflection and include the following:

- Mid-block median;
- Curb bulb outs / neckdown; and
- On-street parking.

These measures can be used to slow traffic where chronic speeding problems have been shown to exist, or to accommodate pedestrian traffic. The mid-block median usually is present on arterials due to another piece of infrastructure, such as a railroad track which passes over the street, or an overhead pedestrian crossing structure.

On-street parking almost always occurs in a residential area, but also can occur in retail or industrial sectors. Judicious use of on-street parking can influence the traffic flow and help regulate traffic speeds on collectors or minor arterials. Bulb outs, also called neckdowns, can be used to create the illusion for the driver that the roadway is narrowing. This perception will cause the driver to slow down. A secondary benefit of the bulb outs is the decreased walking distance for pedestrians at the crosswalks. Bulb outs generally are wide enough for a car to park in their "shadow". This generally creates good separation between the parked cars and the moving traffic.

## 7.6 TRAFFIC CALMING NEEDS IN WHITEFISH

During the development of this Transportation Plan, several specific areas were identified for potential traffic calming measures. Again, traffic calming is generally in response to something that isn't quite working as intended. The City does occasionally receive complaints from its citizens regarding the need for traffic calming.

*Issue 1*
*Speeding and safety is a concern through many of the neighborhoods near the High School and the Muldown Elementary School.*

Although there are recommendations for additional road connections in this area, traffic calming in the existing neighborhood may be feasible. Typically, traffic calming features adjacent to school neighborhoods usually include a mixture of traffic circles, raised intersection tables, and/or curb bulb-outs to neck-down the travel lane width at neighborhood intersections. These should all be explored with neighborhood representatives before implementation. It should be recognized that these types of features can reduce emergency service response time, hamper snow removal activities and/or result in the loss of on-street parking adjacent to the intersections.

*Issue 2*
*Speeding and safety along Wisconsin Avenue*

**Chapter 8** contains several short range and long-range recommendations for the Wisconsin Avenue corridor. As a major arterial, traffic calming typically is not applied to this type of facility. Potential traffic calming remedies could, however, include features that change the perception of the driving environment. This would include landscaping and features to affect the streetscape along the sides of the road (street trees, etc.) and/or narrow median islands within the roadway itself. Any type of traffic calming along this facility would be met with modest improvement to the issues more fully identified in **chapter 8**.

*Issue 3*
*Safety & speeding issues around the schools*

Chapter 6 and chapter 8 provide mechanisms to temper some of the school related issues. Again, traffic calming in the existing neighborhoods around the schools may be feasible. Typically, traffic calming features adjacent to school neighborhoods usually include a mixture of traffic circles, raised intersection tables, and/or curb bulb-outs to neck-down the travel lane width at neighborhood intersections. These should all be explored with neighborhood representatives before implementation.

*Issue 4*
*More crossing guards are needed around the schools*

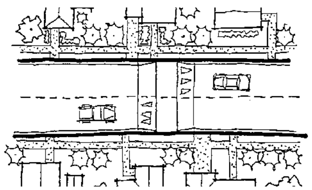
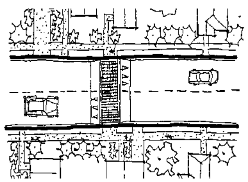
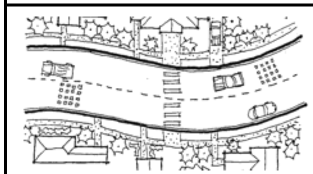
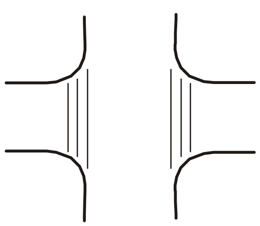
Although this is not necessarily a "traffic calming" feature, the concept of additional crossing guards is generally accepted as desirable by most citizens. Implementation hurdles are realized, though, based on lack of financial resources. Although a volunteer crossing guard program could be explored in the future, there are issues with volunteers not showing up (for example when ill) and not having a formal back-up process in place.

*Issue 5*
*Citizens need a point of contact to explore traffic calming*

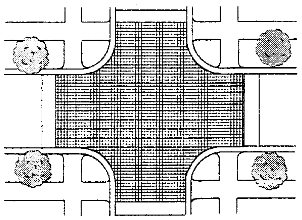
As a matter of practice, all requests and/or complaints should be directed to the Public Works Department for consideration. The potential examples and remedies contained in this chapter via **Table 7-1** can be examined and applied by city engineering staff as appropriate.

# Table 7-1 Types of Traffic Calming Measures

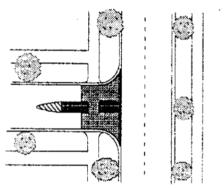
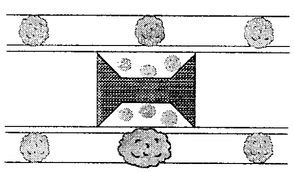
**Vertical Deflection**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Speed Hump | Paved hump in the street that causes discomfort at high speeds.<br>• Speed reduction<br>• Possible traffic reduction | • Effective if used in series at 300 to 500 foot spacing.<br>• Self-enforcing.<br>• Relatively inexpensive. | • If not properly designed, drivers may skirt around to reduce impact.<br>• Drivers may speed up between humps.<br>• May increase volumes on other streets.<br>• Difficult to properly construct. | • Emergency vehicles<br>• Drainage<br>• Signage<br>• Snow removal<br>Estimated Cost Range = $1,000 to $2,000 |
| <br>Raised Crosswalk | Speed hump designed as a pedestrian crossing.<br>• Speed reduction at crossing<br>• Possible traffic reduction | • Highlights crosswalk.<br>• Excellent pedestrian safe treatment.<br>• Aesthetically pleasing if designed.<br>• Relatively inexpensive. | • Drivers may speed up between humps.<br>• May increase volumes on other streets.<br>• Difficult to properly construct. | • Emergency vehicles<br>• Drainage<br>• Signage<br>• Snow removal<br>Estimated Cost Range = $1,000 to $2,000 |
| <br>Rumble Strips | Patterned sections of rough pavement.<br>• Possible speed reduction | • Relatively inexpensive to install.<br>• Create driver awareness. | • High maintenance.<br>• May adversely impact bicyclists.<br>• Noisy by design, and not recommended for all areas. | • Emergency vehicles<br>Estimated Cost Range = $1,000 to $2,000 |
| <br>Surface Valley Gutters | Dips in the street that can be used to carry run-off as well as cause discomfort to drivers at high speeds.<br>• Speed reduction<br>• Possible traffic reduction | • Effective if used in series at 300 to 500 foot spacing.<br>• Self-enforcing.<br>• Relatively inexpensive during initial construction. | • Drivers may speed up between dips.<br>• May increase volumes on other streets.<br>• Not usually appropriate for existing streets with established drainage patterns. | • Emergency vehicles<br>• Drainage<br>• Signage<br>Estimated Cost Range = $1,000 to $2,000 |

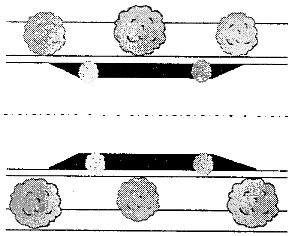
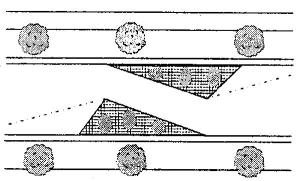
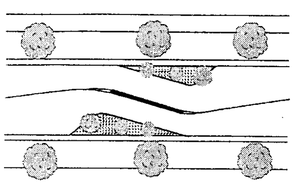
**Vertical Deflection**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Raised Intersection | Raised plateau where streets intersect.<br>• Speed reduction<br>• Possible traffic reduction | • Slows vehicles in the most critical area, reducing conflict.<br>• Highlights intersection.<br>• Excellent pedestrian safety treatment.<br>• Aesthetically pleasing if well designed.<br>• Better for emergency vehicles than speed humps. | • Increases difficulty of making a turn.<br>• Increased maintenance.<br>• Requires adequate signage and driver education. | • Emergency vehicles<br>• Drainage<br>• Signage<br>• Snow removal<br><br>Estimated Cost Range = $4,000 to $6,000 |

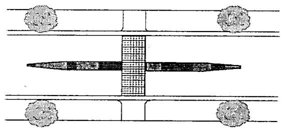
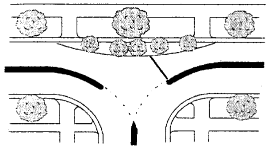
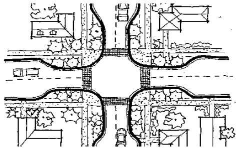
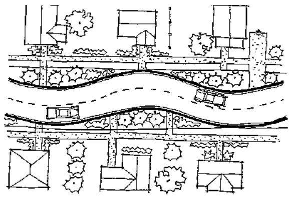
**Horizontal Deflection**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Gateway Treatment | Entry treatment that communicates a sense of neighborhood identity and a change in traffic conditions.<br>• Speed reduction at entry<br>• Traffic reduction | • Positive indication of a change in environment from arterial road to residential street.<br>• Reduces pedestrian crossing distances.<br>• On wide streets, provides space for landscaping in the median. | • Low speed of turning vehicles may restrict flow on adjacent arterial. | • Emergency vehicle access<br>• Lighting<br>• Irrigation and maintenance of landscaping<br><br>Estimated Cost Range = $5,000 to $25,000 |
| Single-Lane Slow Point/<br><br>Lane Narrowing | Mid-block expansion of landscaped areas and/or on-street parking in order to physically narrow the street to a single traffic lane.<br>• Speed Reduction<br>• Traffic Reduction | • Minor inconvenience to drivers.<br>• Minimal inconvenience to local traffic.<br>• Shorter crossing distance for pedestrians.<br>• Provides space for landscaping.<br>• Effective when used in series. | • Unfriendly to bicyclists unless designed to accommodate them.<br>• Conflict between opposing drivers arriving simultaneously could create problems.<br>• Contrary to driver expectation of unobstructed flow. | • Emergency vehicle access<br>• Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br><br>Estimated Cost Range = $8,000 to $20,000 |

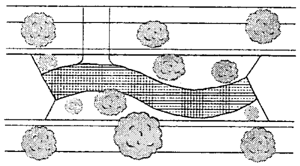
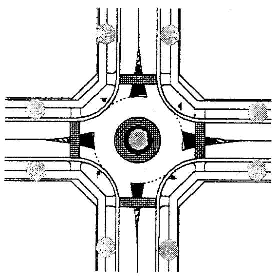
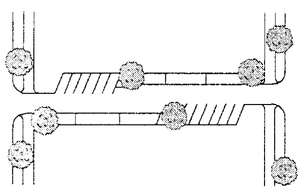
**Horizontal Deflection**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Two-Lane Slow Point | Mid-block expansion of landscaped areas and/or on-street parking in order to physically narrow the street.<br>• Speed reduction<br>• Possible traffic reduction | • Minor inconvenience to drivers.<br>• Regulates parking if bulb-outs are placed in no parking zones.<br>• Protects parked vehicles.<br>• Reduces pedestrian crossing distance.<br>• Provides space for landscaping. | • Less effective in reducing speed and diverting traffic than the single-lane application.<br>• Unfriendly to bicyclists unless designed to accommodate them. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $8,000 to $20,000 |
| <br>Single-Lane Angled Slow Point | Offset curb extensions used to narrow the street to a single lane and create angled deviations in the path of travel.<br>• Speed reduction<br>• Traffic reduction | • Minor inconvenience to drivers.<br>• Minimal inconvenience to local traffic.<br>• Shorter crossing distance for pedestrians.<br>• Provides space for landscaping.<br>• Effective when used in series. | • Unfriendly to bicyclists unless designed to accommodate them.<br>• Conflict between opposing drivers arriving simultaneously could create problems.<br>• Contrary to driver expectation of unobstructed flow. | • Emergency vehicle access<br>• Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $8,000 to $20,000 |
| <br>Two-Lane Angled Slow Point | Offset curb extensions used to narrow the street and create angled deviations in the path of travel.<br>• Speed reduction<br>• Possible traffic reduction | • Same as Single-Lane Angled Slow Point, except pedestrian safety is reduced. | • Same as Single-Lane Angled Slow Point, except less effective in controlling speeds because drivers can create a straighter through movement by driving over centerline. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $8,000 to $20,000 |

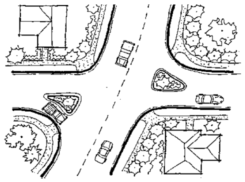
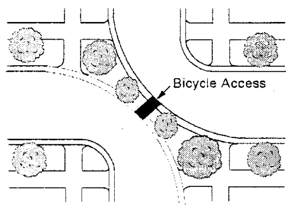
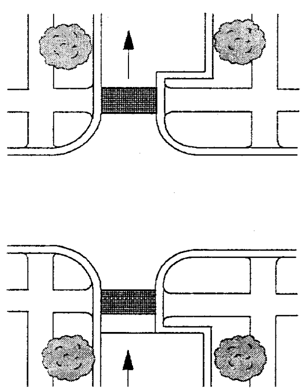
**Horizontal Deflection**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Mid-Block Median | Island or barrier in the center of a street that narrows lanes and segregates traffic.<br>• Possible speed reduction<br>• Possible traffic reduction | • Provides a refuge for pedestrians and bicyclists.<br>• Can improve the streetscape if landscaped. | • Limited reduction in vehicle speeds. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $5,000 to $10,000 |
| <br>Modified "T" Intersection | Modification of "T" intersection layout which gives priority to turning traffic.<br>• Speed reduction<br>• Possible traffic reduction | • Reduces through traffic along the top of the "T".<br>• May provide space for landscaping. | • Can cause confusion regarding priority movements, which may lead to accidents. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $5,000 to $10,000 |
| <br>Neckdown/Curb Bulbs | Physical curb reduction of road width at an intersection.<br>• Speed reduction | • Reduces pedestrian crossing distance.<br>• Can be used in multiple applications or on a single segment of roadway.<br>• Aesthetically pleasing if landscaped. | • Unfriendly to bicyclists unless designed to accommodate them.<br>• Landscaping may cause sight line problems. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $20,000 to $30,000 |
| <br>Deviation/Chicanes | Offset curb extensions that cause deviation in the path of travel.<br>• Speed reduction<br>• Possible traffic reduction | • Imposes minimal inconvenience on local traffic.<br>• Reduces pedestrian crossing distance.<br>• Provides large area for landscaping.<br>• Reduces speed without significantly increasing emergency response time.<br>• Aesthetically pleasing. | • May create opportunities for head-on conflicts on narrow streets.<br>• Cost is greater than many other devices.<br>• Unfriendly to bicyclists unless designed to accommodate them. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $20,000 to $30,000 |

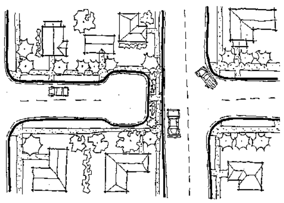
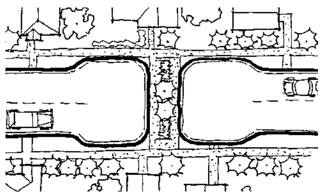
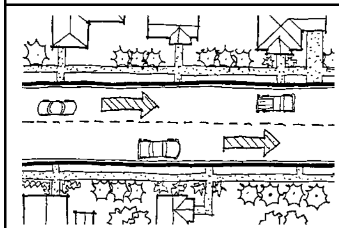
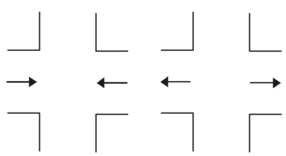
**Horizontal Deflection**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Driveway Link | Narrow winding driveway section placed between two standard street segments.<br>• Speed reduction<br>• Traffic reduction | • Changes the initial impression of the street. Appears to be a road closure yet allows through movements for local traffic.<br>• Provides a large area for landscaping. | • High cost can be prohibitive. Best installed in conjunction with street reconstruction or initial construction.<br>• Unfriendly to bicyclists unless designed to accommodate them. | • Emergency vehicle access<br>• Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br><br>Estimated Cost Range = $20,000 to $50,000 |
| <br>Traffic Circle/Roundabout | Raised circular area placed in the center of an intersection. Drivers travel in a counter-clockwise direction and are required to yield upon entry.<br>• Speed reduction at intersection<br>• Possible traffic reduction | • Reduces accidents by 50% to 90% over stop control.<br>• Provides space for landscaping.<br>• Cheaper to maintain than signals.<br>• Effective at multi-leg intersections.<br>• Provides equal access to intersections for all drivers.<br>• Provides a good environment for bicyclists. | • May be restrictive for larger vehicles if designed to a low speed. (This can be minimized by the use of a mountable apron.)<br>• Right of way may need to be purchased to accommodate left turns by large vehicles.<br>• Initial safety issues as drivers adjust.<br>• May increase volumes on adjacent streets. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br><br>Estimated Cost Range = $10,000 to $50,000 |
| <br>Shared Zone | A block with narrow entry points and high-density parking which functions similarly to a parking lot.<br>• Speed reduction<br>• Traffic reduction | • Provides a low speed shared environment that is safe for all users.<br>• Improves amenity without restricting access.<br>• Provides flexibility for on-street parking. | • High cost unless part of original design.<br>• May result in an increased number of low speed accidents. | • Emergency vehicle access<br>• Signage<br><br>Estimated Cost Range = $15,000 to $25,000 |

**Obstruction**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Forced Turn Barriers/ Diverters | Small traffic islands installed at intersections to restrict and channelize turning movements.<br>• Traffic reduction<br>• Possible speed reduction | • Changes driving patterns<br>• May reduce cut through traffic.<br>• May be attractive if landscaped. | • May increase trip length for some drivers.<br>• May increase response times for emergency vehicles. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br><br>Estimated Cost Range = $4,000 to $8,000 |
| <br><br>Diagonal Road Closure | Barrier placed diagonally across a four-legged intersection, interrupting traffic flow across the intersection.<br>• Traffic reduction<br>• Speed reduction | • Eliminates through traffic<br>• Provides area for landscaping.<br>• Reduces traffic conflict points.<br>• Increases pedestrian safety<br>• Can include bicycle path connection. | • May inconvenience residents gaining access to their properties.<br>• May inhibit access by emergency vehicles.<br>• May divert through traffic to other local streets.<br>• Altered traffic patterns may increase trip length. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br><br>Estimated Cost Range = $10,000 to $20,000 |
| <br>Partial Street Closure | Blockage of one direction of traffic on a two-way street. The open lane of traffic is signed one-way, and traffic from the blocked lane is not allowed to drive around the barrier in the open lane.<br>• Traffic reduction<br>• Speed reduction | • Reduces through traffic in one direction.<br>• Allows two-way traffic on the remainder of the street.<br>• Shorter crossing distance for pedestrians.<br>• Provides space for landscaping.<br>• Two-way bicycle access can be maintained.<br>• Emergency vehicles can drive around partial closure with care. | • Reduces access for residents.<br>• Compliance with semi-diverters is not 100%.<br>• May increase trip length. | • Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br><br>Estimated Cost Range = $10,000 to $20,000 each side of intersection |

**Obstruction**

| Measure | Definition/Application | Advantages | Disadvantages | Special Considerations |
|---|---|---|---|---|
| <br>Cul-De-Sac/Street Closure | Street closed to motor vehicles at the end of a block using planters, bollards, barriers, etc.<br>• Traffic reduction<br>• Speed reduction | • Eliminates through traffic.<br>• Improves safety for all street users.<br>• Pedestrian and bicycle access maintained. | • Reduces emergency vehicle access.<br>• Reduces access to properties for residents.<br>• May increase trip lengths.<br>• May increase volumes on other streets. | • Emergency vehicle access<br>• Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $15,000 to $25,000 |
| <br>Mid-Block Street Closure | Street closed to motor vehicles mid-block using planters, bollards, barriers, etc.<br>• Traffic reduction<br>• Speed reduction | • Eliminates through traffic.<br>• Improves safety for all street users.<br>• Pedestrian and bicycle access maintained. | • Reduces emergency vehicle access.<br>• Reduces access to properties for residents.<br>• May increase trip lengths.<br>• May increase volumes on other streets. | • Emergency vehicle access<br>• Lighting<br>• Signage<br>• Irrigation and maintenance of landscaping<br>Estimated Cost Range = $15,000 to $25,000 |
| <br>One-Way Street | Street upon which motor vehicles may operate in just one direction.<br>• Possible traffic reduction | • Increased safety due to lack of opposing traffic.<br>• Can be used to open up more resident parking.<br>• Maintains reasonable access for emergency vehicles.<br>• Can discourage through traffic. | • Can lead to increased vehicle speeds.<br>• May increase trip lengths.<br>• May increase volumes on other streets.<br>• Initial safety concerns as drivers adjust.<br>• Alternative route must exist. | • Signage<br>Estimated Cost Range = $2,000 to $3,000 |
| <br>Imploding/Exploding One-Way Street Intersections | Intersection at which opposing legs carry one-way traffic in different directions.<br>• Traffic reduction | • Increased safety due to lack of opposing traffic.<br>• Maintains reasonable access for emergency vehicles.<br>• Interrupts the flow of through traffic. | • May increase trip lengths.<br>• May increase volumes on other streets.<br>• Initial safety concerns as drivers adjust.<br>• Alternative route must exist. | • Signage<br>Estimated Cost Range = $3,000 to $5,000 |



CHAPTER 8:

# Recommended Projects

# CHAPTER 8: RECOMMENDED PROJECTS

This Plan includes a variety of recommended programs and improvement projects. These projects are needed to meet the anticipated traffic demands of the year 2030. This chapter summarizes the recommended programs and projects. The recommended Major Street Network (MSN) projects for the Whitefish Area are shown on **Figure 8-1**.

## 8.1 RECOMMENDED TRANSPORTATION SYSTEM MANAGEMENT (TSM) IMPROVEMENTS

Transportation System Management (TSM) projects are relatively low cost, "tune-up" type improvements. These are projects that do not require excessive planning to begin and/or high costs to construct. They are commonly referred to as projects that can help to "tweak" the operation of the transportation system. For the purposes of this Plan an improvement project was classified as a TSM project if the cost of the project was less than $500,000. The cost estimates included in this section are provided for planning purposes only. It was estimated that most new traffic signal systems would cost between $200,000 and $300,000. Lane modifications were estimated to cost $60,000 per approach. If applicable, each project included some basic storm drainage improvements. The cost estimates **do not include any right-of-way costs**, but do include design and construction costs. All costs are in year 2007 dollars.

### ***TSM-1 (Access Control Study of US Highway 93 South)***

Problem: The presence of numerous accesses along US Highway 93, between MT 40 and 13th Street, are expected to cause potential safety and operational issues in the future due to increasing traffic volumes on US Highway 93. Additionally, many in the community have expressed the desire for increased beautification in the corridor and developing a sense of place as drivers Whitefish proper.

Recommendation: It is recommended that the City of Whitefish and the MDT enter into a formal project agreement to develop an "Access Control Plan" for the section of US Highway 93 between MT 40 and 13th Street. This is an implementation strategy that will carry out the recommendations contained in the original *US Highway 93 Somers to Whitefish Final Environmental Impact Statement (FEIS)*. An informal working committee has been set-up and is in operation within the Whitefish community to develop this "Access Control; Plan". The current efforts should be formalized to follow the conventional steps of an access control plan. These steps include a series of formal public outreach activities, as well as "one-on-one" meetings with individual landowners. This project is being led by the City of Whitefish, through a steering committee consisting of City of Whitefish staff and business owners.

Estimated Cost: $60,000

### ***TSM-2 (Fir Avenue/4th Street Intersection)***

Problem: Offset alignment of Fir Avenue legs at intersection cause non-standard vehicle maneuvers. Also, wide pavement areas not conducive to pedestrian movements.

Recommendation: It is recommended that the intersection be reconstructed to align the north and south legs (i.e. Fir Avenue) and to provide definition at the intersection with curb and gutter and pedestrian crosswalks. This is a short term project that can be implemented for low cost and can improve vehicle circulation and pedestrian safety.

Estimated Cost: $75,000

### ***TSM-3 (13th Street/Columbia Avenue Intersection)***

Problem: Slight offset alignment and developing lands to the southeast of the intersection necessitate an intersection modification.

Recommendation: This intersection currently functions as a two-legged intersection carrying traffic from Columbia Avenue to 13th Street. With development pressures increasing to the southeast of the intersections, coupled with a potential future additional crossing of the Whitefish River (see project **MSN-10**), it is recommended that the intersection be planned for a modern urban compact roundabout. This type of intersection feature will allow for any slight offsets in the intersection legs, will be easier to maintain over a traffic signal, and will be able to accommodate and future extension of 13th Street across the Whitefish River.

Estimated Cost: $140,000

### ***TSM-4 (13th Street/US Highway 93 Intersection)***

Problem: Lane use designations and striping could be revised to offer smoother traffic flow.

Recommendation: The west and east legs of this intersection (i.e. 13th Street) should be modified with pavement markings to provide designated left-turn bays on each leg, adjacent to combination thru- and right-turn lanes on each leg. This is a more typical lane use geometry, and would better match actual travel patterns being observed. It is expected this could be accomplished with striping, other pavement markings and signing.

Estimated Cost: $120,000

### ***TSM-5 (JP Road/US Highway 93 Intersection)***

Problem: Side street delay and increased development pressures.

Recommendation: It is recommended to install a traffic signal at this intersection when signal warrants are met. This may require the City of Whitefish and/or the Montana Department of Transportation to conduct a "traffic signal warrant analysis" on a two-year cycle, however volume projections and network development will necessitate a signalized control at this locations.

Estimated Cost: $160,000

### ***TSM-6 (Baker Avenue/13th Street Intersection)***

Problem: Side street delay and increased development pressures.

Recommendation: It is recommended to install a traffic signal at this intersection when signal warrants are met. This may require the City of Whitefish and/or the Montana Department of Transportation to conduct a "traffic signal warrant analysis" on a two-year cycle, however volume projections and network development will necessitate a signalized control at this locations.

Estimated Cost: $220,000

### ***TSM-7 (2nd Street Traffic Signal Modifications/Coordination)***

Problem: Lack of left-turn bays and permitted left-turn green phases along Second Street at Spokane Avenue and Baker Avenue.

Recommendation: It is recommended to add eastbound and westbound left-turn bays and designated left-turn phases at the intersections of 2nd Street with Baker Avenue and Spokane Avenue, respectively. This can be viewed as a short-term, incremental improvement until which time comprehensive corridor improvements can be constructed as recommended in the *US Highway 93 Urban Corridor Study* r (currently ongoing). The installation of protected eastbound and westbound left-turn phases will require the marking of designated left-turn bays on the east and west legs of the 2nd Street intersections at Baker Avenue and Spokane Avenue. This will necessitate the removal of on-street parking along some of the block faces to make the geometrics acceptable. This is especially true at the intersection with Baker Avenue.

Estimated Cost: $275,000

## 8.2 RECOMMENDED MAJOR STREET NETWORK (MSN) IMPROVEMENTS

Recommended Major Street Network (MSN) improvements are needed to meet the anticipated traffic demands of the Year 2030. Listed below are a number of recommendations that will help meet the anticipated traffic demands, and will help create a better traffic network. In addition to the recommended Major Street Network (MSN) projects contained in this section, there are several "Committed" Major Street Network (CSMN) improvement projects that were described in **chapter 3** of this Transportation Plan and are reiterated below.

A major street network project is any road improvement project that requires substantial financing, and significant planning and design efforts. The recommended major improvement projects are shown below, in no particular order of importance or priority. Estimated costs for each improvement have been provided for planning purposes, and are based on various street standards used by the City of Whitefish and the MDT, as appropriate. Each project includes some basic storm drainage improvements. The cost estimates **do not include any right-of-way costs**, but do include design and construction costs. All costs are in year 2007 dollars.

***CMSN-1 (US Highway 93 [Whitefish-West])***

This project includes the complete reconstruction of US Highway 93 west of Whitefish. The project is planned for construction beginning in the year 2011 and is estimated to cost $5.4 million dollars. The project is currently in the design phase.

***CMSN-2 (Wisconsin Avenue Bike/Pedestrian Path)***

This CTEP project includes the construction of a shared-use bike/pedestrian path along Wisconsin Avenue. The project will be built during the summer of 2008 and is estimated to cost $1.6 million dollars.

***CMSN-3 (Central Avenue [Railway to 3rd Street])***

City of Whitefish project to enhance Central Avenue streetscape through mid-block crossings, decorative concrete, angled parking and elevated intersections. Some turn lane restrictions and curb bulb-outs will be incorporated into the project. The project is currently in the design phase.

***CMSN-4 (6th Street and Geddes Avenue)***

City of Whitefish reconstruction project of 6th Street and Geddes Avenue. Currently in design phase and being prepared for bid advertisement.

***MSN-1 (Columbia Avenue South Extension)***

| | |
|---|---|
| Problem: | Limited north-south routes on the south end of Whitefish as well as increasingly high traffic volumes on US Highway 93. Need for traffic relief associated with schools. |

Recommendation: This recommendation is to construct an extension of Columbia Avenue to the south from the intersection with 13th Street to JP Road. This will help alleviate escalating traffic levels from US Highway 93 and provide an alternate north-south route on the south end of Whitefish. An urban minor arterial standard is appropriate, and should consist of one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and appropriate turn bays (or center two-way, left-turn lane) at major intersections.

Estimated Cost: $1,900,000

### ***MSN-2 (Karrow Avenue Reconstruction)***

Problem: Poor connectivity west of US Highway 93 along with increasing traffic demands on US Highway 93 and Karrow Avenue.

Recommendation: Reconstruct Karrow Avenue to a three-lane minor arterial roadway section. This is a long-term need that will be necessary to accommodate future development patterns in this area. This is coupled with the need for pedestrian and bicycle facilities. An urban minor arterial standard is appropriate, and should consist of one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and appropriate turn bays (or center two-way, left-turn lane) at major intersections. Note that this recommendation is not intended to provide a Bypass to US Highway 93, however is needed to facilitate growth likely to occur along the roadway if and when vacant lands are developed.

Estimated Cost: $6,600,000

### ***MSN-3 (Baker Avenue Extension)***

Problem: Limited north-south routes on the south end of Whitefish as well as increasingly high traffic volumes on US Highway 93.

Recommendation: This recommendation is to construct an extension of Baker Avenue to the south from the intersection with West 19th Street to JP Road. This will help alleviate escalating traffic levels from US Highway 93 and provide an alternate north-south route on the south end of Whitefish. An urban minor arterial standard is appropriate, and should consist of one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and appropriate turn bays (or center two-way, left-turn lane) at major intersections.

Estimated Cost: $1,300,000

### *MSN-4 (7th Street Bridge)*

Problem: Limited east-west connectivity across the Whitefish River.

Recommendation: It is recommended that a bridge be constructed along 7th Street across the Whitefish River. This extension would connect 7th Street, which currently ends at the intersection with Kalispell Avenue, with West 7th Street, which currently ends at the intersection with Baker Avenue. It is recommended that the segment be constructed as a two-lane urban minor arterial standard consisting of one travel lane in each direction and bike and sidewalks on each side.

An incremental project that would help connectivity issues is to break the bridge portion our and construct the extension of 7th Street between Spokane avenue and Kalispell Avenue. This could be done in the relatively short term, and would not cost excessively (estimated cost ~$65,000)

Estimated Cost: $5,100,000

### *MSN-5 (7th Street Extension)*

Problem: Limited north-south connectivity on the eastern edge of Whitefish.

Recommendation: This recommendation consists of constructing an extension to the eastern edge of 7th Street. The route would extend 7th Street to the east across Cow Creek, then to the south to connect with Voerman Road at the intersection with Monegan Road. This recommendation adds connection to the south eastern side of Whitefish. An urban minor arterial standard is appropriate, and should consist of one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and appropriate turn bays (or center two-way, left-turn lane) at major intersections.

Estimated Cost: $850,000

### *MSN-6 (Kalner Lane Extension)*

Problem: Limited north-south connection from MT Highway 40 along with limited railroad crossings.

Recommendation: This recommendation consists of rebuilding Kalner Lane and extending it to the north across to the railroad tracks to intersect with East Edgewood Drive. This recommendation would create additional north-south access off of MT Highway 40 to the eastern portion of Whitefish. The railroad crossing would also serve to relieve traffic pressure off of the current crossings while creating better north-south traffic flow. An urban minor arterial standard is appropriate, and should consist of one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and appropriate turn bays (or center two-way, left-turn lane).

Estimated Cost: $13,800,000

***MSN-7 (NE Extension to Cow Creek)***

Problem: Limited connectivity around the north and northeastern part of Whitefish.

Recommendation: Design and implement a new connection between Denver Avenue and East Texas Avenue. Denver Avenue should be reconstructed and extended to the east to meet with East Texas Avenue which should be reconstructed and extended to the north. This will create better connectivity in the northeastern part of Whitefish. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $2,100,000

***MSN-8 (NE Extension to Texas Avenue)***

Problem: Limited connectivity around the northern part of Whitefish.

Recommendation: Create a connection between Texas Avenue and Wisconsin Avenue north of Denver Avenue. This will create better connectivity in the northern part of Whitefish. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $950,000

***MSN-9 (Wisconsin Avenue Improvements)***

Problem: The existing corridor experiences congestion and delay, which will only increase due to projected growth in the area. Due to inherent funding limitations, long-term prospects for complete reconstruction is somewhat limited. A series of smaller scale, incremental projects are warranted. This typically would manifest itself in left-turn bays, pedestrian crossings and traffic signals.

Recommendation: It is recommended to reconstruct Wisconsin Avenue between

(Long Term) Edgewood Place and Big Mountain Road to a three-lane urban minor arterial section. It is expected that a minimum of one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and appropriate turn bays (or center two-way, left-turn lane) at the major intersections and or access points will be required.

Estimated Cost: $4,000,000

Recommendation: (Short Term) The projects recommended below should be considered as incremental projects to be considered that may help relieve safety and operations concerns. It has to be recognized that even the incremental projects have hurdles relative to implementation, chiefly with available right-of-way, storm drainage and utilities. These projects can be good candidates for implementation, however, and will offer immediate relief while funds accumulate for the long-term reconstruction project.

Project A
Left-turn bays along Wisconsin Avenue at Skyles Place
(Estimated Cost = $120,000)

Project B
Left-turn bays along Wisconsin Avenue at Denver Avenue
(Estimated Cost = $120,000)

Project C
Left-turn bays along Wisconsin Avenue at Glenwood
(Estimated Cost = $120,000)

Project D
Left-turn bays along Wisconsin Avenue at Colorado Avenue
(Estimated Cost = $120,000)

Project E
Left-turn bays along Wisconsin Avenue at Reservoir Road
(Estimated Cost = $120,000)

Project F
Bus pull-out along Wisconsin Avenue in the vicinity of the ice rink parking lot. This should include an appropriate covered bus shelter, and should complement the soon to be constructed bicycle/pedestrian path.
(Estimated Cost = $85,000)

Project G
Monitor the intersection of Wisconsin Avenue and Alpine Market for satisfaction of traffic signal control warrants. Currently, the intersection does not meet any of the eight signal warrants.

However, with potential development traffic the intersection may warrant traffic signal control and left-turn bays in the future. (Estimated Cost = $5,000)

***MSN-10 (13th Street Bridge)***

Problem: Limited east-west connectivity across the Whitefish River.

Recommendation: Construct an east-west segment across the Whitefish River connecting East 13th Street and Voerman Road. The segment should be constructed as an urban minor arterial and will need to include a bridge across the Whitefish River.

Estimated Cost: $4,000,000

***MSN-11 (Monegan Road Reconstruction)***

Problem: Increased need to handle traffic volumes on the southeast side of Whitefish along with limited connectivity in the area.

Recommendation: Reconstruct Monegan Road south from the intersection with Voerman Road then east to the projected intersection with Missy Lane. Currently this segment is gravel and is projected to see an increase in traffic volumes as development increases in the area. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $2,850,000

***MSN-12 (JP Road Reconstruction)***

Problem: Increased need to handle traffic volumes on the southeast side of Whitefish along with limited connectivity in the area.

Recommendation: Reconstruct JP Road from the intersection with US Highway 93 to the intersection with Monegan Road. With growth expected to occur around this area, JP Road will act as a key access to development in the area. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $2,500,000

## *MSN-13 (Voerman Road Reconstruction)*

Problem: Increased need to handle traffic volumes on the southeast side of Whitefish along with limited connectivity in the area.

Recommendation: Reconstruct Voerman Road from the intersection with Shady River Lane to the intersection with Missy Lane. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $3,800,000

## *MSN-14 (Whitefish Beach)*

Problem: Poor traffic circulation along with high levels of pedestrian and bicycle traffic.

Recommendation: Reconstruct the portion of Lakeside Boulevard and Skyles Place along Whitefish Beach to accommodate one-way vehicular traffic and two-way bicycle traffic with parking as shown in **Figures 8-2** and **8-3**. Appropriate signage and striping should be used to differentiate between bike lanes, driving lanes, and parking stalls. One-way vehicular traffic will help to increase safety levels and traffic flow in the area.

Estimated Cost: $300,000

## *MSN-15 (8th Street One-Way Roadway)*

Problem: Poor traffic circulation in school area. Need for additional route choice.

Recommendation: It is recommended to construct a one-way, context sensitive roadway facility along the 8th Street right-of-way between Ashar Avenue and easterly limits of the existing 8th Street facility. This project has been debated in the community off and on for several years. The one-way flow (from east to west) will help alleviate traffic congestion along 7th Street and provide an additional option. The new roadway must be designed with sensitivity to the adjacent private school (Whitefish Christian Academy) and incorporate pedestrian friendly amenities.

Estimated Cost: $200,000

## 8.3 RECOMMENDED FUTURE MAJOR STREET NETWORK (FMSN) IMPROVEMENTS

FMSN recommendations should be implemented as development occurs in the area. They are not necessary with the current developments, but would help to create a well established grid system when additional development does occur in the areas. A good grid system is key to help the traffic network function as well as possible.

### ***FMSN-1 (13th Street Extension)***

Recommendation: Extend 13th Street west from the intersection with Baker Avenue to the intersection of Lost Coon Trail and Karrow Avenue. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $1,300,000

### ***FMSN-2 (West 18th Street Extension)***

Recommendation: Extend and reconstruct West 18th Street west from the intersection with Baker Avenue to Old Dumb Road. Old Dump Road should also be reconstructed to the same standards. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $1,300,000

### ***FMSN-3 (Old Morris Trail Extension)***

Recommendation: Extend and reconstruct Old Morris Trail from its intersection with Blanchard Lake Road north to the future extension of 13th Street (i.e. FMSN-1). The roadway should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $3,300,000

***FMSN-4 (Missy Lane Extension)***

Recommendation: Extend and reconstruct Missy Lane from its intersection with Voerman Road south to Monegan Road. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $1,400,000

***FMSN-5 (North/South Connection)***

Recommendation: Create a north-south segment that starts at Voerman Road, between the intersections with Missy Lane and Monegan Road, which travels south to intersect with Monegan Road. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $1,400,000

***FMSN-6 (East/West Connection)***

Recommendation: Create an east-west segment that starts at Monegan Road, between the intersections with JP Road and Voerman Road, which travels east to intersect with Missy Lane. The roadways should be built to an urban minor arterial standard. This would include one travel lane in each direction, curb and gutter, boulevard, sidewalk, and appropriate turn bays at the major intersections and or access points.

Estimated Cost: $1,400,000

## 8.4 OTHER RECOMMENDED ROADWAY PROJECTS

In addition to the Major Street Network (MSN) projects described earlier, along with future corridor segments to facilitate developments, there are several roadway projects that should still be considered for the community. Many of these projects have been defined through previous "Capital Improvement Plans (CIP's)" undertaken by the City of Whitefish. These were reiterated earlier in this Transportation Plan in **Table 2-5**. For purposes of completeness, the following projects are still relevant as identified in **Table 8-1** on the next page:

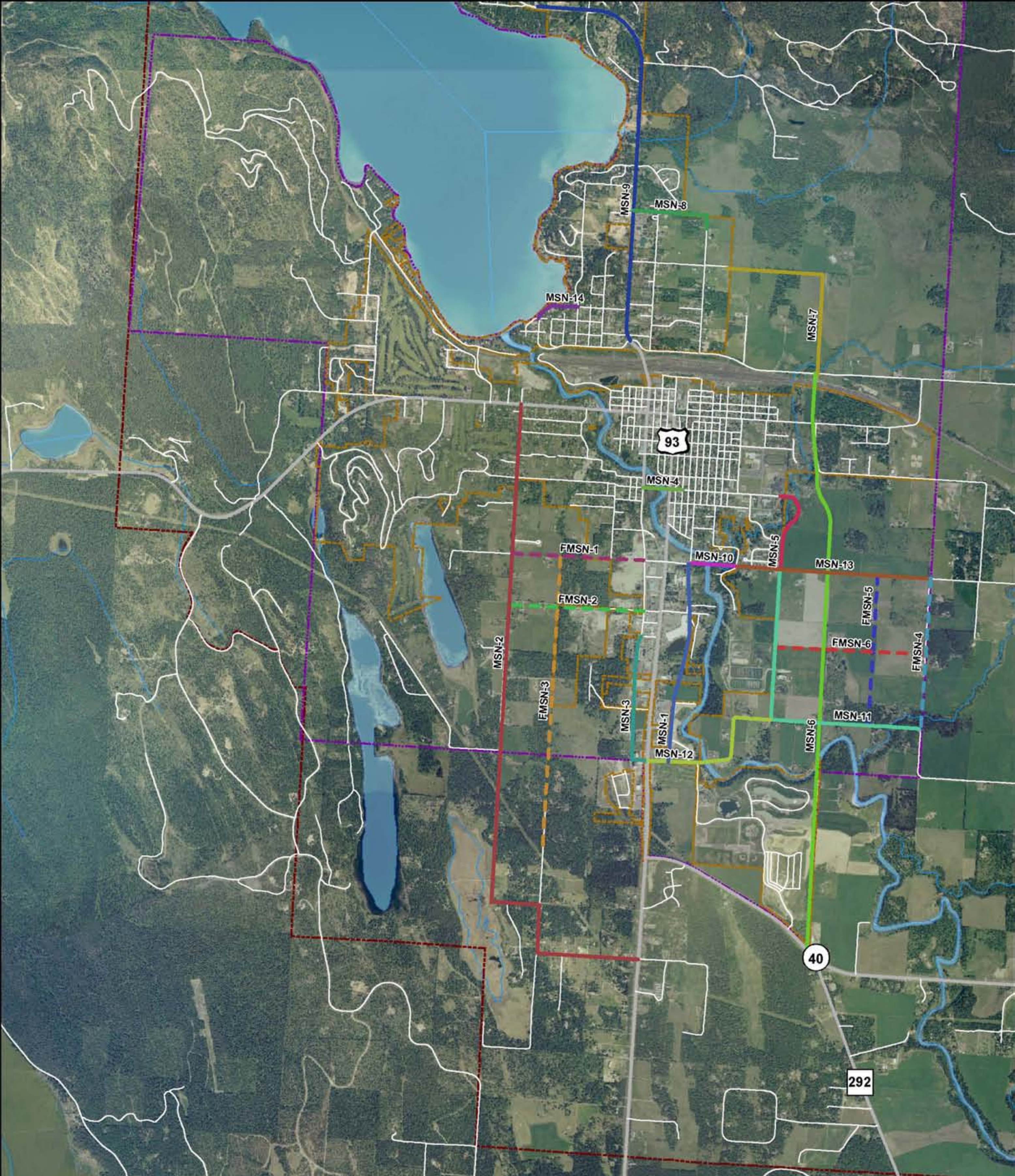
# Table 8-1

## Other Roadway Projects to Be Carried Forward

| # | Project | Description | Status | Comments |
|---|---|---|---|---|
| A-1 | HWY 93 Couplet | Provide a "contra-flow" lane along Baker Avenue to improve access options. Provide a couplet along Spokane Avenue and Baker Avenue. | ***On Hold*** | ***Re-visiting with US 93 Downtown Corridor Study*** |
| A-3 | 2nd Street Improvements Between Spokane Ave and Baker Ave | Provide turn lanes and improve truck-turning radii at the intersection of Second Street and Baker Avenue. Prohibit left turn lanes from Second Street onto Central Avenue. | ***On Hold*** | ***Re-visiting with US 93 Downtown Corridor Study*** |
| C-2 | Central Avenue Reconstruction | Railway to 5th Street | ***In Process*** | ***2009 start*** |
| C-3 | Flint Avenue & 6th Street | Culvert and channel improvements | ***In Process*** | ***Part of 6th and Geddes (2011-2012)*** |
| D-2 | HWY 93 Widening | Widen US 93 from Karrow Avenue west to Lion Mountain Road to incorporate a center landscaped median with left-turn lanes where needed and one through lane in each direction. | ***In Process*** | ***Incorporated into the 'Whitefish – West" project*** |
| D-3 | Wisconsin Avenue | Between the viaduct and Big Mountain Road, add detached bicycle paths and turn lanes at high volume intersections, striping and signage to prohibit passing on the entire length, and caution pedestrian/bicycle signage. Prepare an alignment study for widening, boulevard landscaping, and storm sewer facilities. | ***In Process*** | ***Bid not awarded, re-bidding 2008*** |
| D-4 | Spokane Ave | Between the Whitefish River and 7th Street, restripe and prohibit on-street parking to accommodate four through traffic lanes. | ***On Hold*** | ***Re-visiting with US 93 Downtown Corridor Study*** |
| D-5 | 2nd Street | Widen west of the Whitefish River to incorporate a center median with left-turns without restricting the numerous adjacent drives. | ***In Process*** | ***Incorporated into the 'Whitefish – West" project*** |
| D-6 | 7th Street (1) | Construct an extension of 7th Street east of Spokane Ave to Kalispell Ave to accommodate one lane in each direction. Repave and install sidewalks between Spokane Avenue and Pine Avenue. Designate as route to Whitefish schools. | ***On Hold*** | ***Re-visiting with US 93 Downtown Corridor Study*** |
| D-7 | 6th Street | Repave and install sidewalks between Spokane Ave. and Pine Ave. | ***Recommended*** | |
| D-9 | Baker Ave | Stripe left-turn lane from southbound Baker Ave. to eastbound 1st St. to reduce turn movements at the intersection of 2nd St. and Baker Ave. | ***On Hold*** | ***Re-visiting with US 93 Downtown Corridor Study*** |
| D-10 | East 2nd Street | Include curb, gutter and sidewalk in the developed areas and widened shoulders for pedestrians and bicyclists in the more rural areas. | ***Recommended*** | |
| F-1 | Dakota Ave. Reconstruction 2 | Reconstruction of Dakota Ave. from Bay Point Dr. to Glenwood Rd. | ***Recommended*** | |
| F-2 | Dakota Ave. Reconstruction 1 | Reconstruction of Dakota Avenue from Skyles Place to Bay Point Drive. New pedestrian/bicycle facilities to be included. | ***Recommended*** | |
| F-4 | Washington Avenue Reconstruction | Reconstruction of roadway and sidewalks between Edgewood Place and Lakeside Boulevard. | ***Recommended*** | |
| F-5 | Woodland Place Reconstruction | Reconstruction between Dakota Ave. and Iowa Ave. with new sidewalks. | ***Recommended*** | |
| F-6 | Minnesota Avenue Reconstruction | Reconstruction of roadway and sidewalks between Edgewood Place and Skyles Place. | ***Recommended*** | |
| F-8 | Texas Avenue Reconstruction | Reconstruction between Edgewood Place and Denver Street. | ***Recommended*** | |
| F-11 | 2nd Street Pedestrian Facilities | New sidewalk installation on the south side from Good Avenue to approximately one half block west of Lupfer Avenue. | ***Recommended*** | |
| F-12 | Lupfer Ave. Reconstruction | Reconstruction of roadway and sidewalks from 2nd St to 5th St | ***Recommended*** | |
| F-13 | 4th Street Reconstruction | Reconstruction of roadway and sidewalks from the Mountain View Manor to Baker Avenue. | ***Recommended*** | |
| F-14 | 1st Street Reconstruction 2 | Reconstruction of roadway and sidewalks from Kalispell Avenue to Fir Avenue. | ***Recommended*** | |
| F-16 | 3rd Street Reconstruction/Overlay | Reconstruction of roadway and sidewalks from Kalispell Avenue to Park Avenue and a pavement overlay between Park Avenue and Pine Avenue. | ***Recommended*** | |

| | | | | |
|---|---|---|---|---|
| **F-17** | 4th Street Reconstruction | Reconstruction from Pine Avenue to Fir Avenue with curb and gutter being placed on the south side inline with that on adjacent blocks to separate the high school parking area from the roadway. | ***Recommended*** | |
| **F-19** | 6th Street Reconstruction | Reconstruction from Central Avenue to Pine Avenue with new sidewalks to be included. | ***Recommended*** | |
| **F-21** | Kalispell Ave. Reconstruction | Reconstruction with new sidewalks from 4th St. to Riverside Ave. | ***Recommended*** | |
| **F-22** | 9th Street Reconstruction | Reconstruction with new sidewalks from Spokane Avenue and Columbia Avenue. | ***Recommended*** | |
| **F-23** | Park Avenue Reconstruction | Reconstruction with new sidewalks from 8th Street to 450 feet south of 10th Street. | ***Recommended*** | |
| **F-24** | Riverside Avenue Reconstruction | Reconstruction with new sidewalks from Spokane Avenue and Columbia Avenue. | ***Recommended*** | |

Note: For project Identifiers (ID #) contained in **Table 8-1**, refer to **Figures 2-11** and **Figure 2-12** located in **Chapter 2**.




**Legend**

FMSN-1 FMSN Project
MSN-1 MSN Project
Study Boundary
City Boundary
Urban Boundary

N

0 0.25 0.5 1 1.5 2 Miles

# Whitefish Recommended Major Street Network Improvements

Figure 8-1


ROBERT PECCIA & ASSOCIATES
Helena and Kalispell, Montana
CIVIL
TRANSPORTATION
ENVIRONMENTAL
ENGINEERS

40 0 40 80
(SCALE IN FEET)

**ADVANTAGES**
- INCREASED SAFETY
- SLOWER VEHICLE SPEEDS
- BETTER DEFINED PARKING
- DESIGNATED BIKE ROUTE
- DECREASED TRAFFIC LEVELS

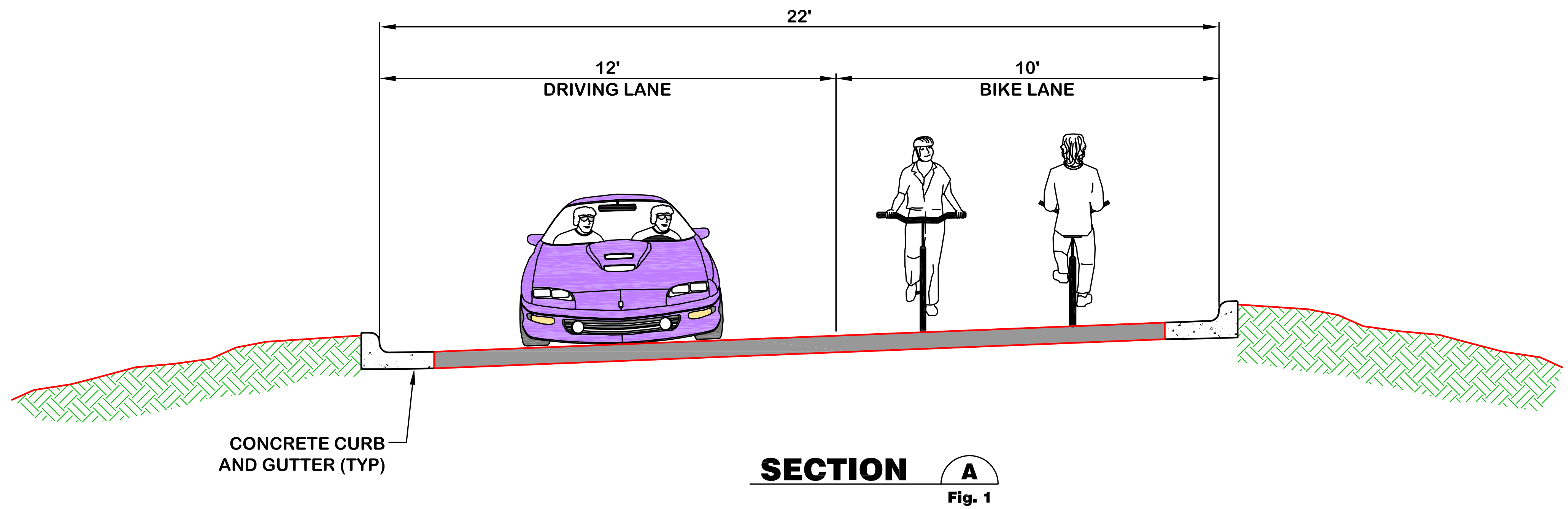
**DISADVANTAGES**
- LIMITED ACCESS
- ONE-WAY TRAFFIC
- EMERGENCY VEHICLE ACCESS MAY BE INHIBITED
- MAY CAUSE HIGHER TRAFFIC ON ADJACENT ROUTES

City of Whitefish

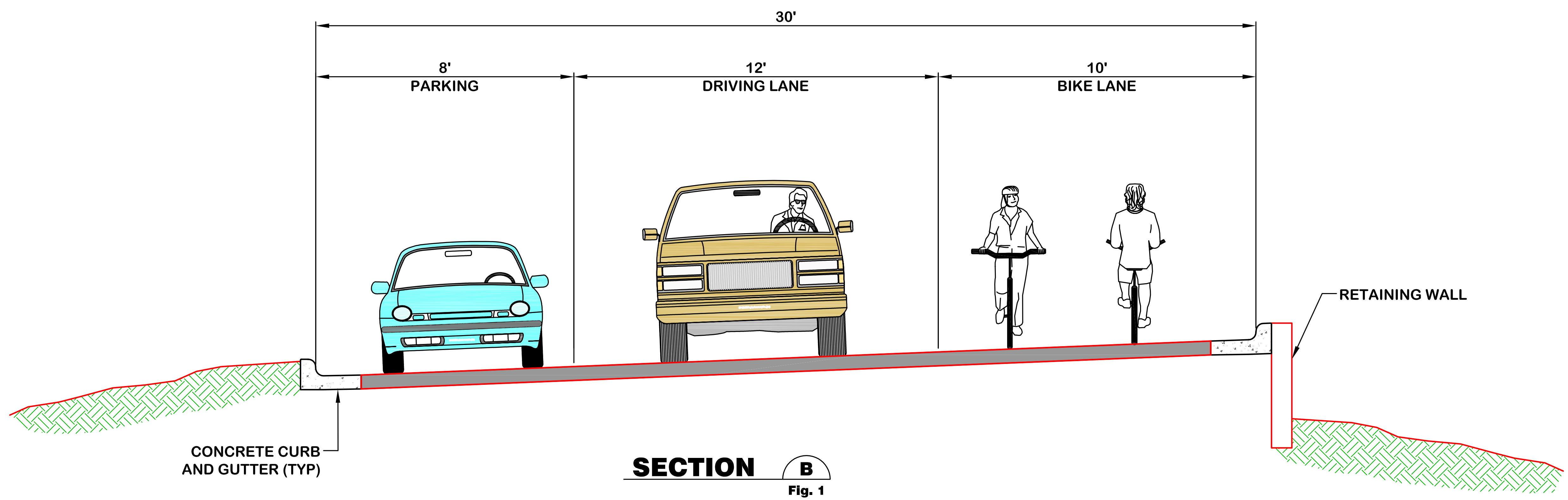
**WHITEFISH BEACH CONCEPTUAL PLAN**
City of Whitefish

**SITE PLAN**
**Figure 8-2**

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Pro\dwg\Lakeside-bikelane\Figures\Fig1-bikeplan.dwg Oct 11, 2007




SECTION A
Fig. 1




SECTION B
Fig. 1

ROBERT PECCIA & ASSOCIATES
Helena and Kalispell, Montana
CIVIL
TRANSPORTATION
ENVIRONMENTAL
ENGINEERS

Horizontal 2 0 2 4 (SCALE IN FEET)

Vertical 1 0 1 2 (SCALE IN FEET)

WHITEFISH BEACH CONCEPTUAL PLAN
City of Whitefish

TYPICAL SECTIONS

Figure 8-3

F:\TRANS\WHITEFISH\Transportation Plan\WhiteFish-Proj\dwg\Lakeside-bikelane\Figures\Fig2-bikesect.dwg Oct 11, 2007

## 8.5 RECOMMENDED NON-MOTORIZED NETWORK IMPROVEMENTS

**Tables 8-2** and **8-3** show a list of recommended non-motorized network improvements to be made in the Whitefish Area. These tables are represented graphically in **Figures 2-13** and **2-14** located in **Chapter 2**.

### Table 8-2
**Trails Listed in the Whitefish Bicycle and Pedestrian Master Plan**

| # | Identification |
|---|---|
| A-1 | U.S. Highway 93 Corridor<br>▪ Proposed bicycle route along US Highway 93 south of Whitefish north to the Whitefish River<br>▪ Proposed paved pedestrian and bicycle path from the Whitefish River to the west past Whitefish Lake Golf Course |
| A-2 | Wisconsin Avenue - Big Mountain Road<br>▪ Proposed paved pedestrian and bicycle path along Wisconsin Avenue from 2nd Street to Big Mountain Road<br>▪ Proposed bicycle route along Big Mountain Road |
| A-3 | East Lakeshore Drive<br>▪ Proposed bicycle route along East Lakeshore Drive from Big Mountain Road to the northwest |
| A-4 | Edgewood Place - City Beach<br>▪ Existing paved pedestrian and bicycle path along Edgewood Place from Washington Avenue to Wisconsin Avenue<br>▪ Proposed paved pedestrian and bicycle path along Edgewood Place from Wisconsin Avenue east outside the city |
| A-5 | Dakota Avenue - Colorado Avenue<br>▪ Proposed paved pedestrian and bicycle path along Colorado Avenue from Edgewood Place north to Parkway Avenue, then west across Wisconsin Avenue to Dakota Avenue, then south along Dakota Avenue to Edgewood Place.<br>▪ Part of this route is already constructed as a paved pedestrian and bicycle path |
| A-6 | Railway Street - Pine Avenue<br>▪ Proposed paved pedestrian and bicycle path along Railway Street between Baker Avenue and Pine Avenue<br>▪ Proposed bicycle path along Pine Avenue between Railway Street and 2nd Street.<br>▪ Existing paved pedestrian and bicycle path along Railway Street between O'Brien Avenue and Baker Avenue |
| A-7 | Second Street East<br>▪ Proposed paved pedestrian and bicycle path along East 2nd Street between East Edgewood Place and Armory Road.<br>▪ Existing paved pedestrian and bicycle path along East 2nd Street between Armory Road and Pine Avenue<br>▪ Existing paved pedestrian and bicycle path along East 2nd Street between Pine Avenue and Spokane Avenue |
| A-8 | Armory Road - Armory Fields<br>▪ Proposed paved pedestrian and bicycle path along Armory Road starting at 2nd Street then easterly to the Armory Fields complex<br>▪ This trail includes Dodger Avenue between Armory Road and Second Street East |

| | |
|---|---|
| A-9 | Seventh Street - Columbia Avenue<br>▪ Proposed bicycle route along 7th Street from Highway 93 to Columbia Avenue, then continuing south along Columbia Avenue to 13th Street, then west to Highway 93<br>▪ Existing bicycle route along 7th Street between Columbia Avenue and Park Avenue<br>▪ Existing paved pedestrian and bicycle path along 7th Street from Park Avenue to the end of the road |
| A-10 | Baker Street - Riverside/Baker Parks<br>▪ Proposed bicycle route along Baker Avenue from 2nd Street south across the Whitefish River<br>▪ Existing bicycle route along Baker Avenue from the Whitefish River south to 19th street, then to Highway 93 |
| A-11 | Karrow Avenue - Seventh Street<br>▪ Proposed paved pedestrian and bicycle path starting at the intersection of 2nd Street and Karrow Avenue, traveling south along Karrow Avenue to 7th Street, then east along 7th Street to Riverside Park |
| A-12 | Tenth Street - Voerman Road<br>▪ Proposed paved pedestrian and bicycle path that extends easterly from the intersection of Tenth Street and Columbia Avenue through neighborhoods adjoining the WhitefishRiver and across Cow Creek to join Voerman Road<br>▪ The trail then proceeds due east for about a mile along Voerman Road |
| A-13 | Golf Course - Whitefish State Park<br>▪ Proposed paved pedestrian and bicycle path that runs from the Whitefish River Trail near City Beach around the perimeter of Whitefish Lake Golf Course along U.S. Highway 93 and State Park Road to end at Whitefish State Park |
| A-14 | Edgewood-Birch Drive - State Park Road<br>▪ Proposed paved pedestrian and bicycle path that begins at the proposed Whitefish River Crossing at Edgewood near the BNSF trestle, crosses the tracks via Birch Drive, and continues to State Park Road via the 30-foot-wide Lakeside Avenue right-of-way and through City Park (golf course) property |
| A-15 | Grouse Mountain - Seventh Street<br>▪ Proposed bicycle route that winds through the Grouse Mountain development and connects U.S. Highway 93 with Karrow Avenue via Fairway Drive and Seventh Street |
| A-16 | Fifth Street<br>▪ Proposed paved pedestrian and bicycle path that extends from Baker Park due east along Fifth Street to Muldown Elementary and Whitefish High Schools |
| A-17 | Whitefish River Trail<br>▪ Proposed paved pedestrian and bicycle path along the Whitefish River from Railway Street to 2nd Street<br>▪ Existing paved pedestrian and bicycle path that extends along the Whitefish River from Railway Street to where the river is joined by Cow Creek |
| A-18 | Cow Creek Trail<br>▪ Proposed paved pedestrian and bicycle path that generally parallels the creek and extends from Second Street East southwesterly along the city limits before joining the Whitefish River Trail near the Duck Inn |

## Table 8-3

### Trails NOT Listed in the Whitefish Bicycle and Pedestrian Master Plan

| # | Identification |
|---|---|
| B-1 | Iron Horse<br>▪ Proposed paved pedestrian and bicycle path that extends the current path to the north along Iron Horse |
| B-2 | Northeast Trail<br>▪ Proposed unpaved pedestrian and bicycle path along the northeast part of the city boundary |
| B-3 | Huckleberry Ln<br>▪ Proposed unpaved pedestrian and bicycle path along Huckleberry Lane |

| | |
|---|---|
| **B-4** | Reservoir Rd<br>▪ Proposed bicycle route that runs east along Reservoir Road |
| **B-5** | Texas Ave<br>▪ Proposed paved pedestrian and bicycle path that starts at East Edgewood Place, then travels north along Texas Avenue and connects with Rick Oshay Road<br>▪ Path then continues north to Reservoir Road, then follows Reservoir Road east to Wisconsin Avenue |
| **B-6** | Armory Rd<br>▪ Proposed paved pedestrian and bicycle path that starts at Voerman Road and travels north along Armory Road until Armory Road turns west |
| **B-7** | Kalner Lane<br>▪ Proposed paved pedestrian and bicycle path that follows the southern side of the Whitefish River starting at JP Road, then heads south along Kalner Lane to Highway 40 |
| **B-8** | HWY 40<br>▪ Proposed paved pedestrian and bicycle path that starts at the intersection of HWY 40 and HWY 93 then heads east along HWY 40 to the intersection with Whitefish Stage |
| **B-9** | Karrow Ave<br>▪ Proposed paved pedestrian and bicycle path that starts at the intersection with Blanchard Lake Road and heads north to the intersection with 7th Street |
| **B-10** | Mountainside Drive-Blanchard Lake<br>▪ Proposed paved pedestrian and bicycle path that starts at the intersection of Mountainside Dr and Fairway Dr then follows Mountainside Dr south to Blanchard Lake Rd, then follows Blanchard Lake south and east to Karrow Ave, then goes east to connect to JP Road |
| **B-11** | Waverly Place<br>▪ Proposed bicycle route along Waverly Place between Dakota Avenue and Idaho Avenue<br>▪ Proposed paved pedestrian and bicycle path along Waverly Place between Idaho Avenue and Washington Avenue |
| **B-12** | Denver Street<br>▪ Proposed paved pedestrian and bicycle route along Denver Street between Wisconsin Avenue and Texas Avenue |
| **B-13** | 1st Street and Second Street Connection<br>▪ Proposed paved pedestrian and bicycle route between 1st Street and 2nd Street just to the west of the Whitefish River |
| **B-14** | Spokane Ave<br>▪ Proposed paved pedestrian and bicycle route along Baker Avenue between 2nd Street and Railway Street |
| **B-15** | 6th St<br>▪ Proposed paved pedestrian and bicycle route along 6th Street from 5th Street south to the Whitefish River Trail |
| **B-16** | 7th Street and Voerman Street Connection<br>▪ Proposed paved pedestrian and bicycle route that connects the east end of 7th Street to Voerman Road at the intersection with Windy Flats Road |
| **B-17** | 13th St<br>▪ Proposed paved pedestrian and bicycle route that starts at the intersection of 13th Street and Baker Street then heads southwest |
| **B-18** | Whitefish River<br>▪ Proposed paved pedestrian and bicycle route that starts at the intersection of the Whitefish River Trail and Cow Creek Trail and follows the Whitefish River south |

**THIS PAGE INTENTIONALLY LEFT BLANK**

# CHAPTER 9:
# Miscellaneous

# CHAPTER 9: MISCELLANEOUS TRANSPORTATION SYSTEM CONSIDERATIONS

## 9.1 ROADWAY TYPICAL SECTIONS

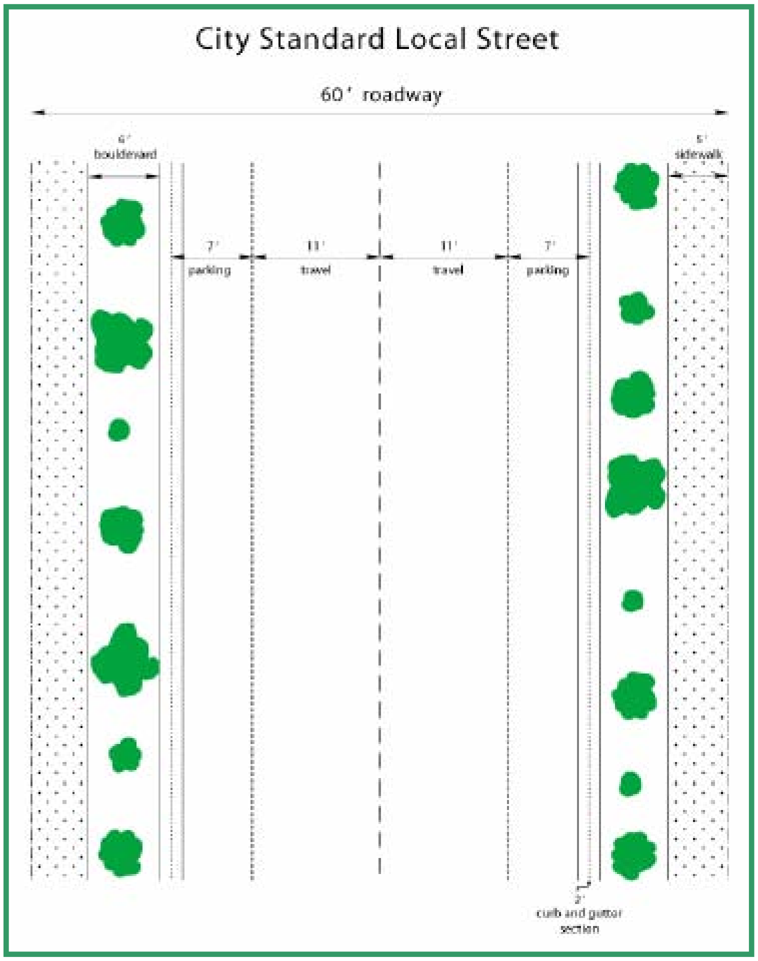
Roadway typical sections, which generally refers to the geometric features of a given roadway (width, radii, sight distance, etc), impact a transportation system in ways more than just carrying vehicles. Roadways widths and adjacent streetscaping can create a "feel" of a roadway corridor and defined the context of the roadway in a given situation. Historically, in most roadway systems, the standard "mode of operation" to vehicular travel has been to build "bigger and better" facilities. This philosophy has resulted in more lane-miles in expanding existing roadways, the addition of new roadway corridors, as well as a primary focus on transportation system management (i.e. smaller projects to tweak the system). These have all been performed under the guise of moving more cars. Increasingly, though, a trend has emerged of diverting from this and focusing on moving people, improving the quality of the travel environment such that a given roadway is in context with the adjacent land use, and shortening travel distances in an effort to extend available resources and get away from the "bigger is better" philosophy. This trend will be increasingly important in our community's urban areas as desires for context sensitivity are heightened.

This background is an overriding theme in the City of Whitefish's current Growth Policy Update. The "Transportation Element" discusses "neighborhood sensitive" street standards, and portrays potential context sensitive roadway typical sections for local and residential street sections. It is the intent of this section of the Transportation Plan to point out the opportunities (pros) and constraints (cons) that may ultimately be realized with the use of the alternative street sections.

First and foremost it must be recognized that for most local streets, the local government entity (in this case the City of Whitefish) has direct control over roadway geometry and function, and can therefore dictate roadway typical section appearance. For roadways that are generally collector and above (i.e. minor arterial, principal arterial, interstate), if the facilities are on the Federally adopted "urban aid system" then the roadway geometry is dictated by Montana Department of Transportation (MDT) roadway standards. This is an important point, because the MDT does have "urban design standards" for the various roadway types classified as collectors and above based on dialogue and consensus with many local Montana governments dating back to the early 1990's.

That being said, though, there is a trend to narrower lane widths on many local roadways, and the intent of the current Growth Policy Update is to provide alternatives that may be considered in residential areas as developments are contemplated. These alternative sections, as shown in the current Growth Policy Update, are reiterated herein.

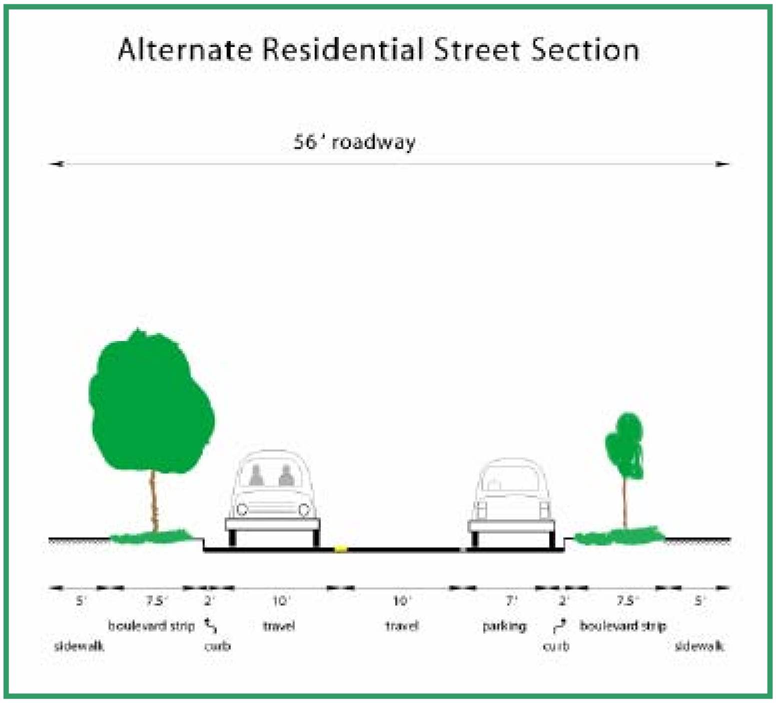
**City Standard Local Street (60' Right-of-Way)**
The city standard local street has a 60-foot right-of-way width. Travel lanes are 11-feet in width and accommodates 7-feet of parking on each side. The total pavement width is 34-feet. In addition, there is a 6-foot boulevard with street tress, and a 5 foot sidewalk on each side.




| City Standard Local Street (60' Right-of-Way) | |
|---|---|
| **Pro's** | **Con's** |
| Emergency service providers are in favor of the 11-foot travel lanes | Wider travel lane widths can encourage traveling over the acceptable speeds in neighborhoods |
| On-street parking is provided via 7-foot parking widths | There are no on-street bicycle/pedestrian facilities present |
| Snow storage is available in the boulevard areas | On-street parking can cause concerns with pedestrians trying to cross the street due to sight visibility |
| Concrete sidewalks are available for pedestrian safety | |

## Alternate Residential Street Section (56' Right-of-Way)

The city alternate residential street section has sidewalks on both sides of the roadway, however parking is eliminated on one side of the street. This is done so the roadside boulevards can be widened to 7.5-feet (instead of 6-feet). Additionally, travel lanes are reduced to 10-feet in width (each direction) to slow speeds. The total right-of-way width for this section is 56 feet.

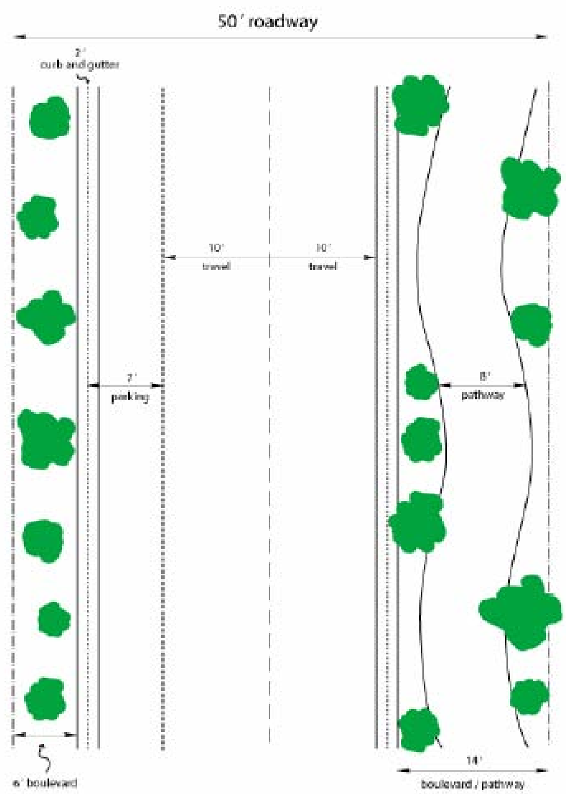



| Alternate Residential Street (56' Right-of-Way) | |
|---|---|
| **Pro's** | **Con's** |
| Ten foot travel lane widths have a tendency to slow vehicle travel speed | Parking is only available on one side of the roadway. May cause blockage in traffic flow when drop-off/pick-up occurs at private residences at "non-parking" side of street. |
| Pedestrian crossing distances are somewhat reduced with the narrower typical section | There are no on-street bicycle/pedestrian facilities present |
| Additional snow storage is available due to the wider boulevards | On-street parking can cause concerns with pedestrians trying to cross the street due to sight visibility |
| Concrete sidewalks are available for pedestrian safety | Ten foot travel lanes are generally the minimum fire service trucks can maneuver |

## Alternate Residential Street Section (50' Right-of-Way)

This city alternate residential street section only uses 50 feet of right-of-way width. It provides for parking on one side of the street, with a standard boulevard (6-feet width). On the other side of the street, the boulevard is wider to accommodate a meandering 8-foot wide separated bike/pedestrian path.

Alternative Residential Street Section




| Alternate Residential Street (50' Right-of-Way) | |
|---|---|
| **Pro's** | **Con's** |
| Ten foot travel lane widths have a tendency to slow vehicle travel speed | Parking is only available on one side of the roadway. May cause blockage in traffic flow when drop-off/pick-up occurs at private residences at "non-parking" side of street. |
| Pedestrian crossing distances are somewhat reduced with the narrower typical section | There are no on-street bicycle/pedestrian facilities present |
| Additional snow storage is available due to the boulevards | On-street parking can cause concerns with pedestrians trying to cross the street due to sight visibility |
| A separated bicycle/pedestrian path exists for increased safety | Ten foot travel lanes are generally the minimum fire service trucks can maneuver |

In conclusion, the alternate local street sections have both pros and cons associated with them. There will be numerous cases where narrow roadway sections will be necessary within narrower right-of-way widths. These will chiefly be founded in urban infill areas and existing neighborhoods where existing right-of-way may be an issue. Also, mixed-use design guidelines are increasingly trying to achieve walkability and context sensitivity, and the presented section may in fact achieve the desired end product of creating a more neighborhood friendly design.

A final note must be made, however, regarding the alternate typical sections. For most major roadways in the community (i.e. collectors and above), urban roadway standards do exist through both the Montana Department of Transportation and the City of Whitefish.
It must be made very clear that the alternate roadway sections presented in section 9.1 will not be allowed on those roadways falling under MDT jurisdiction. Again, reference is made to the MDT's "urban design standards" for the various roadway types classified as collectors and above currently in effect. The City does have roadway typical sections on record for different local, collector, and rural streets. These will be the default sections for those roadways not on the "urban aid system", as well as those roadways not requiring higher sensitivity to "context sensitive design" principles. The reader is referenced to the City of Whitefish "Construction Standards" for the default typical sections for the following roadway types:

- Arterial Street (SD-9);
- Collector Street (SD-2);
- Collector Street w/Parking (SD-3);
- Local Street w/out Parking (SD-4);
- Local Street w/Bike Lanes (SD-5);
- Local Street w/Parking (SD-6);
- Local Street w/Bike Path (SD-7); and
- Rural Street (SD-8).

## 9.2 TRANSIT PARTNERSHIPS WITH EAGLE TRANSIT & GLACIER NATIONAL PARK (GNP)

During the development of this Transportation Plan, dialogue occurred with both Eagle Transit (the Flathead Valley's primary transit provider) and also with Glacier National Park representatives, to discuss ways to heighten awareness of the benefits of transit service e over the planning horizon. There are has been much excitement regarding transit recently due to the unveiling of the transit service as part of the "Going-to-the-Sun" Road Rehabilitation. The transit service was unveiled during the summer of 2007 and is a cooperative agreement between Glacier National Park, the Montana Department of Transportation and Flathead County that allowed for the purchase, operation and maintenance of the transit buses. A goal of these cooperative agreements should be to allow use of transit buses for other parties during the GNP's "off-season".

A fundamental premise of establishing partnerships amongst Glacier National Park, Eagle transit, and the local cities in the Flathead Valley are that there are many, many gateways to the Park and other destinations. The city of Whitefish itself is a primary example. Visitors flock to the area during both winter and summer months. Providing alternative transportation such that a visitor can arrive in Whitefish, take transit to a lodge in Glacier, view the Park's offerings in transit and by walking, and return home can truly enhance the user experience and serve to shift travel modes. This type of example will take years and years before it could become the "norm". However, community leaders and its citizens should be encouraged to begin planning for this type of interaction and begin establishing partnerships with all the relevant entities/agencies.

Along with the discussion of transit, a discussion of "Intelligent Transportation Systems (ITS)" is relevant. In its simplest form, ITS in Montana has recently manifested itself in the form of certain recognizable features such as the 511 system and traveler kiosks. Making current, up-to-date information available to the traveling public will be by necessity important as the planning horizon continues. Especially given the fact that Glacier National Park is such a world wide destination, enabling and encouraging local communities to forge partnerships with the GNP and make information available is a worthy endeavor.

## 9.3 PUBLIC TRANSIT CONSIDERATIONS

In addition to the discussion above regarding partnerships with Glacier National Park, other opportunities were identified pertinent to public transportation. These opportunities are as bulleted below:

- Consider future busing opportunities to Big Mountain for special events and/or tourist hiking. Although implementation details would have to be worked out, all believe it is a worthy goal to reduce the number of vehicle trips on the roadway system by developing alternative forms of transportation. Free (and/or subsidized) transit for special events at Big Mountain are one potential measure that should be fully explored as the community grows.

- Consider heightened public transit usage and priority in the community for the Fourth of July festivities. An initial concept pertinent to this discussion is to allow public transit to enter and exit the City Beach area before the private automobile in hopes of encouraging citizens and tourists to use public transit. Again this ties into removing as many private automobiles from the roadway system as possible. Private vehicle parking areas would need to be identified off-site, such that patrons can park their cars and access public transit. Many suggestions have been made (Mountain Village, O'Shaughnessy Center, Safeway, etc.) however additional work would have to be completed before randomly selecting parking lots for public transit transfer pints.

- In spirit with the discussion in **section 9.2** of this chapter, the potential for free (or subsidized) busing to Glacier National Park should be explored in conjunction with perhaps a tourist hiking program. This could be complemented by Whitefish's "Over the Hill Gang" hikes. This represents a long-term opportunity that could also help to reduce private automobiles on the roadway system.

- A major objective of the approved Whitefish Growth Policy is to increase public transit opportunities and to encourage intercity transit usage. This should be fully explored between the City of Whitefish and Eagle Transit. For starters it would be advantageous to try and provide public transit service between Whitefish and Kalispell at least two times a day. This service could connect the Kalispell Medical Center, the Flathead Valley Community College, the Downtown and other points with the City of Whitefish and Big Mountain. Again, this concept is heavily dependent on available funding though Eagle Transit, however the goal is to provide transportation choices and reduce the dependence on the private automobile.

- One concept that was identified through this planning project was the idea of making a bicycle rental program available in the community. This type of program is somewhat common in several places in Europe. The basic concept is that at key locations, locked bicycles are available for usage and can be accessed through a credit card kiosk. When the bicycle is returned, the bicycle is locked and the receipt is distributed. They are generally available at major locations (such as train stations, parking garages, tourist destinations), and could be an alternative transportation feature unique to the community of Whitefish.

- Any future public transit growth and/or capital facility should consider environmentally sound features (such as bio-diesel fuel). In addition, bike racks and covered bike parking should be considered as appropriate.

- Wherever possible, major new land developments should consider transit pull-outs where feasible. This must be tempered with the reality of transit system usage and planned transit routes. However major developments located along important corridors should be fully reviewed to determine if transit pull-outs can be incorporated into the developments frontage.

Lastly, major employment centers should work with Eagle Transit and explore encouragement programs that allow employees to utilize public transit. This mechanism to reduce the dependence on the private automobile will take several years in the making. However as fuel prices rise and public transit becomes more available, the employment community should encourage transit usage through subsidized bus passes, allowance for transit schedule uncertainties, etc.

## 9.4 URBAN AND SECONDARY HIGHWAY DESIGNATIONS

It is appropriate when completing a regional Transportation Plan to discuss the Urban Highway system designations in place in the community. The formal system in place in the Whitefish area consists of both Urban and Secondary Highways. Because these roads are Montana systems, the Federal government has no direct involvement in the designations.

Urban and Secondary Highways are designated by the Montana Transportation Commission, in cooperation with local governing authorities. When revisions to the system are proposed, the Transportation Commission may require when adding mileage that a reasonably equal amount of mileage be removed. This is not an absolute, and situations do exist where mileage is added without a corresponding reduction. With that in mind, to meet eligibility requirements for placement on a system of Urban and Secondary Highways, the following criteria must be met:

Secondary Highways
The route must be outside a designated urban area and must be functionally classified as either a rural minor arterial or major collector.

Urban Highways
The route must be within a designated urban area and must be functionally classified as either an urban arterial or collector.

As conditions change in the community, driven by outlying growth and travel characteristic shifts, it is advisable to revisit the urban and secondary highway designations from time to time. To add, or delete, a route from the system, a very specific "six-step" process is in place and must be adhered to. This process is as follows:

1. Requests for new route designations or changes in existing designations are initiated by the local government. Requests must have the support of local elected officials from both the city and county and local transportation committees (if applicable).

2. MDT staff reviews the requests to determine whether the routes meet eligibility requirements.

3. If a route does not meet functional classification eligibility requirements, MDT staff advises the local government about the process and need for a formal review of the routes functional classification and conducts the review.

4. If necessary, MDT staff advises the local government about the Montana Transportation Commission policy that requires no significant net changes in secondary and urban highway mileage within the affected county or urban area as a result of designation changes. Local governments may have to adjust their original request to comply with this requirement.

5. If the proposal meets all eligibility requirements and complies with Transportation Commission policy, MDT staff asks the Transportation Commission to approve the request.

6. If the Transportation Commission approves the request, MDT staff notifies the affected local governments and makes appropriate changes in MDT records.

## 9.5 CORRIDOR PRESERVATION MEASURES

Corridor preservation is the application of measures to prevent or minimize development within the right-of-way of a planned transportation facility or improvement within a defined corridor. That includes corridors, both existing and future, in which a wide array of transportation improvements may be constructed including roadways, bikeways, multi-use trails, equestrian paths, high occupancy vehicle lanes, fixed-rail lines and more.

Corridor preservation is important because it helps to ensure that a transportation system will effectively and efficiently serve existing and future development within a local community, region or state, and prevent costly and difficult acquisitions after the fact. Corridor preservation policies, programs and practices provide numerous benefits to communities, taxpayers and the public at large. These include, but are not limited to, the following:

- Reducing transportation costs by preservation of future corridors in an undeveloped state. By acquiring or setting aside right-of-way well in advance of construction, the high cost to remove or relocate private homes or businesses is eliminated or reduced.

- Enhancing economic development by minimizing traffic congestion and improving traffic flow, saving time and money. Low cost, efficient transportation helps businesses contain final costs to customers and makes them more competitive in the marketplace. Freight costs, for instance, accounts for ten percent of the value of agricultural products, the highest for any industry.

- Increasing information sharing so landowners, developers, engineers, utility providers, and planners understand the future needs for developing corridors. An effective corridor preservation program ensures that all involved parties understand the future needs within a corridor and that state, local and private plans are coordinated.

- Preserving arterial capacity and right-of-way in growing corridors. Corridor preservation includes the use of access management techniques to preserve the existing capacity of corridors. When it is necessary, arterial capacity can be added before it becomes cost prohibited by preserving right-of-way along growing transportation corridors.

- Minimizing disruption of private utilities and public works. Corridor preservation planning allows utilities and public works providers to know future plans for their transportation corridor and make their decisions accordingly.

- Promoting urban and rural development compatible with local plans and regulations. The state and local agencies must work closely together to coordinate their efforts. Effective corridor preservation will result in development along a transportation corridor that is consistent with local policies.

To effectively achieve the policies and goals listed above, corridor management techniques can be utilized. These techniques can involve the systematic application of actions that:

- Preserve the safety and efficiency of transportation facilities through **access management**; and,

- Ensure that new development along planned transportation corridors is located and designed to accommodate future transportation facilities (**corridor preservation measures**).

**Access Management**

Access management techniques are increasingly fundamental to preserving the safety and efficiency of a transportation facility. Access control can extend the carrying capacity of a roadway, reducing potential conflicts and facilitating appropriate land usage. There are six basic principles of access management that are used to achieve the desired outcome of safer and efficient roadways. These principles are:

- Limit the number of conflict points.
- Separate the different conflict points.
- Separate turning volumes from through movements.
- Locate traffic signals to facilitate traffic movement.
- Maintain a hierarchy of roadways by function.
- Limit direct access on higher speed roads.

It is recommended that local government adopt a set of Access Management Regulations through which the need for access management principles can be evaluated on a case-by-case basis. For roadways on the State system and under the jurisdiction of the Montana Department of Transportation (MDT), access control guidelines are available which define minimum access point spacing, access geometrics, etc., for different roadway facilities. For other roadways (non-State), the adoption of an access classification system based upon the functional classification of the roadway (principal arterial, minor arterial or major collector) is desirable. These local regulations should serve to govern minimum spacing of drive approaches/connections and median openings along a given roadway in an effort to fit the given roadway into the context of the adjacent land uses and the roadway purpose. The preparation and adoption of a local Access Management Ordinance should be pursued that can adequately document the local government's desire for standard approach spacing, widths, slopes and type for a given roadway classification. Different types of treatment that can assist in access control techniques are:

- Non-traversable raised medians
- Frontage roads
- Consolidation and/or closure of existing accesses to the roadway
- Directional raised medians
- Left-turn bay islands
- Redefinition of previously uncontrolled access
- Raised channelization islands to discourage turns
- Regulate number of driveways per property

**Corridor Preservation Measures**

Another tool used to fulfill the policies and goals listed earlier in this chapter is that of specific corridor preservation measures. As was stated above regarding developing a local Access Management Ordinance, it is desirable to develop a Corridor Preservation Ordinance as well. Such an ordinance would serve to accomplish the following:

- Establish criteria for new corridor preservation policies to protect future transportation corridors from development encroachment by structures, parking areas, or drainage facilities (except as may be allowed on an interim basis). Some possible criteria could include the on-site transfer of development rights and the clustering of structures;

- Establish criteria for providing right-of-way dedication and acquisition while mitigating adverse impacts on affected property owners; and

- Establish criteria by which land dedication requirements can be identified and set forth as roughly proportionate to the transportation impacts generated by a proposed project.

## 9.6 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation Demand Management (TDM) measures came into being during the 1970s and 1980s in response to a desire to save energy, improve air quality, and reduce peak-period congestion. TDM strategies focused on identifying alternates to single occupant vehicle use during commuting hours. Therefore, such things as carpooling, vanpooling, transit use, walking and bicycling for work purposes are most often associated with TDM. Many of these methods were not well received by the commuting public and therefore, provided limited improvement to the peak-period congestion problem. Due to the experiences with these traditional TDM measures over the past few decades, it became clear that the whole TDM concept needed to be changed. TDM measures that have been well received by the commuting public include flextime, a compressed workweek and telecommuting. In addition to addressing commute trip issues, managing demand on the transportation system includes addressing traffic congestion associated with special events, such as special activities at the Big Mountain Resort, and special downtown events. A definition of TDM follows:

> *TDM programs are designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel. (FHWA, 1994)*

Since 1994, TDM has been expanded to also include route choice. A parallel arterial with excess capacity near a congested arterial can be used to manage the transportation system to decrease congestion for all transportation users.

The Whitefish area is projected to grow. The accompanying expansion of transportation infrastructure is expensive and usually lags behind growth. Proper management of demand now will maximize the existing infrastructure and delay the need to build more expensive additional infrastructure. TDM is an important and useful tool to extend the useful life of a Transportation System.

As communities such as Whitefish grow, the growth in number of vehicles and travel demand should be accommodated by a combination of road improvements; transit service improvements; bicycle and pedestrian improvements; and a program to reduce travel (vehicle trips and the vehicle miles traveled) via transportation demand management in conjunction with appropriate land use planning.

TDM strategies should be considered an important part of the Whitefish Transportation Plan due to their inherent ability to provide better predictability and choice to the user. TDM measures can also be applied to non-commuter traffic and are especially easy to adapt to tourism, special events, emergencies and construction.

Overall, congestion can be avoided or managed on a long-term basis through the use of an integrated system of TDM strategies.

### *LIST OF TDM STRATEGIES AND THEIR EFFECTIVENESS*

The following list of TDM strategies are measures that may be beneficial in the Whitefish community over the planning horizon. Many of these have been used by other communities in the United States and include:

- **Bicycling** - Bicycling can substitute directly for automobile trips. Communities that improve cycling conditions often experience significant increases in bicycle travel and related reductions in vehicle travel. Incentives to increase bicycle usage as a TDM strategy include: construction improvements to bike paths and bike lanes; correcting specific roadway hazards (potholes, cracks, narrow lanes, etc.); development of a more connected bikeway street network; development of safety education, law enforcement and encouragement programs; and the solicitation and addressing of bicycling security/safety concerns. Potential costs of this TDM strategy are expenses associated with creating and maintaining the bikeway network, potential liability and accident risks (in some cases), and increased stress to drivers.

- **Walking** - Walking as a TDM strategy has the ability to substitute directly for automobile trips. A relatively short non-motorized trip often substitutes for a longer car trip. For example, a shopper might choose between walking to a small local store versus driving a longer distance to shop at a supermarket. Incentives to encourage walking in a community can include: making improvements to sidewalks, crosswalks and paths by designing transportation systems that accommodate special needs (including people using wheelchairs, walkers, strollers and hand carts); providing covered walkways, loading and waiting areas; improving pedestrian accessibility by creating location-efficient, clustered, mixed land use patterns; and soliciting and addressing pedestrian security/safety concerns. Costs are similar to that of bicycling and are generally associated with program expenses and facility improvements.

- **Ride sharing (carpooling)** - Carpooling is traditionally one of the most widely considered TDM strategies. The idea is to consolidate drivers of single occupancy vehicles (SOV's) into fewer vehicles, with the result being a reduction in congestion. Carpooling is generally limited to those persons whose schedules are rigid and not flexible in nature. Studies have shown that carpooling is most effective for longer trips greater than ten miles in each direction. Aside for the initial administrative <u>cost</u> of set-up and marketing, ridesharing also may encourage urban sprawl by making longer-distance commutes more affordable.

  Transit agencies sometimes consider rideshare as competition that reduces transit ridership. Ridesharing is a strategy that would work within the Whitefish area, especially if set up through the larger employers. An extensive public awareness campaign describing the benefits of this program would help in selling it to the general public.

- **Vanpooling** - Vanpooling is a strategy that encourages employees to utilize a larger vehicle than the traditional standard automobile to arrive at work. Vans typically hold twelve or more persons. Vanpooling generally does not require high levels of subsidy usually associated with a fixed-route or demand-responsive transit service. They can often times be designed to be self-sufficient. The van is typically provided by the employer, or a vanpool brokerage agency, which provides the insurance. The <u>costs</u> of a vanpooling program are very similar to those of ridesharing.

- **Park & Ride lots** - Park and ride lots are effective for communities with substantial suburb to downtown commute patterns. Park and ride consists of parking facilities at transit stations, bus stops and highway on ramps, particularly at the urban fringe, to facilitate transit and rideshare use. Parking is generally free or significantly less expensive than in urban centers. <u>Costs</u> are primarily associated with facility construction and operation.

- **Traditional transit** - Traditional transit service is an effective TDM strategy, especially in a highly urban environment. Several methods to increase transit usage within the community are to improve overall transit service (including more service, faster service and more comfortable service), reduce fares and offer discounts (such as lower rates for off-peak travel times, or for certain groups), and improved rider information and marketing programs. The <u>costs</u> of providing transit depend on many factors, including the type of transit service, traffic conditions and ridership. Transit service is generally subsidized, but these subsidies decline with increased ridership because transit services tend to experience economies of scale (a 10% increase in capacity generally increases costs by less than 10%). TDM strategies that encourage increased ridership can be very cost effective. These strategies may include offering bicycle carrying components on the transit vehicle, changing schedules to complement adjacent industries, etc.

- **Traffic Calming** - Traffic Calming (also called Traffic Management) refers to various design features and strategies intended to reduce vehicle traffic speeds and volumes on a particular roadway. Traffic Calming projects can range from minor modifications of an individual street to comprehensive redesign of a road network.

Traffic Calming can be an effective TDM strategy in that its use can alter and/or deter driver characteristics by forcing the driver to either use a different route or to use an alternative type of transportation (such as transit, bicycling, walking, etc.). Costs of this TDM strategy include construction expenses, problems for emergency and service vehicles, potential increase in drivers' effort and frustration, and potential problems for bicyclists and visually impaired pedestrians.

- **Flextime** - When provided by employers, flextime allows workers to adjust their commuting time away from the peak periods. This means that employees are allowed some flexibility in their daily work schedules. For example, rather than all employees working 8:00 to 4:30, some might work 7:30 to 4:00, and others 9:00 to 5:30. This provides the workers with a less stressful commute, allows flexibility for family activities and lowers the number of vehicles using the transportation system during peak times. This in turn can translate into reduced traffic congestion, support for ridesharing and public transit use, and benefits to employees. Flextime allows commuters to match their work schedules with transit and rideshare schedules, which can significantly increase the feasibility of using these modes. Costs for implementing this type of TDM strategy can include increased administrative and management responsibilities for the employer, and more difficulty in evaluating an employee's productivity.

- **Alternate work schedule** - A related but more expansive strategy is to provide an alternate work schedule. This strategy involves using alternate work hours for all employees. It would entail having the beginning of the normal workday start at a time other than 8:00 a.m. For example, starting the workday at 7:30 a.m. would allow all employees to reach the work site in advance of the peak commute time. Additionally, since they will be leaving work at 4:30 p.m., they will be home before the peak commute time, and have more time in the evening to participate in family or community activities. This can be a very desirable side benefit for the employees. This has a similar effect on traffic as flextime, but does not give individual employees as much control over their schedules.

- **Compressed work week** - A compressed work week is different from offering "flextime" or the "alternate work schedule" in that the work week is actually reduced from the standard "five-days-a-week" work schedule. A good example would be employers giving their workers the opportunity to work four (4) ten-hour days a week. A compressed work week reduces commute travel (although this reduction may be modest if employees take additional car trips during non-work days or move farther from worksites). Costs for implementing this type of TDM strategy may be a reduction in productivity (employees become less productive at the end of a long day), a reduction in total hours worked, and it may be perceived as wasteful by the public (for example, if staffing at public agencies is low on Fridays).

- **Identifying and using special routes and detours for emergencies or special events** - This type of TDM strategy centers around modifications to driver patterns during special events or emergencies. They can typically be completed with intensive temporary signing or traffic control personnel. Temporary traffic control via signs and flaggers could be implemented to provide a swift and safe exit after applicable events.

- **Preferential parking for rideshare/carpool/vanpools** - This concept ties into the discussion above regarding parking of the SOV user. Preferential parking, such as delineating spaces closer to an office for riders sharing their commute or reduced/free parking, can be an effective TDM strategy.

- **Telecommuting** - Telecommuting in the work place offers a good chance to reduce the dependence to travel to work via car or bus. This is especially true in technical positions and some fields in the medical industry (such as medical transcription). Additionally, opportunities for distance learning, shopping via computers, basic health care services and recreation also exist and can serve to reduce vehicular travel on the transportation system. Telecommuting is usually implemented in response to an employee request, more so than instigated by the employer. Since telecommuting reduces commute trips, it can significantly reduce congestion and parking costs. It is highly valued by many employees and tends to increase their productivity and job satisfaction. Costs associated with this TDM strategy include increased administrative and management responsibilities, and more difficult evaluation of employee productivity. Some employees find telecommuting difficult and isolating. Telecommuting also may reduce staff coverage and interaction, and make meetings difficult to schedule. Many employers in Montana have tried and currently allow some form of telecommuting.

- **Subsidized transit by employers** - A subsidized transit program, typically offered by employers to their employees, consists of the employer either reimbursing or paying for transit services in full as a benefit to the employee. This usually comes in the form of a monthly or annual transit pass. Studies show that once a pass is received by an employee, the tendency to use the system rises dramatically.

- **Required densification / mixed use elements for new developments** - Requiring new developments to be dense and contain mixed-use elements will ensure that these developments are urban in character and have some services that can be reached by biking, walking or using other non-automobile methods. This also relates to the concept of “linked” or “shared” trips presented later in this chapter. As new developments are proposed, local and regional planners have the opportunity to dictate responsible and effective land use to encourage “shared” trips and reduce impacts to the surrounding transportation system.

- **Transit Oriented Development (TOD)** - Transit Oriented Development (TOD) refers to residential and commercial areas designed to maximize access by transit and non-motorized transportation, and with other features to encourage transit ridership. A TOD usually consists of a neighborhood with a rail or bus station, surrounded by relatively high-density development, with progressively lower-density spreading outwards. Transit Oriented Development generally requires about seven residential units per acre in residential areas and twenty-five employees per acre in commercial centers to adequately justify transit ridership. Transit ridership is also affected by factors such as employment density and clustering, demographic mix (students, seniors and lower-income people tend to be heavy transit users), transit pricing and rider subsidies, and the quality of transit service. This type of development could potentially work well within Whitefish and its outlying areas as development occurs.

By capitalizing on the use of these options, the existing vehicular infrastructure can be made to function at acceptable levels of service for a longer period of time. Ultimately, this will result in lower per year costs for infrastructure replacement and expansion projects, not to mention less disruption to the users of the transportation system. The Montana Department of Transportation is developing a Montana specific "TDM Toolbox". In evaluating local options for TDM it is suggested to look for programs and alternatives that have been successfully implemented in Montana.

## 9.7 PAVEMENT PRESERVATION STRATEGIES

Pavement preservation represents a proactive approach in maintaining existing community roads. It enables communities to reduce costly, time consuming rehabilitation and reconstruction projects and the associated traffic disruptions. With timely preservation the traveling public can be provided improved safety and mobility, reduced congestion, and smoother, longer lasting pavements. This is the true goal of pavement preservation. A <u>Pavement Preservation Program</u> consists primarily of three components:

- Preventive maintenance;
- Minor rehabilitation (non structural); and
- Routine maintenance activities

An effective pavement preservation program can benefit communities by preserving investment on their roadways, enhancing pavement performance, ensuring cost effectiveness, extending pavement life, reducing user delays, and providing improved safety and mobility. Pavement preservation is a combination of different strategies which, when taken together, achieve a single goal. It is useful to clarify the distinctions between the various types of maintenance activities, especially in the sense of why they would or would not be considered preservation. For a treatment to be considered pavement preservation, one must consider its intended purpose. The distinctive characteristics of pavement preservation activities are that they restore the function of the existing system and extend its service life, not increase its capacity or strength.

***Definitions for Pavement Preservation Programs***
*(from US Department of Transportation memorandum HIAM-20)*

Pavement Preservation is "…a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement life, improve safety and meet motorist expectations." (*Source: FHWA Pavement Preservation Expert Task Group*)

An effective pavement preservation program will address pavements while they are still in good condition and before the onset of serious damage. By applying a cost-effective treatment at the right time, the pavement is restored almost to its original condition. The cumulative effect of systematic, successive preservation treatments is to postpone costly rehabilitation and reconstruction. During the life of a pavement, the cumulative discount value of the series of pavement preservation treatments is substantially less than the discounted value of the more extensive, higher cost of reconstruction and generally more economical than the cost of major rehabilitation. Additionally, performing a series of successive pavement preservation treatments during the life of a pavement is less disruptive to uniform traffic flow than the long closures normally associated with reconstruction projects.

Preventive Maintenance is "a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without significantly increasing the structural capacity)." (*Source: AASHTO Standing Committee on Highways, 1997*)

Preventive maintenance is typically applied to pavements in good condition having significant remaining service life. As a major component of pavement preservation, preventive maintenance is a strategy of extending the service life by applying cost-effective treatments to the surface or near-surface of structurally sound pavements. Examples of preventive treatments include asphalt crack sealing, chip sealing, slurry or micro-surfacing, thin and ultra-thin hot-mix asphalt overlay, concrete joint sealing, diamond grinding, dowel-bar retrofit, and isolated, partial and/or full depth concrete repairs to restore functionality of the slab; e.g., edge spalls, or corner breaks.

Pavement Rehabilitation consists of "structural enhancements that extend the service life of an existing pavement and/or improve its load carrying capacity. Rehabilitation techniques include restoration treatments and structural overlays." (*Source: AASHTO Highway Subcommittee on Maintenance*)

Rehabilitation projects extend the life of existing pavement structures either by restoring existing structural capacity through the elimination of age-related, environmental cracking of embrittled pavement surface or by increasing pavement thickness to strengthen existing pavement sections to accommodate existing or projected traffic loading conditions. Two sub-categories result from these distinctions, which are directly related to the restoration or increase of structural capacity.

*Minor rehabilitation* consists of non-structural enhancements made to the existing pavement sections to eliminate age-related, top-down surface cracking that develop in flexible pavements due to environmental exposure. Because of the non-structural nature of minor rehabilitation techniques, these types of rehabilitation techniques are placed in the category of pavement preservation.

*Major rehabilitation* "…consists of structural enhancements that both extend the service life of an existing pavement and/or improve its load-carrying capability." (*Source: AASHTO Highway Subcommittee on Maintenance Definition*)

Routine Maintenance "consists of work that is planned and performed on a routine basis to maintain and preserve the condition of the highway system or to respond to specific conditions and events that restore the highway system to an adequate level of service." (*Source: AASHTO Highway Subcommittee on Maintenance*)

Routine maintenance consists of day-to-day activities that are scheduled by maintenance personnel to maintain and preserve the condition of the highway system at a satisfactory level of service. Examples of pavement-related routine maintenance activities include cleaning of roadside ditches and structures, maintenance of pavement markings and crack filling, pothole patching and isolated overlays. Crack filling is another routine maintenance activity which consists of placing a generally, bituminous material into "non-working" cracks to substantially reduce water infiltration and reinforce adjacent top-down cracks. Depending on the timing of application, the nature of the distress, and the type of activity, certain routine maintenance activities may be classified as preservation. Routine Maintenance activities are often "in-house" or agency-performed and are not normally eligible for Federal-aid funding.

Other activities in pavement repair are an important aspect of any construction and maintenance program, although they are outside the realm of pavement preservation:

Corrective Maintenance activities are performed in response to the development of a deficiency or deficiencies that negatively impact the safe, efficient operations of the facility and future integrity of the pavement section. Corrective maintenance activities are generally reactive, not proactive, and performed to restore a pavement to an acceptable level of service due to unforeseen conditions. Activities such as pothole repair, patching of localized pavement deterioration, e.g. edge failures and/or grade separations along the shoulders, are considered examples of corrective maintenance of flexible pavements. Examples for rigid pavements might consist of joint replacement or full width and depth slab replacement at isolated locations.

Catastrophic Maintenance describes work activities generally necessary to return a roadway facility back to a minimum level of service while a permanent restoration is being designed and scheduled. Examples of situations requiring catastrophic pavement maintenance activities include concrete pavement blow-ups, road washouts, avalanches, or rockslides.

Pavement Reconstruction is the replacement of the entire existing pavement structure by the placement of the equivalent or increased pavement structure.

Reconstruction usually requires the complete removal and replacement of the existing pavement structure. Reconstruction may utilize either new or recycled materials incorporated into the materials used for the reconstruction of the complete pavement section. Reconstruction is required when a pavement has either failed or has become functionally obsolete.

## 9.8 US HIGHWAY 93 BYPASS DISCUSSION

This Transportation Plan does not recommend the development of a bypass corridor to the existing US Highway 93 facility through the community. The concept of a bypass has historically been debated. Proponents of the bypass have stated that it will reduce overall traffic volumes in the downtown, detour high truck traffic and make the business district more "community oriented". Opponents of the bypass have stated that a bypass would never be built, would likely cause unacceptable environmental consequences and would be financially unattainable.

This Transportation Plan did examine a potential westerly bypass via a travel demand modeling exercise, and also has looked at other constraints associated with potential routes. These have been explained in **chapter 3** of this Transportation Plan. From a pure traffic analysis discussion, a bypass does not solve the future traffic issues examined out to the planning horizon (year 2030) along US Highway 93. Although proponents find this hard to believe, the fact is that if a bypass is to be considered as feasible, it must show <u>significant traffic reduction</u> to its parallel facility to warrant the expense and environmental consequences of its development. Travel demand modeling of the various bypass alternatives do not show a bypass as a "cure-all" to the future traffic issues associated with US Highway 93 traffic flow.

Because of this, any recommendation to carry the bypass concept forward will not be implementable, feasible and/or fundable in the public venue, nor will State and Federal jurisdictions program resources accordingly. The community of Whitefish is better served by strengthening the transportation grid system, providing additional east/west connectivity, and requiring roadway corridor development in vacant land **<u>if and when</u>** the land develops. The recommended projects contained in **chapter 8** will all serve to contribute to a strong grid street system that will provide choices for the traveling public. This should be tempered with other transportation system improvements and policies, such as public transit and non-motorized facilities, that have been recommended elsewhere in this Transportation Plan.

**THIS PAGE INTENTIONALLY LEFT BLANK**



CHAPTER 10:

# Financial Analysis

# CHAPTER 10: FINANCIAL ANALYSIS

The previous chapters of this Plan identify problems with the transportation system and recommended appropriate corrective measures. This chapter focuses on the financial mechanisms that are traditionally used to finance transportation improvements. Transportation improvements can be implemented using federal, state, local and private funding sources. Historically federal and state funding programs have been used almost exclusively to construct and upgrade the major roads in the greater Whitefish area. Considering the current funding limits of these traditional programs, and the anticipated road development needs of the community, it is apparent that a greater amount of the financing will be required from local and private sources if these needs are to be met.

Much of the following information concerning the federal and state funding programs was assembled with the assistance of the Statewide and Urban Planning Section of the Montana Department of Transportation (MDT). The intent is to identify the traditional federal, state and local sources of funds available for funding transportation related projects and programs in the Whitefish area. A narrative description of each potential funding source is provided including: the source of revenue; required match; purpose for which funds are intended; means by which the funds are distributed; and the agency or jurisdiction responsible for establishing priorities for the use of the funds.

## 10.1 FUNDING SOURCES

The following list includes federal and state funding sources developed for the distribution of Federal and State transportation funding. This includes Federal funds the State receives under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)-enacted on August 10, 2005. The list also includes local funding sources available through the city and county, as well as private sources. It should be understood that other funding sources are possible, but those listed below reflect the most probable sources at this time. A narrative description of each source is provided in the following sections of this chapter.

**Federal Funding Sources**

- National Highway System (NHS)
- Surface Transportation Program (STP)
  - *Primary Highway System (STPP)**
  - *Secondary Highway System (STPS)**
  - *Urban Highway System (STPU)**
  - *Community Transportation Enhancement Program (CTEP)**
- Highway Safety Improvement Program (HSIP)
  - *High Risk Rural Roads Program (HRRR)*
- Highway – Railway Crossing Program (RRX)

- Highway Bridge Replacement and Rehabilitation Program (HBRRP)
  - *On-System Bridge Replacement and Rehabilitation Program*
  - *Off-System Bridge Replacement and Rehabilitation Program*

- Coordinated Border Infrastructure Program (CBI)

- Congestion Mitigation & Air Quality Improvement Program (CMAQ)
  - *CMAQ (formula)*
  - *Montana Air & Congestion Initiative (MACI)–Guaranteed Program (flexible)**
  - *Montana Air & Congestion Initiative (MACI)–Discretionary Program (flexible)**
  - *Urban High Growth Adjustment (flexible)**

- Urban Highway Preservation (UHP) (Equity Bonus)*

- Safe Routes To School (SRTS)

- Federal Lands Highway Program (FLHP)
  - *Public Lands Highways (PLH)*
  - *Parkways and Park Roads*
  - *Indian Reservation Roads (IRR)*
  - *Refuge Roads*

- Congressionally Directed Funds
  - *High Priority Projects (HPP)*
  - *Transportation Improvements Projects*

- Transit Capital & Operating Assistance Funding
  - *Discretionary Grants (Section 5309)*
  - *Capital Assistance for the Elderly and Persons with Disabilities (Section 5310)*
  - *Financial Assistance for Rural General Public Providers (Section 5311)*
  - *New Freedoms Program (5317)*
  - *Job Access Reverse Commute (JARC) (5316)*

**State Funding Sources**

- State Funded Construction (SFC)
- TransADE

**Local Funding Sources**

- City Funds
- County Road Funds
- Private Funds
- Future Potential Funds

## 10.2 FEDERAL AID FUNDING PROGRAMS

The following summary of major Federal transportation funding categories received by the State through the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)-enacted on August 10, 2005, includes state developed implementation/sub-programs. In order to receive project funding under these programs, projects must be included in the State Transportation Improvement Program (STIP).

- **National Highway System (NHS)**

The purpose of the National Highway System (NHS) is to provide an interconnected system of principal arterial routes which will serve major population centers, international border crossings, intermodal transportation facilities and other major travel destinations; meet national defense requirements; and serve interstate and interregional travel. The National Highway System includes all Interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

*Allocations and Matching Requirements*
NHS funds are Federally apportioned to Montana and allocated based on system performance by the Montana Transportation Commission. The Federal share for NHS projects is 86.58% and the State is responsible for the remaining 13.42%. The State share is funded through the Highway State Special Revenue Account.

*Eligibility and Planning Considerations*
Activities eligible for the National Highway System funding include construction, reconstruction, resurfacing, restoration, and rehabilitation of segments of the NHS. Operational improvements as well as highway safety improvements are also eligible. Other miscellaneous activities that may qualify for NHS funding include research, planning, carpool projects, bikeways, and pedestrian walkways. The Transportation Commission establishes priorities for the use of National Highway System funds and projects are let through a competitive bidding process. US Highway 93 and MT Highway 40 are on the National Highway System.

- **Surface Transportation Program (STP)**

Surface Transportation Program (STP) funds are Federally apportioned to Montana and allocated by the Montana Transportation Commission to various programs including the Surface Transportation Program Primary Highways (STPP), Surface Transportation Program Secondary Highways (STPS), and the Surface Transportation Program Urban Highways (STPU).

  - *Primary Highway System (STPP)**

  The Federal and State funds available under this program are used to finance transportation projects on the state-designated Primary Highway System. The Primary Highway System includes highways that have been functionally classified by the MDT as either principal or minor arterials and that have been selected by the

Transportation Commission to be placed on the Primary Highway System [MCA 60-2-125(3)].

*Allocations and Matching Requirements*
Primary funds are distributed statewide [MCA 60-3-205] to each of five financial districts, including the Missoula District. The Commission distributes STPP funding based on system performance. Of the total received, 86.58% is Federal and 13.42% is State funds from the Highway State Special Revenue Account.

*Eligibility and Planning Considerations*
Eligible activities include construction, reconstruction, rehabilitation, resurfacing, restoration and operational improvements. The Transportation Commission establishes priorities for the use of Primary funds and projects are let through a competitive bidding process. There are no Primary Highways within the Whitefish Transportation Plan boundary.

- *Secondary Highway System (STPS)**

The Federal and State funds available under this program are used to finance transportation projects on the state-designated Secondary Highway System. The Secondary Highway System highways that have been functionally classified by the MDT as either rural minor arterials or rural major collectors and that have been selected by the Montana Transportation Commission in cooperation with the boards of county commissioners, to be placed on the secondary highway system [MCA 60-2-125(4)].

*Allocations and Matching Requirements*
Secondary funds are distributed statewide (MCA 60-3-206) to each of five financial districts, including the Missoula District, based on a formula, which takes into account the land area, population, road mileage and bridge square footage. Federal funds for secondary highways must be matched by non-federal funds. Of the total received 86.58% is Federal and 13.42 % is non-federal match. Normally, the match on these funds is from the Highway State Special Revenue Account.

*Eligibility and Planning Considerations*
Eligible activities for the use of Secondary funds fall under three major types of improvements: Reconstruction, Rehabilitation, and Pavement Preservation. The Reconstruction and Rehabilitation categories are allocated a minimum of 65% of the program funds with the remaining 35% dedicated to Pavement Preservation. Secondary funds can also be used for any project that is eligible for STP under Title 23, U.S.C.

MDT and county commissions determine Secondary capital construction priorities for each district with final project approval by the Transportation Commission. By state law the individual counties in a district and the state vote on Secondary funding priorities presented to the Commission. The Counties and MDT take the input from citizens, small cities, and tribal governments during the annual priorities process.

Projects are let through a competitive bidding process. Secondary highways around the Whitefish area include S-292 (Whitefish Stage Road), and S-487 (Big Mountain Road).

- *Urban Highway System (STPU)**

The Federal and State funds available under this program are used to finance transportation projects on the state-designated Urban Highway System. The Urban Highway System is described under MCA 60-2-125(6), as those highways and streets that are in and near incorporated cities with populations of over 5,000 and within urban boundaries established by the MDT, that have been functionally classified as either urban arterials or collectors, and that have been selected by the Montana Transportation Commission, in cooperation with local government authorities, to be placed on the Urban Highway System.

*Allocations and Matching Requirements*
State law [MCA 60-3-211] guides the allocation of Urban funds to projects on the Urban Highway System in the fifteen urban areas through a statutory formula based on each area's population compared to the total population in all urban areas. Of the total received, 86.58% is Federal and 13.42% is non-federal match typically provided from the Special State Revenue Account for highway projects.

*Eligibility and Planning Considerations*
Urban funds are used primarily for major street construction, reconstruction, and traffic operation projects on the 390 miles on the State-designated Urban Highway System, but can also be used for any project that is eligible for STP under Title 23, U.S. C. Priorities for the use of Urban funds are established at the local level through local planning processes with final approval by the Transportation Commission.

Because the Urban Highway System includes transportation infrastructure that crosses the line between incorporated and unincorporated areas, it is important that city and county governments work together to identify and address urban highway needs. Consideration of cooperative efforts between city and county governments to address urban highways (roads and bridges) should be incorporated into the planning and implementation of the county CIP as appropriate.

Whitefish's FFY 2007 urban funding balance is currently $773,006. The annual allocation of urban funds for Whitefish is $117,074 (total dollars, Federal plus State match). We assume this allocation will remain constant through the life of the plan. It is anticipated the City of Whitefish will have a positive Urban funding balance and be able to program a new project in 2013. Baker Ave, Wisconsin Ave, East Lakeshore Drive, and Big Mountain Road (within the urban limits of Whitefish) are on the Urban Highway Stystem.

- *Community Transportation Enhancement Program (CTEP)**

Federal law requires that at least 10% of STP funds must be spent on transportation enhancement projects. The Montana Transportation Commission created the Community Transportation Enhancement Program in cooperation with the Montana Association of Counties (MACO) and the League of Cities and Towns to comply with this Federal requirement.

*Allocations and Matching Requirements*
CTEP is a unique program that distributes funding to local and tribal governments based on a population formula and provides project selection authority to local and tribal governments. The Transportation Commission provides final approval to CTEP projects within the State's right-of-way. The Federal share for CTEP projects is 86.58% and the Local and tribal governments are responsible for the remaining 13.42%.

*Eligibility and Planning Considerations*
Eligible CTEP categories include:

- Pedestrian and bicycle facilities
- Historic preservation
- Acquisition of scenic easements and historic or scenic sites
- Archeological planning and research
- Mitigation of water pollution due to highway runoff or reduce vehicle-caused
- Wildlife mortality while maintaining habitat connectivity
- Scenic or historic highway programs including provisions of tourist and welcome center facilities
- Landscaping and other scenic beautification
- Preservation of abandoned railway corridors (including the conversion and use for bicycle or pedestrian trails)
- Control and removal of outdoor advertising
- Establishment of transportation museums
- Provisions of safety and educational activities for pedestrians and bicyclists

Projects addressing these categories and that are linked to the transportation system by proximity, function or impact, and where required, meet the "historic" criteria, may be eligible for enhancement funding.

Projects must be submitted to the local government to the MDT, even when the project has been developed by another organization or interest group. Project proposals must include evidence of public involvement in the identification and ranking of enhancement projects. Local governments are encouraged to use their planning boards, where they exist, for the facilitation of public participation or a special enhancement committee. The MDT staff reviews each project proposal for completeness and eligibility and submits them to the Transportation Commission and the federal Highway Administration for approval.

The City of Whitefish has a current balance of $209,212 and the estimated 2008 allocation is $23,759 (Federal). Flathead County is allocated approximately $243,494 annually (Federal). There is currently a balance of $520,162 for this program. The balances represent funds not obligated towards a selected project.

*State funding programs developed to distribute Federal funding within Montana

- **Highway Safety Improvement Program (HSIP)**

*Allocations and Matching Requirements*
HSIP is a new core funding program established by SAFETEA-LU. HSIP funds are Federally apportioned to Montana and allocated to safety improvement projects identified in the strategic highway safety improvement plan by the Commission. Projects described in the State strategic highway safety plan must correct or improve a hazardous road location or feature, or address a highway safety problem. The Commission approves and awards the projects which are let through a competitive bidding process. Generally, the Federal share for the HSIP projects is 91.24% and the State is responsible for 8.76%.

*Eligibility and Planning Considerations*
There are two set aside programs that receive HSIP funding: the Highway – Railway Crossing Program and the High Risk Rural Roads Program.

- **High Risk Rural Roads Program (HRRR)**

Funds are set aside from the Highway Safety Improvement Program funds apportioned to Montana for construction and operational improvements on high-risk rural roads. These funds are allocated to HRRRP projects by the Commission. If Montana certifies that it has met all of the needs on high risk rural roads, these set aside funds may be used on any safety improvement project under the HSIP. Montana's set aside requirement for HRRRP is approximately $700,000 per year.

- **Highway – Railway Crossing Program (RRX)**

Funds are Federally apportioned to Montana and allocated by the Commission for projects that will reduce the number of fatalities and injuries at public highway-rail grade crossings; through the elimination of hazards and/or the installation/upgrade of protective devices.

- **Highway Bridge Replacement and Rehabilitation Program (HBRRP)**

*Allocations and Matching Requirements*
HBRRP funds are Federally apportioned to Montana and allocated to two programs by the Montana Transportation Commission. In general, projects are funded with 86.58% Federal and the State is responsible for the remaining 13.42%. The State share is funded through the Highway State Special Revenue Account. The Montana Transportation Commission approves projects which are then let to contract through a competitive bidding process.

- *On-System Bridge Replacement and Rehabilitation Program*

The On-System Bridge Program receives 65% percent of the Federal HBRRP funds. Projects eligible for funding under the On-System Bridge Program include all highway bridges on the State system. The bridges are eligible for rehabilitation or replacement. In addition, painting and seismic retrofitting are also eligible under this program. MDT's Bridge Bureau assigns a priority for replacement or rehabilitation of structurally deficient and functionally obsolete structures based upon sufficiency ratings assigned to each bridge. A structurally deficient bridge is eligible for rehabilitating or replacement; a functionally obsolete bridge is eligible only for rehabilitation; and a bridge rated as sufficient is not eligible for funding under this program.

- *Off-System Bridge Replacement and Rehabilitation Program*

The Off-System Bridge Program receives 35% percent of the Federal HBRRP funds. Projects eligible for funding under the Off-System Bridge Program include all highway bridges not on the State system. Procedures for selecting bridges for inclusion into this program are based on a ranking system that weighs various elements of a structures condition and considers local priorities. MDT Bridge Bureau personnel conduct a field inventory of off-system bridges on a two-year cycle. The field inventory provides information used to calculate the Sufficiency Rating (SR).

- **Coordinated Border Infrastructure Program (CBI)**

CBI funds are Federally apportioned to Montana and allocated by the Commission based on system performance and project eligibilities. These funds may be used on projects within 100 miles of the international border to improve transportation, safety, regulation, or improved planning/coordination to streamline international motor vehicle and cargo movements. The Montana Transportation Commission approves projects which are then let to contract through a competitive bidding process. The Federal share is 86.58% and the State is responsible for 13.42%.

- **Congestion Mitigation & Air Quality Improvement Program (CMAQ)**

Federal funds available under this program are used to finance transportation projects and programs to help improve air quality and meet the requirements of the Clean Air Act. Montana's air pollution problems are attributed to carbon monoxide (CO) and particulate matter (PM10 and PM2.5).

*Allocations and Matching Requirements*

CMAQ funds are Federally apportioned to Montana and allocated to various eligible programs by formula and by the Commission. As a minimum apportionment state a Federally required distribution of CMAQ funds goes to projects in Missoula since it is Montana's only designated and classified air quality non-attainment area. The remaining, non-formula funds, referred to as "flexible CMAQ" is directed to areas of the state with emerging air quality issues through various state programs. The Transportation Commission approves and awards both formula and non-formula projects on MDT right-of-way. Infrastructure and capital equipment projects are let through a competitive bidding process. Of the total funding received, 86.58% is Federal and 13.42% is non-federal match provided by the state for projects on state highways and local governments for local projects.

*Eligibility and Planning Considerations*
In general, eligible activities include transit improvements, traffic signal synchronization, bicycle pedestrian projects, intersection improvements, travel demand management strategies, traffic flow improvements, and public fleet conversions to cleaner fuels. At the project level, the use of CMAQ funds is not constrained to a particular system (i.e. Primary, Urban, and NHS). A requirement for the use of these funds is the estimation of the reduction in pollutants resulting from implementing the program/project. These estimates are reported yearly to FHWA.

- *CMAQ (formula)*

Mandatory CMAQ funds that come to Montana based on a Federal formula and are directed to Missoula, Montana's only classified, moderate CO non-attainment area. Not applicable to Whitefish.

- *Montana Air & Congestion Initiative (MACI)–Guaranteed Program (flexible)**

This is state program funded with flexible CMAQ funds that the Commission allocates annually to Billings and Great Falls to address carbon monoxide issues in these designated, but "not classified", CO non-attainment areas. The air quality in these cities is roughly equivalent to Missoula, however, since these cities are "not classified" so they do not get direct funding through the Federal formula. Not applicable to Whitefish.

- *Montana Air & Congestion Initiative (MACI)–Discretionary Program (flexible)**

The MACI – Discretionary Program provides funding for projects in areas designated non-attainment or recognized as being "high-risk" for becoming non-attainment. Since 1998, MDT has used MACI-Discretionary funds to get ahead of the curve for CO and PM10 problems in non-attainment and high-risk communities across Montana. District Administrators and local governments nominate projects cooperatively. Projects are prioritized and selected based on air quality benefits and other factors. The most beneficial projects to address these pollutants have been sweepers and flushers, intersection improvements and signal synchronization projects. The City of Whitefish is designated as a PM-10 non-attainment area.

- *Urban High Growth Adjustment (flexible)**

Urban High Growth Adjustment funds are distributed to urban areas in Montana where population increased by more than 15% between the 1990 and 2000 censuses. These funds are available thru 2011. Kalispell, Bozeman, and Missoula are the areas currently eligible for funding through this source. The intent of this funding is to address backlogged needs in these very rapidly growing cities. Nominations for the use of these funds are established at the local level similar to STPU funds. These funds may be spent on the Urban Highway System for projects eligible for either STPU or CMAQ funds.

*State funding programs developed to distribute Federal funding within Montana

- **Urban Pavement Preservation (UPP) (Equity Bonus)***

The Urban Pavement Preservation Program is a state program that addresses urban highway system preservation needs. The program is funded from federal Equity Bonus funds that are appropriated to each State to ensure that each State receives a specific share of the aggregate funding for major highway programs. The program funds cost-effective treatments for the preservation of the existing Urban Highway System to prevent deterioration while maintaining or improving the functional condition of the system without increasing structural capacity.

*Allocations and Matching Requirements*
The Transportation Commission determines the annual funding level for this program for preservation projects in the fifteen urban areas. Projects are funded with 86.58% Federal and the State is responsible for the remaining 13.42%. The State share is funded through the Highway State Special Revenue Account. The Montana Transportation Commission approves projects which are then let to contract through a competitive bidding process.

*Eligibility and Planning Considerations*
Activities eligible for this funding include pavement preservation treatments on the Urban Highway System based on needs identified through a locally developed and maintained pavement management system. Priorities are developed by MDT Districts based on the local pavement management system outputs and consideration of local government nominations with final approval by the Transportation Commission. Projects are let through a competitive bidding process.

*State funding programs developed to distribute Federal funding within Montana

- **Safe Routes To School (SRTS)**

*Allocations and Matching Requirements*
Safe Routes To School funds are Federally apportioned to Montana for programs to develop and promote a safe environment that will encourage children to walk and bicycle to school. Montana is a minimum apportionment state, and will receive $1-million per year, subject to the obligation limitation. The Federal share of this program is 100%.

*Eligibility and Planning Considerations*
Eligible activities for the use of SRTS funds fall under two major categories with 70% directed to infrastructure improvements, and the remaining 30% for behavioral (education) programs. Funding may be used within a two mile radius of K-8 schools for improvements or programs that make it safer for kids to walk or bike to school. SRTS is a reimbursable

grant program and project selection is done through an annual application process. Eligible applicants for infrastructure improvements include local governments and school districts. Eligible applicants for behavioral programs include state, local and regional agencies, school districts, private schools, non-profit organizations. Recipients of the funds will front the cost of the project and will be reimbursed during the course of the project. For grant cycle information visit: http://www.mdt.mt.gov/pubinvolve/saferoutes/

- **Federal Lands Highway Program (FLHP)**

FLHP is a coordinated Federal program that includes several funding categories.

- *Public Lands Highways (PLH)*

*Discretionary*
The PLH Discretionary Program provides funding for projects on highways that are within, adjacent to, or provide access to Federal public lands. As a discretionary program, the project selection authority rests with the Secretary of Transportation. However, this program has been earmarked by Congress under SAFETEA-LU. There are no matching fund requirements.

*Forest Highway*
The Forest Highway Program provides funding to projects on routes that have been officially designated as Forest Highways. Projects are selected through a cooperative process involving FHWA, the US Forest Service and MDT. Projects are developed by FHWA's Western Federal Lands Office. There are no matching fund requirements.

- *Parkways and Park Roads*

Parkways and Park Roads funding is for National Park transportation planning activities and projects involving highways under the jurisdiction of the National Park Service. Projects are prioritized by the National Park Service and approved and developed by FHWA's Western Federal Lands Office. There are no matching fund requirements.

- *Indian Reservation Roads (IRR)*

IRR funding is eligible for multiple activities including transportation planning and projects on roads or highways designated as Indian Reservation Roads. Funds are distributed to Bureau of Indian Affairs (BIA) area offices in accordance with a Federal formula and are then distributed to projects on individual reservations. Projects are usually constructed by BIA forces. There are no matching fund requirements. Any public road within or leading to a reservation is eligible for the Indian Reservation Road funding. In practice, IRR funds are only rarely expended on state designated roads. MDT staff is aware of only two secondary routes that have received IRR funding support. These are S-418, Pryor Road, in the Crow Reservation; and S-234, Taylor Hill Road, that leads to the Rocky Boy's Reservation.

- *Refuge Roads*

Refuge Roads funding is eligible for maintenance and improvements of refuge roads, rest areas, and bicycle and pedestrian facilities. Allocations are based on a long-range transportation improvement program developed by the US Fish and Wildlife Service. There are no matching fund requirements.

- **Congressionally Directed Funds**

The categories listed below describing the programs for congressionally directed funds are specific to the current transportation funding bill (SAFETEA-LU). It should be recognized that there is no guarantee that these programs will be in place during the next Transportation Authorization Bill. The "Congressionally Directed Funds" programs are as follows:

- *High Priority Projects (HPP)*

High Priority Projects are specific projects named to receive Federal funding in SAFETEA-LU Section 1702. HPP funding authority is available until expended and projects named in this section are included in Montana's percent share of the Federal highway funding program. The Montana Transportation Commission approves projects which are then let to contract through a competitive bidding process. In Montana, the Federal share payable for these projects is 86.58% Federal and 13.42% non-Federal. Montana receives 20% of the total project funding named in each year 2006 thru 2009. These funds are subject to the obligation limitation.

- *Transportation Improvements Projects*

Transportation Improvement Projects are specific projects named to receive Federal funding in SAFETEA-LU Section 1934. Transportation Improvement Project funding authority is available until expended and projects named in this section are not included in Montana's percent share of the Federal highway funding program. The Montana Transportation Commission approves projects which are then let to contract through a competitive bidding process. In Montana, the Federal share payable on these projects is 86.58% Federal and 13.42% non-Federal. Montana receives a directed percent of the total project funding named in each year as follows: 2005 – 10%, 2006-20%, 2007-25%, 2008-25%, 2009-20%. These funds are subject to the obligation limitation.

- **Transit Capital & Operating Assistance Funding**

The MDT Transit Section provides federal and state funding to eligible recipients through federal and state programs. Federal funding is provided through the Section 5310 and Section 5311 transit programs and state funding is provided through the TransADE program. The new highway bill SAFETEA-LU brought new programs for transit "New Freedoms and Job Access Reverse Commute (JARC). All projects funded must be derived from a locally developed, coordinated public transit-human services transportation plan (a "coordinated plan").

The coordinated plan must be developed through a process that includes representatives of public, private, and nonprofit transportation and human service providers and participation from the public. The following programs may be an eligible source of funding for Whitefish area transit needs.

- *Discretionary Grants (Section 5309)*

Provides capital assistance for fixed guide-way modernization, construction and extension of new fixed guide-way systems, bus and bus-related equipment and construction projects. Eligible applicants for these funds are state and local public bodies.

- *Capital Assistance for the Elderly and Persons with Disabilities (Section 5310)*

The Section 5310 Program provides capital assistance to providers that serve elderly persons and persons with disabilities. Eligible recipients must have a locally developed coordination plan. Federal funds provide 86% of the capital costs for purchase of buses, vans, wheelchair lifts, communication, and computer equipment. The remaining 14% is provided by the local recipient. Application for funding is made on an annual basis.

- *Financial Assistance for Rural General Public Providers (Section 5311)*

The purpose of the Section 5311 Program is to assist in the maintenance, development, improvement, and use of public transportation systems in rural areas (areas under 50,000 population). Eligible recipients are local public bodies, incorporated cities, towns, counties, private non-profit organizations, Indian Tribes, and operators of public transportation services. A locally developed coordinate plan is needed to receive funding assistance. Funding is available for operating and capital assistance. Federal funds pay for 86% of capital costs, 54% for operating costs, 80% for administrative costs, and 80% for maintenance costs. The remainder, or required match, (14% for capital, 46% for operating, 20% for administrative, and maintenance) is provided by the local recipient. Application for funding is made on an annual basis.

- *New Freedoms Program (5317)*

The purpose of the New Freedom Program is to provide improved public transportation services, and alternatives to public transportation, for people with disabilities, beyond those required by the Americans with Disabilities Act of 1990 (ADA). The program will provide additional tools to overcome barriers facing Americans with disabilities who want to participate fully in society. Funds may be used for capital expenses with Federal funds provided for up to 80 percent of the cost of the project, or operating expenses with Federal funds provided for up to 50 percent of the cost of the project. All projects funded must be derived from a locally developed, coordinated public transit-human services transportation plan (a "coordinated plan").

- *Job Access Reverse Commute (JARC) (5316)*

The purpose of this grant program is to develop transportation services designed to transport welfare recipients and low income individuals to and from jobs and to develop transportation services for residents of urban centers and rural and suburban areas to suburban employment opportunities. Funds may be used for capital and operating expenses with Federal funds provided for up to 50 percent of the cost of the project.

## 10.3 STATE FUNDING SOURCES

- **State Funded Construction (SFC)**

*Allocations and Matching Requirements*
The State Funded Construction Program, which is funded entirely with state funds from the Highway State Special Revenue Account, provides funding for projects that are not eligible for Federal funds. This program is totally State funded, requiring no match.

*Eligibility and Planning Considerations*
This program funds projects to preserve the condition and extend the service life of highways. Eligibility requirements are that the highways be maintained by the State. MDT staff nominates the projects based on pavement preservation needs. The District's establish priorities and the Transportation Commission approves the program.

- **TransADE**

The TransADE grant program offers operating assistance to eligible organizations providing transportation to the elderly and persons with disabilities.

*Allocations and Matching Requirements*
This is a state funding program within Montana statute. State funds pay 50 percent of the operating costs and the remaining 50 percent must come from the local recipient.

*Eligibility and Planning Considerations*
Eligible recipients of this funding are counties, incorporated cities and towns, transportation districts, or non-profit organizations. Applications are due to the MDT Transit Section by the first working day of February each year. To receive this funding the applicant is required by state law (MCA 7-14-112) to develop a strong, coordinated system in their community and/or service area.

## 10.4 LOCAL FUNDING SOURCES

- **State Fuel Tax – City and County**

Under 15-70-101, MCA, Montana assesses a tax of $.27 per gallon on gasoline and diesel fuel used for transportation purposes. Each incorporated city and town receives a portion of the total tax funds allocated to cities and towns based on:

1. The ratio of the population within each city and town to the total population in all cities and towns in the State;
2. The ratio of the street mileage within each city and town to the total street mileage in all incorporated cities and towns in the State. The street mileage is exclusive of the Federal-Aid Interstate and Primary System.

Each county receives a percentage of the total tax funds allocated to counties based on:

1. The ratio of the rural population of each county to the total rural population in the State, excluding the population of all incorporated cities or towns within the county and State;
2. The ratio of the rural road mileage in each county to the total rural road mileage in the State, less the certified mileage of all cities or towns within the county and State; and
3. The ratio of the land area in each county to the total land area of the state.

All fuel tax funds allocated to the city and county governments must be used for the construction, reconstruction, maintenance, and repair of rural roads or city streets and alleys. The funds may also be used for the share that the city or county might otherwise expend for proportionate matching of Federal funds allocated for the construction of roads or streets on the Primary, Secondary, or Urban Systems. Priorities for these funds are established by the cities and counties receiving them.

For State Fiscal Year 2008, Whitefish's/Flathead County's combined allocation was approximately $623,664 (Whitefish - $150,467 and Flathead County - $473,197) in state fuel tax funds. The amount varies annually, but the current level provides a reasonable base for projection throughout the planning period.

In addition, local governments generate revenue through a variety of other funding mechanisms. Typically, several local programs related to transportation exist for budgeting purposes and to disperse revenues. These programs are tailored to fulfill specific transportation functions or provide particular services.

The following text summarizes programs that relate to transportation financing through the city and county.

## 10.5 CITY OF WHITEFISH

- **General Fund**

This fund provides revenue for most major city functions like the administration of local government, and the departments of public services, including police, fire, and parks. Revenues for the fund are generated through the general fund mill levy on real and personal property and motor vehicles; licenses and permits; state and federal intergovernmental revenues; intergovernmental fund transfers; and charges for services.

Minor transportation-related services are supported by this fund through the City of Whitefish Police Department. The police department is responsible for enforcing traffic laws on the street system.

- **Transportation Impact Fees**

This method of funding transportation improvements will be considered by the City of Whitefish based on projects and results contained in this Transportation Plan document. Although at times controversial, this exaction on private development can help to soften development's impact on the surrounding transportation system.

Impact Fees are increasingly being considered as a potential method for financing transportation infrastructure needs. Presently, the only communities utilizing impact fees are the city of Bozeman, the city of Missoula, and Gallatin County. Developer exactions and fees allow growth to pay for itself. The developers of new properties should be required to provide at least a portion of the added transportation system capacity necessitated by their development, or to make some cash contribution to the agency responsible for implementing the needed system improvements.

Establishment of an equitable fee structure would be required to assess developers based upon the level of impact to the transportation system expected from each project. Such a fee structure could be based upon the number of additional vehicle trips generated, or upon a fundamental measure such as square footage of floor space. Once the mechanism is in place, all new development would be reviewed by the local government and fees assessed accordingly.

- **Special Revenue Funds**

These funds are used to budget and distribute revenues that are legally restricted for a specific purpose. Several such funds that benefit the transportation system are discussed briefly in the following paragraphs.

- **Special Improvement District (SID) Revolving Fund**

This fund provides financing to satisfy bond payments for special improvement districts in need of additional funds. The city can establish street SID's with bond repayment to be made by the adjoining landowners receiving the benefit of the improvement. The city has provided labor and equipment for past projects through the General Fund, with an SID paying for materials.

- **Gas Tax Apportionment**

Revenues are generated through State gasoline taxes apportioned from the State of Montana. Transfers are made from this fund to the General Fund to reimburse expenditures for construction, reconstruction, repair and maintenance of streets. Half of the City's allocation is based upon population, and half is based on the miles of streets and alleys in the City. The City Gas Tax Fund received an allocation of approximately $150,467 for state fiscal year 2008.

- **Tax Increment Financing (TIF)**

The funds generated from a new tax increment financing TIF district could be used to finance projects including street and parking improvements; tree planting; installation of new bike racks; trash containers and benches; and other streetscape beautification projects within the downtown area.

## 10.6 FLATHEAD COUNTY

- **Road Fund**

The County Road Fund provides for the construction, maintenance, and repair of all county roads outside the corporate limits of cities and towns in Flathead County. Revenue for this fund comes from intergovernmental transfers (i.e., State gas tax apportionment and motor vehicle taxes), and a mill levy assessed against county residents living outside cities and towns. Flathead County's State fiscal year gas tax apportionment added approximately $474,317 to the Road Fund.

County Road Fund monies are primarily used for maintenance with little allocated for new road construction. It should be noted that only a small percentage of the total miles on the county road system are located in the study area. Projects eligible for financing through this fund will be competing for available revenues on a county-wide basis.

- **Bridge Fund**

The Bridge Fund provides financing for engineering services, capital outlays, and necessary maintenance for bridges on all off-system and Secondary routes within the county. These monies are generated through intergovernmental fund transfers (i.e., vehicle licenses and fees), and a county-wide mill levy. There is a taxable limit of four mills for this fund.

- **Special Revenue Funds**

Special revenue funds may be used by the county to budget and distribute revenues legally restricted to a specific purpose. Several such funds that benefit the transportation system are discussed briefly in the following paragraphs.

- **Capital Improvements Fund**

This fund is used to finance major capital improvements to county infrastructure. Revenues are generated by loans from other county funds, and must be repaid within ten years. Major road construction projects are eligible for this type of financing.

- **Rural Improvement District (RID) Revolving Fund**

This fund is used to administer and distribute monies for specified RID projects. Revenue for this fund is generated primarily through a mill levy and through motor vehicle taxes and fees. A mill levy is assessed only when delinquent bond payments dictate such an action.

- **Special Bond Funds**

A fund of this type may be established by the county on an as-needed basis for a particularly expensive project. The voters must approve authorization for a special bond fund. The county is not currently using this mechanism.

## 10.7 PRIVATE FUNDING SOURCES AND ALTERNATIVES

Private financing of highway improvements, in the form of right-of-way donations and cash contributions, has been successful for many years. In recent years, the private sector has recognized that better access and improved facilities can be profitable due to increases in land values and commercial development possibilities. Several forms of private financing for transportation improvements used in other parts of the United States are described in this section.

- **Development Financing**

The developer provides the land for a transportation project and in return, local government provides the capital, construction, and necessary traffic control. Such a financing measure can be made voluntary or mandatory for developers.

- **Cost Sharing**

The private sector pays some of the operating and capital costs for constructing transportation facilities required by development actions.

- **Transportation Corporations**

These private entities are non-profit, tax exempt organizations under the control of state or local government. They are created to stimulate private financing of highway improvements.

- **Road Districts**

These are areas created by a petition of affected landowners, which allow for the issuance of bonds for financing local transportation projects.

- **Private Donations**

The private donation of money, property, or services to mitigate identified development impacts is the most common type of private transportation funding. Private donations are very effective in areas where financial conditions do not permit a local government to implement a transportation improvement itself.

- **Private Ownership**

This method of financing is an arrangement where a private enterprise constructs and maintains a transportation facility, and the government agrees to pay for public use of the facility. Payment for public use of the facility is often accomplished through leasing agreements (wherein the facility is rented from the owner), or through access fees whereby the owner is paid a specified sum depending upon the level of public use.

- **Privatization**

Privatization is either the temporary or long-term transfer of a public property or publicly owned rights belonging to a transportation agency to a private business. This transfer is made in return for a payment that can be applied toward construction or maintenance of transportation facilities.

- **General Obligation (G.O.) Bonds**

The sale of general obligation bonds could be used to finance a specific set of major highway improvements. A G.O. bond sale, subject to voter approval, would provide the financing initially required for major improvements to the transportation system. The advantage of this funding method is that when the bond is retired, the obligation of the taxpaying public is also retired. State statutes limiting the level of bonded indebtedness for cities and counties restrict the use of G.O. bonds. The present property tax situation in Montana, and recent adverse citizen responses to proposed tax increases by local government, would suggest that the public may not be receptive to the use of this funding alternative.

- **Tax Increment Financing (TIF)**

Increment financing has been used in many municipalities to generate revenue for public improvements projects. As improvements are made within the district, and as property values increase, the incremental increases in property tax revenue are earmarked for this fund. The fund is then used for improvements within the district. Expenditures of revenue generated by this method are subject to certain spending restrictions and must be spent within the district. Tax increment districts could be established to accomplish transportation improvements in other areas of the community where property values may be expected to increase.

- **Multi-Jurisdictional Service District**

This funding option was authorized in 1985 by the State Legislature. This procedure requires the establishment of a special district, somewhat like an SID or RSID, which has the flexibility to extend across city and county boundaries. Through this mechanism, an urban transportation district could be established to fund a specific highway improvement that crosses municipal boundaries (e.g., corporate limits, urban limits, or county line). This type of fund is structured similar to an SID with bonds backed by local government issued to cover the cost of a proposed improvement. Revenue to pay for the bonds would be raised through assessments against property owners in the service district.

- **Local Improvement District**

This funding option is only applicable to counties wishing to establish a local improvement district for road improvements. While similar to an RSID, this funding option has the benefit of allowing counties to initiate a local improvement district through a more streamlined process than that associated with the development of an RSID.

## 10.8 SUMMARY OF CURRENT FINANCIAL STATUS

Current financial information was obtained from the MDT Urban Planning Section to get a picture of the projected revenue available for funding transportation projects in the Whitefish area over the next 20 years. This information is summarized in **Table 10-1**.

### Table 10-1

**Projected Funding Available for Transportation Projects**

| Funding Source | Current Account Balance | Current Annual Allocation | Projected Annual Allocation | Revenue Projection 2020 | Revenue Projection 2030 |
|---|---|---|---|---|---|
| STP – Urban | $773,006* | $117,074 | $117,074** | $2.3 M*** | $3.5 M*** |
| CTEP – City | $209,212* | $23,759 | $23,759** | $5.2 M*** | $7.6 M*** |
| State Fuel Tax – City | | $150,467 | $150,467 | $2.0 M**** | $3.5 M**** |
| Transportation Impact Fees | | ***** | ***** | ***** | ***** |
| Total | **$982,218** | **$291,300** | **$291,300** | **$9.5 M** | **$14.6 M** |

Notes: Although TEA-21 only provides for Federal funding through FFY2003, 2020 and 2030 projections are based on continuance of current levels of funding unless otherwise noted. Estimated Federal fund allocations do not include amounts of any required local matching funds.

* Unobligated Carryover Balance (9/2007) per MDT Urban Planning.

** Allocations beyond TEA-21 (9/30/2003) are being estimated based on current allocation levels.

*** Year 2020 and 2030 estimates are based on the current carryover plus annual allocations equal to the current annual allocations. It is important to note that the projected funding estimates are based on the best information available at the time and that there is no guarantee that these funding sources will be available beyond TEA-21.

**** Revenues projections are based on estimates provided by MDT, City, and County staff. It is understood that these estimated funds may not be available for the transportation improvements included in this plan.

***** The annual allocation for transportation impact fees is unknown at this time.