CITY OF CASCADE

MASTER TRANSPORTATION PLAN

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Team Members

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Traffic Data Collection

Staff members of the Department of Public Works are hereby acknowledged for traffic data collection and providing current traffic counts within the City limits, and for providing valuable technical information during the course of the project.

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CHAPTER 1

Introduction and Overview

INTRODUCTION AND OVERVIEW

Growth in Valley County almost ceased in 2000, in 2020 it appears as though Valley County and cascade will experience growth again. It is necessary to develop a Master Transportation Plan (MTP) for systematic City growth, economic development, and to plan and address the increasing traffic demand.

The MTP provides guidelines for future transportation project developments and programs, and helps the City to plan and progress to achieve goals and objectives furnished in the City's Comprehensive Plan. The MTP plays a vital role in determining how the City and surrounding areas will grow and accommodate growth in the future.

The City adopted a Comprehensive Plan in 2018 (See **Appendix B**). The primary goal the City furnished in the Comprehensive Plan is to provide safe, functional, and efficient means for movement of people and goods into and through Cascade

The MTP is used for developing the following purposes:

- To provide guidance and recommendations to accomplish the goals furnished in the City's Comprehensive Plan.
- To interrelate land use developments with the existing transportation system.
- To project future traffic on important roadways and at key intersections.
- To address issues and identify alternate measures for increasing traffic in the City and surrounding areas.
- To develop a Capital Improvement Plan (CIP) prioritized based on the roadway condition within the study area.

The MTP was developed on the City's policies, needs and directions outlined in the City's Comprehensive Plan. This is a dynamic document and should be updated annually to reflect the growing and changing community.

An overview of the Master Transportation Plan is comprised of the following:

1. *Introduction and an overview of the Master Transportation Plan.*
2. *Purpose, scope and methodology in developing the MTP.*
3. *Existing and projected population and land use information.*
4. *Evaluation of the existing transportation system, including right of way and current traffic information.*
5. *Transportation issues and Future Planning: Looking at long term needs, traffic projection on key streets, right of way preservation, 4 key intersection evaluation, State Highway 55 alternate route, future functional classification plan and pedestrian and bike path planning.*
6. *Assessing and evaluating existing roadways: Asset valuation, current street surface condition assessment, pavement management system for maintenance and reconstruction*
7. *Street Standards: Minimum design and construction standards for the City streets. Standards include minimum right-of-way requirements, access control, drainage and snow storage, etc.*
8. *Capital Improvement Plan (CIP): CIP based on the City needs and priority, street surface condition and traffic demand and funding options and strategies.*

Purpose

A Master Transportation Plan and a Capital Improvement Plan are documents to be used in conjunction, as a systematic planning tool to maintain and expand the City facilities, and to provide citizens with the basic needs for life sustaining accommodations and conveniences. In addition, a CIP will be required to be submitted with any request for federal or state funding of street or bridge projects. This CIP will become an important criterion in evaluation of projects.

There are several funding possibilities through the State of Idaho and from the federal government. These funding agencies require, indirectly, local governments to develop and maintain Transportation Plans in order to apply for various funding packages in an organized and thoughtful manner. The indirect requirement of transportation plans is to ensure that in making improvements, the local government has considered future growth and street usage patterns, and will be making judicious choices in improvement considerations.

To receive federal funding, a proposed project must be listed on the Statewide Transportation Improvement Program (STIP). The STIP is a five-year master plan of transportation projects within the State. The STIP will be updated annually and shows how federal transportation funds will be used to fund a variety of transportation projects, including [9]:

- Highway, bridge, bicycle and pedestrian facilities
- Highway safety
- Air quality
- Railroad crossing safety
- Airports
- Public transportation
- Transportation planning

In order for a project to be listed in the STIP, an application must be completed. LHTAC reviews the application and sets a priority for the improvement based upon an “incentive program” before making a recommendation to ITD for inclusion of the project in the STIP.

This incentive program consists of rating criteria of 100 possible points for various project characteristics. Approximately, a third of these points come from transportation planning issues through a Transportation Plan or a detailed transportation element of a Comprehensive

Plan. Transportation improvement planning is considered to be an essential part of a successful federal-aid application by the State of Idaho.

Materials from LHTAC and the State on funding requirements and transportation planning were used in the preparation of this report to ensure that this report can be used by the City of Cascade in applying for these various funding resources. LHTAC materials describing the Local Federal-Aid Incentive Program specifically state that "the application process will emphasize the needs of the Local Highway Jurisdictions, as depicted in the 1995 Idaho Highway Needs Assessment Study Update, and will be used specifically for the Federal-Aid routes and in some cases minor collectors, as required by Federal regulation."

Scope

The Master Transportation Plan identifies the current conditions of the City streets, transportation structures, and future potential transportation needs and requirements. The action plan throughout the process is to prepare an inventory of existing facilities and to develop a Geographical Information System (GIS), including a citywide base map and database to prioritize improvements. From this, the City will provide strong justification and support for the selected improvements for both communities understanding and the funding application. The Public Works Department will be able to track needed improvements and the associated costs. Additionally, from the GIS, information for annual updates to the CIP will be readily available to match potential funding sources with required and desired improvements.

This project includes a Geographical Position System (GPS) inventory of current street surface conditions, a GIS database of all City streets, an evaluation of each City street surface condition, and a surface condition rating in order to evaluate the City transportation system needs. The current transportation policy, land use issues, population growth, traffic counts at key intersections and streets, and crash data are reviewed.

This report includes a discussion of the methodology and hardware used for the collection and management of the data, population trends, land use, existing and projected future traffic demand, existing and projected traffic operation at 4 key intersections in the City, and the City transportation goals. The report also discusses current street conditions, minimum standards for road design and construction, future transportation system considerations, capital improvement programs and financial implications.

General

The inventory of the City streets, included in this study, will compile all of the street data into one database and link this database to the City map. The system utilized to obtain these results included the Global Positioning System (Trimble/Pathfinder XRS), Pathfinder Office 2.9 Software, and Arcview 3.0 Software programming language.

Methodology

Data Collection

In 2006, the City street data was collected using a Trimble GPS Data Collection Unit. An inventory of city streets, traffic control devices and drainage culverts was collected while driving each city street from start to finish recording the variations in road surface conditions. A data dictionary, with fields corresponding to ArcGis-9.2, is used to record the road surface condition and the City streets attributes. See **Appendix A** for a copy of the data dictionary. The roadway data survey also includes pavement width, shoulder width, drainage information, curb, gutter and sidewalk, sign post and culvert location.

The Trimble Data Collection unit is a small computer which stores latitude and longitude coordinates with an accuracy of plus or minus three feet and then links these coordinates with the library data. The accuracy can be expected to fluctuate plus or minus five feet at locations covered with trees and terrain with significant height. The location of culverts and bridges are recorded as part of the roadway inventory survey, but the attributes of culverts and bridges within the City limits were not recorded. **Appendix F** contains a map showing the streets surveyed and location of culverts.

The inventory of each city road was completed during the summer and fall of 2006. Referenced material includes the city road files, the ITD's road segment map, Valley County road classification map, street name map, and the City and County bridge map.

With advance in GIS technology, the City has published a web-based GIS map that can be updated annually using mobile phones, tablets, and the Arcview Collector App.

Traffic Data and Analysis

While this Plan was being drafted, The City was reviewing and considering approval and annexation of The River District. The River District is a large scale land development project that will significantly impact the transportation network. A traffic model was included as a condition of approval of the development and annexations. The City also collected traffic counts during the summer of 2020 and is currently processing the data. The The River District Traffic Model and 2020 City traffic counts will be incorporated into this Transportation Plan as an addendum. The population and traffic counts in Cascade have not changed significantly since the Transportation Plan was developed in 2008. Historical Traffic counts and Level of Service are included in Chapter 3. The City is currently collecting See **Appendix E** for the definition of Level of Service.

Database Library

A database library consists of geometric and street surface conditions, bridge and culvert size and type, and basic street sign groups. This database library contains the significant information required for the street surface condition evaluation, rating, and estimating the probable repair costs. This library is a checklist for each street segment. Each category on the checklist must be recorded for each segment. **Appendix A** contains the database library and descriptions of each attribute.

Database

The database includes all of the library information, the street rating values, surface condition attributes such as distress type, pavement width, drainage characteristics, etc. The program allows digital pictures to be linked to any map location. The software allows for a live link between the database and the map. This concept (live link between the database and the map) identifies a true GIS system. The background of the data map is the county Government Control Database (GCDB) map. Any changes to the database or data map will automatically update the other. On the data map, streets are shown as lines and all other items such as bridges, culverts signs, etc. show up as points. Each time a street condition changes, a

segment break is made in the street line. Any street segment or point may be selected on the map to obtain the street identification and conditions shown in a window on the computer monitor. This data may be sorted, joined or queried to identify any street having a certain condition. This software allows the City to update their street conditions as improvements or deterioration is noted in the field.

Included in the database is a unit cost schedule. Item costs may be updated regularly to remain current. This unit cost schedule can be used as a reference and is linked to the default repairs. By keeping the cost schedule current, the City will be able to achieve accurate cost estimates for maintenance and repairs of their street system.

Arcview

Arcview software is used to automate repetitious queries, street ratings, and assigning probable repair costs to street segments. This software will also reduce time in computer operation and in creating reports.

One important aspect of this software package is the opportunity for City personnel to override the default programming and insert repair costs, desired street widths, and to interact with the software to obtain the preferred results.

Planning Period

MTP addresses transportation related issues and identifies needs to meet the future transportation demands through the year 2030. The traffic counts, population and land use were projected through the planning period of 2030.

Future Use of Data and Software by the City

A key element in the use of this GIS system is continued maintenance of the database. City personnel may add street improvements and additions to the database at any time. Scheduling repair work with the aid of map locations of similar repairs will improve repair efficiency. Maps, tables, graphs for budgets, and reports may be developed using the Pathfinder software. The use of queries will assist street crews in planning, budgeting, and scheduling work. One example is to query all streets with asphalt that is 8 years old. From this, the length and width of each street can be obtained for materials and man-hours. Another example is a query of all

streets with potholes in the western section of the City. Maps showing these repair areas can be quickly and easily printed. This program, however, does not replace field evaluation and verification of existing items.

CHAPTER 2

Population and Land Use

POPULATION AND LAND USE

The City of Cascade is the county seat of Valley County. The City is located in lower Long Valley, approximately 40 miles long and 15 miles wide, situated east of Lake Cascade on State Highway 55 (SH 55) and 75 miles north of Boise. The latitude and longitude of Cascade are 44.515N and 116.04W respectively. The 2010 U.S. Census lists the population of Cascade as 939 people.

Population

Population trends and projections are key issues in determining transportation needs for the City. Community characteristics were obtained from various sources including the Idaho Department of Commerce web page, and the U.S. Bureau of Census.

Historical Population.

The population of the City of Cascade has remained relatively constant for the last 4 decades. There was no significant growth in population through the period of 1970 to 2006. A population decrease from 2006 to 2012 can be attributed to the foreclosure of the Tamarack Resort. Since 2010, the Tamarack Resort reopened and has increased in the population growth.

The historical population records for the City and Valley County were obtained from the U.S. Department of Commerce Bureau and shown in Tables 1 and 2, respectively.

Table 1: City of Cascade Historical Census Population Data

Year	Population	Numerical Change	% Change per Year
1970	833	-	-
1980	945	112	13.4
1990	877	-68	-7.2
2000	997	133	13.7
2010	939	-58	-5.8
2013	906	-33	-3.5
2014	921	15	1.7
2015	938	17	1.8
2016	966	28	3.0

Source: U.S. Department of Commerce Bureau

Table 2: Valley County Historical Census Population Data

Year	Population	Numerical Change	% Change per Year
1970	3,609	-	-
1980	5,604	1995	55.3
1990	6,109	505	9.0
2000	7,651	1542	25.2
2010	9,862	2,211	28.9
2013	9,606	-256	-2.6
2014	9,826	220	2.3
2015	10,103	277	2.8
2016	10,496	393	3.9

Source: U.S. Department of Commerce Bureau

It is evident from Table 1 that the population of the City has remained relatively constant for the last 3 decades. A slight increase in population can be observed from 2014 to 2016 within the City of Cascade. There is an increase in the County's population in the last 3 years with an average annual growth rate of 3.00 percent.

Existing Land Use

The City of Cascade is a rural community with Lake Cascade situated on the west, Kelly's Whitewater Park situated on the east, and the Cascade Aquatic and Recreation Center located to east of Cascade which attracts residents and tourists to the area. The total area in the City limits of Cascade, by the year 2016 was approximately 4.69 square miles, as per the US census.

"Existing land use in Cascade's impact area is primarily residential and agricultural, with the remaining land divided between other uses; commercial, industrial and public. Agricultural land use occurs on the north end of the City impact area and in a timbered area just to the south of the city center area. Within the Cascade city limits, the primary land use is high density residential, followed by medium density residential, low density residential, commercial, residential-commercial, industrial, and recreational. Commercial land use is primarily located in the City center and includes the former Boise-Cascade mill site. Residential-commercial land use incorporates the other part of the City center area. Industrial land use is primarily located along the SH 55 corridor south of the City center area, including the airport, storage units, and other light industrial developments. Recreational land use includes two city park areas, trails, a golf course, and adjacent lands along Lake Cascade [1]". Currently, land use distribution in acres and land use zoning maps are available online.

Future Population Projection

Population projection depends on a number of variables and assumptions; changing these variables will yield a range of possible population projections. The annual average growth rate over the last 4 years is 0.75 percent for the City of Cascade and 1.60 percent for the County. The City's Comprehensive Plan encourages a variety of land uses including housing types and lot sizes to serve all economic segments of the community, light industrial use, commercial areas not conflicting with residential land uses, and affordable housing.

The population in Valley County has been growing at a steady pace since 1970. Second homes and tourism in the county has increased year after year. Second home owners and visitors do not count towards population, but they add significantly to the seasonal and weekend traffic of the County.

Tamarack Resort is situated approximately twenty miles north of the City. December 15, 2004 Tamarack Resort opened for skiing and snowboarding, but was soon closed during the 2008 recession. The population growth rate decreased slightly due to the foreclosure on the resort. Tamarack Resort in 2010 reopened creating the population to consistently increase. In 2010 Kelly's Whitewater Park opened east of the City. Since the opening of Kelly's Whitewater Park Cascade has received an economical growth within the few years. The River District Planned Urban Development has presented a 2019 planned unit development application for 145 single family lots, 11 cottage lots, 46 townhouses and 64 multifamily lots. There is high potential of developing other tracts of land simultaneously with these developments. Developers have added 311 units in the City of Cascade from 2000 to 2010, increasing the housing growth of 43 percent.

The following table shows the historic and probable future population for the City and Valley County through the planning year 2030. Future projections shown in the table below are based on the assumptions made in the previous paragraph.

Table 3: Future Population Projection

Year	Cascade	Valley County
2020	1,060	10,894
2025	1,630	11,748
2030	1,707	12,602

Future Land Use

The City's Comprehensive Plan encourages development of a variety of housing types and lot sizes to serve all economic segments of the community, commercial and light industrial areas south of the city center, open spaces for public parks and recreational activities, intermingled affordable housing, common areas, parks, retail services and businesses along SH 55. The plan also encourages retaining the rural character of the area surrounding the developed portion of Cascade.

Tamarack Resort and other developments around Lake Cascade have significant impact on land use distribution within the City. The developments attract residents, tourists and retail businesses like hotels, inns, recreational rental facilities, etc. The City encourages centralized growth as opposed to sprawl.

The City has GIS Mapping identifying land use zonings. The City uses GIS Mapping for assistance in the systematic and organized growth of the community.

Future Development Potential

The City of Cascade is planning growth management as an orderly, logical expansion of the City services. The City's impact and surrounding area has prime real estate for growth and development. This real estate is being converted from agricultural to large lot developments. Eventually, the City limits will expand to include these developments.

Areas surrounding the airport along SH 55, on the south-east side of the City center, are susceptible to commercial developments. Lakeshore Drive and Lake Cascade Parkwaycarry major recreation traffic between Lakeshore and SH 55. There is potential of future residential development along Lakeshore Drive and Old State Highway. Recently, there are residential developments along Cabarton Road. Cabarton Road is a paved road and carries local traffic to SH 55. Residential developments can be expected along Cabarton Road in the future. By virtue of the location of the Payette River within the City's impact area, recreational and public park areas along the river can be beneficial to the City. The City has adopted zoning ordinances and standards for different developments and construction in the City limits and the area of impact. These ordinances and construction standards will aid the City in providing an orderly and logical expansion of the City.

CHAPTER 3

Existing Transportation System

EXISTING TRANSPORTATION SYSTEM

The City of Cascade is served via SH 55, Principal Arterial, runs through the center of the City in the north-south direction. The other major streets serving the City are: Lake Cascade Parkway, Cabarton Road, Lakeshore Drive, Sawyer Street, Idaho Street, Pine Street, Cascade Street.

SH 55 is the major street, within the City limits, that connects the City of McCall approximately 30 miles to the north and the City of Eagle approximately 75 miles on the south. Lake Cascade Parkway and Lakeshore Drive serve recreational traffic traveling to Lake Cascade.

There are other minor streets; Pine Street, Cascade Street, Payette Street, Front Street and School Street that are classified as collector roads within the City limits. Currently, most of the local streets are decomposed granite soil surfaces. The total local roads length surveyed within the City limits is 8.7 miles, with 1.25 miles having dust control measures. The total length of paved road length surveyed within the City limits is 10.39 miles.

All intersections within the City limits are either YIELD or STOP controlled intersections. There are no pavement markings on local city streets, other than Lake Cascade Parkway and SH 55, to delineate traffic movements or for pedestrian crossing. The majority of the traffic regulatory signs and traffic control signs like STOP and YIELD are according to the standards of the Manual on Uniform Traffic Control Devices (MUTCD). Most of the street signs located in the City do not meet the height and size requirements featured in the MUTCD. These sub-standard signs need to be upgraded as per the specifications provided in the latest edition of the MUTCD. The following Table 4 shows the inventory of traffic control devices and signs within the City limits.

Table 4: Inventory of Traffic Signs

Sign Description	Number
Speed limit	24
STOP/Yield	49
Railroad Crossing Signs	2
Warning Signs	5

The Lake Cascade Parkway and Highway 55 intersection is the major intersection in the City, with stop control on Lake Cascade Parkway. This intersection is the main access for traffic

traveling to Lake Cascade and other developments along Lakeshore Drive.

The street standards and development procedures for streets within the City's impact area are featured in later sections. The Street Standards and detail drawings for different facilities are provided in the **Appendix P**. The City requires all new public streets to meet these standards before the City accepts a street into their system for maintenance. In addition, the City reviews all new streets and modifications to existing streets within the City limits.

Historic Traffic Counts

In 2006 traffic counts on city streets were collected at twelve locations, over a time period of one week to understand traffic patterns. These counts provide a datum for the City's decision-makers for traffic volume comparison.

The following Table 5 lists the ADT counts on city streets. This data will be updated as the City compiles traffic count data collected in 2020 and The River District completes the required Traffic Model.

Table 5: Historic Average Daily Traffic

Street Name	ADT	Weekend Traffic
Cabarton Road (at City Limit)	350	374
Front Street	232	335
Idaho Street	308	508
Idaho Street	168	234
Lakeshore Dr near Duffers Lane	461	770
Lakeshore Drive near Old SH	1766	2767
Market Street	467	811
Patterson Avenue near Idaho Street	316	467
Patterson Street near Old SH	91	130
Payette Street	77	116
School Street	456	702
Spring Street	158	208

ADT values, provided in the above table, are the average traffic counts collected over a time period of one week. Traffic volume and travel behavior varies depending on the day of the

week. It is evident from the above table that weekend traffic in the City is more than weekday traffic. Cascade has recreational areas around Lake Cascade that tend to attract significant amount of tourist and recreational traffic during the summer time, especially on long weekends. High traffic volumes can be observed on all roads during special events, such as, local festivals; like Winter Carnival, County Fair, and special events at Resorts in the County. Although the ADT is less during the winter months, winter driving conditions have a significant impact on traffic flow. Lakeshore Drive carries higher traffic volume than other streets in the City. The following figure illustrates variation in traffic volumes during a week on Lakeshore Drive.

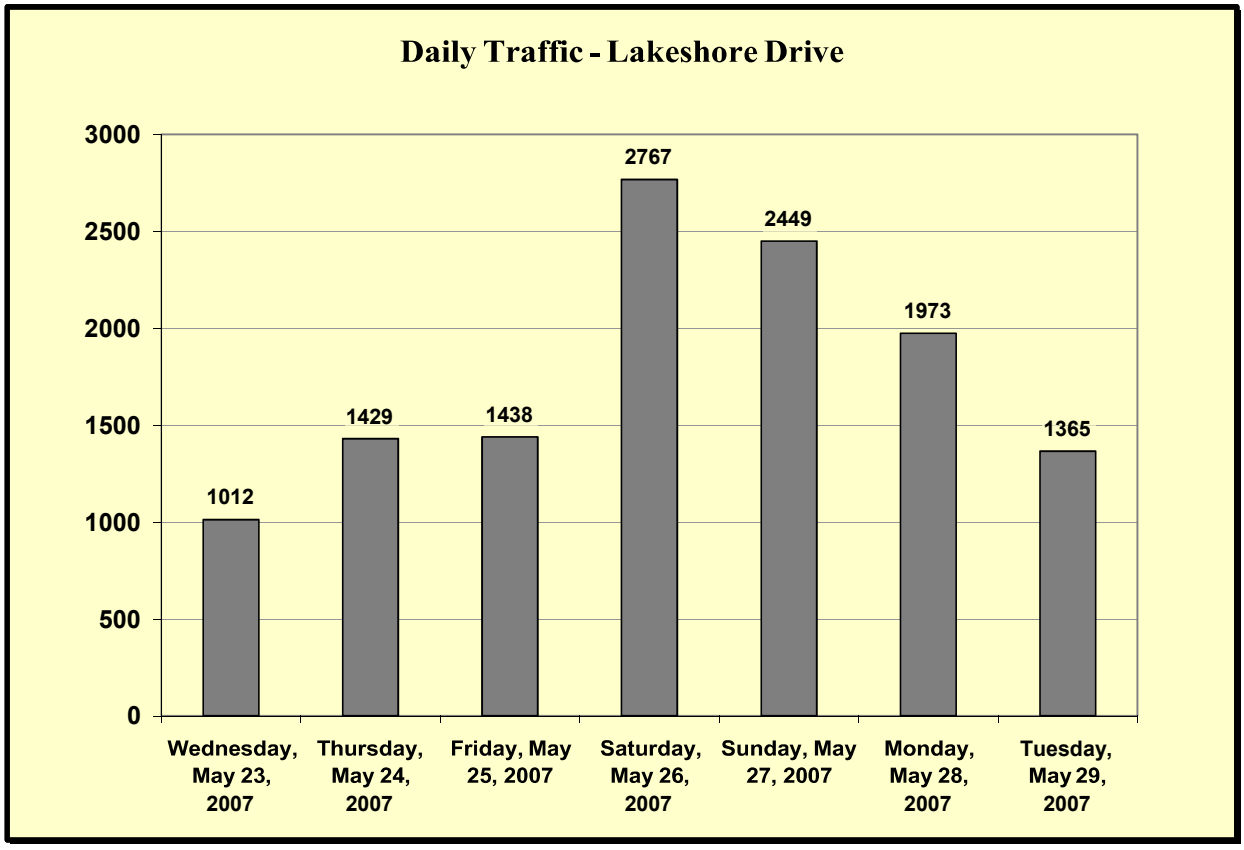


Figure 1: Daily Traffic on Lakeshore Drive

It can be observed from the above figure that the traffic volume peaks on Saturdays decreases through Monday. This trend can be expected on other city streets as well. The traffic counts provided in the above figure were collected during the summer time on Memorial Day weekend, when schools are closed and recreational traffic is at a peak.

Historical Intersection Traffic Counts and Analysis

The traffic data, including turning movements, was collected at 4 key intersections identified by the City staff, and located within the City limits, in the summer of 2006. These key intersections are located along SH 55. The following are the 4 key intersections:

1. SH 55 and Lake Cascade Parkway
2. SH 55 and Pine Street
3. SH 55 and Cascade Street
4. SH 55 and Cabarton Road

Traffic counts were collected for 2 hours in the morning and evening at each intersection to determine the AM and PM peak traffic. It was observed from the data collected that the peak AM period was between 9:30 AM and 10:30 AM, and the peak PM period was between 5:30 PM and 6:30 PM. The following table shows the AM and PM peak turning movement volumes on each approach at the 4 key intersections.

Table 6: AM and PM Peak Traffic Counts at 4 Key Intersections

Intersection	East Bound			West Bound			North Bound			South Bound			Total
	LT	THR	RT	LT	THR	RT	LT	THR	RT	LT	THR	RT	
SH 55 and Lake Cascade	11 (12)	0 (0)	48 (72)	2 (1)	0 (0)	4 (2)	61 (82)	145 (383)	7 (16)	2 (2)	157 (293)	6 (10)	443 (871)
SH 55 and Pine Street	3 (7)	1 (2)	8 (16)	7 (6)	0 (1)	12 (19)	5 (7)	223 (440)	13 (7)	6 (14)	182 (316)	3 (7)	463 (842)
SH 55 and Cascade Street	2 (6)	0 (0)	4 (14)	16 (9)	0 (2)	13 (16)	1(5)	208 (480)	7 (4)	11 (11)	161 (347)	1 (6)	423 (900)
SH 55 and Cabarton Road	12 (17)	0 (0)	1 (8)	0 (0)	0 (0)	0 (0)	7 (4)	266 (250)	0 (0)	0 (0)	165 (306)	8 (29)	416 (614)

Note: Numbers without parenthesis are AM counts
Numbers within parenthesis are PM counts

It can be observed from the above table that the PM traffic counts are higher than the AM traffic counts. It should be noted that the traffic counts at all 4 intersections were not taken on the same day. Also, these counts were taken on Friday evenings and Saturday mornings so that the peak traffic conditions can be assessed. The AM and PM peak traffic conditions were assessed using HCS 2000, version 4.1d. The following table lists LOS of the key intersections for the AM and PM peak periods.

Table 7: Historical Level of Service of Key Intersections

Intersection	East Bound			West Bound			North Bound			South Bound		
	LT	THR	RT	LT	THR	RT	LT	THR	RT	LT	THR	RT
SH 55 and Old State Highway	B (C)	B (C)	A (B)	B (B)	B (B)	B (B)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
SH 55 and Pine Street	B (B)	B (B)	B (B)	B (B)	B (B)	B (B)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
SH 55 and Cascade Street	B (B)	B (B)	B (B)	B (B)	B (B)	B (B)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
SH 55 and Cabarton Road	B (B)	NA (NA)	B (B)	NA (NA)	NA (NA)	NA (NA)	A (A)	A (A)	NA (NA)	NA (NA)	A (A)	A (A)

Note: Numbers without parenthesis are AM counts
Numbers within parenthesis are PM counts
NA represents LOS Not Applicable to that movement

During the AM and PM peak periods, the traffic on cross streets along SH 55 is experiencing minor delays. The eastbound approach at the SH 55 and Lake Cascade Parkway intersection operates at LOS 'B' during the AM peak period and LOS 'C' during the PM peak period.

Current Traffic on SH 55

As stated earlier, SH 55 is classified as a principal arterial with two travel lanes for most of the section between Banks and New Meadows. SH 55 is a scenic route in Idaho, which follows the Payette River most of the way. ITD has taken traffic counts on SH 55 over the past years. There is a permanent traffic counter installed on SH 55 approximately 4 miles south of Roseberry Road. It records traffic every day and periodic traffic reports are available on ITD's website. It should be noted that this traffic data provides an idea of traffic volume on SH 55 and at this location. Understanding SH 55 traffic volumes, variation, and its relationship to the City helps to predict future needs for an alternate route and for planning. The following figure illustrates the variation of traffic volume on SH 55 for the period from 1995 to 2017, based on the traffic counts obtained from the automatic traffic recorder at milepost 127.72.

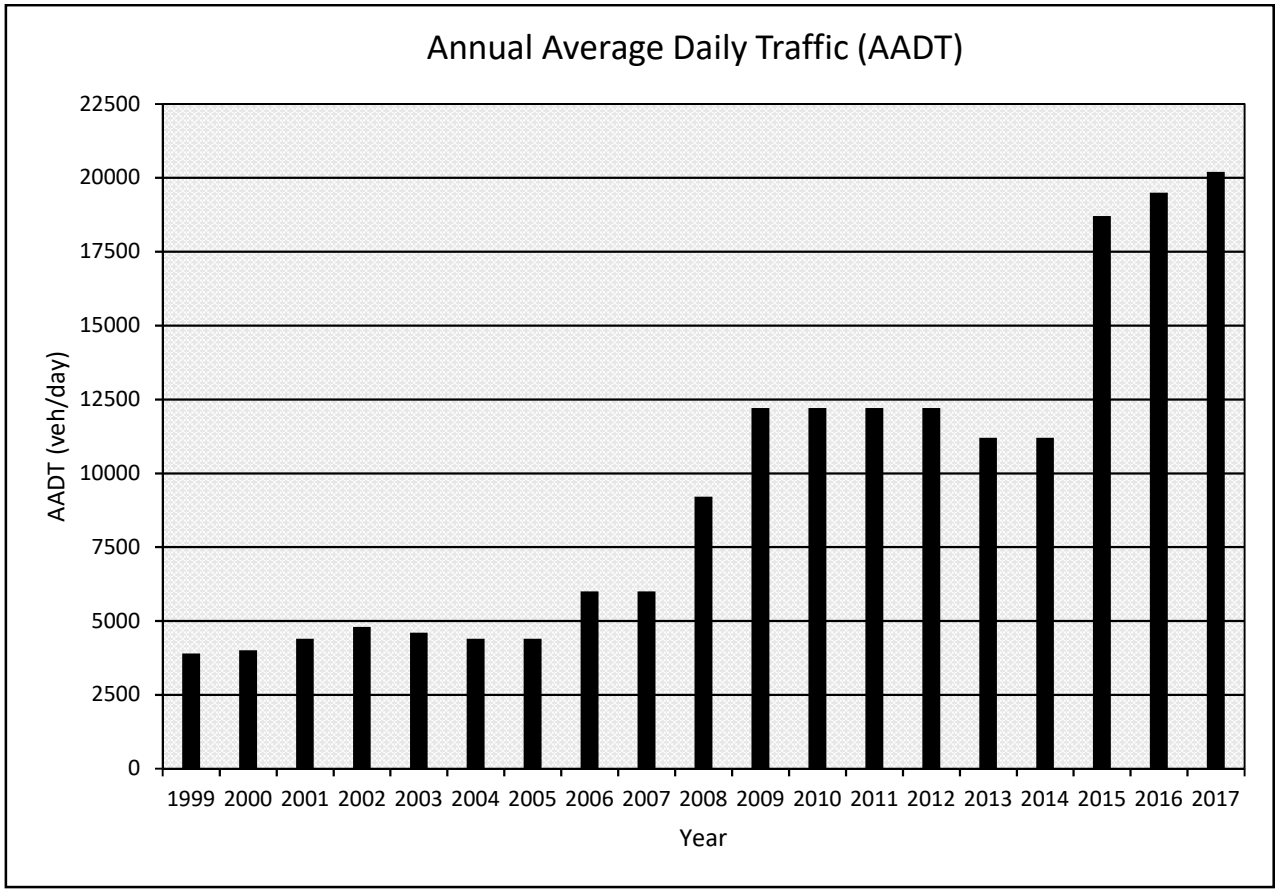


Figure 2: Annual Average Daily Traffic (AADT) on SH 55

It can be observed from the above figure that the Annual Average Daily Traffic (AADT) values remained fairly constant until 2005, then increases steadily through 2007. In 2009 AADT values stay constant till 2013, then decreases through 2014. In 2015 the AADT increases significantly and maintains a steady through 2017

As stated earlier, SH 55 serves the Valley County area and carries traffic from the Treasure Valley area to Valley County and from North Adams County north to the Treasure Valley. This traffic passes through the heart of the City of Cascade. High variation in seasonal traffic was observed on SH 55 due to the presence of recreational areas in Valley and Adams County. Traffic data from the ITD automated traffic counter #43 was obtained to understand traffic variation in a year.

The following figure illustrates the variation in traffic volume on SH 55 during the year 2006.

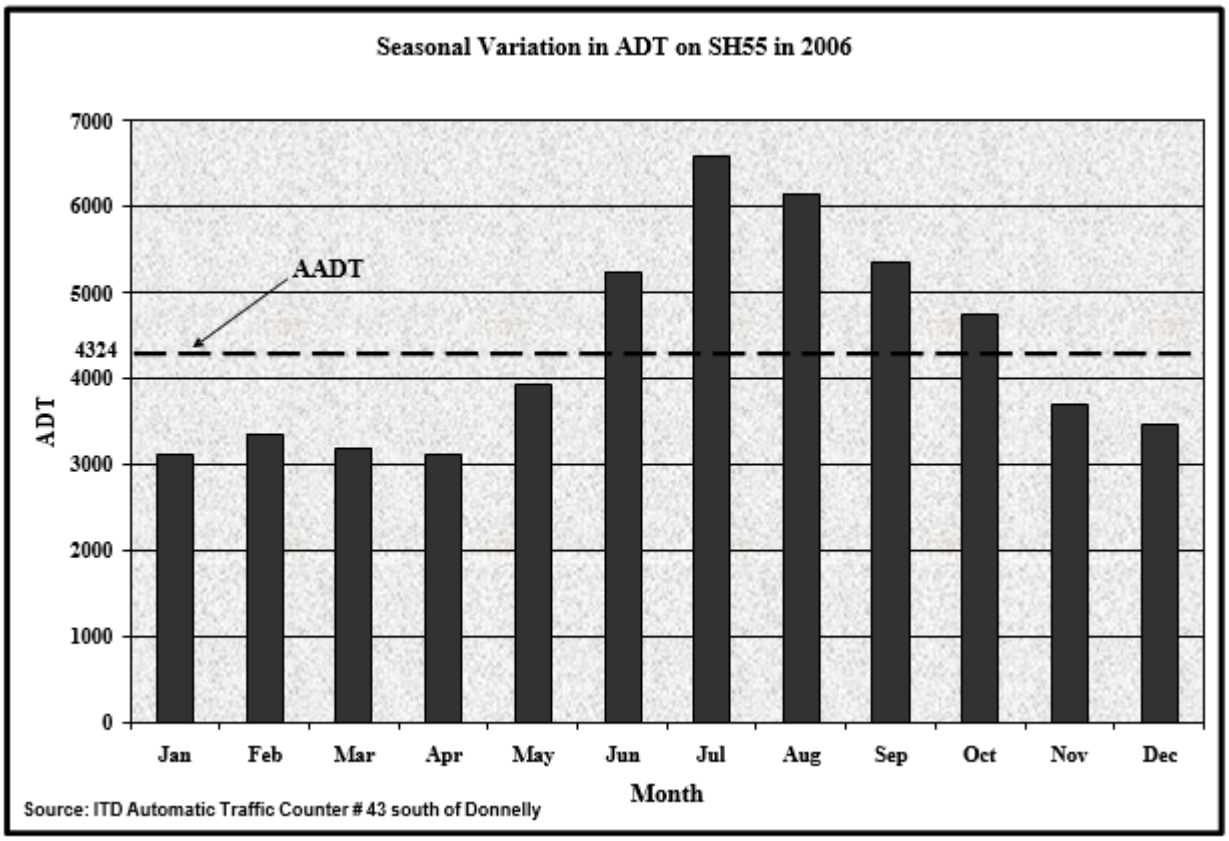


Figure 3: Seasonal Traffic Variation on SH 55 in 2006

It can be observed from the above figure that the traffic volume varies significantly on SH 55 depending on the time of the year. Maximum traffic can be observed during the summer months, especially in July and August. A seasonal variation factor can be determined based on the available seasonal traffic data.

Average non-seasonal traffic on SH 55 is the average monthly ADT in a year, except for the ADT from the months of July and August. The traffic in these three months can be expected to reached peak levels on SH 55 in 2006.

Average non-seasonal ADT on SH 55: 3,916

Average peak seasonal ADT on SH 55: 6,366

Using the above information, a seasonal variation factor was calculated using the following equation:

$$Variation = \frac{\text{Average Peak Seasonal ADT}}{Average\ Non-Seasonal\ ADT}$$

The seasonal variation factor was determined as **1.62**.

Road Functional Classification

Functional classification is the process of classifying roads into different classes according to the character of service they are intended to provide. To classify roads it is necessary to determine how the vehicles travel within the network of roads in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a highway network.

Table 8: Collector Road Functional Classification

Street Name	Classification
Lake Cascade Parkway	Major Collector Road
Lake Shore Drive	Major Collector Road
Warm Lake Road	Major Collector Road
Cabarton Road	Minor Collector Road
Crown Street	Minor Collector Road
Crown Point Parkway	Minor Collector Road
Front Street	Minor Collector Road
Idaho Street	Minor Collector Road
School Street	Minor Collector Road
Dam Road	Minor Collector Road
Cascade Street	Minor Collector Road
Kerby Street	Minor Collector Road
Market Street	Minor Collector Road
Mill Street	Minor Collector Road
Pine Street	Minor Collector Road
Payette Street	Minor Collector Road
Spring Street	Minor Collector Road

In table collector roads are split into two sub classification, major collector roads and minor collector roads. SH 55 is the only arterial that runs through the City. Arterials function to move traffic and generally linking counties and cities. Collectors are the connectors in the City street system. They generally move traffic from local roads to the arterials or other points of interest such as, local cities or major recreational activity areas. Local roads provide access to land uses and serve many localized purposes with lower speeds, such as moving traffic to residences or places of business.

Bridges and Culverts

Bridges and culverts must meet the "clear-span measurement of over 20 feet 6 inches" to be included in the National Bridge Inventory (NBI). Bridges that do not meet this requirement are not on the inspection program administered by ITD. Bridges included on the NBI are routinely

inspected (every 12 to 24 months depending on the condition). Each bridge under the NBI system is assigned an identification number known as the master key number (structure key number). During data collection, bridges are identified by their master key number and attributes such as, feature intersected, dimensions of structure, superstructure material type, deck material type, and the sufficiency rating are compiled into a database. All bridges, regardless if they are on the NBI or not, are located on the data map as a color dot. See **Appendix F** for the City Bridge and Culvert Map.

Currently, there are two bridges located on SH 55 within the City limits. These two bridges are under ITD's jurisdiction and the City does not maintain them. The location of culverts (not included in the NBI list) was recorded along with the road data during the road inventory survey. Culvert locations were recorded during the survey. Attributes such as size, condition, and length may be added to the data base in the future.

Public Transit and Pedestrian Pathway

Public transit in Cascade is limited. The City is collaborating with ITD to in a planning process to develop an umbrella of mobility services, known as "I-Way". The mobility services for the Valley County include services for public transit, bicycle/pedestrian services, vanpool, rideshare, and Park and Ride lots. The mobility plan for the Valley County will include transit from:

- Treasure Valley Transit (TVT)
- Mountain Community Transit (formerly Valley County Connections)
- Elderly Opportunity Agency, Inc. (EOA)
- Northwest Stage Lines

The current transit system is the Treasure Valley Transit, based in Nampa, operating bus

services within Valley County between Cascade and McCall called Valley County Connections Service. The bus operation hours are from 6:15 AM to 6:05 PM. The route begins at the McCall City Hall with stops at Ridley's (McCall), Lakefork Merc., Roseberry Plaza (Donnelly), Cascade's Ashley Inn and Harpo's (Cascade). The bus schedule can be obtained from the Treasure Valley Transit website at the following website address http://www.treasurevalleytransit.com/schedules.htm.

The other transit services available in Valley County are as follows:

1. Transit service operated by Tamarack Resort. They provide bus services connecting Cascade, Donnelly, Lake Fork, Tamarack Resort and the McCall area.
2. Senior Citizen Centers in Cascade provides services for senior citizens.

Cascade Airport

In 1949, the Cascade Airport was little more than a lot adjacent to SH 55. Currently, the Cascade Airport consists of a concrete runway of dimensions 4,300 ft long by 60 ft wide and provides charter services to small private and corporate jets. Arnold Aviation Inc. is an air charter service that has been operating full time since 1975. The Cascade Airport serves surrounding wilderness areas and small communities surrounding Cascade. The Cascade Airport provides services like weekly mail delivery, private charters to hunters, fishermen, hikers, and transporting emergency medical supplies to more than 20 locations in the wilderness area. Each week the mail delivery covers approximately 450 miles of wilderness.

During fire season, the Cascade Airport is a base for helicopter operations and fixed-wing spotters. Based on the 5010 records available in the 2013 Federal Aviation Administration (FAA) and the Terminal Area Forecast (TAF) published in 2016, there has been 8,150 annual operations within 2013 and 2014 at the airport. Flight operations consist of 73.6 percent of air taxi/commuter, 25.8 percent of general aviation, and 0.6 percent of Military.

The Airport Improvement Program (AIP) granted funding for projects between 2005 and 2016.

Projects granted by the AIP consist of rehabilitation on runways and taxiways, snow removal equipment, and updating the Cascade Airport Master Plan. Other sources which provides to the airport include outside fuel providers who pay fuel flowage fees, mail services, forest service usage fees for space and water, private aircraft hangar sales and other miscellaneous service fees.

The Cascade Airport is not only an asset to many businesses and residents in the City, but also supports the City's increasing economy. The past 10 years Cascade Airport has experienced stable numbers of operations. Cascade Airport is planning for operations to increase within the next 20 years.

Pedestrian and Pathways

The City of Cascade Bicycle and Pedestrian Plan identifies the need for developing greenbelts, pathways, and sidewalks. The increase in population has caused more pedestrian and cyclist traffic within the City and in the recreational activities. "Valley County Pathways Inc. opened a quarter-mile new section of the Crown Point Rail-Trail, near Cascade, on May 12, 2007" [7]. The City encourages safe pedestrian and bicycle travel by promoting greenbelts, pathways and sidewalks.

In July of 2004, a citizens group formed the Valley County Pathways Committee. One of the goals of the Committee was to develop a north-south pathway system in Long Valley to link communities and fosters the development of pathways. This would connect the scenic transportation routes and natural resources like lakes and rivers. Currently, the Cascade Pathway Master Plan includes a trail system and 2.25 miles of pathway along the Payette River from Water's Edge RV Park to Fisher Pond Park, and around Kelly's Whitewater Park. A detailed discussion on the Master Pathway Plan is provided in Chapter 4.

CHAPTER 4

Future Transportation System and Needs

FUTURE TRANSPORTATION SYSTEM AND NEEDS

This section of the MTP discusses the future transportation needs and the transportation system improvements required to meet the future demand in the City. Valley County experienced an significant increase in construction of residential, commercial and recreational developments within the last ten years. The future transportation demands of the City depends on the land use and the City's growth principles provided in the Comprehensive Plan.

Future Traffic Projection

The City of Cascade is a developing community. The proximity of the City to Tamarack Resort and Lake Cascade tends to attract business people to establish commercial developments and construct residential buildings in the City. As described in an earlier chapter, the seasonal traffic variation within the City is substantial. It is necessary to determine future traffic volumes on key roads to evaluate the capacity of the existing transportation facilities. The traffic volumes (demand) on key city streets were forecasted using linear projection growth rates. Other factors such as future residential, commercial and recreational developments in the City, the current road system and future street functional classification were considered in the traffic projection. The traffic projection using linear growth rates does not consider the effect of major investment projects such as street widening, street connections, bridge construction, etc.

The following table is data collected from 2006, which shows projected non-peak and peak daily traffic on key city streets for 5, 10 and 20 years.

Table 9: Projected Average Daily Traffic (ADT)

Year	2007		2010		2015		2020		2025		2030	
Street Name	Non-Peak	Peak	Non-Peak	Peak	Non-Peak	Peak	Non-Peak	Peak	Non-Peak	Peak	Non-Peak	Peak
Cabarton Road (at City Limit)	350	374	361	386	380	406	456	487	532	568	607	649
Front Street	232	335	239	346	252	363	264	381	276	399	289	417
Idaho Street	308	508	317	524	334	551	350	578	366	605	382	632
Idaho Street	168	234	173	241	182	254	191	266	200	279	209	291
Lakeshore Drive near Duffers Lane	461	770	476	794	500	835	600	1002	700	1169	800	1336
Lakeshore Drive near Old SH	1766	2767	1822	2855	1915	3002	2299	3602	2682	4202	3065	4803
Market Street	467	811	482	837	507	880	531	923	556	966	581	1009
Patterson Avenue near Idaho Street	316	467	326	482	343	507	359	531	376	556	393	581
Patterson Street near Old SH	91	130	94	134	99	141	104	148	108	155	113	162
Payette Street	77	116	79	120	84	126	88	132	92	138	96	144
School Street	456	702	471	724	495	762	519	799	543	836	567	873
Spring Street	158	208	163	215	171	226	180	237	188	248	197	259

The above table illustrates the future traffic projection on key city streets for the non-peak and peak seasonal periods. Based on future developments within the City, high traffic volumes can be anticipated on Lakeshore Drive, Cabarton Road, and Market Street. These traffic projections provide City staff and decision-makers an idea of the future needs for street developments and a timeline.

Roadway Capacity Guidelines

Roadway capacity depends on many factors such as functional classification, pavement widths, street parking, vicinity land use, terrain type, etc. There are no deterministic methodologies available to evaluate a roadway capacity. Proper engineering judgment is necessary to evaluate the capacity of a roadway. The definition and concept of level of service for highways is defined in **Appendix E**. These guidelines should be used only for planning purposes and not for capacity evaluation. These guidelines in conjunction with context sensitive design, are useful to the

City staff and decision-makers to assess the capacity of existing transportation facilities and to help make necessary plans to acquire federal and local funds for city street developments.

Traffic Projection on SH 55

SH 55 runs through the business district of the City. It is necessary to forecast traffic on SH 55 to understand the impact of traffic growth on local businesses. The traffic on SH 55 was projected using an annual average growth rate of 1.78 percent, which is consistent with Valley County's growth rate.

The following table shows the historic traffic volumes in the shaded area and the projected traffic volumes in the non-shaded area on SH 55 within the City limits.

Table 10: Projected Traffic on SH 55

Year	AADT
2007	6,000
2010	12,200
2015	18,700
2020	20,031
2025	21,457
2030	22,985

Based on traffic projections, the traffic on SH 55 by 2030 can be anticipated to reach 23,000 vehicles per day within the City limits. It is expected that most of the traffic generated will be tourism and recreational traffic to Tamarack Resort and McCall.

Based on land use development applications received by the City, from various developers, it can be expected that land use within the City's impact area will change and hence a planned road network with designated functional classification is necessary to provide adequate street capacity for future traffic demand.

Proposed Functional Classification

The Functional Classification system is a method of classifying streets and highways based on the role of the street or highway in the transportation system, but not purely based on traffic volume. The proposed functional classifications are in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Functional

Classification of streets and highways. Federal aid for capital improvements is available to arterials (principal and minor) and major collectors by City application to the State. Federal aid funds are not available to "local streets", so the street classification is an important element in the planning and funding of construction projects. A proposed functional classification street plan for the City of Cascade is shown in **Appendix N**. This plan serves as a guide for decision-makers in preserving rights-of-way and required setbacks for future developments. This proposed functional classification plan should be submitted to the State for acceptance of the proposed major collectors. Minimum right-of-way requirements, design standards and typical sections for the various functional classification streets are provided in the Street Standards chapter of this report.

Historic Traffic Analysis for Key Intersections

In 2006, traffic was projected at 4 key intersections. The traffic analysis for the PM peak hour was performed using HCS 2000, version 4.1d. The PM peak hour traffic is higher than the AM peak hour traffic. Therefore, only the PM peak hour traffic condition is analyzed. The following table illustrates LOS of each approach for projected traffic volumes at 4 key intersections. See **Appendix I** for the projected traffic volumes and HCS 2000 analysis worksheets.

Table 11: Projected LOS at Key Intersections

Intersection	Year	East Bound			West Bound			North Bound			South Bound		
		LT	THR	RT	LT	THR	RT	LT	THR	RT	LT	THR	RT
SH 55 and Lake Cascade Parkwayy	2010	C	C	B	C	C	C	A	A	A	A	A	A
	2015	D	D	B	C	C	C	A	A	A	A	A	A
	2020	D	D	B	C	C	C	A	A	A	A	A	A
	2025	E	E	B	D	D	D	A	A	A	A	A	A
	2030	F	F	B	E	E	E	A	A	A	A	A	A
SH 55 and Pine Street	2010	B	B	B	B	B	B	A	A	A	A	A	A
	2015	B	B	B	B	B	B	A	A	A	A	A	A
	2020	C	C	C	C	C	C	A	A	A	A	A	A
	2025	C	C	C	C	C	C	A	A	A	A	A	A
	2030	C	C	C	C	C	C	A	A	A	A	A	A
SH 55 and Cascade Street	2010	B	B	B	B	B	B	A	A	A	A	A	A
	2015	B	B	B	C	C	C	A	A	A	A	A	A
	2020	C	C	C	C	C	C	A	A	A	A	A	A
	2025	C	C	C	C	C	C	A	A	A	A	A	A
	2030	C	C	C	D	D	D	A	A	A	A	A	A
SH 55 and Cabarton Road	2010	B	N/A	B	N/A	N/A	N/A	A	A	A	A	A	A
	2015	C	N/A	C	N/A	N/A	N/A	A	A	A	A	A	A
	2020	C	N/A	C	N/A	N/A	N/A	A	A	A	A	A	A
	2025	C	N/A	C	N/A	N/A	N/A	A	A	A	A	A	A
	2030	D	N/A	D	N/A	N/A	N/A	A	A	A	A	A	A

Note: N/A represents not applicable to that approach.
These LOS are for an average non-peak seasonal traffic conditions.

The SH 55 and Lake Cascade Parkway, Lakeshore Drive and Lake Cascade Parkway intersections are the major intersection within the City limits. Recreational vehicles and traffic accessing Lake Cascade travel through this intersection. The eastbound left turn approach of the intersection operated at LOS 'C' and right turn approach operated at LOS 'B' in the existing traffic conditions. Based on projected traffic volumes, this intersection may warrant a signal in the future. An updated traffic analysis of this intersection should complete when the City has identified improvements to be completed within the next 5 years.

The Cabarton Road and SH 55 intersection is the other major intersection within the City limits. Currently, Cabarton Road is a paved road and carries minimal traffic.

Other intersections in the business district of the City will perform at LOS 'C' or better by 2030. The other key intersections currently operate at satisfactory Level of Service. As these projects become prioritized for completion within 5 years, traffic analysis should be completed.

Front Street, Cascade Street to Payette Street

Front Street is a gravel road located east of SH 55. The project limits start at Cascade Street to ending at Payette Street. The project includes a new surface, engineered storm water network, curb and gutter, and sidewalk. At the intersection of Cascade Street and Front Street storm water builds up causing flooding to occur on Front Street. Runoff from Front Street currently sheet flows to the side of the road into ditches and is stored until runoff is able to infiltrate into the existing. To eliminate future flooding along Front Street curb and gutter will direct runoff into catch basins that will be able to convey flow to the east. Northeast of Front Street, across from the railroad tracks it is recommended to convert the former mill yard into a bio swale facility to retain and treat storm water before entering the Payette River.

Payette Street, Front Street to SH 55

Payette Street is a local road that is partially paved, it transitions into a gravel surface traveling eastbound towards Front Street. Improvements needed for Payette Street include new surface, full sidewalks, biking facilities, curb and gutter, and a storm water network.

Curb and gutter is to match the existing roll curb that wraps around Payette Street from SH 55. To match the SH 55 surface the gravel road is to be paved from SH 55 to Front Street.

West Spring Street, Idaho Street to School Street

West Spring Street is a gravel collector roadway that carries traffic from School Street to Idaho Street. Along both sides of West Spring Street side ditches captures and conveys road runoff to a local point on the corner of Spring Street and Idaho Street. The project is to improve the existing base, pave surface, and implement a storm water facility. Open side ditches are to be constructed along with the surface improvements.

Van Wyck Street, Cascade Street to Spring Street

Van Wyck Street carries low volume traffic from the surrounding residential homes. Improvements include widening, engineered storm water network, and a new surface.

Van Wyck Street is currently a local road with a gravel surface, the roadway width allows

one lane of traffic though. Van Wyck Street is suggested to be widened to two lanes paved with curb and cutter. Side ditches line both side of the roadway conveying runoff north and south of the limits. Van Wyck Street is located on a steep terrain directing drainage north and south. A new engineered storm water network is recommended to prevent future flooding.

Sawyer Street, SH 55 to Pine Street

Currently, Sawyer Street is an unimproved corridor that needs a new base, surface, and an engineered storm water system. Project limits are from SH 55 to the tracks on Pine Street. Sawyer Street carries traffic from SH 55, the local RV Camp, and the newly developed subdivision. With no base on Sawyer Street it has caused several maintenance issues over the last few years. Sawyer is classified as a major collector carrying high volumes of traffic. The new design is intended to slow traffic down and provide cyclist and pedestrians a safe environment. To limit the number of storm water minor structures, planter medians are proposed to collect and drain storm water runoff.

Lakeshore Drive, Lake Cascade Parkway to Dam Road

Lakeshore Drive, which provides access to 3000 acres of federal land surrounding Lake Cascade, is in disrepair. The drainage needs to be improved, the road widened and the potholed, gullied, gravel surface paved. The narrow road and its poor condition make it unsafe for pedestrian and bicycle transit. The intersection of Lakeshore Drive with Lake Cascade Parkway is unsafe. Back in 2002 the USBR Resource Management lane stated that the intersection was dangerous due to lack of traffic control. In the intervening time population growth in Boise has been exponential, increasing traffic safety risks at this intersection. This Lakeshore Drive improvement project serves a large number of diverse recreationists including fisherman, campers, motorized and non-motorized boaters, swimmers, cyclists, walkers, Nordic skiers, snowshoes. This project will enhance safety and transit for both motorized and non-motorized users while increasing access and use of federal lands.

To address the problems mentioned in the questioned above road drainage will be improved, the road widened, and the gullied, potholed base replaced and surface paved using 20-year design standards. The road will have a 12” thick granular sub-base, 3/4” aggregate, 6” base,

and 3" thick asphalt pavement surface. The 34' wide final roadway section will have 12' travel lanes, two 5' bike/ped lanes, curb & gutter, and a storm drain system. Advance signing will commerce in early 2020, construction work will begin in May 2021 for a period of 3 months with project close-out occurring no later than August 2022.

Lakeshore Drive provides access to Lake Cascade State Park and Federal lands, is a candidate for FHWA FLAP funding. The City has been working with the Bureau of Reclamation for adjacent projects and joint funding applications.

Future Public Transit

In the late 1990's, Cascade's economy slumped due to the closure of the last lumber mill in Cascade and many people moved from the City. In 2004, the four-season resort, Tamarack opened to the public and created jobs and land speculation. There were signs of an increase in the economy and commercial developments in the City after the resort opened. During the 2008 recession Tamarack Resort filed bankruptcy, declining growth. In 2010 the ski portion of the resort reopened for seasonal activities, increasing economic growth. Valley County has experienced an impact of rapid growth associated with significant new resort developments and commercial developments.

City of Cascade have collaborated with ITD – Division of Public Transportation and Community transportation of Idaho to address the mobility in the state. The City of Cascade mobility plan includes transit services for rural areas, transit between Cascade and McCall, with a service for the elderly, and a stage line between Lewiston and Boise. The City has coordinated with local service providers such as Tamarack, and Treasure Valley Transit, Mountain Community transit, Elderly Opportunity Agency Inc. and Northwest Stage Lines to expand public transit service in the City. Valley Adams Planning Partnership (VAPP) in association with ITD and rural transit consultant Amy Ostrander prepared an outline for a regional transit system covering Valley and Adam counties. Ostrander Consulting Inc. prepared a report evaluating the transit needs in both counties and identifying the viable integrated transit alternatives throughout the region.

The study recommends a cooperative effort between the communities of Cascade, McCall, and Donnelly in terms of planning for transit and developing local partnerships. The study also identified short-term, mid-term and long-term plans to increase future transit.

It is recommended that the City plan and preserve areas for park and ride facilities within the City.

Future Air Transit

The current airport in Cascade provides charter services to small private and corporate jets. The airport also serves as a base for firefighting helicopters and fixed-wing spotters, weekly mail delivers services, emergency medical supply services to the surrounding 20 locations in the wilderness area. The airport not only provides services to the surrounding communities but also supports to enhance the City's economy. Cascade Airport Master Plan indicates future plans for Cascade Airport. An increase in the number of flights in the future as the City and recreational activities grow. From the 2016 aviation activity projections, they show in the next 20 years the Cascade Airport anticipate growth in all activities. In 2036, it is projected approximately 9,451 aircraft operations are to occur. Cascade Airport is expected to increase based aircrafts from 18 in 2016 to 23 in 2036. The City should consider expanding the airport facilities to include a terminal building, runway length, and additional runways, etc. as the demand for flight services increases. The City should coordinate with other community agencies like McCall, Donnelly and Valley County for the possibility of expanding the Cascade Airport. The City has completed a feasibility study for a new runaway in the vicinity of the existing airport. The Cascade Airport Master Plan is included in **Appendix Q**.

Future Pedestrian and Bike Path Plan

Currently, the City has a pathway that extends 2.25 miles along the Payette River from Water's Edge RV Park to Fisher Pond Park and around Kelly's Whitewater Park. The Valley County Pathways Committee has developed a Master Pathways Plan for Valley County, Donnelly and McCall. The comprehensive plan identifies the needs for connecting pathways between neighborhoods, parks, schools, shopping centers and other destinations. The City is recommended to design sidewalks and pathways to comply with ADA standards and accommodating the increase of bikers and pedestrians. In this conceptual plan, it identifies a number of proposed pathway corridors within and around the City that could create an outstanding linked pathway system in Long Valley. The proposed corridors are preliminary, and further work is needed to gauge public support such as meet with neighbors and adjacent landowners, and identify any environmental and planning issues. The conceptual pathway

corridors are shown in a map provided in **Appendix M**. The Bicycle and Pedestrian Plan should consist of policies, goals, funding options and strategies, typical sections and standards to develop a continuous pathway system.

Access Control Standards

Access management strategies are essential with growing traffic demand and congestion. These strategies involve the systematic control of driveways, intersection design and spacing, median openings, and street connections. Access control and management is associated with a variety of benefits primarily preserving and improving public safety especially for pedestrians and bicyclists, reducing traffic congestion and delay, and safe traffic operation.

The following are the major principles of access management:

- Design and manage roadways according to the primary function that they are expected to serve.
- Limit direct access to major roadways. Direct access to residential property from major collector and arterials should be discouraged.
- Limit the number of conflict areas on the highway.
- Provide an appropriate transition from one classification of roadway to another by designing a proper network, including intersections.

The above listed benefits of access management can be achieved by setting standards on access location, spacing of intersections, and urban and private approaches. Well designed and distributed intersections with circulation plans within commercial developments will promote attractive commerce and increase traffic flow. “SAFE ACCESS IS GOOD FOR BUSINESS” information is available from the Idaho Transportation Department (ITD). It is recommended that the City enter into a Transportation Access Plan (TAP) with ITD.

The following are the access control standards recommended to the City:

1. Access to SH 55 shall be limited to arterials or major collector intersections at half (1/2) mile intervals, minor collector intersections at quarter (1/4) mile intervals, and local street intersection spacing, city blocks, at 330 feet.
2. Access control in areas where the highway transitions from the urban core to rural shall be at a minimum of mile spacing. These standards confirm with the Rural Type IV access control standards described in ITD's Access Management policy.
3. The use of existing approaches on SH 55 shall be allowed to continue provided that:
    a. The existing use is lawful and properly permitted by ITD.
    b. The nature of land use does not change, for example, a residential use to a commercial use.
    c. The intensity of land use does not increase, for example, an increase in the number of residential dwelling units or an increase in the square footage of commercial space.
4. The developer shall develop or acquire access to a road other than the SH 55 if the owner proposes a change in intensity of use or change in land use type. The use of the existing approach shall be abandoned and removed.
5. A shared driveway approach should be encouraged over individual approaches to minimize the total number of driveway approaches on SH 55 and major collectors.
6. Frontage roads should be encouraged for access control on SH 55.
7. A single access location at Pine Street should be provided to the proposed Whitewater Park along the river.
8. Access on major collector roads in the City shall be at a minimum spacing of 500 feet between approaches and at a half a mile between intersections. These standards confirm with ITD's Rural Type II access control standards.
9. The building setback, including landscape area, for new commercial developments in Non-Business District shall not be less than seventy five feet (75') from SH 55 and fifty feet (50') from major collector Rights-of-Way.
10. The residential setbacks in other districts should meet requirements described in the City of Cascade's zoning ordinances.

CHAPTER 5

Street Standards

STREET STANDARDS

Section 1 -General

The purpose of this section is to define the minimum requirements, minimum standards and procedures for the design, construction, and maintenance of the City of Cascade streets. However, the standards may not apply in all situations. Compliance with these standards does not relieve the designer of the responsibility to use sound professional judgment. Any deviation from these standards shall only be allowed with written approval from the City Engineer.

All work shall be done in accordance with the latest edition of American Association Highway Transportation Official (AASHTO) *Policy on Geometric Design of Highways and Streets,* and the *Idaho Standards for Public Works Construction* (ISPWC), unless otherwise noted herein. Any contradictions between the standards presented here the AASHTO and ISPWC standards, these standards take precedence.

For projects governed by other jurisdictions, e.g. Valley County or ITD, the designer/applicant must comply with their standards and requirements and receive approval from those entities. These standards apply to all street construction projects within the City, including City work and private development (industrial, commercial and residential). Some of these standards have been taken from the Valley County Standards.

Section 2 - Roadway Classification

2.1 Roadways within the City of Cascade are classified in accordance with the Federal Highway Administration guidelines. All roads are classified as Arterials, Collectors, or Local Roads. It shall be the prerogative of the City of Cascade to define the roads and their classification as Arterials, Collectors, or Local Roads in developing area and within subdivisions.

Section 3 - Right-of-Way

3.1 All streets and alleys within any subdivision shall be dedicated for public use, except as provided herein.

3.2 There shall be right-of-way provided at a width no less than those defined in the comprehensive plan for the City; or these standards, whichever is greater:

Table 12: Minimum Right-of-way Requirements

Street Functional Classification	Right-of-way
Principal/Regional Arterial (SH 55)	100 feet minimum
Minor Arterial Street	90 feet, minimum
Major Collector Street w/o parking	80 feet, minimum
Minor Collector Street with parking	80 feet, minimum
Minor Collector without Parking	70 feet, minimum
Local Street and Private Street	60 feet minimum

3.3 Currently, Cabarton Road is classified as a minor collector street. There is potential for more development south-west of City Center and traffic access SH 55 through Cabarton Road. Cabarton Road is to preserve a minimum right-of-way as furnished in the above table. Sawyer Street is located on the east side of the City center which runs parallel to SH 55. There has been of growth on the east side along with Kelly's Whitewater Park. Sawyer Street is recommended to be upgraded from a local road to a minor collector with the development of Kelly's Whitewater Park.

3.4 Cul-de-sacs shall have a minimum right-of-way width of seventy foot (70') radius and a minimum pavement width of fifty foot (50') radius. Cul-de-sacs of a temporary nature may be allowed, providing each right-of-way is shown on the plat and approved by the City of Cascade. A standard cul-de-sac layout is shown as standard drawing **SD-6** in **Appendix P.**

3.5 In general, half street dedications shall not be permitted, however, the Council may accept a half street dedication when such street is necessary for reasonable development of the property, and practicable to require the dedication of the other half when the

adjoining property is subdivided. The minimum width of such streets shall be a half street width plus ten feet (10') within the adjacent property. In addition, half streets shown on the street layout plan are officially designated as a high priority present or future roadway, or when such other conditions or restrictions exist or are imposed by the Council to ensure that the eventual completion of such street is to its full required right of way. When a dedicated half street exists adjacent to a property to be subdivided, the other portion of the street shall be platted within such subdivision.

3.6 Private streets may be allowed in PUDs at the discretion of the City Engineer, provided that the private street is not a collector or arterial. Private streets must meet the street design and construction requirements as outlined in these Standards, be approved by emergency agencies, and these streets shall not be gated. The right-of-way width for private streets shall not be less than sixty feet (60'). A Street that connects two public streets shall not be private.

Section 4 - General Street Layout

4.1 The arrangement, character, extent, width, grade and location of all streets shall conform to the street layout plan and shall be considered in their relation to existing and planned streets, topographic conditions, public convenience and safety, and in their appropriate relation to the proposed uses of the land served.

4.2 Street patterns in residential neighborhoods shall be designed to create areas free of through traffic, but readily accessible to adjacent collector and arterial streets.

4.3 Where industrial, commercial and residential development abuts or contains an existing or proposed arterial or collector street, the City Engineer may require frontage streets, reverse frontage streets, or similar treatment for the purpose of creating a desirable neighborhood character and enhancing the traffic movement.

4.4 The City Engineer may require a street along the railroad right of way suitable for appropriate use of the intervening land.

4.5 In the subdivision of land along arterial and collector streets, lots shall not front directly onto arterial and collector streets.

4.6 Street intersections in residential areas may be of a "T" rather than a "+" design.

4.7 All irrigation and natural drainage courses shall be improved by tiling in a manner which will improve the hydraulics and ease of maintenance of the channel as per the City specifications.

4.8 If street trees are required, the minimum standard shall be two inches (2") caliper, forty feet (40') to sixty feet (60') apart. Trees or shrubs placed within twenty five feet (25') of a street intersection shall not obstruct clear vision of and across the corner between three feet (3') and eight feet (8') above the ground level of the traveled way.

4.9 DRIVEWAYS

4.9.1 Driveways shall have a minimum width of sixteen feet (16’).

4.9.2 Driveways may provide access to no more than two residential single family dwelling units. No portion of the required fire lane width of any driveway may be used for parking. In this instance, driveways shall have a minimum width of twenty feet (20’). Driveways shall not be named.

4.9.3 Driveways and access streets longer than one hundred and fifty feet (150’) must have a turnaround area approved by the Fire Department. Fire lane signage must be provided as approved by the Fire Department.

4.9.4 Driveway access locations shall be governed by the Manual for use of public right-of-way standard approach policy, developed by the Local Highway Technical Assistance Council.

4.9.5 Driveways accessing more than one (1) residential dwelling unit shall be maintained by an owner’s association, or in accordance with a plat note.

4.9.6 Residential driveways fronting arterial and collector streets shall not be allowed. In unavoidable situations, such driveways should be designed to prevent vehicular traffic from backing out onto the collector or arterial streets.

4.10 Required fire lanes, whether in private streets or driveways, shall comply with all regulations set forth in adopted fire codes, and approved by the Fire Department.

4.11 Property lines at street intersections shall be rounded with a circular curve radius of twenty feet (20’) or greater, where the City Engineer may deem it to be necessary. On arterial streets the curve radius shall be thirty feet (30’).

4.12 Street jogs with centerline offsets of less than one hundred and twenty five feet (125') shall be avoided.

Section 5 - Street Design Requirements

5.1 No block shall be longer than six hundred feet (600') or less than three hundred feet (300') between street intersections on collector streets. Each block shall have sufficient width to provide for two rows of lots, except as provided in the City's Development Standards by a special exception approval by the City Engineer.

5.2 Street grades shall be such as to provide for the safe movement of traffic in all weather conditions and for adequate drainage of both streets and abutting properties. Street grades, whenever feasible, shall be not less than four tenths percent (0.4%) and not more than six percent (6%). Grades in excess of 3 percent (3%) should be avoided on all approaches within fifty feet (50')of an intersection.

5.3 A cul-de-sac, court or similar type street may be permitted, provided that the maximum length for a cul-de-sac shall be six hundred feet (600') as measured from entrance to the center of the turnaround, and all cul-de-sacs shall be provided with a turnaround having a minimum radius of fifty feet (50') at the edge of pavement and seventy feet (70') at the right-of-way.

5.4 Dead-end streets shall not be permitted with the exception that such streets terminating at the boundary of a subdivision may be approved when such street and its extension is shown on the comprehensive general plan or when, in the opinion of the City Engineer, the future extension of such street is feasible and necessary to the proper development of the City street pattern. A paved temporary cul-de-sac shall be constructed at the end of a dead-end street. A temporary fence barricade or other substantial barrier shall be constructed at the end of any dead-end street to prevent vehicles using said street as a through street. Any abutting landowners who desire to use a dead-end street to reach abutting lands may apply to the City Council to do so, and will be required to bring his portion of the street up to subdivision standards.

5.5 ALIGNMENT

5.5.1 Streets shall be designed and laid out in order to intersect as close to a right angle as possible, and no street shall intersect any other street at less than seventy degrees (70°).

5.5.2 Where any street deflects an angle of ten degrees (10°) or more, the connecting curve shall have a minimum radius of three hundred feet (300') for arterial and collector streets and one hundred fifty feet (150') for minor streets as required by the City Engineer.

5.6 Minimum stopping sight distances shall be determined by the *AASHTO Policy on Geometric Design of Highways and Streets*.

5.7 On a corner lot, no person shall be allowed to erect, place, or maintain plants or shrubs or any obstacles which can dangerously obscure the view within a clear sight triangle defined by the following:

5.7.1 Height between thirty inches (30”) and ten feet (10’), measured from the centerline grades of the intersecting streets.

5.7.2 The minimum distance measuring one hundred feet (100’) along the property line from the centerlines of the intersecting streets. See standard drawings **SD-7**, **SD-8** and **SD-9** in **Appendix O**.

5.8 The Standard Roadway details and the typical cross section characteristics required for the classified roadways within the City of Cascade are included in **Appendix O**. Local Roads standard drawing is **SD-1**; Collectors standard drawing is **SD-2** and **SD-3,** Arterials standard drawing is **SD-4.** The alternate standard sections for Residential and Collector Streets may be approved at the discretion of the City Engineer based on a soils report submitted to the City Engineer.

5.9 The developer shall provide and install all street signs in accordance with the current edition of the MUTCD and as approved by the City Engineer.

5.10 ALLEYS

5.10.1 Alleys shall be provided in all CBD developments.

5.10.2 Dead end alleys shall not be allowed.

5.10.3 New alley widths shall not be less than twenty feet (20').

5.10.4 Where possible, utilities shall be located and installed under ground in the alleys.

5.10.5 Alleys shall be paved and have adequate drainage approved by the City's Engineer.

5.11 All streets and alley ways in a proposed subdivision, or streets that are shown on the Comprehensive Plan shall be dedicated to the City.

5.12 Location: street and road location shall conform to the following:

5.12.1 Street Location and Arrangements: When an official street plan or comprehensive development plan has been adopted, subdivision streets shall conform to such plans;

5.12.2 Local Streets: Local streets shall be so arranged to discourage their use by through traffic;

5.12.3 Stub Streets: Where adjoining areas are not subdivided, the arrangement of streets in new subdivisions shall be such that said streets extend to the boundary line of the tract to make provisions for the future extension of said streets into adjacent areas. A reserve strip shall be required and held in public ownership;

5.12.4 Relation to Topography: Streets shall be arranged in proper relation to topography to result in usable lots, safe streets and acceptable gradients;

5.13 Street Construction: The following standards for street design and construction shall apply to all new streets.

5.13.1 Design plans for street construction and subdivision drainage shall be submitted to and approved by the City Engineer prior to construction. Sub grade construction must be approved before placing the gravel surfacing.

5.13.2 Clearing: The City may require clearing of full right-of-way width.

5.13.3 Drainage:

(a) Side ditches shall drain to cross drains which size shall be approved by the City Engineer.

(b) Cross drains at intersections shall be set back ten feet (10') from the appropriate property line or located according to the recommendations of the City Engineer.

(c) Driveway approach pipes shall be twelve inches (12") minimum diameter.

5.14 Street Names: Streets shall be named in accordance with Title 8, Chapter 5 of the Cascade City Code. County Emergency Staff shall be consulted in the street naming process.

5.15 Planting Strips and Reserve Strips: Planting strips and reserve strips shall conform to the following:

5.15.1 Planting Strips: Planting strips shall be required to be placed next to incompatible features such as highways, railroads, commercial or industrial uses to screen the view from residential properties. Such screening shall be a minimum of twenty feet (20') wide, and shall not be part of the normal street right-of-way or utility easement; and

5.15.2 Reserve Strips:

(a) Private Reserve Strips: Privately held reserve strips controlling access to streets shall be prohibited; and

(b) Public Reserve Strips: A one foot (1') reserve strip may be required to be placed along half streets which are within the subdivision boundaries and shall be deeded to the City for future street widening.

5.16 Any new construction work in the Central Business District shall follow the same curb, gutter and sidewalk pattern as now exists.

Section 6 - Easements

6.1 Unobstructed utility easements shall be provided along front lot lines, rear lot lines, and side lot lines when deemed necessary; total easement width shall not be less than ten feet (10') with five feet (5') on each side of the property line. In situations where an easement is required for City owned utilities then the minimum easement width of twenty feet (20') should be provided.

6.2 Easements shall also be provided, where necessary, to provide access for emergency services, utility maintenance, public access, private access, or any other purpose in the public interest.

6.3 Storm water easement or drainage right-of-way shall be provided where a subdivision is traversed by a watercourse, drainage way, channel or stream, conforming substantially with the lines of watercourse, and such further width or construction, or both, as will be adequate for the purpose. The City Engineer may require setbacks from watercourses, applicable not only to buildings, but also to any disturbance of the stream banks and edge habitats.

6.4 Snow storage easements of not less than ten feet (10') shall be provided along all public streets

6.5 All easements described herein shall be dedicated to the City.

Section 7 - Pedestrian Walkways

7.1 Pedestrian walkways may be required where necessary to obtain convenient pedestrian circulation to schools, parks, shopping areas, or as designated in the City's Comprehensive Plan or Pathway Master Plan. The width of a walkway on any street shall not be less than five feet (5'). Multi use pathways within a development or in the City limits shall not be less than ten feet (10') wide, except for existing pathways in the City.

7.2 Pedestrian sidewalks shall be constructed with a minimum width of five feet (5'). Sidewalks shall be constructed on all new streets.

7.3 The landowner whose property abuts the pedestrian walkway or sidewalk shall be responsible for all costs associated with engineering, installation, maintenance, upkeep, repair and replacement of the pedestrian walkway.

7.4 The typical street cross sections described in Section 5 and as shown in **SD-1**, **SD-2**, **SD-3 and SD-4** in **Appendix O** display walkway construction.

Section 8 - Drainage and Snow Storage

8.1 Arterials, Collectors, and Local Streets may be constructed with six inches (6") vertical curb, gutter, and catch basins at regular intervals with storm drainage systems as shown in the ISPWC Standard Drawings. The storm drainage shall be designed such that the system collects all storm water and discharges to a designated treatment system. Construction details are provided in the Standard Drawings in **Appendix O** and the ISPWC.

8.2 For sub-base course sections, see Standard Drawings in **Appendix O**.

8.3 The developer shall provide a geotechnical report for the development area. Geotextile sub-grade separation filter fabric may be required to separate sub grade from sub-base where the seasonal high ground water table is within twelve inches (12") of sub-base, and the potential locations where silt sand and fine materials are present in the sub-grade. This determination will be made by the City Engineer.

8.4 The natural storm water and snowmelt water drainage and treatment on and through the property shall be consistent with best management practices and regulatory programs to which the City is subject. These best management practices shall be consistent with other City plans as established and approved by the City Engineer. Off-site improvements necessary for interconnection between private property and the City's property may be required of the developer as a condition of plat approval or platting, and development shall be postponed until such improvements are provided by others.

8.5 A drain pipe shall be required at the bottom of borrow ditches at grades less than 0.4 percent and in areas of seasonal high ground water. See **SD-1** and **SD-3, Alternate Standards** in **Appendix O.**

8.6 Streets shall be signed to prevent on street parking during snow plowing activities.

8.7 Each development shall plan, preserve, and require locations for snow storage to maintain clear travel lanes. Snow shall be removed to snow storage areas. Public streets shall provide for snow storage along each side of the street.

8.8 Drainage designs shall be based on a precipitation event with a return period of twenty-five (25) years for local streets and fifty (50) years for collector streets. Arterials, bridges, and primary storm conveyance systems shall be designed to accommodate a 100 year event. All drainage plans shall be stamped by a Professional Engineer in the State of Idaho.

8.9 ITD drainage design manual is recommended for estimating the volume of runoff.

8.10 Design flows shall not exceed 80% of pipe capacity.

8.11 Dry wells may be used in special circumstances where other methods of storm water management have been explored and there is no feasible alternate to dry well installation.

Section 9- Signing, Striping, and Markings

9.1 All traffic control devices (signing, and traffic signals) shall be shown on the design plans. The traffic control devices and their application shall conform to MUTCD as adopted in Idaho.

9.2 All temporary traffic control shall conform to the MUTCD, latest edition.

9.3 The City may determine pavement marking requirements subject to MUTCD requirements. The color, pattern and dimensions of markings shall be in conformance with the MUTCD, latest edition. Paint quality shall be the same as that used by ITD for their pavement markings.

9.4 All signs shall be installed prior to the acceptance of streets, unless approved otherwise by the City Engineer.

Section 10- Construction Specifications and Materials

10.1 DIVISION 100 - GENERAL CONDITIONS

ISPWC shall control road construction work in the City of Cascade.

10.1.1 Street, drainage and utility improvements are required by Cascade as a condition of approved land use.

10.1.2 All testing required in these standards or required by Cascade shall be done by an accredited or approved testing laboratory at the expense of the applicant or contractor. Copies of all shall be submitted to the City for review.

10.1.3 Changes to any materials, quality control or workmanship on public improvement projects shall be approved by the City in writing.

10.1.4 The City of Cascade shall be notified at least five business days prior to the start of construction.

10.1.5 The gravel base and asphalt depths shown on **SD-1** through **SD-4** will meet or exceed the Valley County Road Standards. If a soils test analysis is conducted on the sub-grade and shows a high "R" value, then the City Engineer may approve a lesser cross-section of materials.

10.2 DIVISION 200 - EARTHWORK

10.2.1 Clearing and grubbing shall consist of the removal and disposal of all organic and other unsuitable material from the road construction area.

10.2.2 In solid rock construction excavation, the solid rock shall be excavated to six inches (6") below the finished sub grade elevation and backfilled with approved granular materials.

10.2.3 Unstable sub-grade conditions shall be remedied by over-excavation and back-filling with approved granular material.

10.2.4 Sub-grade shall be compacted to a density no less than ninety-five percent, (95%) of the AASHTO T-99 Proctor Density.

10.2.5 Class A (see ISPWC for requirements) compaction shall be specified for construction.

10.3 DIVISION 300 - TRENCHING

10.3.1 A right-of-way use permit shall be obtained from the City prior to commencing work in any public right-of-way.

10.4 DIVISION 600 - DRAINAGE

10.4.1 Culverts used for drainage purposes shall be corrugated steel, aluminum, or high density polyethylene (HDPE) with the wall thickness and minimum depth of cover shown in the table below:

Table 13: Minimum Requirements for Culvert Materials

Diameter Inches	Steel Thickness Inches	Aluminum Thickness Inches	HDPE Thickness Inches	Cover Required
12" through 36"	0.51 (16 ga)	0.075 (14 ga)	.05 @ 12" 0.175 @ 36"	12" Min.

10.5 DIVISION 700- CONCRETE

The basic mix design for curb, gutter and sidewalk work on City streets shall have at least 28 day strength of 3000 lbs. (Class 30- see requirements in ITD standard specifications). Fiber Mesh shall be included in the construction.

10.6 DIVISION 800 - UNCRUSHED AGGREGATE

Pit run material shall be durable, have a sand equivalent not less than 30, and shall meet the gradation shown in the table below:

Table 14: Minimum Requirement for Sub-base Gradation (% Passing)

Sieve Size	Sub-base
12”	95-100
8”	
6”	
2”	
#4	15-65
#200	0-12

10.7 DIVISION 800 - CRUSHED AGGREGATE

10.7.1 The crushed aggregate for base shall conform to the table below:

Table 15: Minimum Requirement for Base Material Gradation (% Passing)

Sieve Size	% Passing
1”	100
¾”	90-100
#4	40-75
#8	30-50
#200	3-20

10.7.2 Material shall be mechanically compacted by rolling to at least ninety- five percent (95%) of the AASHTO T-99 Proctor Density.

10.8 DIVISION 800- ASPHALT PAVING

10.8.1 Hot plant mix asphalt concrete shall be Class III. The asphalt cement performance grade shall be selected for the site temperature requirements. See ISPWC for additional asphalt standards.

CHAPTER 6

Road Surface Ratings and Surface Management Plan

ROAD SURFACE RATINGS AND SURFACE MANAGEMENT PLAN

Currently, the City maintains 19.1 miles of roadway, of these, 8.7 miles are gravel roads and 10.4 miles are paved roads. Each street maintained by the City's Public Works Department included in the inventory survey is rated numerically. Poor road surface conditions result in delays and loss of comfort to the user. Each road condition attribute in the data dictionary is assigned a numeric value. Surface condition ratings for paved and gravel roads are determined using these values.

Paved Road Surface Condition Assessment

The paved road surface condition can be assessed by calculating a numerical score or index between 0 (worst) and 100 (best) based on the visible pavement distress, which is called the Pavement Condition Index (PCI). Road ratings were determined using a weighted average of the individual road segment condition. The PCI values assigned were based on the following 3 surface distress conditions:

1. Surface Cracking
2. Surface Distortion
3. Surface Disintegration

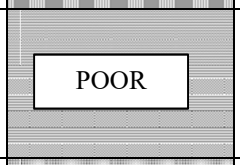
PCI	RATING	DESCRIPTION
100		New road surface with smooth driving conditions.
95		Road surface with smooth driving conditions, no loss of speed.
80		Road surface with rough driving surface, potential loss of speed and comfort occasionally and minor safety hazards.
65		Road surface suitable for driving with reduction in speed and driving comfort, and occasional safety hazards.
45		Road surface suitable for driving passenger vehicles. Significant reduction in speed due to potholes and other distress, potential damage to vehicles and safety hazard conditions.
25		Road surface not suitable for driving passenger cars. Potential damage to vehicles and safety hazard.
10 0		Road surface not suitable for driving. Road Closed condition.

Figure 4: PCI Scale and Condition Rating

Figure 4 shows the graphical representation of the PCI and pavement condition rating. This figure provides an idea of paved road surface condition with respect to the PCI. The following Table 16 lists the weighted average surface condition ratings of some of the paved roads within the City. A map showing the paved roads and the respective calculated PCI values is provided in **Appendix C**.

Table 16: Paved Roads Surface Ratings

ROAD NAME	SURFACE RATING	ROAD LENGTH (Feet)
Cabarton Road	90	7950.0
Pine Street	63	1054.49
Idaho Street	66	401.66
Lefever Drive	66	258.09
Divot Circle	72	547.03
Jeffrey Avenue	73	861.53
School Street	73	715.22
Skyline Drive	74	1251.16
Lakeway	75	3097.31
Par Drive	76	2319.24

Similarly, surface condition for gravel roads can be assessed by calculating a numerical index ranging from 0 to 100 based on visible surface condition, drainage, and grade and dust control. Gravel road ratings were determined based on the following parameters:

1. Gravel Surface Type
2. Surface Condition like Washboards, Loose Aggregate, Potholes and Rutting

The following Table 17 lists the weighted average surface condition ratings of some of the gravel roads within the City. A map showing the gravel roads and the respective calculated surface ratings is provided in **Appendix D**.

Table 17: Gravel Roads Surface Ratings

ROAD NAME	SURFACE RATING	ROAD LENGTH (Feet)
Fairway Cir	65	325.11
Idaho Street	75	3502.07
Lefever Drive	78	608.98
Alder Street	79	187.01
Hatfield Drive	79	730.07
Payette Street	80	1073.01
Overlook Drive	82	808.60
Hillcrest Drive	82	2423.90
Kerby Street	83	1069.01
River Street	83	534.45
Cabarton Road	84	4139.17

Surface Management Plan

The Surface Management Plan (SMP) is a set of tools or methods that can assist decision-makers in finding cost effective strategies for providing, evaluating, and maintaining road surfaces in a serviceable condition. The SMP consists of two basic components: A comprehensive database, which contains current and historical information on road surface condition, road structure, and traffic. The second component is a set of tools that allows decision-makers to determine short-term and long-term maintenance goals, future road requirements, and identify and prioritize road surface preservation projects according to budget constraints.

The City of Cascade is a small community with approximately 981 people and 19 miles of road surface. For this scale of community, a brief SMP is adequate to evaluate and maintain current roads in a serviceable condition.

A simple and brief SMP method is discussed below. This method should be used by the Public Works Superintendent to document maintenance goals in order to procure adequate funds. There are five steps in this simple SMP method that are flexible and may be tailored to the City's specific needs and the techniques can be modified as necessary or convenient.

The following are the Five (5) steps in the SMP method:

1. **Street Inventory** – Prepare and maintain a street inventory which defines a network by segments including the date and type of maintenance and or repairs.
2. **Condition Survey** – Conduct surface condition survey rating based on severity and extent relative to the surface distress.
3. **Prioritize Projects and Maintenance Technique**– Rank projects such that most severe and most cost-effective projects are considered first. Appropriate maintenance techniques should be identified for each project.
4. **Schedule and Funding** – Schedule road surface maintenance based on the available funds. Develop a unit cost schedule for improvements, as it is critical for budget and future planning.
5. **Documentation** – Document the maintenance techniques and fiscal resources and gather feedback from the City Council. This step also relates to the program outcome.

The following section discusses each step of the SMP in detail.

Street Inventory and Database

A road inventory survey includes visual inspection of road surface type (paved and unpaved) and condition, pavement width, drainage characteristics, location of traffic control devices like sign posts, speed signs and location of culverts. A database can be developed from the road inventory survey.

A road inventory survey was conducted within the City using an automated GPS equipment during the summer of 2006, and a database was set up to allow for frequent updates and cost calculations to assist in setting maintenance project goals and their associated costs. These costs can be directly placed into the City's road maintenance budget. The costs included in the database can be updated regularly to account for any variations from year-to-year and to reflect actual unit costs that the City has historically encountered. The GIS component of this project includes a road inventory and surface condition assessment. This information is vital in developing budgets for operation and maintenance of the County roads.

Condition Survey

The road surface condition can be assessed from a survey based on severity and extent relative to the surface distress and disintegration. To assess the condition of a pavement structure, extensive data collection and a survey, such as base and sub-base exploration is necessary. As explained earlier, a numerical score or index between 0 and 100 can be assigned to the road surface based on the visible road surface distress. The numerical ratings of treated or rehabilitated roads in the database should be updated as and when road surface treatments are applied.

Prioritize Projects and Maintenance Techniques

Based on the pavement condition and the PCI values, the City should identify the road sections needing repair or treatment and determine the source of funding so that the road sections can be restored to the desired level of service. These sections should be prioritized for funding. The goal of prioritization of projects is to provide the greatest benefit to the community for the funds expended on the project.

There are a large number of project prioritization approaches. A simple ranking procedure often ranks those with the worst condition road section as the highest priority; however, this procedure is limited in the number of available parameters. Generally, pavements with poor PCI require substantial repair or treatment which requires significant funds to restore roads to the desired level of serviceability. Hence, prioritization of projects should be done based on good engineering judgment and net positive impact on the community and drivers.

Paved Roads Maintenance Techniques

Maintenance activities on asphalt surfaces preserve the existing pavement surface and prevent further deterioration. Maintenance activities can be divided into four separate categories (as presented in The Asphalt Handbook, Asphalt Institute, 1989):

- Routine maintenance – the day-to-day work that is necessary to preserve and keep a pavement as close to an as-constructed condition as possible. This may include crack sealing (annually), pothole patching (as soon as possible), and drainage maintenance (semiannually).

This maintenance technique should be applied to pavements with the PCI ranging between 100 and not less than 30.

In addition to the above listed routine maintenance, other road maintenance work including pavement marking, upgrading traffic control devices (sign boards), and re-grading borrow ditches for proper drainage etc., should be applied to all city streets.

- Preventive maintenance - work which is done to prevent deterioration of a pavement, thus reducing the need for more substantial maintenance work. This may include drainage (road side) maintenance and fog or chip seals (every 4 to 5 years). This maintenance technique should be applied to pavements with the PCI ranging between 85 and not less than 30.
- Major maintenance (rehabilitation) – work which is needed to restore a pavement to an acceptable serviceability condition. It includes surface treatments, surface recycling and thin overlays. This maintenance treatment should be applied to pavements when the PCI rating is less than 50.
- Reconstruction – work includes reconstruction of the sub-base, base and asphalt surface to restore pavement to its as-constructed condition. This maintenance technique should be applied to pavements with the PCI less than 30.

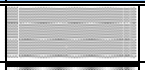
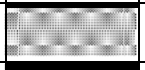
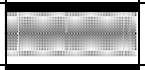
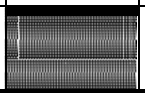
PCI	Maintenance Technique	
100		Routine Maintenance
80		Preventive Maintenance
50		Major Rehabilitation
30 0		Reconstruction with Base Treatment

Figure 7: Pavement Maintenance and PCI Rating

The above figure illustrates the range of PCI values that triggers different maintenance techniques for paved roads. The above figure is a general guide. A field investigation would always take precedence over these general guidelines.

Gravel Road Maintenance Techniques

The majority of city streets are unpaved (gravel). The City Public Works Department maintains 8.7 miles of gravel roads including native material surface roads. Currently, the Public Works Department has adopted maintenance techniques and has implemented them as and when required. As per City staff, some roads with negligible traffic seldom require maintenance and are repaired on an as needed basis.

The following table lists six (6) types of gravel road distresses and the respective maintenance techniques, which can be helpful to the City Public Works Department in maintaining gravel roads in good serviceability.

Table 18: Gravel Road Surface Distresses and Maintenance Technique

	Gravel Surface Distresses	Maintenance Technique
1	Improper cross-section	Reshape or re-grade depending on the severity of the distress
2	Inadequate roadside drainage	Re-grade ditches and clean culverts regularly
3	Corrugation	Reshaping or blading depending on severity
4	Potholes	Blading or reconstruction depending on severity
5	Rutting	Removing or stabilize sub-grade and reconstruction
6	Loose Aggregate	Reshaping and additional fines to obtain the proper gradation for stability

Items 1 and 2, listed in the above table, are drainage issues that may compromise the structural integrity of the road base. Items 4 and 5 are indications of an inadequate base. Items 3 and 6 are related to surface management and daily traffic volumes. When traffic volumes are large enough it becomes cost effective to pave the road. A good indicator of requiring pavement is frequent grading due to poor wearing surface conditions. Placing pavement over inadequate base and/or poorly drained roads will provide a temporary fix but will result in potholes and cracking within a few years.

Gravel roads are more susceptible to dust erosion than paved roads. Traffic and weather can cause major loss of fine materials, create environmental problems for nearby residents and can be a safety hazard. Gravel roads rely on fine material to help form a stabilized road surface. Therefore, it is necessary to prevent dust erosion and improve the cohesion of the binder material (fines) in the road surface.

The City should continue to provide maintenance and preventive measures to gravel and native material surface roads as and when needed. Water can be used for dust abatement on gravel roads but it suppresses dust temporarily, and hence, it is not a long-term maintenance technique. The most common long-term dust control technique adopted is by using dust palliative, calcium chloride in flake or liquid form. Calcium chloride attracts moisture and improves the cohesion and ability of fine aggregates to retain moisture. Other possible dust control techniques include lingo-sulfates and asphalt emulsion resins.

The following are recommendations and time frequency for maintenance techniques for gravel roads.

- Debris and excess vegetation like grass and weeds should be removed from the bottom of ditches and culverts at the beginning of every fall season.
- Ditches should be graded by removing excess silt and sand sediments and reestablishing longitudinal and side slopes at the beginning of every spring and fall seasons.
- Road cross slope and shoulder slopes should be inspected and graded as required and at a minimum at the beginning of spring and fall seasons.
- Repair and/or upgrade culverts depending on storm water demand and existing culvert capacity each fall season.
- Dust control annually.

This information will be helpful to the City Public Works Department to select an appropriate treatment to retain or enhance the level of serviceability of paved and unpaved roads. Good maintenance practices will prolong the life of the wearing surface of gravel and paved roads, and thus reduce the capital expenditure on the County roads.

Schedule and Funding

Schedule road surface maintenance based on the available funds and priority of the project. Funding for street maintenance, operations and capital improvement projects are of primary importance. Small rural communities like the City of Cascade must plan, set a strategy, and budget for years to create sufficient funds for capital improvement projects. Currently, the City's road funds come from taxes.

Documentation

Maintenance techniques, cost, and time of maintenance as and when maintenance techniques are applied to the City streets needs to be documented. An updated unit cost schedule for improvements needs to be maintained, as it is critical for budget and future planning. The road inventory and road surface condition database should be updated annually.

Recommendations to the City

Currently, the City does not have a Surface Management Plan (SMP). Many of the City streets, even with limited resources, are in fair to good condition. The City's current strategy of applying pothole patching, crack sealing and overlay to existing pavements is the primary reason for the good quality roads in the City.

Based on the SMP principles, the following are the recommendations to the City to maintain the City streets in acceptable and serviceable condition.

- The GIS component of this project provides the current road surface condition and also a database was set up from the road inventory survey. This database should be updated as and when the roads, culverts and sign boards are repaired.
- The unit cost schedule should be updated regularly to account for any variations from year-to-year and to reflect actual unit costs that the City has historically encountered. The updated unit costs should be included in the database to prepare the City's road maintenance budget.
- Develop a program to set aside funds for routine maintenance work every year and to apply for State and/or Federal funds for major capital expenditure projects
- Apply chip seal to the City street sections where the PCI rating falls less than 50 or every 5 years, whichever presides.

CHAPTER 7

Capital Improvement Program

CAPITAL IMPROVEMENT PROGRAM

A Capital Improvement Program (CIP) is a major transportation-planning tool. It is the process of systematically inventorying and prioritizing a community's major capital improvement projects within a proposed time frame. The CIP lists the projects and improvements needed based on a sense of priority, available funding options and indicates the person or agency responsible for implementation.

There are several benefits for developing and adopting a CIP. The CIP provides a management tool for the City Council and City Staff and can also provide valuable information to the Planning Commission, citizens of the City, developers, and businesses who are interested in the development of the community. The CIP document will assist in planning available resources and funds and coordinating City projects with those of other public or private developments.

Despite many benefits of capital improvement programming, it is necessary to understand that this CIP is a document and serves as a guideline document. There can be changes in the program and order of projects identified for many reasons. Estimated costs for the projects and available funds can fluctuate as a result of changing economic conditions or shifts in public policy therefore; these CIP projects should be reviewed annually. Project priorities may be adjusted depending on the need and funding availability. A well-maintained GIS database will assist in updating the list.

The recommended street improvement projects are identified in two classifications: major reconstruction and minor repairs/reconstruction of a small segment. For major reconstruction of streets, the City will most likely seek federal funding. Minor repairs/reconstruction of small segments will likely be locally funded projects. The following table presents the proposed projects for the City for the next 5 years.

Table 19: Capital Improvement Projects

Priority	Project Name	Funding Source	Projected Construction Year				
			FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Front Street (From Cascade St. to Payette Street) Improvement	LHTAC - STP Rural	X				
2	School Street Improvement	LHTAC – Investment		X			
3	West Spring Street (Idaho St. to School St.) Improvement	LHTAC – STP Rural and Private	X				
4	S Van Wyck Street (W Cascade St. to W Market St.) Improvement	LHTAC – Enhancement & Recreational Trails Program		X			
5	W Payette St. (S School St. to SH-55) Improvement	LHTAC – STP Rural			X		
6	N Sawyer Street (SH-55 to E Pine St.) Improvement	LHTAC – STP (Enhancement) & Recreational			X		
7	Kirby Street (S Idaho St. to S School St.) Widening	Local Funds			X		
8	Dam Road (from SH 55 to Van Wyck Park)	Local Funds					
9	N Pine Street Sidewalk						
10	Downtown Revitalization						
Note: * Preliminary Planning and Design The above listed projects are not included in the current STP.							

Note: All federal funding through the State is restricted to Major Collectors and Arterials in the Surface Transportation Improvement Program (STIP). Some of the proposed projects are not currently listed as Major Collectors in the STIP. Application may be made to the State to change the classification of qualified streets. Federal funded projects time frame is an average of four to six years. Please note that the given approximate costs are for construction only as per current unit costs, costs for application, design engineering, construction engineering, project administration, contingency and other costs associated with a street construction project need to be added based upon site specific review. Project size may have to be varied to meet available funding.

The above table lists the capital improvement projects for the next five years, the potential funding source and the projected construction year

Funding Strategies for Road Development

There are several funding possibilities available from the State and from the federal government, through the State. There are other funds available from some local agencies such as the Idaho Commerce Department and Economic Development for rehabilitation and reconstruction projects. The City requires identifying projects and listing them in their CIP. Many of these funding agencies require the City to provide a certain percentage of local funds to match the total funding. Currently, the City does not have any plan to accumulate the matching funds. The following is a list of funding agencies and their programs to provide funds for street developments:

1. STP Local Rural

   These funds are allocated for projects in rural areas, and in cities with populations below 5,000. They may be used for new construction, reconstruction or rehabilitation of roadways functionally classified with FHWA as rural major collectors, with a small percentage allowed for minor collectors. The local match requirement is 7.34 %. The funds are awarded through the Local Federal-aid Incentive Program administered by the LHTAC.

2. STP Enhancement

   These funds are available to state, local, federal agencies, universities and Indian Tribes, for enhancement activities such as developing pedestrian and bicycle facilities, landscaping and other scenic beautification, Historic preservation, rehabilitation and operation of historic transportation buildings, structures or facilities etc.

3. Local Rural Highway Investment Program

   The Investment Program is a grant program that provides funding for road paving, drainage structure replacement, signage upgrades, transportation planning, reconstructing roadways, and most other types of construction on any public road. Matching funds are not required for this program but LHTAC encourages matching funds. The work must be contracted out when the estimated cost of the project is more than $50,000. Maximum funds per year, per agency, are $100,000. These funds do not require federal project

requirements to be met. These funds are exchanged by the LHTAC with the ITD at $0.61 per $1.00 up to a maximum of $2.8 million in state funds. Applications for the 2009 award allocation are available on the LHTAC website.

(Source: www.lhtac.org)

4. Congestion Mitigation Air Quality (CMAQ)

These funds are available statewide. This competitive program provides federal transportation funding for air quality projects, planning and programs. Projects under this program falls under two categories: construction and non-construction. These funds are available for projects which provide significant air quality benefits, and projects directed toward solving a transportation related air quality problem. The local match requirement is 7.34 percent. Projects such as dust control and prevention (sweeper/flusher trucks, unpaved road stabilization, and deicing equipment/supplies), special studies for air quality monitoring, alternative transportation education etc., are eligible under this program.

(Source: http://www.itd.idaho.gov/planning/reports/cmaq/cmaq.html)

5. FHWA FLAP

These funds are allocated to States that use a statutory formula based on road mileage, number of bridges, land area, and visitation. Funds may be used to imp transportation facilities that provide access to, are adjacent to, or are located within Federal lands.

6. Transportation Alternative Program (TAP) ITD

The Alternative Program provides funding for programs for work that defines transportation alternatives, including on and off-road pedestrian and bicycle facilities infrastructure projects for improving non-driver access to public transportation mobility, and create safe route to school educational programs. Eligibility for funding require a minimum of local cash-only match of 7.34 percent secured right-of-way, and environmental requirements are within the Categorical Exclusions.

The above listed funds are available from the State and Federal government annually. Each year LHTAC sends out application packets to all cities with a population under 5,000, and eligible projects are identified and rated for the funding process. Top rated projects are funded based on available funds. The funding process and project selection procedure were explained

in the first section of this report. It is recommended that the City adopt a plan to procure local funds annually to match the State and federal funds every year in order to obtain the federal funding.

Recommendations to the City

The following recommendations were made to the City for the future planning and improvement of the transportation system.

1. Preserve and improve the existing City street system by adopting the recommended Surface Management Plan and increasing the pavement width where traffic warrants.
2. Adopt the recommended SMP and maintain up-to date GIS database.
3. Update traffic counts annually during periods of heaviest use to confirm traffic volumes and travel patterns.
4. Adopt the proposed road functional classification map and preserve future rights of way, as shown on the plan, by requiring setbacks and land dedications to allow for major and minor collectors. The proposed functional classifications for the City streets identified in the plan should be updated on the current classification map and propose the changes to ITD.
5. Adopt the proposed CIP and update it annually.
6. Adopt the proposed access control standards and enforce the access control policy on the new developments.
7. Enter into a Traffic Access Plan with ITD and create an Access Overlay District Ordinance for arterials and collectors.
8. Coordinate and work with the Valley County Pathways Committee and Cascade pathways sub-committee and preserve rights-of-way to develop a continuous bike and pedestrian pathway as suggested in the conceptual pathway plan.
9. Adopt the proposed street standards for public and private roads provided in this report.

References

1. "City of Cascade, Comprehensive Plan", 1994
2. "Cascade City Code", updated by ordinance 617 passed August 22, 2005
3. "Valley/Adams Transit Expansion Study", March 2006, prepared by Ostrander Consulting Inc.
4. "Transportation Impact Analyses for Site Development", Institute of Transportation Engineers, 2005.
5. "Housing Market and Needs Assessment Valley and Adams County", Prepared by Valley County Economic Development, July 1, 2005
6. "Executive Summary Report, Pavement Management Guide", November 2001, prepared by the AASHTO.
7. "Valley County Minimum Standards for Public and Private Road Design and Construction", July 2005, prepared by the Valley County Road Department.
8. "Highway Capacity Manual", 2000, Transportation Research Board
9. http://www.valleycountypathways.org
10. "Regional Economic Development Strategic Plan", October 2006, prepared by Valley/Adams County Partnership.
11. http://www.itd.idaho.gov/Projects/D3/I551906

CHAPTER 8

Appendices

List of Appendices

APPENDIX A

Database Library

```
transp06
rb

paved road              Line Feature
   road name            Text, Maximum Length = 30
   segment code         Text, Maximum Length = 10, Required, required
   surface              Menu
      chip & oil     Default
      asphalt
      asphalt w/overlay
      scrub coat
   cracking             Menu
      alligator2
      alligator1
      joint
      no cracking    Default
      edge1
      edge2
      edge/transverse
   distortion           Menu
      no distortion    Default
      rutting1
      rutting2
      roughness1
      roughness2
   disintegration       Menu
      no disintegration    Default
      patch\pothole
      potholes
      raveling
      section patch
      gravel
   grade                Menu
      <5%    Default
      5%-10%
      11%-15%
      >15%
   pavedwidth           Numeric, Decimal Places = 0, width
                        Minimum = 0, Maximum = 100, Default Value = 0
   drainage             Menu
      acceptable    Default
      unacceptable
   shoulder             Menu
      <2'one/both sides    Default
      >2'both sides
      curb/gutter both
      curb/gutter both 1re
      curb/gutter both re
      curb/gutter 1side
      curb/gutter 1side re
   sidewalk             Menu
      both sides
      1 side
      none    Default
   geology              Menu
      clear    Default
      spring
      tree\brush
      soil slide
      rock slide
      rock outcrop
      erosion cut
   left\backslope       Menu
      -1:1
      -2:1
      +-3:1    Default
      2:1
      1:1
   right\backslope      Menu
      -1:1
      -2:1
      +-3:1    Default
      2:1
      1:1
```

```
    watercourse          Menu
       <25ft
       >25ft   Default
    guardrail            Menu
       none   Default
       bothsides
       oneside

bridge                   Point Feature
    number               Numeric, Decimal Places = 0, enter a number
                         Minimum = 0, Maximum = 999999, Default Value = 0
    type                 Menu
       concret
       null   Default
       steel
       wood
    lanes                Numeric, Decimal Places = 0
                         Minimum = 0, Maximum = 2, Default Value = 2
    span length          Numeric, Decimal Places = 0
                         Minimum = 0, Maximum = 1000, Default Value = 0

culvert                  Point Feature
    type                 Menu
       other
       round steel
       round corr   Default
       arch
       box
       round concete
    size                 Text, Maximum Length = 10, span/height or diameter
    rate                 Numeric, Decimal Places = 0
                         Minimum = 0, Maximum = 9, Default Value = 0

intersection             Point Feature

sign                     Point Feature
    type                 Menu, enter a type
       railroad
       speed
       stop/yield
       warning   Default
       street
       regulatory
       info
       mile post
    info                 Text, Maximum Length = 30, any text

railroadcx               Point Feature
    tracks               Numeric, Decimal Places = 0
                         Minimum = 0, Maximum = 9, Default Value = 1
    crossarms            Menu
       yes
       no   Default

cattleguard              Point Feature
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       no

gate                     Point Feature

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       aged gravel
       native gravel
       dirt
    dust control         Menu
       yes
```

```
   no   Default
condition          Menu
   smooth   Default
   washboard
   dust
   loose agg
   potholes
   rutting
grade              Menu
   <5%   Default
   5%-10%
   11%-15%
   >15%
width              Numeric, Decimal Places = 0, feet
                   Minimum = 0, Maximum = 100, Default Value = 0
drainage           Menu
   acceptable   Default
   unacceptable
shoulder           Menu
   <2' one or both
   >2' both sides
   curb/gutter both
   curb/gutter both 1re
   curb/gutter both re
   curb/gutter 1side
   curb/gutter 1side re
geology            Menu
   clear   Default
   spring
   tree\brush
   soil slide
   rock slide
   rock outcrop
   erosion cut
left\backslope     Menu
   -1:1
   -2:1
   +-3:1   Default
   2:1
   1:1
right\backslope    Menu, Required
   -1:1
   -2:1
   +-3:1   Default
   2:1
   1:1
watercourse        Menu
   <25ft
   >25ft   Default
guardrail          Menu
   none   Default
   bothsides
   oneside
```

APPENDIX B

Transportation Section
Cascade Comprehensive Plan, 2018

2018
COMPREHENSIVE
PLAN UPDATE

Adopted by City Council, Resolution 18-04, March 12, 2018

ACKNOWLEDGEMENTS

The 2018 Comprehensive Plan update has been an ongoing cooperative effort involving a variety of individuals, entities, and agencies over a number of years.

Through the course of this project, the City of Cascade, representing a partnership between Valley County and the Cities of Cascade and Donnelly entered into an agreement for professional services with Applied Communications, Whitefish, Montana. The City of Cascade also entered into a partnership with the University of Idaho, Building Sustainable Communities Initiative (BSCI) for draft language in support of the comprehensive plan update. The Cascade Planning and Zoning refurbished the City of Cascade Impact Area and Zoning Planimetric Base Map and Cascade City Council approved.

Numerous individuals have been involved in review of this document. Special thanks to all of the dedicated Cascade Planning and Zoning Commission Members, City Council Members, Mayors, and support staff whose efforts to brought this plan to fruition.

TABLE OF CONTENTS

Purpose of the Comprehensive Plan

The Cascade Planning and Zoning Commission with the help and guidance of the citizens of Cascade, Idaho has formulated this revised comprehensive plan in order to ensure that the quality of life desired by residents of the community is maintained and enhanced. This plan seeks to protect property values as well as the economic and intrinsic values of the land, water, and air in and around the City of Cascade. This Comprehensive Plan includes the City of Cascade and the surrounding Area of Impact. (See Map 1 on Page 3)

History

The City of Cascade was founded because of the rail line built by the Oregon Short Line Railroad. When the railroad crossed from the west side of the Payette River to the east side just below the current dam, the three towns previously in existence, Crawford, Thunder City, and the largest, Van Wyck, were bypassed by the new tracks. The place the tracks crossed the river was a narrow canyon opening containing a set of falls, known as the Cascades of the North Fork, thus the name Cascade was chosen for the new town established at this location.

W.D. Billie Patterson owned the land near where the railroad crossed the river and recognized the need for a town with easy access to the railroad. In 1913 he platted a six-block town site which became Cascade. The first houses built in the new town of Cascade were on the east side of the railway; one being built by the railroad for their agent, the other by Jesse Lefever. Both houses still stand today.

Many people realized the importance of the railroad access and one of the first businesses in Cascade was a barbershop that was moved there in 1914 from the town of Van Wyck by Jesse Lefever. Many other businesses from the surrounding towns began disassembling their buildings and moving them to Cascade. Crawford had been the banking center for all three early towns and in 1915, Intermountain State Bank built a new bank in Cascade. About the same time the Baptist Church in Van Wyck was moved to Cascade and turned into a school, which caused the main school in Crawford to close. Some of the other early transfers to Cascade were the Crawford Mercantile and Crawford Hotel and the Thunder City grocery and dry goods stores, the Emory Hotel, the drug store and Mission Cigar store from Van Wyck. The first water and sewer systems began service in Cascade in 1918.

In 1917, shortly after Cascade was incorporated, Valley County was chartered. Valley County was comprised of parts of Boise and Idaho Counties. In 1929, $6,000 was raised by local businessmen for the construction of a new courthouse, thus securing Cascade as the county seat.

In 1923, J.P. Dion started the first sawmill, thus beginning the long history of Cascade's reliance on the wood products industry. This mill changed hands many times before Boise Cascade dismantled it in 2002. During Cascade's economic climb, many logging companies, most using powerful shay engines, brought their logs to town, mostly to be shipped out on the railroad.

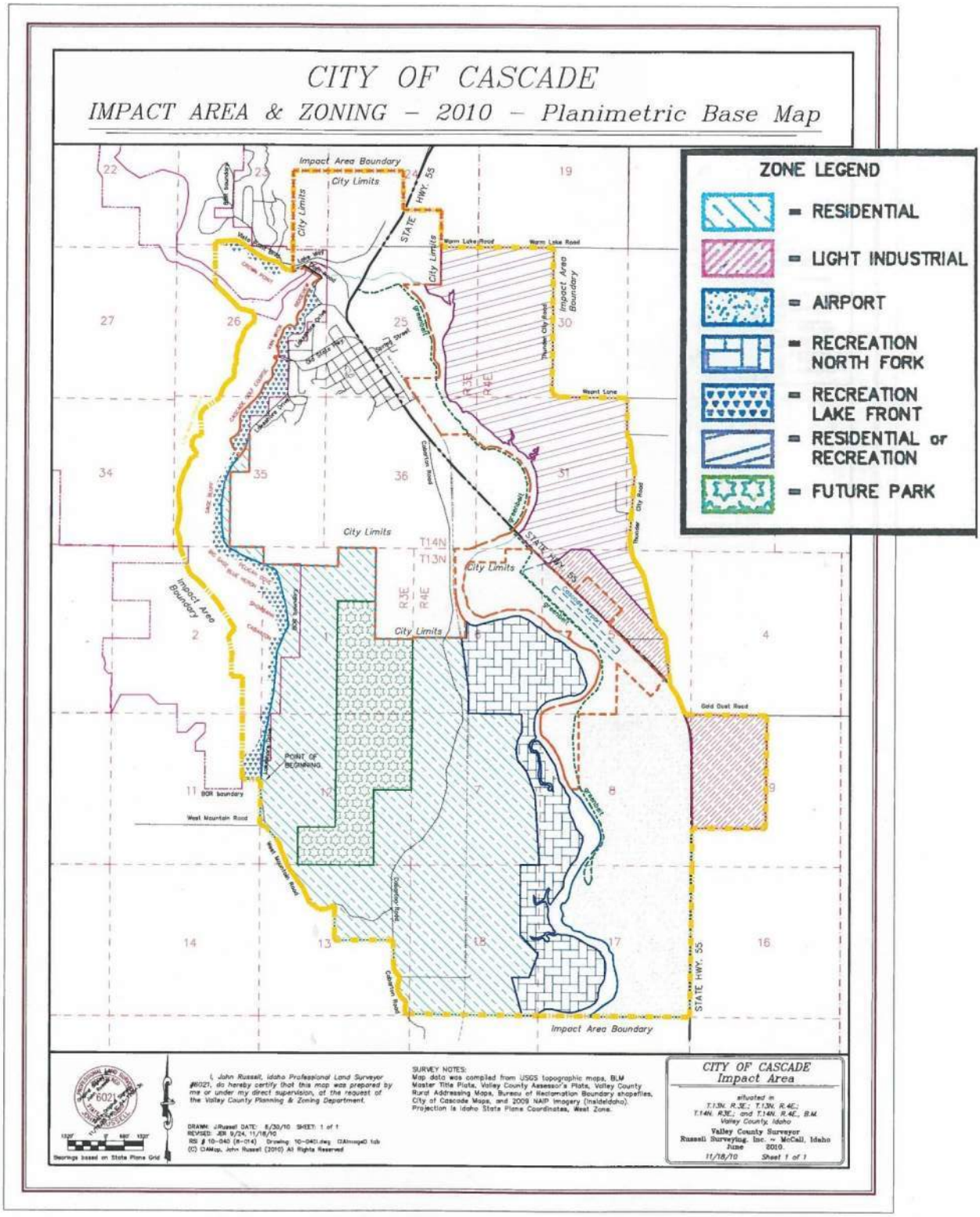
In 1939, the Bureau of Reclamation started plans to build a dam in Cascade for an estimated cost of three million dollars. However, work on the dam was halted because of WWII.

Furthering Cascade's growth was the fact that Cascade was the main supply point for the 1,000 plus people in the Stibnite area that were involved in mining antimony and tungsten needed for the war effort.

After the war, in 1946, M.K. Construction resumed work on the Cascade dam. It was shortly after this that the population of Cascade was at its highest. Thirteen clubs were in operation at this time, all with legal gambling.

After completion of the dam, at a cost of $7 million dollars, and with gambling outlawed, the population of the town dropped to 943 in the early 1950s.

Map 1: Cascade, ID – Area of Impact



1. Population

This element provides an analysis of past, present, and future trends in population including characteristics such as total population, age, gender, and income.

1.1. Goals, Objectives, and Action Items

Goal: Encourage a level of population growth that enhances community vitality and culture without exceeding public service capacity.

Objective: Forecast expected population changes in order to provide for future planning and growth management needs.

Actions:

- Estimate population data frequently, revise previous forecasts, and amend or update as necessary the elements of the comprehensive plan that are affected by changes in population characteristics and totals.

- Use updated population data and projections in all capital facility planning projects, including water, sewer, roads, trails and parks.

1.2. Population Change

1.2.1. Historic Trends

Cascade is situated in Valley County, an area that was among the “most remote and least known areas of Idaho” until the 1920's. (Valley County History Project, 2002) Since pioneers first started settling in Idaho, the Cascade area has been one in which people have scratched out a living for themselves and hung-on by toeholds during hard times. Historically, Cascade has not been an easy place to live.

The purpose of the population element of this Comprehensive Plan is to understand Cascade’s past and current population trends, and to use that understanding as a basis for predicting future conditions and needs. Decisions made in each of the subsequent Comprehensive Plan elements will be influenced by projected population growth and characteristics discussed here.

Table 1.1 shows the changes in population in Cascade, Valley County, and the state of Idaho over the last ten years. While the State and the County population experienced significant population growth over the last decade, the City of Cascade actually experienced a decline in population. McCall had the largest population growth of any city in the county. The Area of Impact had a slight increase in population during the last decade.

Table 1.1: Population Change for Cascade Area and Region (2000 through 2016)

Area	2000	2010	2016
State of Idaho	1,293,953	1,567,582	1,683,140
Valley County	7,651	9,862	10,496
City of Cascade	997	939	921
City of McCall	2,084	2,991	3,109
City of Donnelly	138	152	137
Cascade Area of Impact	154	180	
Combined Cascade & AOI Pop	1151	1119	

(Source: U.S. Census Bureau)

As indicated in Table 1.2, historically, the population of Cascade has fluctuated with a decade of decline, generally followed by a decade of growth.

Table 1.2 Historic Population Trends for the City of Cascade

	1970	1980	1990	2000	2010
Population	833	945	877	997	939
Percent Change	--	13.4%	(-7%)	13.7%	(-6%)

(Source: US Census Bureau)

1.2.2. Components of Population Change

There are several components of population change that contribute to population growth rates. Net migration, or the difference between how many people moved in and how many moved out, is one part of population change. The other part is natural change, or the difference between births and deaths. Migration data is available at the county level.

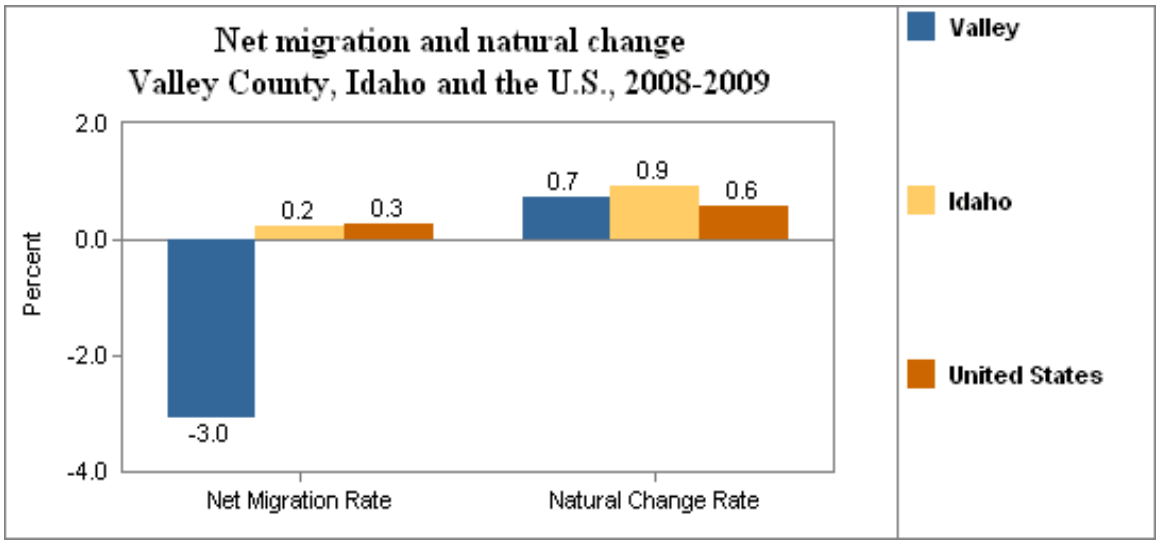
According to the following data, migration levels to Valley County were at a comparable rate to the State and accounted for about two-thirds of the county's growth. Natural change in the last decade accounted for about one-third of the growth and the rate of increase due to natural increase was slower than the state level. The slower rate in

natural increase can be attributed to the generally older demographic in the County and fewer women of child bearing age.

Following are specific trends regarding components of population change in Valley County.

- Valley County gained 780 residents through net in-migration from 2000 – 2009.
- The net migration rate for Valley County from 2000 – 2009 was 10.2 percent compared to 10.4 percent for Idaho.
- Valley County grew by 317 residents due to natural change from 2000 – 2009 for a natural change rate of 4.1 percent compared to 9.0 percent for Idaho.

Figure 1.1 Net Migration and Population Change



(Source: http://www.indicatorsnorthwest.org/DrawRegion.aspx?RegionID=16085&IndicatorID=2)

1.2.3. Projected Population Growth

Projecting future populations is necessary in order to better plan for public facilities and to more effectively direct capital expenditures and public policy. According to the State of Idaho, the projected population for the City of Cascade in 2016 was expected to be 1,059, based on an average annual growth rate of 1.4%. If this growth rate is applied to the entire planning area (Cascade + the Area of Impact), the projected population for the city and planning area in the year 2016 is 1,213. (Source: http://idaho.zoomprospector.com/default.aspx?mode=COMMUNITIES)

1.3. Population Characteristics

1.3.1. Population by Race

The predominant racial category in Cascade is White.

Figure 1.2: Population by Race 2017

	TOTAL	%
White	866	95.80
Black	4	0.44
American Indian	7	0.77
Asian	5	0.55
Pacific Islander		0.00
Other	7	0.77
Multirace	14	1.55

(Source:http://idaho.zoomprospector.com/default.aspx?mode=COMMUNITIES

1.3.2. Population by Age

The aging of the population is a nationwide trend and will have impacts on housing design, increase the demand on social services, and create changes in the labor force. Additionally, the 65 and over age cohort is more likely to experience a disability that will need to be accounted for in new construction. The following table indicates that 33% of the population in Cascade was over age 65. The following trends are to be expected for Cascade and Valley County.

Median age in Valley County increased from 29.7 in 1980 to 37.0 in 1990, and increased again to 43.5 in 2000. The median age from the 2010 Census was 46.4.

In 2010, the median age in Cascade was 46.4 and in Valley County was 46.9. This compares to a statewide median age of 34.1 in Idaho.

Figure 1.3: Age Distribution - Cascade

	TOTAL	%
0-4	34	3.76
5-9	34	3.76
10-19	83	9.18
20-29	63	6.97
30-39	62	6.86
40-49	105	11.62
50-59	128	14.16
60-64	92	10.18
65+	303	33.52

Source:http://idaho.zoomprospector.com/default.aspx?mode=COMMUNITIES)

1.3.3. Household Characteristics

Family households in Cascade comprise a smaller portion of households than the statewide average. Household size for family households is also smaller than the state average.

Figure 1.4: Household Characteristics - Cascade

	TOTAL	%
1 Person	137	31.86
2 Person	205	47.67
3 Person	39	9.07
4 Person	25	5.81
5 Person	15	3.49
6+ Person	6	1.40

Table 1.5: Household Characteristics - Idaho

	TOTAL	%
1 Person	155,611	24.62
2 Person	224,508	35.52
3 Person	92,937	14.71
4 Person	80,261	12.70
5 Person	43,712	6.92
6+ Person	21,605	3.42

(Source:http://idaho.zoomprospector.com/default.aspx?mode=COMMUNITIES)

1.3.4. Educational Attainment

In 2017, 85.82% of the labor force in Cascade had a high school degree or higher while 16% of the labor force had a Bachelor's Degree or higher. This compares to 29.86% of the population in the county overall that has a Bachelor's degree.

Figure 1.6: Household Characteristics - Idaho

	TOTAL	%
< Grade 9	65	9.04
Grade 9-12	37	5.15
High School	281	39.08
Some College	186	25.87
Assoc Degree	35	4.87
Bach Degree	79	10.99
Grad Degree	36	5.01

(Source: http://idaho.zoomprospector.com/default.aspx?mode=COMMUNITIES)

2. Economic Development

This element provides an analysis of the Cascade area's economic base, including employment, industries, jobs, and income levels.

In September 2016, the University Center for Economic Development, University of Nevada, Reno; Western Rural Development Center, Utah State University completed an Area Sector Analysis Process (ASAP) providing information on the top 17 industries compatible with Valley County, Idaho. The ASAP report was made possible through funding provided by the America's Best Communities initiative, Midas Gold, and Idaho Power. The Western Rural Development Center granted a technical assistance grant to the University of Idaho, Valley County office in partnership with the West Central Mountains Economic Development Council. The final report dated February 16, 2017 is available for viewing at Cascade City Hall.

2.1. Goals, Objectives, and Action

In addition to the following Goals, these Smart Growth Principles will be used to guide Economic Development decisions:

- Mix Land Uses
- Take Advantage of Compact Building Design
- Create Walkable Communities
- Foster Distinctive, Attractive Communities with a Strong Sense of Place
- Strengthen and Direct Development Towards Existing Communities

Goal: Maintain a healthy retail shopping and tourist district in the downtown core

Objective: Encourage infill and redevelopment in the Central Business District and adjacent commercial areas.

Actions:

- Explore incentives and funding to assist property owners in constructing or expanding commercial buildings.
- Encourage the formation of a diverse downtown or Main Street organization of property owners, business owners, and residents to develop grassroots solutions for revitalizing downtown Cascade.
- Pursue and support cultural tourism development and related events.

- Maintain streets and sidewalks including snow removal.

- Adopt a minimum lot maintenance requirement to eliminate weedy or unsightly conditions on empty lots in the downtown commercial area.

Objective: Encourage office uses on the upper levels of Main Street retail fronts.

Actions:

- Consider design standards that encourage a minimum of two stories for new buildings on Main Street.

- Adopt zoning regulations that encourage new office uses in ground floor Main Street locations.

Objective: Encourage the development of residential units within walking distance of the downtown retail-shopping district.

Actions:

- Modify the Zoning Ordinance to allow mixed office/residential or "live-work" type development adjacent to the Central Business Districts (CBD).

- Encourage infill and redevelopment of buildings in the CBD that include a residence.

Goal: Reduce retail and service commercial "leakage" from Cascade

Objective: Meet community retail and service needs while maintaining the unique and historic character of Cascade.

Actions:

- Ensure adequate land supply for the desired commercial activities.

- Adopt and enforce commercial design standards that protect the city's historic and unique character, gateways, and scenic corridors.

- Improve dialogue and agreement between city and county on appropriateness of various commercial land uses inside and outside of the city and its area of impact.

Goal: Create a more diverse local economy

Objective: Ensure that economic and business-related information is available and easily accessible.

Actions:

- Support Cascade and Valley County Chambers of Commerce projects to promote the city and region and attract new business that will enhance the community's economy and unique character.
- Promote use of civic space for markets, live performances, and other community events and activities.
- Support regional efforts to attract and host events in and around Cascade to promote the region as a destination and draw visitors to downtown.

Objective: Facilitate the creation of new business and sustainable, higher wage employment.

Actions:

- Explore the possibility, benefits, and costs of a community or technical college branch in Cascade.
- Support the growth of a local film and media industry.
- Maintain the city's industrial center as an effective business incubator and explore the possibility of providing additional incubation space.
- Provide incentives to attract local call centers and technical training centers.

Objective: Facilitate the expansion of the Cascade Airport and the local Railroad.

Actions:

- Consider efforts for the Cascade Airport to become a regional hub.
- Consider efforts to expand usage of the local railroad.

2.2. Current Conditions

Cascade's economy has traditionally been supported by industries such as ranching, mining, logging, and wood processing. Cascade was also one of the main hubs of the railroad for most of the surrounding area thus creating even more business opportunities. The presence of federal, state, county, and city offices has also contributed to Cascade's economy.

The loss of the longtime sawmill and most mining activities in the area as well as the decline of the availability of timber from local forests and the abandonment of the railroad have had a negative impact on the area's economy. Should mining become viable again, all efforts should be made to accommodate this industry.

The Midas Gold company is headquartered in Donnelly, Idaho, with offices in Boise, Stibnite and Vancouver, Canada. The company is comprised of scientists, engineers, environmentalists and community leaders in Idaho. Midas believes it can build a mining project that restores the environment, creates economic opportunity and benefits the surrounding community. These values drive everything Midas does and makes Midas a modern mining company. The Board of Directors represents a cross section of perspectives and experiences in Idaho. Their role is to lead the Stibnite Gold Project in a manner that reflects the values and needs of Valley County and Idaho.

The Stibnite Gold Project site has a long history of mining. A lot has changed since the first miners found the site more than a century ago. Midas is committed to leaving the environment better than they found it. For the Stibnite Gold Project this means cleaning up 100 years of negative environmental impacts and ensuring mining plans prioritize reclamation. Midas has a plan for the future of the Stibnite Gold Project. Unlike projects permitted even just a few decades ago, the Stibnite Gold Project is subject to the National Environmental Policy Act, multiple state and federal standards and strict financial assurance regulations before it can move forward. Midas Gold has hopes to start construction in 2019.

The current trend is a more service-based economy with an increased impact from tourism. In that regard, promoting and creating more local and regional recreational activities will benefit the overall economy.

Since 2012, the West Central Mountains Economic Development Council (WCMEDC) has played a vital role in bringing together people and organizations from throughout the region. WCMEDC's mission is creating opportunities, opening communication channels and fortifying common understandings about the challenges and strengths of our communities. WCMEDC realizes that many of the region's communities share the same values and face similar challenges; and a regional approach to problem solving is beneficial.

2.3. Future Conditions

Quality of life for residents and visitors should always be considered in long range decision making for Cascade. To provide a favorable economic future for Cascade, efforts should focus on projects that will help promote currently established businesses and industries as well as provide a favorable environment for new economic growth. Efforts should be made and incentives offered to encourage growth in, but not limited to, recreation, light and resource-based industries, higher education programs and institutions, tourism, government, and private businesses.

Cascade's business development strategy should include encouraging increased light and resource-based industry (such as logging and wood processing), and tourism, as well as expanding the local airport facility to become a regional hub. This would provide much easier access to the area for tourists as well as commuting residents. Efforts should be made to maintain all current government agencies and offices in Cascade as well as housing for the employees. Special attention should be paid to maintaining Cascade as the county seat. Cascade may consider the location and development of new governmental branches or offices within the city. This would include any city, state, or federal agencies as well as any higher education facilities.

Lake Cascade has always been an invaluable asset for the community. With the addition of the Kelly's Whitewater Park (KWP), along with the area's vast outdoor recreational opportunities, an economic path based on tourism can be effective.

Revitalization of the downtown corridor is essential to future commercial and recreational growth. With the vision of a walkable downtown corridor being connected to the Strand, parks, and the whitewater park Cascade can become a year a round attraction for visitors. Resource based recreation for snow and water sports, fishing, hunting, hiking, biking and camping, is very attractive, especially with the large population and economic center of Boise within driving distance. However, in order to support increased visitation, the need for additional lodging, shopping, equipment rental, and dining establishments, and quicker modes of transportation (airport), will be increased, and should be encouraged.

Kelly's Whitewater Park (KWP) adjacent to the City's east side on the Payette River is world caliber in design and adds significantly to the local economy if promoted and supported by the Cascade Chamber of Commerce and City officials. With the completion of KWP, a natural movement of new business and recreational opportunities toward the river should occur. Parks, pathways, and recreation should be the focus of the river front area. Along with this development, a demand for higher-density, community amenity-oriented housing should emerge. Multi-family housing, lofts, and townhomes would all be appropriate and complementary product types.

Industrial growth should occur in Cascade as a result of opportunities provided by an expanded airport and of planning and zoning efforts in the Cascade Area of Impact, also from potential future uses of the local railroad line southbound.

The City of Cascade would welcome a partnership with Valley County in the promotion and development of the Cascade Airport as a viable regional general aviation facility serving all of Valley and Adams counties. With the addition of a north-south runway, the Cascade Airport would be usable by a wider variety of private and charter aircraft. The glide path of the new runway would not cross any urbanized areas, and the additional land and aviation activity would provide significant industrial development opportunities. Finally, if Cascade and Valley County are to continue to transition toward a stronger economic base in recreation and tourism, an expanded airport is vital as it would allow a larger commuting work force to efficiently travel to high paying jobs while leaving their families at home here.

2.4. Public Participation

To be as successful as possible, a renewed spirit of cooperation must emerge. The Cascade community has always displayed a willingness to help each other and that spirit must come forth even more so in the future. Comprehensive planning must continue to seek out public opinion whenever possible and public meetings and workshops must continue into the future.

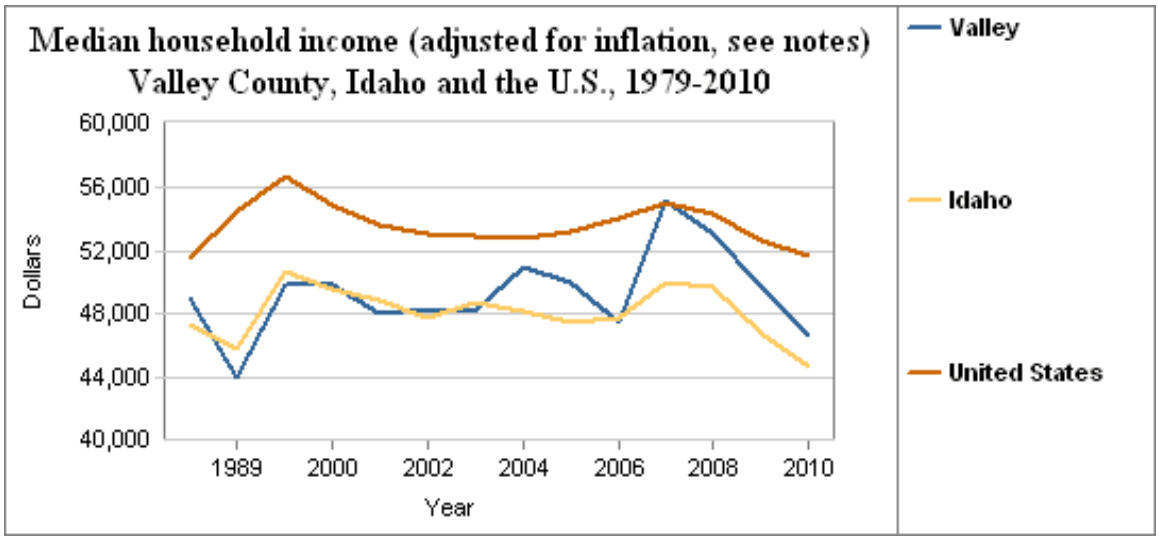
The City Council and Chamber of Commerce especially should be proactive in attracting new business and in encouraging proper regulations. Zoning code revisions, and in some cases a total rewrite of codes, needs to occur. The Chamber of Commerce must be promoters of Cascade with all it has to offer for residents, tourists, and new business. It is essential that the Chamber be as involved as possible with all economic endeavors and efforts concerning event planning and promotion of what is being offered in Cascade. Volunteers will be needed to assist in organizing and promoting concerts, sporting events, and other civic and community events as well as to help with a tourist information center, and other community projects that Cascade envisions for the future. All of the civic groups and service clubs in town must step forward with any assistance they can provide when requested.

2.3. Economic Data

2.3.1. Income

According to the U.S. Bureau of the Census, Small Area Income and Poverty Estimates, the median household income in Valley County in the year 2010 was $49,858. Valley County was ranked 9th out of 44 counties in Idaho. Since the recession in 2008, median income for the County has fallen behind the rest of the nation.

Figure 2.1 Median Household Income Trends



(Source: http://www.indicatorsnorthwest.org/DrawRegion.aspx?RegionID=16085&IndicatorID=9)

Household income distribution for the City of Cascade is generally comparable to the county average with approximately half of households in the $10k to $50 range and half of households making more than $50k. Countywide, there are more households in the over $100K income bracket compared to the City of Cascade.

Table 2.1: Household Income Distribution (2016)

	Cascade		Valley County	
	TOTAL	%	TOTAL	%
Average Household Income	41,160		50,942	
<10k	18	4.06	388	8.12
$10-$20 K	75	16.93	461	9.64
$20-$30 K	60	13.54	547	11.44
$30-$40 K	62	14	526	11
$40-$50 K	49	11.06	423	8.85
$50-$60 K	29	6.55	477	9.98
$60-$75 K	55	12.42	550	11.51
$75-$100 K	46	10.38	621	12.99
>$100K	49	11.06	787	16.46

(Source: http://idaho.zoomprospector.com)

2.3.2. Poverty

The poverty rate is the percentage of people living below the poverty level or threshold. Each year, the U.S. Office of Management and Budget establishes a series of poverty thresholds for different family sizes and ages of household heads. The U.S. Bureau of the Census, Small Area Income and Poverty Estimates, includes data on a county level which provides an indication of poverty levels for the City of Cascade. According to the most recent data from 2015, the overall poverty rate for Valley County was 10.7% compared to 14.7% for the State of Idaho. (Source: http://www.indicatorsnorthwest.org)

2.3.3. Labor Force - Unemployment Rate

People are counted as unemployed if they are at least 16 years old, are without a job and available for work, and have recently made specific efforts to find employment. The unemployment rate is the number of unemployed as a percent of the entire labor force. Valley County's monthly unemployment rate was 5.8 percent in December, 2016. This compares to 3.6 percent in Idaho as a whole. Valley County's average annual unemployment rate in 2015 included the following trends:

- County unemployment was 6.1 percent compared to 4.1 for Idaho
- County unemployment was less than the previous year's rate of 7.5%
- County unemployment in 2015 ranked 9th from highest to lowest - out of Idaho's 44 counties.

2.3.4. Employment by Industry

The largest industry sector in Cascade is the service sector which employs more than half of the work force. Compared to the rest of the County, Cascade has a smaller share of workers.

Table 2.2: Employment by Industry (2016)

	Cascade		Valley County	
	TOTAL	%	TOTAL	%
Agricultural, Forestry, Fishing	10	1.23	163	2.70
Mining	0	0.00	6	.10
Construction	50	6.16	311	5.16

Manufacturing	5	.62	115	1.91
Transportation & Communications	13	1.60	120	1.99
Wholesale Trade	7	.86	48	.80
Retail Trade	104	12.81	1,070	17.76
Finance, Insurance & Real Estate	20	2.46	416	6.9
Services	491	60.47	3,060	50.78
Public Administration	111	13.67	686	11.38

(Source: http://idaho.zoomprospector.com/default.aspx?mode=COMMUNITIES)

3. Transportation

This element provides an analysis and recommended actions to improve the entire Cascade transportation system, including streets and roads, pathways, transit, and the airport. The Transportation Element represents Cascade's overall transportation plan, and plays an important role in shaping the overall structure and form of the city, and in the movement of people, goods, and freight within and through Cascade. (City of Cascade, Master Transportation Plan (MTP), August 2008, is available for viewing at City Hall)

3.1. Goals, Objectives, and Action Items

Goal: Provide safe, functional, and efficient means for movement of People and Goods into and through Cascade.

Objective: Ensure that the capacity of Cascade roads will accommodate future increases in traffic volumes.

Actions:

- Maintain arterial connection between Highway 55 and downtown Cascade.
- Project future traffic volumes on Highway 55 through Cascade, and develop a specific Highway 55 Corridor transportation plan to safely accommodate increased traffic.
- Support exploration of traffic circulation alternatives that could relieve seasonal congestion on Main Street and expand the commercial district.

Objective: Promote pedestrian and bicycle safety and continuity throughout the Cascade community.

Actions:

- Maintain an official Cascade Pathways plan for a safe, accessible and attractive network of non-vehicular sidewalks, paths and trails that provides efficient access within town as well as to regional trail networks and recreational opportunities.
- Continue to update the Bicycle & Pedestrian Plan – See Addendum A
- Continue to update the Activity Connection Plan – See Addendum B

- Where practicable and appropriate to the development and location within the community, require all new commercial and residential developments to provide safe and efficient bicycle and pedestrian connections to existing networks, or provide easements for new ones consistent with adopted plans.

Objective: Encourage growth of the existing airport to accommodate larger planes and additional services. Encourage Cascade to become a regional airport.

Actions:

- Continue to update and develop the Airport zone ordinance.
- Expand the Cascade Impact Area to include sufficient land to accommodate a 7,500' to 8,000' runway which would allow smaller commercial jet traffic.

Objective: Encourage increased use of railway line running southbound from Cascade.

Actions:

- Develop a plan that will include the present rail line and its uses for future anticipated growth of this rail line. The plan should also encourage the exchange of right-of-way with the City of Cascade to expand the Sawyer Street's progressive easement to City property to accommodate no less than 100' of right-of-way. This action can help make way for a route to ease weekend and seasonal congestion in downtown Cascade and improve safety.

3.2. Current Conditions

3.2.1. Road Conditions

Highway 55 (Main Street) traverses the city in a north-south direction and is the predominant transportation corridor in Cascade. Main Street is also the only "arterial" roadway in the city.

The highway bridges at the south and north end of town have been replaced with new bridges. Perhaps the most overlooked factor in transportation planning is the fact that streets are an integral part of the built environment. As factors that determine the character and qualities of a community, they are just as important as parks, schools, and neighborhoods. Livable communities are walkable and bike able communities.

They provide residents and visitors with viable transportation choices---not just reliance on the private automobile. Many of Cascade's local streets are in need of repair or reconstruction, and while this presents the community with a financial challenge, it also provides an opportunity to build streets that are an asset to the neighborhoods they serve, and support overall community sustainability.

3.2.2. Functional Classification

Functional street classification is an important planning tool for determining street design, funding, and system development. The functional classification is defined by characteristics such as level of access, and type of travel mobility. Federal regulations recognize these different features though separate urban and rural functional classifications. Streets can be classified according to the following definitions from the Federal Highway Administration:

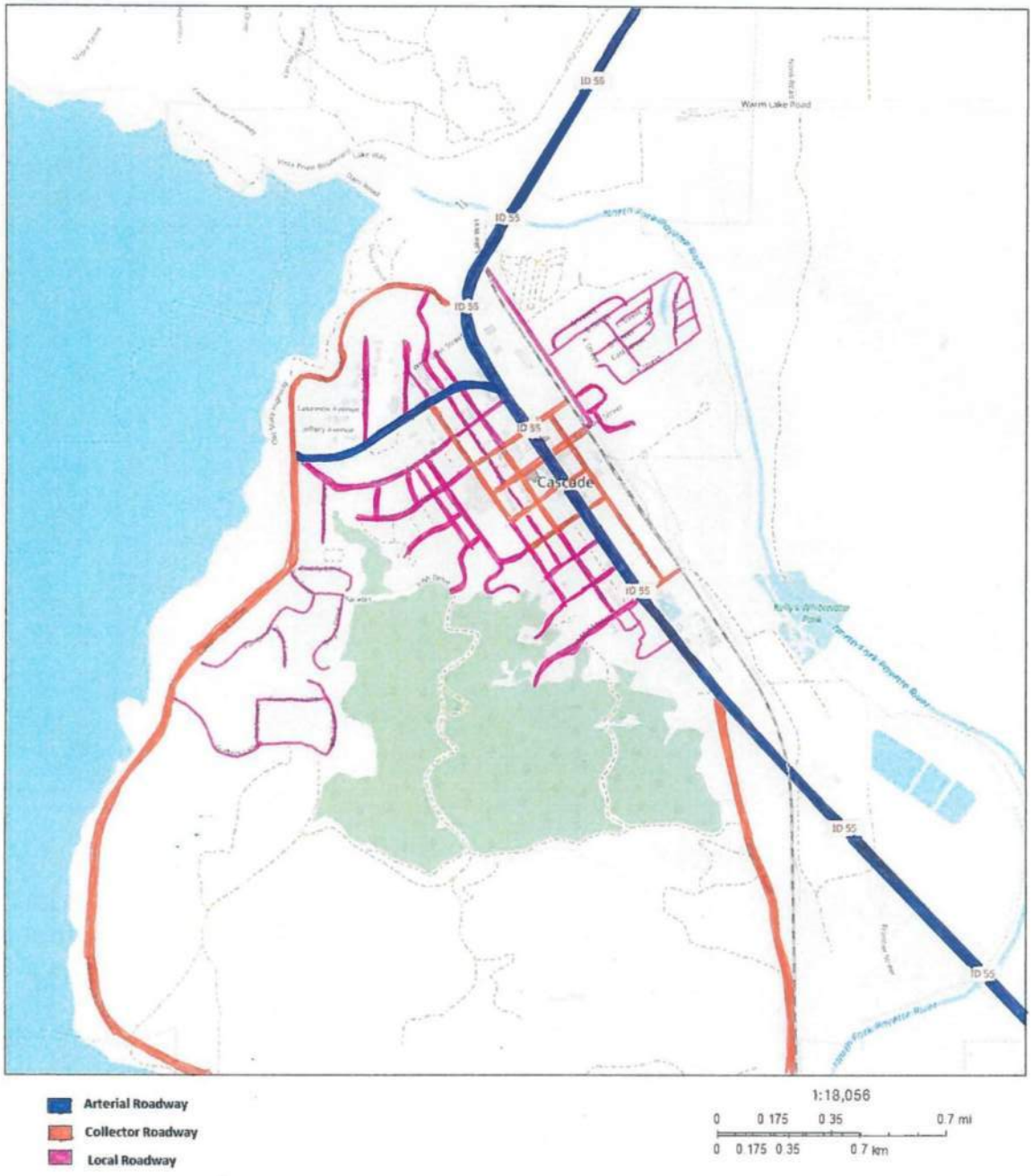
- Principal arterial - Urban principal arterials may or may not be part of the state highway system, but they have at least partial access control when on the state highway system. Recommended right-of-way width for a 2-lane principal arterial is 100 to 120 feet with a pavement width of 36 feet. Highway 55 is classified as a principal arterial.

- Minor arterial - Urban minor arterials are generally under local jurisdiction, but occasionally may be under state jurisdiction. When under state jurisdiction, they have partial access control. Recommended right-of-way width for a 2-lane minor arterial is 100 to 120 feet with a pavement width of 34 feet.

- Collectors - Urban collectors serve shorter, more localized travel needs, they collect traffic from local streets in residential neighborhoods and channel it into the arterial system. They may penetrate residential neighborhoods, distributing trips from the arterial through the area to the ultimate destination. In addition, urban collectors are never on the state highway system. Recommended right-of-way width for a 2-lane collector is 80 - 100 feet with a pavement width of 28 feet.

- Local streets – These streets are under local jurisdiction and generally serve only local residential units on the streets. Recommended right-of-way width for a 2-lane local street is 60 to 80 feet with a pavement width of 26 feet. There are a number of local streets that are unpaved –gravel surfaces.
  (http://itd.idaho.gov/planning/lrtp/reports/Tech%20Rept%205Highway%20Systems%20Classification.pdf)

Figure 3.1 Cascade Functional Street Classification



3.2.3. Traffic Volume

The Idaho Transportation Department has generated updated projections for average daily traffic (ADT) counts for Highway 55**.**

Table 3.1 Highway Traffic Count

Year	Count
2009	4,916
Projected 2030	9,832

(Source: http://itd.idaho.gov/planning/hwyneeds/)

3.2.4. Public Transportation and Mobility

As part of a joint effort, the Idaho Transportation Department – Division of Public Transportation and Community Transportation of Idaho has undertaken a process to help local officials develop a first generation of planning documents to address mobility in the state. The planning process, known as "I-Way", represents a growing statewide network that connects people in Idaho to a mix of transportation options. The purpose of the I-Way is to promote local planning and local decision-making regarding mobility that is based on sound planning activities and to meet the Federal Transit Administration's (FTA) requirements regarding development of a coordinated transportation plan. This planning will be important for any locale to receive a variety of funds from the FTA.

Mobility is an umbrella term that includes alternatives to "Single Occupant Vehicles". Mobility services can include public transit, human services transportation, bicycle/pedestrian services, vanpool, rideshare, and Park and Ride lots. The I-Way planning process involves a variety of stakeholders including:

- Aging Services Providers
- City Planners
- Consumers
- Disability Services Providers
- Elected Officials
- Human Service Agencies (including those that provide transportation)
- Independent Living Programs
- Intercity Bus Operators
- Transit Operators

Cascade is located in ITD District 3 – Region A. The mobility plan for this region identifies the following resources in Valley County.

- Treasure Valley Transit – Treasure Valley Transit (TVT) is located in Nampa, Idaho. It is a rural transit provider for the eight counties in ITD District Three. TVT provides Dial-a-Ride and Medicaid transportation which is open to the general public under the same fare structure. Treasure Valley Transit also operates Mountain Community Transit.

- Mountain Community Transit (formerly Valley County Connections) - Offers three fixed routes in Valley County. The Cascade to McCall route operates daily with stops in Cascade, Donnelly, Lake Fork and McCall.

- Elderly Opportunity Agency, Inc. (EOA) – EOA is a private non-profit corporation providing services to senior citizens within the Idaho Agency on Aging Area III network. EOA owns a fleet of vehicles (vans and buses, some of which were funded through the Section 5310 program) that provide transportation to many of the senior centers in its service area.

- Northwestern Stage Lines - Provides service between Lewiston and Boise with stops in White Bird, Riggins, New Meadows, McCall, Lake Fork, Donnelly and Cascade. One round trip per day is made.

3.2.5. Pedestrian and Bicycle Paths

At present there are sidewalks along Main Street between Patterson Avenue on the north and Payette Street on the south. Other than this one segment of Main Street, there are no other improved sidewalks in Cascade. The Strand, one segment of multi-use trail exists from Fischer Pond along the west bank of the river, to the north bridge, two miles in length. This trail is 8 feet in width and is a segment of a designated trail shown on the Valley County Pathways Master Plan. In addition, there is a designated pedestrian way along the south side of Lake Cascade Parkway that starts at State Highway 55 and runs to Lakeshore Drive, where it connects to another planned regional pathway.

In July of 2004, a citizens group formed the Valley County Pathways Committee to promote the development of a pathways system throughout the Long Valley region. (http://www.valleycountypathways.org/) The Valley County Pathways has a county-approved pathways master plan that envisions more than 100 miles of pedestrian pathways between McCall and Cascade, including the prospect of revitalizing an old railroad right of way that runs the length of Long Valley, and building trails around Payette Lake and Lake Cascade. Additionally, the Cascade Pathways Master Plan includes a trail system for the city. The Cascade system includes a 12-foot pathway

that extends for 2.25 miles along the Payette River from Water's Edge RV Park to Fischer Pond Park, including pathways in and around Kelly's Whitewater Park.

Map 2: Cascade Pathways Master Plan

Scenic By-Ways & Context Sensitive Design

In addition to local efforts, state and Federal governments are promoting walkability as a key element of livable communities. The Idaho Transportation Department has several programs related to bicycle and pedestrian mobility. They include:

- Bicycle and Pedestrian Program – Plans for bicycle routes on state highways and publishes commuter guides and safe riding guides for bicyclists.

- ITD Division of Highway Safety Bicycle/Pedestrian Safety Program – Helmet program, educational material, Idaho Walk Smart booklet, and safety grants.

- Safe Routes to School Program - Program to increase safety and convenience for students (Kindergarten through 8th grade) to bike or walk to school. The primary goals are to enable and encourage children to talk and bicycle to school, improve the safety of children walking and bicycling to school, and facilitate projects and activities that will reduce traffic, fuel consumption, and air pollution near schools. Idaho receives funds from the Federal Highway Administration for activities that support school route safety and infrastructure projects in conjunction with school route safety programs. (http://itd.idaho.gov/SR2S/)

3.2.6. Scenic By-Ways

Highway 55 from the junction of US 95 at New Meadows to junction SH-44 in Eagle has been designated as the Payette River National Scenic Byway. The route offers travelers views of mountain forests, Payette Lake, Lake Cascade, and the white-water rapids of the Payette River.

Idaho has officially recognized Scenic Routes since June of 1977. In 1991 the U.S. Forest Service, the Bureau of Land Management, and the state of Idaho combined the scenic routes and back country byways of each agency under one umbrella. The Idaho Transportation Department is the lead agency administering the Idaho Scenic Byways Program to meet the requirements of the Surface Transportation Efficiency Act of 1991, and subsequent omnibus federal transportation bills.

The Idaho Scenic Byways Program serves two functions: (1) to promote the scenic, historic, and backcountry byways of Idaho, and (2) to provide funding for tourist amenities, kiosks, and signs that will assist the traveler on the byways. Although there is no specific State funding available for Scenic Byways projects, the National Scenic Byways Program allows for project funding of qualified State Scenic Byways and Back Country Byways which meet certain criteria. There are also related funding categories such as Enhancement and Public Lands Highway funding available for Scenic Byways. (http://itd.idaho.gov/planning/byways/scenic/)

In order to qualify for funds there must be an adopted corridor management plan. In 2001, the “Payette River Corridor Management Plan” was completed by Sage Community Resources under the direction of an advisory committee comprised of

representatives from county and incorporated cities trans versed by the route – including Cascade. The management plan includes an inventory of heritage sites, recreation opportunities and points of interest. It includes recommendations for transportation improvements, promotion, and evaluation criteria for community projects that would enhance the visitor experience. (http://itd.idaho.gov/planning/byways /scenic /byway _mgmt_plans.html)

3.2.7. Context Sensitive Design

Related to scenic byway designations are principles of context sensitive design. The Idaho Transportation Department has adopted a vision that promotes context sensitive solutions in the design of state highways. These principles can also be used to evaluate local transportation improvements and streets in proposed developments. ITD defines site context sensitive solutions as follows:

"The context sensitive solutions approach is more than just processing environmental clearances and ensuring regulatory compliance for transportation projects. It embodies the notion of "going beyond" legal requirements and being responsive to community desires. A context sensitive solutions approach means that the statewide transportation system is constructed, operated and maintained in an environmentally responsible, sustainable and compliant manner consistent with the desires of the community."

Figure 3.1 Context Sensitive Solution

(Source: http://itd.idaho.gov/planning/css/)

Typically, effective context sensitive design solutions are based upon the following objectives:

- Balance safety, mobility, community, and environmental goals.
- Involve the public and stakeholders early and continuously.

- Use an interdisciplinary design team tailored to project needs.
- Address needs of all users.
- Apply flexibility inherent in design standards and guidelines; and
- Incorporate aesthetics as an integral part of good design.

At the local level, context sensitive design concepts can be used to supplement community street standards in order to make those standards more flexible and more responsive to special neighborhood needs and characteristics. For example, a standard local street may feature curbs, gutter, and sidewalks, and a width of 34 feet face of curb to face of curb. A local street constructed to those standards can easily accommodate up to 15,000 trips per day safely and efficiently, while providing for pedestrians as well.

However, in a wooded low-density neighborhood, accommodating larger traffic volumes with great efficiency is not the primary objective of a local street. Here, the main purpose of a local street is to complement the scale and character of the neighborhood. Such streets will have very low daily traffic volumes, slower speeds, and have a much higher percentage of bicycles and pedestrians, including children. And because of the low residential density and tree canopy, curbs and gutters may not be needed for storm water management. In fact, they may actually be counterproductive to water quality as opposed to vegetated swales along the side of each street. Reference the photo below.

The street at left does not meet the standards of the city in which it is located. However, because of the uniqueness of the neighborhood, this street design was preferred by the residents and accepted by the city.

3.2.8. Airport

The City of Cascade is served by the Cascade Airport which is located two miles southeast of town. The airport is owned and operated by the City of Cascade. Arnold Aviation is the airport's full service Fixed Base Operator (FBO) and also offers charter services. Primary use includes recreation and wilderness backcountry support. The airport also supports a wide range of activities such as air cargo, medical transportation, military exercises, wildlife studies, agricultural spraying, and wildfire management.

The United States Postal Service (USPS), UPS and Federal Express utilize airport services for mail and package delivery to wilderness area. Tamarack Resort, real estate, and a variety of visitor tours.

In 2007, there were 18 fixed based aircraft and 13,400 annual operations at the airport. It is projected that in 2027, there will be 23 based aircraft and 16,800 annual operations.

According to the "Idaho Airport System Plan – 2009" prepared by the Idaho Transportation Department – Division of Aeronautics, the recommended improvements include extending and widening the runway, upgrading the taxiway, upgrading the instrument approach, and installing visual aids and weather reporting facilities.

Idaho Department of Transportation (ITD) has identified incompatible land use development as a threat to airport operations. Issues include noise, safety, and environmental impacts. As part of the airport systems planning process, IDT has published a guidebook for local governments, "Idaho Airport Land Use Guidebook". (http://itd.idaho.gov/aero/Publications/08SystemPlan/Technical_Reports/Appendix%20C%20Land%20Use%20Guideline s%20-%20080310-FINAL%20DRAFT.pdf).

Table 3.1: Cascade Airport – Idaho Airport System Plan Summary

	EXISTING	SYSTEM OBJECTIVE	RECOMMENDATION	DEVELOPMENT COST
AIRSIDE FACILITIES				
Primary Runway Length	4,300 feet	4,420 feet or greater	Extend 120 feet	$75,900*
Runway Width	60 feet	75 feet	Widen 15 feet	$708,400*
Runway Strength	12,500 Lbs SW	12,500 Lbs SW	None	$0
Taxiway Type	Partial Parallel	Partial/Connector/ Turnaround	Upgrade to Full Parallel	$480,000*
Instrument Approach	Visual	Non-Precision	Upgrade to Non-Precision	$54,000*
Visual Aids	Rotating Beacon	Rotating Beacon	None	$0
	Lighted Wind Cone	Lighted Wind Cone	None	$0
	None	REILS	Install REILS	$62,000**
	None	PAPI/VASI	Install PAPI/VASI	$70,000**
Runway Lighting/Reflectors	MIRL	MIRL	None	$0
Weather Reporting Facilities	None	AWOS/ASOS	Install AWOS/ASOS	$185,000**
LANDSIDE FACILITIES				
Terminal with Public Restroom	Yes	Yes	None	$0
Hangar Storage	111 Spaces	10 Spaces	None	$0
Apron Spaces	24 Spaces	8 Spaces	None	$0
Auto Parking	10 Spaces	Parking Spaces	None	$0
SERVICES				
Phone	Yes	Yes	None	$0
Restroom	Yes	Yes	None	$0
FBO	Yes	None	None	$0
Maintenance Facilities	Yes	None	None	$0
Fuel	AvGas and Jet A	AvGas and Jet A	None	$0
Ground Transportation	Courtesy/Loaner Car	Courtesy/Loaner Car	None	$0
PAVEMENT MAINTENANCE, PLANNING/ENVIRONMENTAL AND MISCELLANEOUS				
Pavement Maintenance				$1,440,400**
Master Plan/ALP/Environmental				$230,000**
Airside Development				$30,700**
Other CIP Projects				$2,514,300*
TOTAL				$5,850,700

*Airport Capital Improvement Plan (CIP) Project | **Idaho Airport System Plan (IASP) Project

(Source: http://itd.idaho.gov/aero/)

3.3. Future Conditions

3.3.1. Projects and Plans

The function and safety of Cascade streets would be enhanced by ongoing storm water drainage system improvements. The local services and public facilities element has more detail on the storm water management system.

In order to implement any new projects and plans, the City must build budgeted resources through grantsmanship and other creative funding methods that can be used for transportation capital improvements of all kinds

A design study would indicate if improvements such as roundabouts would improve the function of intersections in the corridor. In some instances, roundabouts move traffic very well and offer easy access to other areas of town. Refer to Addendum A and B

3.3.2. Idaho 55 Corridor Study

The Idaho Transportation Department (ITD) is undertaking a corridor plan for Highway 55 to identify policies and projects important to the development of this major route over the next 20 years. The Idaho 55 highway corridor originates in Owyhee County at the Idaho/Oregon/Nevada junction with U.S. 95 and serves six counties. The completed corridor plan will include an analysis of the existing conditions on the highway; a forecast of future demand over the next 20 years, and a list of short and long-term improvements on how to modernize transportation on Idaho 55. The document will address the course of the highway as a whole and on a county-by-county basis. The projected completion date for the corridor plan is December, 2018.

According to ITD, the finished corridor plan will address the following:

- Safety: What are the improvements that will make Idaho 55 safer for motorists, pedestrians and residents?
- Access Management: How can ITD and local communities manage the effect of development along the corridor so the roadway continues to function safely and efficiently?
- Traffic: What are the best ways to improve current traffic flow and capacity throughout the corridor? Can we anticipate future congestion points and develop solutions?
- Environment: What are the important environmental issues to consider when ITD builds improvements in the future?

3.3.3. Proposed Roads, Extensions, and Connections

Pursuant to the adopted pathways plan, any new subdivision should have development agreements that allow for a trail system connecting all lands within the Cascade Impact Area to the present City limits. These areas should be built to serve pedestrian and bicycle traffic, and be of a sufficient width to allow emergency access.

3.3.4. Proposed Street Standard Descriptions

All new street construction should have curb or rolled curbs, gutters, and sidewalks built to ITD standards where applicable, and to city standards where context sensitive design is desired to preserve and enhance neighborhood scale and character. Particular attention should be paid to storm water management, water quality, and moving from

gravel to asphalt surfaces. Local standards should be developed for Main Street, and all collector and local streets. Collectors should have curbs, gutters, and a sidewalk on at least one side of the roadway. All lighting on collector streets should have decorative "period" posts and luminaires with appropriate landscaping.

3.3.5. Airport

The Cascade Airport can continue as a key component in the economic development of the Cascade area and the entire region. A regional airport could accommodate all types of general aviation, including charters. There is adequate vacant land south of the existing airport on which a new 7,500' to 8,000' 18/36 runway could be constructed. This could be a catalyst for investment in Cascade and throughout the region. McCall, Tamarack, Donnelly, and New Meadows are all within a one-hour driving time from the Cascade Airport. Airport expansion could also facilitate additional development at the airport industrial area. Valley County government should be encouraged to partner in this process.

4. Natural Resources

This element provides an analysis of the uses of rivers and other waters, forests, rangeland, soils, harbors, fisheries, wildlife, minerals, thermal waters, beaches, watersheds, and shorelines.

4.1. Goals, Objectives, and Action Items

This element provides and inventory and assessment of Cascade's natural resources, as well as maps, goals, objectives, and actions to guide the City of Cascade in conserving, promoting, and responsibly managing those natural resources.

Goal: Protect wildlife habitat, the environmental and hydrologic functions of lakes and streams, and scenic vistas.

Objective: Ensure that all new developments are planned and designed to recognize and minimize impacts to the Cascade area's environmental and scenic resources.

Actions:

- Manage and maintain all forested areas within the impact area to minimize the loss of natural resources due to development and during timber harvesting.
- Development shall respect the aesthetic and economic value of trees, and a heritage tree preservation ordinance should be explored.
- Explore a cluster development option in order to preserve wildlife habitat, streams, wetlands, and scenic vistas.
- Develop a Payette River Greenway Plan that provides detailed inventories and priorities for protecting important natural resources and recreational / educational opportunities.
- Development proposals in and adjacent to the Payette River floodplain should include an assessment of impacts on environmental and hydrologic functions of the river and wildlife habitat.

Objective: Preserve the natural environmental corridors both within the city and the impact area.

Actions:

- Use the cluster development option to guide development along the North Fork of the Payette River environmental corridor by providing large buffers to protect water quality and wildlife habitat.

- Where the cluster option will not provide sufficient buffers, consider land acquisition adjacent to rivers and creeks to preserve riparian water quality, aesthetics, and wildlife.

Goal: Protect ground and surface water and water quality

Objective: Prevent contamination of groundwater from septic systems and other pollution sources.

Actions:

- Participate with the county and other organizations in a well monitoring program to identify any existing high nitrate areas.

- Facilitate education of area residents in methods and actions to reduce ground water pollution sources.

- Create sedimentation runoff capture points within the City limits and Impact areas as well.

Objective: Prevent outside interests from being able to remove the water in Cascade and its area of impact.

Actions:

- Create codes to prohibit the water in Cascade and its area of impact from removal for uses outside of Valley County, Idaho.

Objective: Preserve and enhance the quality of the area's surface waters through a multi-faceted effort aimed at pollution abatement watershed management.

Actions:

- Partner with the US Bureau of Reclamation, Idaho Department of Environmental Quality, the Cascade Reservoir Association, and others to improve and maintain water quality, and to develop facilities needed to optimize use of the lake and river.

- Require impaired water bodies meet the Total Maximum Daily Loading standards as determined by the Idaho Department of Environmental Quality and the Environmental Protection Agency.

- Explore a permit system for grading, excavation, and other land disturbances that require restoration and revegetation of the site in order to prevent erosion and sedimentation.

- Maintain the cleanliness of all beaches, and make sure they are in accordance with the Land Use and Community Design standards within this plan.

Goal: Protect, enhance, and increase the fish population

Objective: Increase the fish population within Lake Cascade and surrounding water bodies.

Actions:

- Adequate testing of the quality of natural fish habitat is to be maintained and promoted to ensure a healthy fish population.

- Maintain and enhance Fischer Pond and encourage educational activities relating to fishing.

- Promote fish habitat restoration projects.

Goal: Utilize natural geothermal waters as a resource

Objective: Promote the use of geothermal water for all public and commercial facilities.

Actions:

- Develop a plan to utilize geothermal energy to reduce costs to promote development and attract investment.

Cascade Schools converted to geothermal heating for its buildings. The Southern Valley County Recreation District (SVCRD) opened the Cascade Aquatic and Recreation Center and heats swimming and therapy pools with geothermal energy.

Goal: Protect the night sky from unwanted light pollution

Objective: Preserve opportunities for star gazing and general enjoyment of a dark night sky.

Actions:

- Consider adopting lighting standards for commercial and residential developments that require downcast and cut-off light sources in order to avoid light trespass, light pollution, and glare.

4.2. Current Conditions

4.2.1. Physical Setting

The abundant natural resources found throughout the Cascade impact zone are vitally important to the long-term growth and development of the Cascade area. Cascade continues to develop as an all-season recreational paradise due in large to the trees, the mountain topography that encompasses the area, and the abundant supply of water resources, including Lake Cascade and the North Fork of the Payette River. Rafting, tubing, fishing, recreational boating, wildlife viewing, swimming, camping, hiking, and general sightseeing are all important activities, which are greatly enhanced by the relative abundance of natural resources in the area. The unique opportunity to utilize our natural resources through regulated fishing within the city impact area should be preserved. While the potential for natural resource extraction and economic development exists within the impact area of the City of Cascade, they must be extracted in an environmentally sensitive manner in order to preserve and enhance the quality of life and the tourism potential of the area for many years to come.

Due to poor water quality, pollution impacts and predation by larger fish species, the population of yellow perch in Lake Cascade dropped dramatically in the 1990's and early 2000's. Fishery restoration efforts in the mid 2000's was successful in restoring a Yellow Perch fishery to Lake Cascade. Idaho Department of Fish and Game (IDFG) estimated that the 2011 fishery economic value for Lake Cascade had risen to $10.7 million. The economic survey included all costs for a fishing trip including; transportation, lodging, food, supplies and licenses.

General recreation boating has also increased likely due to the improved water quality and fishing. Cascade continues to host a variety of events and tournaments. The winter ice fishery has become popular again and attracted several new ice fishing tournaments in recent years. The Yellow Perch fishing has been written about in several national sporting magazines and has begun to attract out of area anglers. Fishery management by IDFG is focused on maintaining low numbers of Yellow Perch predators which should maintain a long term stable sport fishery.

4.2.2. Hydrology

Lake Cascade, which has an elevation of about 4828 ft. encompasses an area of 144 square miles of watershed. It has fluctuating flows that have a high of 7000 cubic feet

per second (cfs) to 300 cfs but maintains a fairly stable flow throughout the irrigation season of between 1500 and 2500 cfs. This is an ideal situation for river recreation from Cascade to Horseshoe Bend and has established one of the more consistent flows of water for fishing, recreational rafting and kayaking, compared to anywhere in the country.

4.2.3. Watershed and Drainage District

1. Cascade, Idaho sits in the North Fork of the Payette Watershed (number 17050123, www.epa.gov)

2. City of Cascade: https://msc.fema.gov/portal

3. The following is data on the watershed that can be used to create the verbiage for this section:

    - LOCATION.--Lat 44° 54'26", long 116° 07'09" (NAD83), in NW1/4 SE1/4 SW1/4 sec.8, T.18 N., R.3 E., Valley County, McCall quad., Hydrologic Unit 17050123, on left bank at McCall, 0.2 mi downstream from outlet of Payette Lake, and at mile 75.2.

    - DRAINAGE AREA.--144 mi2. Mean elevation, 6,520 ft.

    - PERIOD OF RECORD.--September 1908 to June 1917, May 1919 to current year. Prior to October 1942, published as "at Lardo".

    - REVISED RECORDS.--WSP 963: Drainage area.

    - GAGE.--Datum of gage is 4,967.75 ft above NGVD of 1929 (levels by Idaho Fish and Game). Non-recording gage at site 1 mi downstream at different datum prior to Oct. 14, 1908, and Oct.14, 1908 to Dec. 18, 1923, at sites near present gage at present datum.

    - REMARKS.--Flow regulated to some extent since several years prior to 1923 by gates at outlet of Payette Lake 0.2 mi upstream (see stage 13238500) and several smaller lakes upstream. Diversion for fish hatchery bypasses station and is returned below gage. Records of daily discharge of this diversion published in annual Water-Supply Papers from October 1942 to February 1953.

    - EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,980 ft3/s May 21, 2006, gage height, 8.14 ft; maximum gage height, 8.16 ft, June 19, 1974; no flow Nov. 5-8, 1931, Nov. 17-24, 1933, Nov. 14-27, 1935, Oct. 22 to Nov. 11, 1938.

4.2.4. Surface and Ground Water

Water from Lake Cascade is used primarily for irrigation water in the Gem County area. Other uses now include hydro-electric power, fishing, and recreational activities. Water quality is a concern especially in late summer and early spring with the algae blooms of Lake Cascade. Contributing factors include ground septic systems rather than treatment facilities, cattle grazing and influx of nitrate discharge from McCall and surrounding areas from the north drainage area.

Quality of life and water quality should be of great concern. An effort should be made with the State of Idaho, EPA, DEQ, to procure funding for these areas to eliminate Nitrate dispersal into Lake Cascade. This would include the fencing of cattle from Water dispersal areas directly into Lake Cascade directly. Nitrate gathering areas should be incorporated into all creeks and drainage areas. Fencing should occur along any direct contact with the reservoir or South of Lake Cascade along the river, under Idaho Water Quality Standards (Section 200, General Surface Water Quality Criteria at a minimum. Any storm water drainage within the Impact area should include sediment control and cleanout points, as well as upgrades to the City System. Any PUD or other development issue should include (Chapter 1, title 39 Environmental Quality-Health)

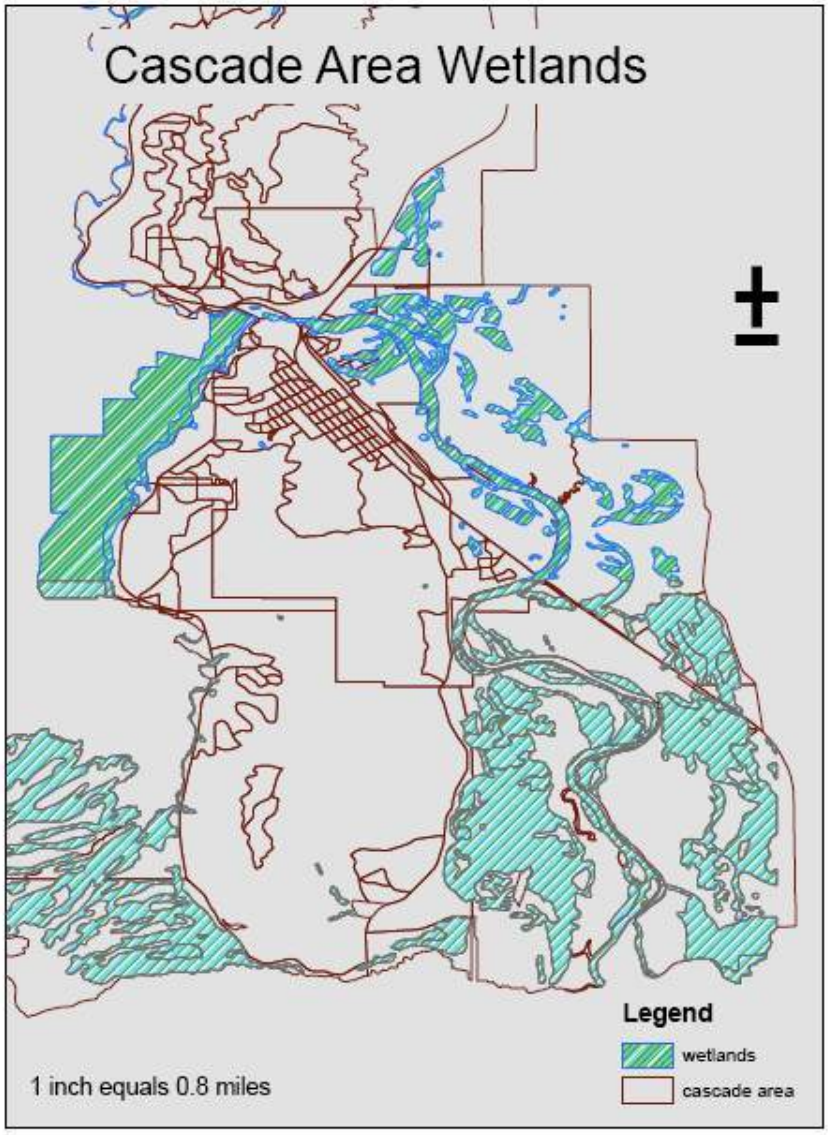
- 39-126. DUTIES OF STATE AND LOCAL UNITS OF GOVERNMENT. (1) All state agencies shall incorporate the adopted ground water quality protection plan in the administration of their programs and shall have such additional authority to promulgate rules to protect ground water quality as necessary to administer such programs which shall be in conformity with the ground water quality protection plan. Cities, counties and other political subdivisions of the state shall incorporate the ground water quality protection plan in their programs and are also authorized and encouraged to implement ground water quality protection policies within their respective jurisdictions, provided that the implementation is consistent with and not preempted by the laws of the state, the ground water quality protection plan and any rules promulgated there under.

4.2.5. Wetlands and Floodplain

The Federal Emergency Management Agency, with the assistance of the Army Corps of Engineers, has designated certain areas along Lake Cascade and the North Fork of the Payette River as being within the 100-year floodplain (see Figure 5.2.5). The city has adopted a Flood Hazard Areas Ordinance to control development in these areas. Enforcement of this ordinance should be continued so that potential hazards due to flooding are reduced and in order for property owners of structures within these floodplains to continue to be eligible for federal flood insurance. Work should be done to clean up the entire drainage course along the banks and within the channel of both

man-made and natural debris, and maintain it at a minimal level. Flood control measures on the creek and the river should be designed to maintain the pathway concept. Enlargement of undersized culverts and bridge crossings can also help to eliminate the flooding problem without changing the nature of the waterways. Public ownership, easements or leaving of the creek and river lands, and the proposed clean-up program would facilitate clearance of brush and other debris that clog drainage areas and cause flooding.

Figure 4.1 Cascade Area Wetlands



4.2.6. Geothermal Water

Based on the Idaho Office of Energy Resources, Valley County has 91 records of geothermal activity, with varying temperature ranges, most of which are located within the neighboring mountains. There are 54 sites with temperatures between 85 degrees F and 212 degrees F and are considered to be 'low temperature geothermal' water. There are 29 sites that have 'warm' temperatures, which consist of temperatures ranging between 68 degrees F to 85 degrees F. Vulcan Hot Springs records show that it has the hottest geothermal temperatures reaching 191 degrees F, and a well drilled at Tamarack has reported temperatures of 150 degrees F in 2005.

4.2.7. Impaired Waters

Within the City of Cascade there are two main sources of water, the North Fork of the Payette River and Lake Cascade. In 2003 they were evaluated and North Fork of the Payette was assessed to contain sediment, nutrient alterations, temperature alterations, flow alterations, and habitat alterations. Lake Cascade, or Cascade Reservoir, is found to contain nutrients, phosphate, dissolved oxygen, and pH alteration. (http://www.oneplan.org/Water/303d_c.htm)

Figure 4.2 shows the list of impaired waters in the Payette Watershed where Cascade, Idaho is located within. (The State of Idaho Division of Environmental Quality, 1998 303(d) List, Chapter 2)

Figure 4.2: Impaired Waters in the Payette Watershed

Idaho Division of Environmental Quality 1998 303(d) List

HUC#17050123

WQLS	T/R	WATERBODY	BOUNDARIES	YEAR	ADDS	POLLUTANT(S)				STREAM MILES
2884		Cascade Reservoir		2003		DO	NUT	pH		.00
2889		Round Valley Creek	Headwaters to N Fk Payette River	2003				SED		5.66
2890		Clear Creek	Headwaters to N Fk Payette River	2003				SED		17.78
2891		Big Creek	Horsethief Creek to North Fk Payette River	2003				SED		6.50
2893		Gold Fork River	Flat Creek to Cascade Reservoir	2003			NUT	SED		5.36
2895		Boulder Creek	Headwaters to Cascade Reservoir	2003		DO QALT	NUT	SED	TEMP	20.46
2898		Mud Creek	Headwaters to Cascade Reservoir	2003	BAC	DO	NH3 NUT	SED		12.04
5625		Brush Creek	Headwaters to North Fk Payette River	2006	*ADD*				UNKN	5.06
5626		Landing Creek	Headwaters to Deadhorse Creek	2006	*ADD*				UNKN	2.42
5627		Elip Creek	Headwaters to Lemah Creek	2006	*ADD*				UNKN	3.00
5628		Lake Fork	Headwaters to Cascade Reservoir	2006	*ADD*				UNKN	25.93
5629		Willow Creek	Headwaters to Cascade Reservoir	2006	*ADD*				UNKN	8.18
5631		Duck Creek	Headwaters to Cascade Reservoir	2006	*ADD*				UNKN	2.07
5632		Van Wyck Creek	Headwaters to Cascade Reservoir	2006	*ADD*				UNKN	2.47
5633		Tripod Creek	Headwaters to North Fk Payette River	2006	*ADD*				UNKN	5.40
6882		North Fork Payette River	Clear Creek to Smiths Ferry	2003		QALT HALT	NUT	SED	TEMP	9.53
6897		Browns Pond		2003		HALT				.00
			NEW MILES	54.53			TOTAL MILES OF LISTED STREAMS			131.86

4.2.8. Geology

Cascade has a diverse terrain, suitable for development of agriculture, residential, commercial, and light industry.

4.2.9. Agriculture Resources

At present a large percentage of lands within the City limits and the Impact Area comprise agricultural use. A large track of land centered in this area is State land primarily used in the past for timber harvesting. Surrounding areas of range and ranch land make up the agricultural zones and present land usage. Little to no agricultural production other than cattle production exists.

4.2.10. Geology, Mining and Logging Activity

Long Valley and West Mountain are located along the west side of the Long Valley fault, and were formed by block faulting. As the West Mountains rose, alluvium deposits filled in to create the floor of Long Valley, and are composed of “boulders, cobbles, gravels, sands, clays, and silts that vary in thickness from a few feet to as much as 7,000 feet,

[which] are the result of deposition form glaciers, rivers, and streams". The Batholith portion is composed of "massive igneous intrusions of granite" that can be found all over the Valley; being one of the main geological components. (Cascade, Idaho Atlas: Biophysical)

A number of fault lines run North-South through the Long Valley. "Most recently, during the Pinedale Glaciation, the North Fork Valley Glacier carved the basin and deposited the moraines which formed Payette Lake. During the early glaciations the valley glaciers were thicker and longer, forming the prominent medial moraine, Timber Ridge". Over time, these faults, with the help of periodic glacial activity, shaped the Long Valley that we see today. In a 1976 micro-seismic study of the tectonic activity in respect to the geothermal activity, and found that 'swarms' of activity are responsible for the movement of geothermal resources. "Swarms are groups or clusters of low magnitude earthquakes that occur in a specific area over a distinct time period". Through this study, it was determined that there are "tectonically-active zones existing and that they are aligned in east-west trends". This information showed that the major fault line that runs north-south is intersected by a newly discovered east-west seismically active zones. This was a significant finding because it lent itself to the realization that this seismic activity was allowing the geothermal water to circulate within the valley floor, and that the granite and alluvium rocks "offer potential as reservoirs for thermal water and that a significant untapped thermal aquifer may exist at depth in the valley fill". The entire Long Valley experiences micro-earthquakes with significant ones occurring in the southern portion of the valley, and reveal the strike-slip and normal fault motions running north-northwest occurring at subsurface depths of 7,000 feet. (Cascade, Idaho Atlas: Biophysical)

4.2.11. Ranch Land

Much of the open areas around Cascade and the Impact Area are composed of large tracks of separately owned ranches. The MacGregor's, Davis', Pancherri's, Bilbao's and Allen's ranches take in the majority of this ranch land connected to the Impact Area.

4.2.12. Beaches, and Shorelines

Lake Cascade borders the western edge of Cascade and the Impact Area; a few boat launches exist in this area. Shorelines are open to public use through the State Parks and Recreation. Campgrounds, picnic areas and recreational opportunities exist as well. The western border of the Payette River and all of the dam area are within the City limits and runs through the heart of the Impact Area. Kelly's Whitewater Park is within the waters of the Payette River as well.

4.2.13. Soils

Most of the area around Cascade is decomposing granites and glacial deposits. Slightly mountainous terrain exists within the City limits.

4.2.14. Air Quality

When air quality is being addressed, the National Ambient Air Quality Standards (NAAQS) has standards that hold six pollutants that are known to harm humans to a healthy concentration. These pollutants include: ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides. These standards hold true to Long Valley, which sits within the Montana/Idaho Airshed. The Montana/Idaho Airshed Group actively monitors air quality by managing smoke within the air through the beginning of March to the end of November for both states entirely. For Long Valley, the "air quality in the area and surrounding airshed is generally good to excellent", but it can be compromised during the summer and fall, due to prescribed burning or occasional wild land fires. Long Valley within Valley County falls within the 15th and 16th unit within Idaho for monitoring smoke and air quality. The danger that fire possesses to air quality is tremendous in terms of particulates being released. When fire comes in contact with steep slopes, bush, grass, and other species during extreme fires, then large amounts of particulate matter is released into the air causing the air quality to be sacrificed. Generally speaking, the air quality of the Long Valley is good to excellent, except during the fire season of the summer and late summer months.

4.2.15. Sky Resources

The night sky is a natural resource that the City of Cascade considers to be one of the unique natural resources to the area. The ability to preserve the dark night sky provides residences and visitors with the ability to see hundreds of stars and planets. This natural resource can and should be protected through the adoption of light standards to minimize the impact of development.

4.2.16. Climate

Cascade has an average annual rainfall of 23.03 inches per year and an average annual snowfall of 87 inches per year. In general, a mildly arid climate exists. Temperatures range in the summer from 65 to 85 degrees and winter's range from -24 to 38 degrees on average. Extremes can be achieved but are not frequent.

4.2.17. Fire

Fire is an element that not only affects the vegetation on the landscape, but also extends to affect the wildlife, soils, and the people of the area. The composition of the Long Valley landscape lends itself to various scales of fire prone conditions; specifically,

during the summer months. Additional influencing factors that contribute to the likeliness of fires within the valley are “weather, seasonal and daily variations in moisture (relative humidity), solar radiation”, slope, aspect, and vegetative cover type to name a few. These factors are also important to consider when prescribed slash and burn agriculture fires are being practiced so that the evolution of a possible wild land fire starting is minimized.

“Fire assessment is an important ecological element that is vital for the Long Valley when it comes to planning a protective management plan. Between the years of 1948-2000 there were 1.2 million acres burned in the county. In July of 2004 these statistics prompted Valley County to produce the Wildfire Protection Plan where an evaluation of the landscape with respect to fire was addressed in order to “institutionalize and promote a countywide wildfire hazard mitigation ethic through leadership, professionalism and excellence, leading the way to a safe, sustainable Valley County”. The Wildfire Protection Plan houses the Wildland-Urban Interface Mitigation program for Valley County, where data was collected on past fire history in order to predict the likeliness and severity of future fires based on the type of ignition fuel and burn patterns.

4.2.18. Environmental Corridors

Cascade’s abundant natural resources help to make the area a beautiful place to live with a high quality of life. The City’s natural resources are primarily included within designated “environmental corridors” that help create and sustain the city’s unique array of wildlife. Environmental corridors are continuous systems of open space in urban and urbanizing areas, that include environmentally sensitive lands and natural resources requiring protection from disturbance and development, and lands needed for open space and recreation use. They are based mainly on drainage ways and stream channels, floodplains, wetlands, steep slopes, and other resource features, and are part of a countywide system of continuous open space corridors. Volume I, Map 61, identifies the location of environmental corridors in the Central Business District.

4.2.19. Vegetation

The vegetation of the Long Valley ranges from the grassy meadows to the alpine and subalpine conditions of the mountains. With cool air drainage occurring in the valley, much of the vegetation found follows in stride with the moisture content and temperatures of this effect. The area offers the vegetation with adequate moisture content for the abundance of conifer and subalpine species at higher elevations. Much of the habitats within the Long Valley consist mainly of dry coniferous forest with multiple uses, such as “timber production, livestock, grazing, wildlife habitat, recreation, and watershed protection” occurring in the valley.

4.2.20. Threatened, Endangered and Wildlife of Conservation

Bald eagles and wolves are known to inhabit the area, though both have been removed from the endangered list at this time that could change quickly.

4.2.21. Fish, Fisheries and Wildlife

Fish species found in Lake Cascade include rainbow and brown trout, Coho and kokanee salmon, smallmouth bass, bullhead catfish, and yellow perch. The lakes in the valley are stocked via the McCall Hatchery, which is located within the city limits of McCall. This site has a satellite location on the South Fork of the Salmon River during the summer months. From this location on the river, Chinook salmon are trapped during the spawning season and harvested for their eggs. From here the Chinook eggs are taken to the main site where they are incubated for hatching to take place. This specific fish hatchery is the main supplier of Chinook salmon for the state of Idaho where they are distributed for lake stocking. In addition to the Chinook species, there are trout, bass, catfish, salmon, whitefish, crappie, perch, and pike minnow that can be found within Valley County. Throughout the winter seasons, ice fishing can be found on Lake Cascade with the fishing being mainly rainbow trout, Coho salmon, and small mouth bass and perch. Wildlife is abundant within the City limits such as mule deer, whitetail deer and elk. It is not uncommon to see a large variety of predators as well. Black bears, cougars, fox, coyote and an occasional wolf are known residents of the area. (Cascade, Idaho Atlas: Biophysical)

4.2.22. Scenic Views

Highway 55 is a designated scenic corridor with national recognition. It is named Payette River National Scenic Byway. It was done to preserve the scenic qualities that attract visitors and improve quality of life for residents. The significant elements include the mountain ranges surrounding the valley and the natural riparian corridor along the Payette River, which is considered a critical area for scenic resources.

4.3. Future Conditions

4.3.1. Preservation

As the city grows, pressure to demolish, remove or alter significant historic structures will increase. The availability of monetary assistance for preservation and restoration will become a determining factor in the continued existence of these structures as the forces of nature and economics bear down.

4.4. Community Concerns

4.4.1. Loss of Open Space: Habitat and Views

There are still large open areas within the City limits and especially the Impact Area. With special attention to zoning regulations and consideration for a walkable community as well as retaining much of the natural settings that presently exist, loss of open space shall be minimized. By creating a park area or natural reserve of state ground within the impact area, a haven shall exist for good wildlife habitat and cohabitation. Building standards, heights and zones should be controlled in certain areas to allow panoramic views by all.

4.4.2. Native Vegetation

Vegetation is predominately ponderosa pines with scatterings of lodge pole pine, Douglas fir, tamarack or Western larch, and always the present cottonwood. Ground cover includes sagebrush, dogwood, willows and grasses. Mushroom and huckleberry picking is a strong spring and summer activity in surrounding areas.

4.4.3. Dark Skies

The ability to see the night sky – stars, planets, etc., is an increasingly rare amenity for towns across the country. Increasing residential and commercial development in Cascade will have an impact on this natural resource, but the level of impact can be minimized through simple design standards on lighting levels and fixture types. Such lighting standards are being adopted by the governments of Driggs, Victor and, Teton County, which Cascade should consider as well. With controlled growth, it is time to address outdoor lighting with a comprehensive ordinance. Valley County has already implemented an ordinance in the unincorporated areas.

4.4.4. Water Quality

Protection of groundwater quality is critically important because it serves as the primary source for domestic use in the valley. Nitrate pollution, from septic systems and agricultural operations is possible. Once water sources are contaminated, they can be extremely costly to restore. According to the Idaho DEQ, currently, fifty public water systems consume water from 121 wells across the state show elevated nitrate levels (greater than 2 mg/l nitrate). With the aquifer level in some local areas being at the level of a normal basement, the potential for contamination from septic systems in the Driggs Planning Area is a significant concern. Title 67-6537 requires local governments to consider the effect the proposed Comprehensive Plan amendment will have on the quality of ground water in the area.

The proposed Goals, Policies and Action Items of this Plan seek to protect ground water quality by encouraging utilization of the central sewer system and DEQ BMPs for storm water management, and by supporting ground water quality monitoring and education programs. The Plan therefore should not have a negative impact on ground water quality if implemented. Surface water quality is also a concern because of high water table and because of potential impacts to fish habitat. Construction areas should implement EPA and DEQ best management practices for storm water management.

4.4.5. Payette River

Creek bed alterations can create higher velocities, which in turn are leading to the erosion of creek banks, sediment transport into fish habitat, loss of important riparian vegetation, and log dams, flooding, and other impacts to downstream properties. Preservation of functioning sections and restoration of non-functioning sections of the Payette River should be encouraged and supported. Control of livestock access to the river should see regulations from the County to enforce no contact with water or banks of the Payette River. Sediment and nitrate controls should be put in place on all tributaries or creeks going through grazing land to lessen the pollution to the river.

The Payette River Water Trails vary from short routes along river sections to loops around lakes; from relaxing flatwater to intense rapids and whitewater.

Water trails are boat routes suitable for canoes, rafts, paddleboards, kayaks, and motorized watercraft. Like pedestrian, equestrian and bicycle trails, water trails are recreational corridors between destinations.

Water trail amenities include boat launches, day-use sites, fishing access, and camping areas. They serve as educational venues that create interactive experiences regarding the geology, pre-history, history, ecology and commerce of an area.

Water trails are valuable assets to cities and counties, providing recreational and educational opportunities for both residents and visitors. Water trails also help people discover new perspectives about their waterways and their communities, raise awareness of watershed stewardship, and serve as economic engines through tourism and its associated hospitality industry.

The Payette River Basin Water Trails Coalition seeks to develop a system of whitewater and flatwater trails on the lakes, reservoirs and tributaries of the Payette River for people of all ages to explore, respect, and enjoy.

5. Special Areas and Sites

This element provides an analysis of areas, sites, or structures of historical, archeological, architectural, ecological, wildlife, or scenic significance.

5.1. Goals, Objectives, and Action Items

Goal: Identify, protect, and maintain historical, architectural, and archeological resources.

Objective: Understand the sites, resources and assets that deserve protection.

Actions:

- Partner with local historians, schools and volunteers to create an inventory of significant historic, archaeological and architectural resources.
- Determine the level of significance and the level of risk for each historic structure or site.
- Formulate a strategy for the protection and/or restoration of each significant site for the express purpose of guiding the use of capital improvement and grant funding.

Objective: Promote and publicize the natural beauty and scenic qualities of the Long Valley, specifically near Cascade.

Actions:

- Provide incentives for owners of historically, architecturally, or archeologically significant buildings/sites to continue to maintain and invest in these sites consistent with their historic and cultural values.
- Develop a walking and educational tour once enough sites have been recognized and maintained and/or restored.
- Encourage a natural scenic byway by preserving and enhancing native vegetation along Highway 55 and Shoreline Drive, the North Fork of the Payette, the river strand area and south to the end of the impact area.

Objective: Encourage the preservation and/or restoration of priority historic resources.

Actions:

- Explore and facilitate grant opportunities for building restorations and adaptive reuse.
- Explore other incentive programs to encourage preservation and restoration of historic structures.
- Consider ordinance options to protect the highest priority resources.

Goal: Recognize sites of interest within close proximity of Cascade, for which Cascade is the portal or gateway.

Objective: Capitalize on Cascade's close proximity to sites of interest.

Actions:

- Promote use of Lake Cascade.
- Promote use of Cascade Golf Course.
- Promote use of backcountry access to and from Cascade.
- Promote the close proximity to National Forest lands.
- Promote the close proximity to premier whitewater rivers including the Payette River system, Main Salmon River, South Fork of the Salmon River and Kelly's Whitewater training facility in Cascade.

Goal: Identify, protect and maintain wildlife habitat.

Objective: Before any development takes place, consideration of wildlife habitats, corridors, breeding grounds, wetlands, and fisheries should first take place to ensure the preservation of wildlife and critical wildlife habitat.

Actions:

- Preserve large trees along the North Fork of the Payette River for growth and retention of nesting/perching sites.
- Vegetation within and around wetlands and all waterways should be preserved in its natural state to protect water quality and to encourage the retention of wildlife habitat and aquatic life.

- A waterside bank boundary should be established along the Payette and major tributaries to keep livestock and human damage at a minimum with nitrate collection points being established.

- Develop state owned land within the impact area as recreational or walking trail areas and for wildlife observation and habitat protection.

5.2. Current Conditions

5.2.1. Architecture, Archeology and Historical Structures

Cascade has few buildings that have withstood the test of time due to poor soils and building practices. Currently are no adopted architectural standards or even preferred building themes. This makes it difficult for the City to communicate with developers as to the community's preferred scale, character, and qualities of the built environment. Three of the oldest downtown structures; the Roxy Theater, The Cascade Store and Umpqua Bank are examples of architectural influence that dates to the early 1900's. For the most part, brick and stone structures have outlived wood framed buildings.

There are archeological sites in the area that are known through local folklore. Massacre Rock and the grave site of these early settlers is a known interest. Several Indian sites exist that would offer a form of exploration in the valley, should they be revealed. These are important areas that if brought to light would widen the scope of the history of this valley. Local historians should be encouraged to share their knowledge.

5.2.2. Ecological and Scenic Significance

Cascade lies in a picturesque valley between West and East Mountain. Lake Cascade and the Payette River attract summer tourists and adventure seekers; from fishermen to kayakers to hunters, hikers, and campers. The nearby mountain ranges have some of the largest groomed trail systems for snowmobilers anywhere in the lower 48 states. The National Forest Service transition from a timber and mining base to recreational base fits well with a tourist-based economy in Cascade. Having the large metropolitan area of Boise within easy driving distance only serves to support this trend.

Cascade should pay particular attention to preserving and protecting the resource values and scenic beauty upon which that visitation will be dependent. Special policies and programs to protect water quality, restore fisheries, and protect open spaces and wildlife habitat should be seriously considered. Partnering with Valley County and others would make such policies and programs far more effective than if pursued by Cascade alone.

5.3. Future Conditions

5.3.1. Preservation

As the city grows, pressure to demolish, remove or alter significant historic structures will increase. The availability of monetary, technical, and promotional assistance for preservation and restoration will become a determining factor in the continued existence of historic structures as well as other cultural and historical resources. Programs and policies to promote cultural and historic resources as part of the transition to a visitation economy will tend to place a higher economic value on these resources, thereby encouraging their restoration, maintenance, and reinvestment in them.

5.3.2. Community Design

A complete inventory and description of historic, archaeological and architectural resources has not been completed. Without a comprehensive inventory, preservation of significant sites will be difficult to achieve. One concern related to historic resources is the potential for new development to occur that is not compatible with and detracts from the character of historic downtown. This is discussed in greater detail in the Community Design chapter.

6. Community Design

This element provides needs analysis for regulating landscaping and trees, building design, and signage. The suggested patterns and standards for community design, development, beautification should foster preservation of significant sites.

Broad statutory authority for local governments to plan for and regulate community design elements is set forth in the Idaho Code:

67-6518 STANDARDS "Each governing board may adopt standards for such things as: building design; blocks, lots, and tracts of land; yards, courts, greenbelts, planting strips, parks, and other open spaces; trees; signs; parking spaces; roadways, streets, lanes, bicycle ways, pedestrian walkways, rights-of-way, grades, alignments, and intersections; lighting; easements for public utilities; access to streams, lakes, and viewpoints; water systems; sewer systems; storm drainage systems; street numbers and names; house numbers; schools, hospitals, and other public and private development.

Standards may be provided as part of zoning, subdivision, planned unit development, or separate ordinance adopted, amended, or repealed in accordance with the notice and hearing procedures provided in section 67-6509, Idaho Code.

Whenever the ordinances made under this chapter impose higher standards than are required by any other statute or local ordinance, the provisions of ordinances made pursuant to this chapter shall govern.

6.1. Community Design Vision and Goals, Objectives, and Actions

Cascade's desire to preserve and enhance its unique, scale, character, and qualities is a reflection of its community values. Cascade strives to retain the family friendly ambiance, style, and appeal of the current downtown core with commercial infill that blends in with older buildings, remodeling current buildings, and new construction that is an update of current styles.

Expanding and planning for connecting walking/bike paths to the downtown from all points of the city impact area, including the Strand, Fischer Pond, Cascade Sports Park, Kelly Whitewater Park, Cascade Golf Course, and Lake Cascade State Park, is a priority objective. The City wishes to improve the continuity of trails system by connecting walking/bike paths in new and existing subdivisions. The City wants to take strategic advantage of its position as the county seat and keep the courthouse area the attractive showpiece. The community's vision is to enhance Cascade as a destination area with inviting walkable, drivable, safety conscious neighborhoods that are family friendly; and through providing a supportive environment for year around residents and

an economy to support them. Cascade must also take advantage of the natural recreational opportunities that can be expanded upon without adversely affecting the quality of the environment upon which they are based.

The community must make a true commitment to the cultural aspects that play such an important role in Cascade's history. Cascade has a rich cultural past that needs to be communicated to residents and visitors alike. Native Americans used this area as hunting and gathering seasonal encampment areas, and these are still visible to those who know their locations. The Chinese, Japanese, Basque and Finnish cultures all have played important roles in the culture and history of the Long Valley. This history must be a part of the story of Cascade to be expanded upon and told to the world.

Every effort should be made to co-exist with the area's native wildlife. Wildlife is an attraction to the city, but it must be protected and the public educated to the advantages of these creatures as well as the dangers they may pose.

6.2. Smart Growth Principles

I Mixed Land Uses.

II Take Advantage of Compact Building Design.

III Create a Range of Housing Opportunities and Choices.

IV Create a Walkable Community with connections between developed areas that will create a connected trail system to any part of the impact area. (See Map 4, Chapter 11.1)

V Foster a Distinctive, Attractive Community with a Strong Sense of Place.

VI Preserve Open Space, Farmland, Natural Beauty, and Critical Environmental/Wildlife Areas.

VII Strengthen and Direct Development towards the City Limits within the impact area until build out and the City can support more expansion.

VIII Provide a Variety of Transportation Choices.

IX Make Development Decisions Predictable, Fair, and Cost-Effective.

X Encourage Community and Stakeholder Collaboration in Development Decisions.

Goal: Achieve the community design vision.

Objective: Incorporate Smart Growth Principle V into Community Design decisions and programs.

Actions:

- Adopt and enforce commercial design standards that protect and enhance the city's historic character and that prevent "formula" designs, uncoordinated growth and automobile-oriented sprawl.
- Adopt an earth tone color scheme for incorporation in future construction standards.
- Consider commercial and public lighting standards that allow safe levels of lighting and prevent obtrusive and/or dangerous lighting levels, glare, etc.
- Encourage and facilitate preservation and adaptive reuse of historic or architecturally significant buildings, including the Ponderosa Plaza complex, the Cascade Store, the Chief Building, the Roxy Theatre and Umpqua Bank which is the oldest structure.
- Encourage and develop incentives for the creation of downtown public spaces, public art, and cultural activities.
- Create and maintain attractive gateways to Cascade on Highway 55 (South and North) that are natural in appearance and design.
- Implement the Commercial Design Standards provisions on the preservation of mature trees and consider additional incentives for preservation of trees with high community value.
- Work with the Chamber of Commerce and other partners to develop a coordinated way-finding signage program for visitors, pathways designation, and direction.
- Use the Cascade Sign Ordinance to reduce sign clutter and encourage pedestrian-scale signage in downtown area.

Objective: Incorporate Smart Growth Principle IV into Community Design decisions and programs:

Actions:

- Adopt and implement design standards that make commercial areas more walkable or pedestrian friendly.
- Provide landscaping and pedestrian amenities within any new public parking lot.
- Work with ITD to develop an acceptable streetscape plan for Main Street that incorporates street trees, sidewalks, pedestrian-scale lighting, handicap crossings, and a proper drainage system that incorporates sediment control.
- Incorporate landscaping into road improvement projects in the original town grid or Residential/Commercial zone and along any collector or arterial streets.
- Work with Valley County Pathways to implement a Cascade Pathways Plan that connects to other established paths outside of the city limits.
- Encourage new development to provide pathway connections between neighborhoods, parks, schools, shopping and other destinations, in conformance with any adopted Pathways Plan. Work with existing neighborhoods and property owners to encourage acceptance of and participate in a pathway system connecting all parts of the impact area with continuity to each pathway.

Objective: Incorporate Smart Growth Principle II into Community Design decisions and programs.

Actions:

- Adopt maximum off-street parking regulations and provide incentives for structured parking downtown.
- Consider zoning changes to allow for detached accessory dwellings in the original town grid.

6.3. Current Conditions

6.3.1. Existing Community Design Standards

Existing standards are limited and mostly apply to residential zones where new construction including manufactured homes, are to blend in with the existing neighborhood. No design standards apply to commercial development at this time.

6.3.2. Prevailing Historic Architectural Patterns

The architectural patterns in the commercial area along State Highway 55 through town are masonry/concrete block structures as the majority with stucco or brick fascia. The majority of buildings have level fronts with a decorative canopy over sidewalk areas.

6.3.3. Present Downtown Conditions

Cascade has sidewalks with landscaping pods and expanded paved conversation corners at intersections along Main Street, decorative street lighting fixtures, and theme banner hangers through the main downtown area. The bulb-outs at the street intersections provide room for pedestrians to safely wait to cross a street. In addition, they reduce the speed at which vehicles can make a right turn, and reduce the distance that pedestrians must negotiate at each crossing. Tree grates in the sidewalks have trees and flowers in them with automatic irrigation and electrical outlets for decorative lighting and seasonal displays. This creates a very aesthetically pleasing scene for the downtown area at night. Murals have also become a prominent part of the downtown décor.

6.3.4. Existing Highway Commercial and Light Industrial Areas

The South Main Street commercial area contains the airport, a large storage unit facility, limited commercial businesses, and a seasonal flea market. North of the river are mixed commercial businesses transitioning into the downtown core area.

6.3.5. Existing Neighborhood Commercial Areas

Cascade has a population of approximately 1,000. Historically, this population along with visitors has supported the major commercial area on Highway 55 (Main Street). This includes the north portion of the route from Spring Street to the North End Bridge.

6.4. Citizen Involvement

A citizens committee assisted with the community involvement of Chapters 6 and 7 in the Comprehensive Plan and have shared their thoughts and ideas with the Cascade Planning, Zoning and Building Department.

7. Housing

This element provides an analysis of housing conditions and needs; plans for improvement of housing standards; and plans for the provision of safe, sanitary, and adequate housing. It also includes strategies and recommendation for the provision for low cost conventional housing, the sitting of manufactured housing and mobile homes in subdivisions and parks and on individual lots where zoning regulations allow.

7.1. Goals, Objectives, and Action Items

Housing decisions will be guided by the Smart Growth Principles (as listed on page 51).

Goal: Meet the housing needs of all residents with maximum efficiency of public services.

Objective: Provide a range of housing options that are affordable, safe, and attractive.

Actions:

- Participate with Valley County in the creation of a Housing Needs Assessment and Community Housing Plan.
- Adopt and help implement the Community Housing Plan.
- Consider revisions to the zoning ordinance to permit a wider variety of housing types.
- Integrate affordable housing units spatially and aesthetically into the community.
- Revise the multi-family zoning standards and regulations to increase the options for density and housing types and to define the appropriate locations for each type of project so that existing neighborhoods are not adversely impacted.

Objective: Encourage infill of housing where infrastructure currently exists.

Actions:

- Allow accessory dwellings in appropriate areas, subject to design standards, in order to encourage additional housing variety and opportunities.

- Consider revising the zoning ordinance to allow mixed use in the RC zone and Central Business District.

- Reduce access requirements to the minimum that will satisfy fire code standards.

Objective: Encourage housing location and neighborhood design based on efficient delivery of public services. Facilitate walking, cycling, and other alternative modes of transportation, while preserving desired open space and critical environmental areas.

Actions:

- Create a Planned Unit Development overlay for large parcels under residential zoning.

- Identify desirable development "nodes" along infrastructure lines and offer incentives for mixed-use clustering at these locations.

- Adopt guidelines for desired neighborhood design, including parks, open spaces and walkability.

7.1.1. Current Conditions

In Valley County, 72% of housing stock is taken up by short-term rentals and vacation or second homes. (Source: Cascade Community Review, April 2016, available for viewing at City Hall)

7.1.2. Housing Unit Growth

According to the 2010 Census, 311 units were added to the housing stock in Cascade and the area of impact since 2000. This represented an increase of 43% compared to a 20% increase county wide. Most of the new units were located within the city limits.

Table 7.1: Change in Housing Units from 2000 to 2010

Locality	2000 DU	2010 DU	# Change	% Change
Valley County	9,820	11,789	1,969	20%
Cascade	562	847	285	51%
Area of Impact	154	180	26	17%

Combined Cascade & AOI	716	1,027	311	43%

(Source: U.S. Census Bureau, Census of the Population – 2010, www.census.gov)

7.1.3. Housing Occupancy and Seasonal Units

In 2010, the housing vacancy rate was 51% in Cascade, with a 74% vacancy rate in the Area of Impact (AOI). In Cascade, 70% of vacant units were classified as seasonal units with 92% of the vacant units in the AOI classified as seasonal units. The number of seasonal-recreational housing units in the City of Cascade almost tripled with an increase from 105 units in the 2000 Census to 305 units in the 2010 Census.

Table 7.2: Population and Housing Characteristics – 2010

	Cascade	AOI	Cascade & AOI Combined
Dwelling Units	847	180	1,027
Occupied Units	416	46	462
Vacant Units	431	134	565
Vacancy Rate	51%	74%	55%
Seasonal Units	305	124	429
% of Vacant Units that are seasonal	70%	92%	75%

(Source: U.S. Census Bureau, Census of the Population 2010, www.census.gov)

The median home value of owner-occupied units is lower in Cascade compared to the rest of the county. Rental costs, however, are slightly higher in Cascade.

Table 7.3 Housing Costs and Affordability

	Cascade	Valley County
Median Value – Owner Occupied Units	$168,500	$287,100
Median Monthly Rental Costs	$807	$727

% of Owners Experiencing Costs Burden (Monthly Cost > 30% of HH Income)	37.1%	36.8%
% of Renters Experiencing Costs Burden (Monthly Cost > 30% of HH Income)	17.2%	27.4%

(Source: U.S. Census Bureau – American Community Survey 2006-2010)

7.1.4. Housing Stock – Age and Condition

The age of the home is often an indicator of housing condition. Age issues associated with older homes include deferred maintenance and lack of modern features. The cost to upgrade homes that have not received routine maintenance can be a deterrent to rehabilitation. Financing for homes needing extensive repairs or not meeting FHA home inspection requirements can be difficult to obtain.

Another concern with older homes is lead-based paint. Any home built, or more specifically, painted, before 1978 may have lead-based paint. Lead-based paint becomes hazardous when it chips off or turns to dust. It can cause permanent side-effects when inhaled or swallowed which can go so far as to impair intelligence. It is a big risk to everyone, especially young children.

Older homes also tend to be energy inefficient resulting in higher heating and air conditioning costs for residents. Investments in energy efficient upgrades, however, can have significant benefits. A study by Idaho Power estimates that for every dollar a consumer invests in energy home improvements, the return is 2.5 times the investment.

According to the most recent data from the U.S. Census, approximately 20.7% of the housing stock in Cascade is over 50 years in age.

Table 7.5: Year Structure Built

YEAR	#	%
2005 or later	2	0.3%
2000 to 2004	41	5.5%
1995 to 1999	184	24.7%
1990 to 1994	100	13.4%
1980 to 1989	179	24.1%

1970 to 1979	84	11.3%
1960 to 1969	36	4.8%
1940 to 1959	28	3.8%
1939 or earlier	90	12.1%

(Source: U.S. Census – American Community Survey 2006-2010

7.1.5. Housing Unit Type

According to 2000 Census data, 67.4% of homes in the city limits were single-family detached units while 19.9% of units were mobile homes. Mobile homes built before 1976 predate the HUD Code established in the "National Manufactured Housing Construction and Safety Standards Act". Mobile homes built prior to the enactment of these standards were generally built of flimsy and non-durable materials, and not really designed for long-term permanent housing. In addition, materials used were sometimes highly flammable and the homes lacked sufficient ventilation and insulation. Often building components contained toxic materials such as asbestos and formaldehyde. Mobile homes also energy inefficient, and therefore has high energy costs resulting in a serious burden for low income households that reside in these pre-HUD code mobile homes.

Table 7.6: Dwelling Unit Type Breakdown

Dwelling Type	Number of Units	Percent of All Units
Single-Family	502	67.4%
Duplex – 2 units	28	3.8%
Multi-Family 3-10 units	51	6.8%
Mobile Home	148	19.9%
Other	15	2.0%

(Source: U.S. Census – American Community Survey – 2006-2010)

7.2. Future Conditions

Trends in local housing have mostly reflected national patterns. During the last decade, a variety of factors, most notably readily available financing, created a housing bubble. Nationally, and locally, the construction of new housing units peaked in 2007 and then declined dramatically in 2008. In 2011, there were indicators that the housing bust had

bottomed out but it is projected that it will still take several years to absorb the existing inventory of homes and vacant lots.

Although the housing bust resulted in some decline in housing values, there are still a significant number of homeowners and renters experiencing a cost burden. This can be due, in part, to the high percentage of housing stock in Cascade and Valley County that are built as vacation homes. High amenity areas that attract vacation buyers typically result in overall higher housing costs. As the housing market starts to rebound, this cost burden is likely to become more severe. There are a number of programs that are available to assist low-income households in finding affordable housing. Resources for locating such programs include:

- http://www.ihfa.org/ihfa/housing-information-and-referral-center.aspx
- http://www.housingidaho.com/

Another trend that will impact future housing construction is the aging of the population. Typically, this population prefers smaller, one story homes with designs that include features to improve accessibility.

8. Public Services and Facilities

This element provides descriptions and analyses of the general plans for sewage, drainage, water supply, fire stations and firefighting equipment, health and welfare facilities, libraries, cemeteries, solid waste disposal, schools, public safety facilities and related services. Much of the information contained in this element was gleaned from specific facility plans, and in some cases, a discussion of needed improvements and/or expansions is provided.

8.1. Goals, Objectives, and Action Items

Goal: Ensure that public services, facilities and utilities provide for the needs of all residents of Cascade.

Objective: Plan for future service, facility, and utility needs, including expansions and upgrades necessitated by growth in demand, life span of infrastructure, and other changes.

Actions:

- Continue improving the existing sewage treatment system in Cascade, to accommodate future growth.
- Require underground utility connections for all new residential and commercial development.
- Expand capacity of materials recycling drop-off facility, to be user friendly and landscaped.
- Evaluate upgrading the existing city public works and storage facility to include an equipment and maintenance building large enough to allow indoor maintenance and some storage of winter equipment, graders, loaders, and heavy trucks.

Objective: Protect purity and availability of water supply.

Actions:

- Protect wells from contamination.
- Promote residential and commercial water conservation efforts.
- Replace old water mains and meters.

- Endeavor to reduce urban, commercial and residential runoff delivery to the lake, river, and streams by upgrading to a silt trap or stormceptor type system and replacing old CMP pipes.

8.2. Current Conditions

8.2.1. Local Government

8.2.1.1. City of Cascade

The City of Cascade has a strong mayor form of government with the Mayor also acting as the chief executive. The Mayor and four (4) city council members are elected at-large to four-year terms. The terms of the council members are staggered so there are city elections every two years. In addition to the Mayor, the city has 11 employees. City departments include the Clerk's Office, Building Inspector, Library, Parks and Public Works. City Hall is located at 105 S. Main Street. The City operates a municipal airport (See Transportation Element).

8.2.1.2. Valley County

Valley County is located in west central Idaho. The county was established in 1917 and was named after the Long Valley of the North Fork of the Payette River. The county seat is Cascade, and the largest city in the county is McCall. The County is governed by three (3) elected commissioners and has a number of advisory boards. Following is a list of County Departments (Source: http://www.co.valley.id.us/index.html)

- Assessor
- Building Dept.
- Clerk/Auditor/Recorder
- Judicial
- Noxious Weeds
- Planning and Zoning
- Parks and Recreation
- Sheriff
- Treasurer

8.2.2. Water System

8.2.2.1. Storage and Distribution

Cascade's public water supply is pumped from groundwater wells into above-grade storage tanks. The wells are located outside the city limits, but within the city impact area. The three wells pump directly into a pair of water tanks located above Duffers Lane. The two tanks are located at higher elevations than most residents so pumping for residential use is not necessary.

The water distribution system is generally polyvinyl chloride (PVC), pressure class PVC, and High-Density Polyethylene (HDPE). Since 2007, various water system projects have been undertaken including a new 14-inch HDPE trunk line through part of the city to increase fire flow in the commercial district, replacement of outdated water meters, and a 14" HDPE waterline extension to previously unserved areas. The system operates at 40-80 psi in the two pressure zones.

8.2.2.2. Water Supply and Protection

The three water supply wells are located along West Mountain Road just south of Cascade Reservoir. These wells penetrate 240 to 400 feet into a 7,000+ foot thick aquifer composed of a sequence of fluvial and glacial sediments. Water extraction duties are rotated among the three wells on a regular basis.

According to the Idaho Department of Environmental Quality, "City of Cascade Source Water Assessment (PWS 4430012) – Final Report" (2015), all three wells have moderate ratings for hydrologic sensitivity and low ratings for system construction. Land use factors are the main cause for an overall moderate risk rating for all the wells. The report recommends that the City of Cascade source water protection activities should focus on the following:

- Implementation of best management practices aimed at protecting the wellheads and surface seals within the zone immediate to the wells.
- Monitor urban and residential runoff
- Since Lake Cascade plays a major role in groundwater recharge for the City of Cascade's drinking water, the City should give priority to protecting water quality in the reservoir
- Work with businesses on spill prevention. Respond quickly to accidents and closely monitor clean-up activities.

- Partner with state, local agencies, and industry groups on water quality issues.

- Disinfection practices should be maintained to reduce the risk of microbial contamination since there are numerous septic systems in the area.

- Conduct workshops for residents with septic systems who live in the delineation zones for Wells #1 and #3.

- Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Valley Soil and Water Conservation District, and the Natural Resources Conservation Service.

8.2.2.3. Water Usage

Fresh water daily usage varies form 60,000 gallons in the winter to over 1,000,000 gallons in the summer. At the present there are no plans to expand or create more wells. The water supply is stable and should be able to serve the entire City and Impact Area well into the future for any growth that should occur.

8.2.3. Wastewater Facilities

8.2.3.1. Description of System

The City of Cascade's wastewater treatment plant is a three-cell facultative treatment pond system along with four rapid infiltration basins. Wastewater flows from the City of Cascade are received at the City Shop lift station located immediately west of City Shop near Cell 1. This lift station is used to transport the wastewater vertically 15 feet to a structure that diverts flows to the different cells.

A preliminary engineering report was prepared pursuant to meeting the preliminary engineering report requirements given in Section 411 of IDAPA 58.01.16, better known as the Idaho Wastewater Rules (hereinafter called Wastewater Rules).

The technical portion of the City of Cascade's Sewer Facility Planning Study (Project Engineering Consultants; Schiess & Associates) was completed and approved by DEQ on March 29, 2011. Since that time, the City replaced thousands of feet of old sewer mainline in an effort to eliminate infiltration and reduce the hydraulic loading on the treatment plant. The collection system project included replacement of the final lift station located near the lagoon treatment plant. This is the sum of all of the wastewater improvements that the City has done since the completion of the Sewer Facility Planning Study.

All three lagoon cells were leak tested in 2011 (Strata). The results of these tests showed that the liners of each cell are each within the allowable leakage limit of 1/4 inch per day.

The NPDES permit remains administratively extended since January 1, 2009. BOD and TSS discharge requirements are typical of a low impact lagoon system like Cascade with an 85 percent removal requirement and 30 mg/L average monthly discharge concentration limit. Currently phosphorus and ammonia are being monitored as per Table 1 of the City of Cascade NPDES discharge permit.

The City of Cascade now desires to turn their focus to incrementally improving the efficiency and the reliability of treatment at the wastewater treatment plant by adding a minimum amount of aeration and a vertical fine screen.

Much of the collection system improvements identified in the facility plan have been made. The treatment aspects of the facility plan are not outdated, remain in force and still provide a capital plan for treatment plant improvements. A preliminary engineering report for treatment plant improvements was prepared to initiate improvements.

8.2.3.2. Recommended Improvements for Overall Capacity

The 20-year design condition is assumed to be the addition of 200 homes from the present condition and the buildout condition is too far into the future to be relevant at this time. The addition of 200 homes yields a non-transient population of 1,500 and a summer population of 2,000 or more.

The added amount of tourist influence, although factored into the design and recommendations of this report through heavier summer BOD and TSS loading, do not play a significant role in the aeration recommendations given in this report due to the inherent benefits of lagoon operations coupled with aeration during summer and fall months.

Aeration and mixing added to each of the three lagoon cells will provide immediate treatment improvement. The operators should see a noticeable effect of reduced BOD effluent results and odor at seasonal turnover (when the ice on the surface of the lagoons melt off and the warmer water near the bottom of the lagoons during the winter changes places with the warming water on the top of the lagoons as winter gives way to spring) in the late winter and in the later fall when cooler lagoon surface temperatures tend to change places with the warmer water at the bottom of the lagoons.

The vertical fine screen is a one-time installation item that will function for current flows all the way to buildout of the capacity of the entire WWTP. The wet well at the final lift station was designed around the future addition of a Huber RoK4 500 vertical fine

screen. (Source: “City of Cascade Preliminary Engineering Report for Aeration and Screen Improvements”, 2017)

The City of Cascade is one of 114 municipal wastewater treatment plants with NPDES permits. From the period of January 2014 to December 2016 was one of 22 municipal wastewater treatment plants (19%) which had no violations. (Source: “Idaho Conservation League, Most Sewage Treatment Plants in Idaho are Not Making the Grade”, 2017)

8.2.4. Storm Water

The city has an underground storm water collection system. The storm water is discharged into three collection basins near the river. The collection basins act as settling ponds for sediments before the water flows to the river. System upgrades include improving storm drains. The system is designed to meet Idaho Department of Environmental Quality (DEQ) best management practices (BMPs) for storm water. (http://www.deq.idaho.gov/media/622263-Stormwater.pdf)

According to the DEQs BMPs, storm water run-off is a major source of non-point pollution that can degrade the quality of receiving water bodies. Common pollutants from storm water run-off include:

- Sediment, which can carry other pollutants and can smother fish eggs
- Organic debris and fertilizer containing nutrients such as phosphorus and nitrogen
- Bacteria and viruses from humans and animals
- Organic chemicals, such as pesticides, oil, and antifreeze
- Heavy metals such as lead, copper, zinc, and cadmium from roof runoff, worn tires, and automobiles
- Oxygen-demanding substances
- Floatables, such as litter.

The best practices manual from DEQ contains recommendations to address water quality concerns with storm water run-off. These include the following:

- Education – Increase awareness among homeowners and businesses regarding practices for proper disposal of waste, lawn care, and auto maintenance to minimize non-point pollutants.

- Incorporate low-impact development techniques for new construction and subdivisions to reduce erosion and construct proper storm water collection systems.

- Road and highway departments should maintain storm drains, drainage systems and other infrastructure related to storm water control.

8.2.5. Law Enforcement

Police protection is provided by Valley County Sheriff's Office (VCSO) on a contractual basis. Increased police protection may be achieved by contracting with VCSO for additional services. Assistance is also provided by the Idaho State Patrol, who has responsibility for traffic enforcement on state highways. The Sheriff's Office also operates the County Correctional Facility in Cascade and the Valley County Emergency Services. The County is served by 911 emergency response through the Sheriff's Office and Valley County Emergency Services.

8.2.6. Fire Protection

8.2.6.1. Fire Protection Services

Cascade is now served by the Cascade Rural Fire Protection District. The District has a significant number of volunteers and professionals that serve the area from the Southern end of Round Valley County line north to Arling Hot Springs on the North end. The Fire District provides both suppression and prevention services within its service area. There are mutual aid agreements in place with all fire departments in the valley floor along Highway 55. SIPTA provides Wildland fire protection in the area.

Equipment is a concern for the Cascade Rural Fire Protection District. The district also provides EMS services for the City of Cascade and surrounding areas. The levy for the Cascade District is considerably less compared to other districts in Valley County. There is about a $600,000 difference in funding between Cascade and Donnelly Rural alone.

The Fire District is a member of an association called the Valley County Fire Working Group (VCFWG). This group meets several times throughout the year to maintain updated emergency response plans and strategies.

8.2.6.2. Wildland – Urban Interface (WUI)

The "Valley County, Idaho Wildland-Urban Interface Wildfire Mitigation Plan" was adopted in 2004. The plan encompasses the entire county and was developed under the direction of a committee with representatives from federal and state land agencies and local city and county governments. Each county in the state has adopted a plan

under the National Fire Plan guidelines. The plans include a risk assessment, mitigation strategies and processes to monitor and update the plan.

According to the WUI Plan the following risks have been identified:

- Fuels – The highest risk area is near the lake with drier fuel types such as ponderosa pine and brush understory. These fuels can burn with a rapid rate of spread. The state lands are another high-risk area with dead and downed fuel between Cabarton Rd. and Lakeshore Drive and along Landale Lane and Panorama Drive.

- There is significant human habitation in the risk areas increasing the potential source of fire ignitions.

- The narrow strip of privately owned land between West Mountain Road and the Boise National Forest boundary has been heavily developed. Primary residences and summer homes are located along the southwestern corner of the reservoir and extending north along most of the western shore. Wood siding and decking are popular construction materials in the area. Few homes have created any type of defensible space around structures. There is very little buffer between the homes and forest fuels. The fuel continuity within the area leads to conditions in which the homes essentially will act as fuel in the event of a wild-land fire.

- Ingress-Egress –State Highway 55 is the main route. There is a need for signage of alternate routes in cases of emergency. Some subdivisions near the lake have one-way streets that could inhibit evacuation. Some older subdivision lack adequate turnouts for emergency equipment and have steep driveways that will not accommodate some fire-fighting equipment.

The WUI plan recommends the following mitigation strategies.

- Public awareness campaign regarding defensible space techniques.

- Community evacuation plan

- Vegetative treatments to reduce fuels and the potential for crown fires.

- Provide for proper ingress and egress in new developments.

(Source: http://www.idl.idaho.gov/nat_fire_plan/county_wui_plans/valley/valley.pdf)

8.2.7. Utilities

8.2.7.1. Electric

Electric service is provided to Cascade by Idaho Power, an investor owned utility based in Boise that provides service in southern Idaho and eastern Oregon. The utility is engaged in generation, transmission, distribution, sale, and the purchase of electrical power.

Generation capacity comes primarily from hydroelectric facilities and coal fired power plants. This includes a hydroelectric facility located on the Cascade Reservoir. The plant was originally built in 1926 on a Payette River diversion by the U.S. Bureau of Reclamation. The generation plant was rebuilt in 1984 to add capacity and now has two generators with a total capacity of 12, 420 kilowatts. Generation is tied to seasonal reservoir releases for irrigation.

Idaho Power has adopted an "Integrated Resources Plan" to direct investments in new and existing facilities in order to meet future demands in their service area. To meet future needs, the Plan includes strategies related to demand management as well as supply side strategies. Demand side strategies include promoting energy efficiency, encouraging energy conservation, and responding more effectively to peak demand cycles.

Supply side strategies focus on adding generation and transmission capacity. Population growth, generation costs, regulations, and environmental concerns are factors that influence the future energy portfolio of the company. As indicated in the table below, reliance on coal generated power will decrease over the next 20 years and some renewable energy sources will be added to portfolio.

Table 8.1 Typical Fuel Mix (2011–2015 Average)

Fuel	Percentage
Hydroelectric	47.4%
Coal	33.5%
Wind	8.8%
Natural Gas	7.9%
Other Renewables	1.2%
Geothermal	1.0%

Other Non-Renewables	0.2%
Total	**100%**

(Source: www.idahopower.com/AboutUs/EnergySources/FuelMix/typical_fuelMix.cfm)

Goal: Promote the development of energy services and public utility facilities to meet public needs.

Actions:

- Encourage the enhancement of the electric system capacity and reliability.
- Encourage the multiple-use of utility corridors by utility providers.
- Support longer term (10 to 15-year) conditional use permits to enable utilities to purchase sites well in advance of needing to build the facility.
- Support siting of utility corridors to ensure that they connect to similar facilities in adjacent jurisdictions.
- Support siting of utility corridors within identified or designated transportation corridors and allow the appropriate placement of electric utility facilities on public rights-of-way.
- Work with service providers to designate locations of future utility corridors. Adopt or reference a map of these corridors in the Comprehensive Plan. Update these reference maps as necessary to reflect any future National Interest Electric Corridor designations.
- Develop a Future Acquisitions Map for inclusion into the Comprehensive Plan that identifies existing and future utility facilities and corridors.
- Support the protection of wetlands and other critical areas and recognize that electric facilities sometimes must cross these areas, and that access is essential for repair and maintenance of the facilities.
- Recognize and support the long-range planning and build-out of electricity infrastructure developed by a local Community Advisory Committees.

Goal: Promote conservation of energy through support of public education, incentives and other tools that encourage conservation.

Actions:

- Adopt and implement guidelines and standards for energy conservation practices.
- Incorporate energy conservation requirements as approval criteria for planned communities and planned unit developments.
- Encourage LEEDS™ (Leadership in Environmental and Energy Design) certification for all public buildings.
- Create and use incentives for energy-efficient design in private development and construction.
- Partner with Idaho Power to develop and promote sustainability programs for new construction and development as well as for existing businesses and homes.
- Encourage the enhancement of the capacity and reliability of renewable energy resources.
- Recognize the need for electric utility facilities that are sufficient to support economic development.
- Encourage Idaho Power to make additions to and improvements of electric utility facilities that provide adequate capacity for projected growth.
- Provide Idaho Power with periodic updates of population, employment, and development projections. The City and Idaho Power will seek to jointly evaluate actual patterns and rates of growth, and compare such patterns and rates to electrical demand forecasts.
- Recognize Idaho Power's obligations to serve all of its customers. The Idaho Public Utilities Commission (IPUC) provides a forum, available to the city and the general public, for consideration and determination of matters involving appropriate levels of service and the allocation of costs associated with providing that service.

There is no natural gas service in the City. Propane gas delivery is available.

8.2.7.2. Telecommunication and Broadband Services

Link Idaho is the State of Idaho broadband planning initiative to plan advanced broadband services and to promote adoption of broadband technologies. The initiative is funded through a federal grant from the National Telecommunications and Information Administration (NTIA). As part of the grant, a statewide broadband coverage map was developed and is available on-line. The grant also funded regional planning efforts to work with local teams to develop deployment and adoption strategies. Information on the initiative is available at www.linkidaho.org.

8.2.7.3. Solid Waste Disposal

Cascade is under contract for waste disposal with Lake Shore Disposal. Cascade has a Valley County recycle collection point within the City. Lakeshore Disposal is responsible for the collection and hauling of refuse to their collection sites in McCall, Cascade, and Donnelly. Lakeshore also operates recycling bins at the same locations. After the waste is hauled to the collection sites it is then transported to Idaho Waste Systems' landfill in Elmore County. Each community has a collection fee for refuse collection and hauling.

8.2.7.4. Health Facilities and Emergency Medical Response

Cascade Medical Center serves Cascade and the surrounding areas, from Donnelly south to Smith's Ferry. Cascade Medical Center provides a wide variety of medical services to meet the needs of the surrounding community. Cascade Medical Center provides twenty-four-hour emergency care, inpatient hospital care, and a rural health clinic. A local EMS team is available for medical emergencies in and around this area, including the large backcountry. The Cascade Medical Center partners with Saint Alphonsus Regional Medical Center, which supplies both tertiary care and life flight transfer service. http://www.cascademedicalcenter.net/

The Central District Health Department is the health district that covers Valley County. Cascade Family Practice and Hospital, and Cascade Family Dentistry presently provide professional health services to the community. Other physical therapy and homeopathic work is done locally as well. http://www.cdhd.idaho.gov/

8.2.7.5. Library

The Cascade Public Library provides service to residents within city limits, as well as the outlying areas. As a full-service library, it provides free access on our six public computers, along with free Wi-Fi. The library offers a variety of services such as, 3-D printer, faxing, copying, audio books, videos, interlibrary loan, a large selection of educational databases, and children and adult programming throughout the year, to name a few.

There is also a community room that can be used free of charge for group or private meetings. The library is supported with city taxes, grant funding, and donations. All city residents are allowed free library cards. Those who live outside of city limits can obtain a membership for the entire family at a low-cost annual fee. Three-month and six-month memberships are also available.

The Friends of the Cascade Public Library is a non-profit group that is organized for the purpose of supporting the various activities of the library through volunteer efforts and fund raising.

8.2.7.6. Cemetery

The City of Cascade has one cemetery within city limits. Margaret Cemetery, often called the Cascade Cemetery is located at 118 Gardner Place, Cascade. Other cemeteries in the local area include Crown Point Cemetery located at 1263 Shore Drive, Cascade and Alpha Cemetery located on Alpha Lane, Cascade.

8.2.7.8 Cascade Food Pantry

The Cascade Food Pantry is a community non-profit organization that provides supplemental food to those in need in our community.

The ongoing mission of the Cascade Food Pantry involves combating the underlying and incipient issues of hunger and poverty through education, training, counseling and encouragement provided through a dynamic and aggressive partnership with myriad private and public agencies and programs. The pantry also has a community garden (Pride of Pantry Plots), providing ongoing gardening education for successful produce growth in the West Central Mountain area.

Food distributions are held on 1st and 3rd Thursdays of every month from 4-6pm at the Cascade Food Pantry, 1470 S. Main St., Cascade.

9. Hazardous Areas and Sites

An understanding and identification of potentially hazardous areas is important to land use planning. Identifying areas at high risk of hazards will definitely impact where future developments are planned and developed, and what mitigation strategies can reduce risk to property owners and avoid the loss of life and property in the event of natural disasters.

The City of Cascade has participated in a multi-jurisdictional planning process to develop a disaster mitigation plan. This effort resulted in the "Valley County Multi-Jurisdiction All Hazard Mitigation Plan" adopted in 2011. The plan was developed to meet the requirements of the Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency amendments to floodplain management standards in 2009. The Plan identifies the hazards that threaten the County, the areas and facilities that are at risk, and the projects that should be carried out to reduce the consequences of these hazards to the community. The Plan strongly recommends close coordination with land use planning goals.

Reviewing and evaluating the mitigation strategy detailed in the former plan is vital in updating and refining the plan's goals, objectives, and actions. This step is also required by FEMA, as plan updates must reflect current conditions and progress in mitigation efforts. The county is currently in the process of updating the 2011 plan.

In addition to the hazards identified in the county disaster mitigation plan, this section addresses hazardous waste sites that have been identified by the Idaho Department of Environmental Quality.

9.1. Goals, Objectives and Actions

9.1.1. Vision:

Considerations for upgrading the Smith's Ferry canyon area. Highway 55 serves Valley County as the only main north/south artery thru the State and is a good reason to have a regional airport for quick extrication during disasters or road closures. Fire may be more of a factor than anything previously mentioned here for Cascade. A large fuel load exists to the west, south and north. These areas need to be managed for fire prevention and yet preserved for wildlife habitat.

Goal: Minimize the risk of property damage and personal injury from natural and man-made hazards.

> **Objective**: Adopt the necessary ordinances and codes to assure that potentially hazardous uses and development in hazardous areas will not occur without appropriate and effective mitigation.

Actions:

- Update the floodplain ordinance
- Require Planned Unit Developments to place all building envelopes outside of the 100-year floodplain and provide adequate incentives for developers to choose the PUD option.
- Require the Subdivision Ordinance to establish a clear and comprehensive set of standards for any development in the floodplain that will protect ecological function as well as property and safety.
- Make public information available regarding health issues, concerns, outbreaks, etc. via appropriate agencies.
- Work with the emergency management officials to assess zoning and development regulations for potential hazardous uses.
- Develop fire mitigation tactics in undeveloped areas and encourage or sponsor fire mitigation classes and news releases for homeowners.

9.2. Current Conditions

9.2.1. Floodplains

The land along waterways that is susceptible to flooding is called the floodplain. The Federal National Flood Insurance Plan (NFIP) relies on historical data to identify areas that, in any given year, have a one percent chance of flooding. This base flood area is known as the '100-year floodplain' and is subject to local floodplain regulations in order to qualify for flood insurance. Figure 1 indicates the location of floodplains in and around Cascade adjacent to the Payette River. Refer to the online Flood Plain Maps (FEMA)

Map 3: Floodplains Around Cascade

(Source: "Valley County Multi-Jurisdiction All Hazard Mitigation Plan", 2011)

In Idaho, flooding most commonly occurs in the spring of the year and is caused by snowmelt. While the major concern with flooding is often protection of structures and minimizing economic loss due to property damage, it is important to recognize flooding as part of a dynamic natural process. Along rivers and streams, flooding is part of the

cycle of erosion and deposition that is continuously rearranging and rejuvenating aquatic and terrestrial systems. More severe property and infrastructure damage often occurs when people develop in floodplains and natural processes are altered or ignored. Flooding can also threaten life, safety, and public health.

To encourage communities to go beyond the minimum requirements and further prevent and protect against flood damage, the NFIP established the Community Rating System. To qualify for CRS, communities can take action to make building codes more rigorous, maintain drainage systems, and inform residents of flood risk through public awareness programs. In exchange for becoming more flood ready, the CRS community's residents are offered discounted premium rates. Based on the community's CRS ratings, property owners can qualify for up to a 45% discount on annual flood insurance premiums. Valley County participates in the Community Rating System; however, none of the incorporated cities are participating at this time.

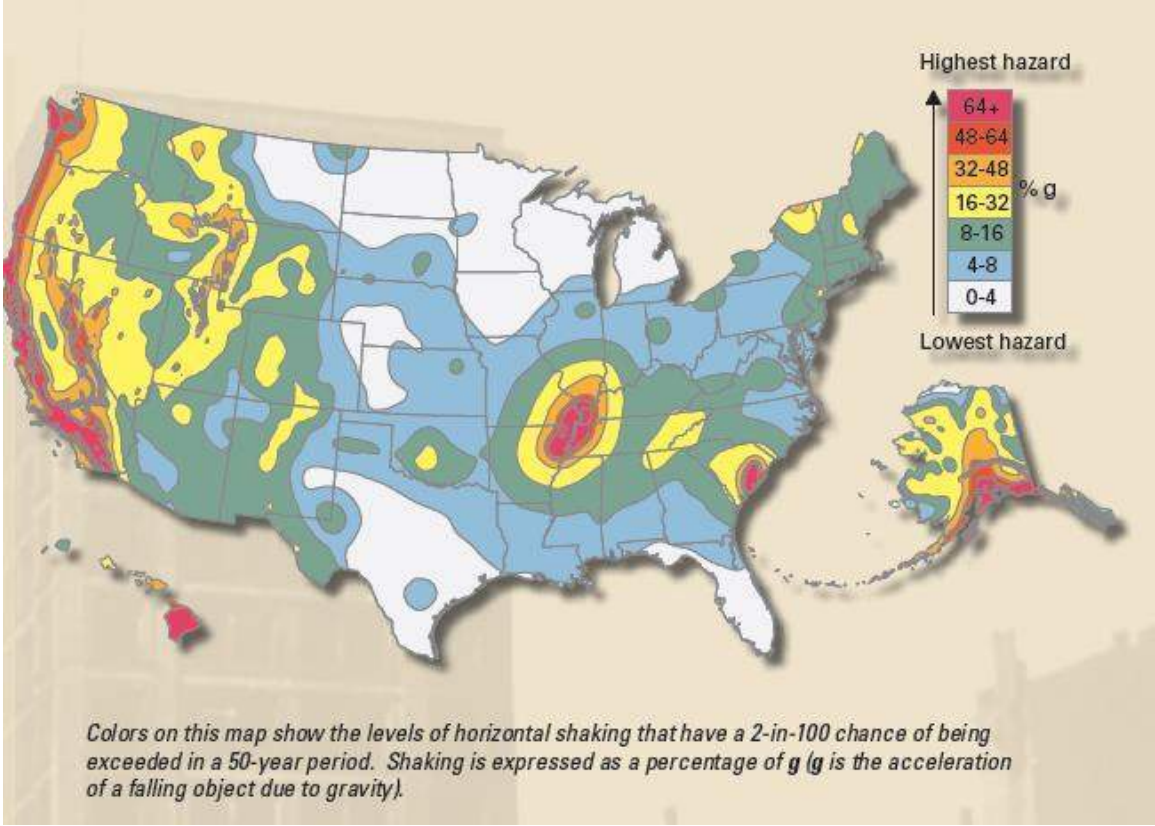
9.2.2. Seismic Activity

The U.S. Geological Survey maintains the National Seismic Hazard Maps. These maps are the basis for seismic design provisions of building codes, insurance rate structures, earthquake loss studies, retrofit priorities, and land-use planning. Accounting for potential seismic activity in the design of buildings, bridges, highways, and other critical infrastructure allows these facilities to better withstand earthquakes. The seismic maps can also help engineers avoid costs of over-design for unlikely levels of ground motion.

According to Figure 2, Valley County is located in an area generally rated in the low to mid-range for earthquake hazards. For purposes of administering building codes, the county is located in Seismic Design Category D (Per Valley County Building Department). The “Valley County Disaster Mitigation Plan” notes that significant damage can be expected from earthquakes with a magnitude of about 5.0 or higher on the Richter scale. Since 1934, there have been 17 earthquakes with magnitudes of 4.5 or higher recorded in Valley County.

The Plan also notes a fault line extending south from Cascade that has had some seismic activity in the past.

Figure 9.2 Seismic Hazards Map for the US



(Source: http://pubs.usgs.gov/fs/2008/3018/pdf/FS08-3018_508.pdf)

9.2.3. Hazardous Waste – Brownfields

A brownfield site is a property where redevelopment or reuse is complicated by actual or perceived environmental contamination. Brownfield sites may include former gas stations, mine sites, timber mills, bulk fuel storage and distribution sites, landfills, and generally any commercial or industrial site that may be contaminated with hazardous substances.

Brownfield revitalization is a process in which contamination at a brownfield site is remediated so that the site can then be redeveloped. Cleanup efforts can include actively removing contaminants and/or isolating contaminants so that they cannot leak into the environment. Revitalization of brownfields properties can have both environmental and economic benefits for the sites and the communities in which they are located. The Boise Cascade site is an example of a brownfield that has been redeveloped and is now the site of Kelly's Whitewater Park and the home of the Cascade Aquatic and Recreation Center.

Over the past several years, the Idaho Department of Environmental Quality (DEQ) has been developing an inventory of brownfield sites in Idaho. The inventory is used to help

identify areas of need and prioritize assessment and cleanup funding. The inventory is not comprehensive and communities may identify additional brownfield properties. In Cascade, the old landfill and the Boise Cascade site, which is being redeveloped, are listed on the inventory. Additional properties that are identified and added to the inventory may be eligible for environmental assessment and/or cleanup funds (if necessary) from DEQ and/or the U.S. Environmental Protection Agency (EPA). (Source: http://www.deq.idaho.gov/waste-mgmt-remediation/brownfields.aspx).

9.2.4. Leaking Underground Storage Tank (LUST)

A leaking underground storage tank (LUST) is any underground storage tank that is leaking and may be subject to state cleanup requirements, so all tank owners need to be vigilant about leaks.

Most underground storage tanks installed through the 1980s were bare steel tanks, which eventually corrode and leak. Many old tanks have reached or passed this point. Faulty installation or inadequate operation and maintenance also can cause underground storage tanks to release their contents into the environment.

In 1984, Congress directed EPA to publish regulations that require owners and operators of LUSTs to prevent, detect, and clean up releases. Congress also banned the installation of unprotected steel tanks and piping beginning in 1985. New tanks include a corrosion resistant covering or are made of non-corrodible materials. Old steel tanks also had to be retrofitted with a corrosion protection system by December 1998. Each steel tank and its corrosion protection system must be tested and/or inspected at least once every three years.

The greatest potential hazard from a LUST is that the petroleum or other hazardous substance can seep into the soil and contaminate ground water. Once a leak is detected, the general extent of the contamination is determined. Next, monitoring wells are usually drilled to obtain a more detailed assessment of ground water contamination. Once the extent of contamination has been determined, a remediation (cleanup) plan is developed and implemented.

DEQ maintains information on LUST sites and on all known active and closed LUST sites across the state. The LUST database identifies 14 monitored sites in the Cascade area. Tank owners can be held financially responsible for costs associated with cleaning up releases and compensating third parties in the event of a leak or spill. Idaho's Petroleum Storage Tank Fund (PSTF) operates as a nonprofit insurance company and is responsible for administering the Idaho Petroleum Clean Water Trust Fund. The petroleum liability insurance policies issued to owners and operators of regulated underground storage tanks through the PSTF satisfies the federal financial responsibility requirements. The PSTF also provides insurance coverage to owners of all eligible unregulated above ground and underground petroleum storage tanks,

including farm, ranch, home, and commercial heating oil tanks. PSTF's policy does not provide coverage for pre-existing contamination or tank installation, removal, repair, or replacement. (Source: http://www.deq.idaho.gov/waste-mgmt-remediation/storage-tanks/leaking-underground-storage-tanks.aspx)

10. School Facilities

This element provides an analysis of public school capacity and transportation considerations associated with future development.

10.1. Goals, Objectives, and Action Items

Goal: Ensure that the public education system and facilities in Cascade continue to meet facility and transportation demands and exceed national quality standards as the community's population and educational needs grow.

Objective: Ensure that school facility planning is a collaborative effort between cities, county and school district.

Actions:

- Solicit and review feedback from the school district in regards to new local and regional development and the impacts those developments will have on the public-school system.
- Share population, transportation and other important planning data with the school district to assist in facility planning.
- Incorporate school transportation issues and bus routes into future City of Cascade Master Transportation Plan, and solicit school district approval of recommendations, including school traffic routing options.
- Compile and review alternate plans for future recreational facilities and playing fields, and consider partnership and coordinated efforts between the school district and other local and county entities.
- Cascade School District has limited resources for vocational/technical training. Automotive, welding and building trade classes are offered at Cascade School with limited space and limited funding. Cascade School would like to expand upon these programs if given the opportunity and means for such expansion.

Goal: Encourage alternate educational opportunities for all Cascade residents to supplement the standard public education system

Objective: Promote higher education, including vocational/technical and other adult educational opportunities. Support efforts to create a strong community education program to increase hobby, enrichment and interest-related adult education in Cascade.

Actions:

- Work with school district and city officials in building the planned vocational/technical addition to the high school.
- Encourage year-round use of the public library as an educational entity for all ages. Continue to provide educational programming for all ages at the public library.
- Foster ongoing dialog with Alzar School and the home-school community.

10.1.1. Current Conditions

10.1.2. Cascade School District Enrollment-Historic and Current

Year	Enrollment	Year	Enrollment
2017-2018	232	2008-2009	329
2016-2017	234	2007-2008	357
2015-2016	262	2006-2007	379
2014-2015	270	2005-2006	381
2013-2014	265	2004-2005	359
2012-2013	262	2003-2004	360
2011-2012	260	2002-2003	369
2010-2011	270	2001-2002	347
2009-2010	300	2000-2001	405

10.2. Public School Facilities- Location and Capacities

The Cascade School District #422 is located at 209 N. School St. in Cascade. The 96,000 square foot facility educates students P-12. The building includes two gymnasiums, a small cafeteria, eleven elementary classrooms, sixteen secondary classrooms, three administrative offices, a counselor's office and storage closets. The building has the capacity to house approximately 500 students. An elementary playground exists on site. Athletic fields are provided by a partnership with the City and the Southern Valley County Recreation District.

10.3. Future Conditions

10.3.1. Projected School Enrollment

Enrollment has been in a state of decline. Projected enrollment is expected to remain the same or decline until the local and state economic conditions improve.

11. Recreation and Open Space

This element provides an analysis of the existing system of recreation areas, including parks, parkways, trails, river walks, athletic facilities, playgrounds, and other recreation areas and programs. It also sets forth the community's goals and objectives for expanded and enhanced recreational opportunities.

11.1. Goals, Objectives, and Action Items

Goal: Adopt smart growth principle VI into any recreation and open space decisions and programs.

Objective: Preserve open space, farmland, natural beauty and critical environmental areas.

Actions:

- Promote City of Cascade collaboration with Southern Valley Recreation District (SVCRD) for optimal use of all recreation areas and programs.

Goal: Provide recreational opportunities based on the unique needs and desires of residents in the Cascade area.

Objective: Make available the services, facilities, and cooperative planning needed for area residents to maintain an active, recreational lifestyle.

In 2013, the Cascade City Council appointed a Planning Committee (Sports Park Committee) to develop a Master Plan for the Cascade Sports Park. The Sports Park Committee developed the Cascade Sports Park Master Plan and recommended City officials commit to revisit and revise, as necessary, every five to ten years. (see Addendum C)

Objective: Encourage further development of the Strand along the Payette River.

Actions:

- Encourage low impact recreational activities to protect existing riparian/wetland/wildlife areas. Pursue development of a wild life sanctuary with adjoining state lands.

- Promote expansion of the Strand north along the river to the Highway 55 crossing on the north side of town.

- Pursue grant funding for ongoing development of a fitness course along the Strand and throughout the walkable community.

Goal: Provide a share of county level parks facilities to meet demand for county-wide recreational and sports activities.

Actions:

- Participate in the creation of a county-wide parks and recreation master plan.

Goal: Expand recreation and open space varieties and opportunities.

Objective: Expand the variety of open spaces as well as the opportunities for more and better recreational facilities and programs.

Actions:

- Work with developers to target 30% of new development for open space, including walkways and trails that interconnect new and existing neighborhoods.

Objective: Additional planning for Armstrong Park should include recreational opportunities for people of all ages.

Actions:

- Enhance permanent, basketball courts, picnic areas, and multi-use areas of Armstrong Park.

Objective: Encourage collaboration with all government agencies in Valley County in the ongoing development of recreational facilities.

Actions:

- Generate partnerships among the City of Cascade, Lake Cascade State Park, Bureau of Reclamation, Bureau of Land Management, State of Idaho, Idaho Fish and Game, Valley County, and the City of Donnelly.

- Maintain facilities, signage, and aesthetics of the outdoor setting.

- Conduct frequent assessments of the natural and man-made assets that contribute to the variety and quality of recreation in Valley County.

Goal: Expand trail network.

Objective: Connect Cascade to the regional trail system and interconnect Cascade's neighborhoods with a walkable/bicycle trail system.

Actions:

- Expand and preserve the North Fork of the Payette river walk, or strand corridor.
- Connect downtown to the lake in at least two different locations to the river strand area. Develop a waterside bank buffer zone along all river front areas within Cascade and the Impact Area. (See Addendum A)

11.2. Current Conditions

11.2.1. Physical Setting

Cascade is situated in a recreational paradise. Both Lake Cascade and the Payette River provide recreational opportunities, including boating, rafting, kayaking, fishing, bird and wildlife watching, camping, hiking, snowmobiling. The Cascade area is ideally suited for hosting many forms of outdoor activities and events.

A golf course along Lake Cascade provides a recreation outlet for locals and visitors alike. Lake Cascade State Park provides boat launching, camping and picnicking facilities adjacent to the city impact areas.

Cascade Sports Park, within the City of Cascade, provides facilities such as a two-mile Strand, access to the North Fork of the Payette River, Fischer Pond (kid's fishing pond and aquarium), two softball/baseball fields, football field, and visitor parking. Amenities include seating areas for sport spectators, picnic facilities, and restrooms.

Armstrong Park, a smaller park near the Valley County fairgrounds provides facilities including children's playground equipment, a picnic shelter, restrooms and a propane barbecue.

Located adjacent to the Payette River, Kelly's Whitewater Park (KWP) is the newest addition to the area's many recreational amenities.

11.2.2. Parks and Recreation Benefits

The economic benefits of parks and recreation areas and facilities are numerous. One of the more significant benefits is the "value amenity" factor: the increase in value of private lands adjacent to or near public parks, trails or open space. Close proximity of parks to residential areas leads to increased land values and safer walks for children

and adults seeking recreation and exercise. Often, quality parks and recreation areas are an important consideration of businesses looking at expansion or relocation. Parks and recreation areas improve the quality of the living environment and make communities livable and desirable for businesses and homeowners.

In this photo from the southeastern U.S., a subdivision has been developed with no pedestrian access to an adjacent park. Residents must walk out of the subdivision and access the park via a busy collector roadway.

Parks, trails and open spaces provide vital green space in the fast-changing landscape. They provide buffers, transitional areas, and visual relief that can reduce the impacts of development. These areas are also instrumental in providing access to rivers, lakes and adjoining public lands. Just as importantly parks, trails and open space maintain open view sheds, and provide groundwater recharge areas, floodplain protection, natural sound barriers, habitat for urban wildlife, and filter pollutants from the air. Parks and open spaces contribute to both community sustainability and public health.

Parks, trails and open spaces facilitate social interactions for individuals, families, civic groups, and others. These areas are critical to maintaining community cohesion and pride. Parks provide meeting places where the community can develop social ties and bonds. Leisure activity in parks can reduce stress, promote physical fitness and enhance a sense of wellness. People go to parks, use trails or experience open space to reinvigorate themselves and to decrease anxieties of daily life. Recreation programs encourage structured activities for people of all ages.

11.2.3. Park Classification

The following park classification system is useful for conducting a level-of-service analysis as well as providing standards for parkland development.

POCKET PARK: Pocket-parks, tot lots, and children's playgrounds are small; single-purpose play lots generally less than two acres in size. They are generally located to provide some passive open space in areas where there is limited land

for a larger park. Park features usually include a small open grass area and may include a children's playground or a picnic area. Passive recreation use is typical.

NEIGHBORHOOD PARK: This is the core city park located conveniently to residential areas. They are within ½ mile of the residential area being served, connected by a safe, accessible non-motorized route or trail, containing a turf area for informal play, a playground, picnic facilities and ranging in size from 3-10 acres. There should be adequate land area that fully developable for park uses; that is, it is not in environmentally sensitive areas such as floodplains, a designated retention pond or containing steep terrain. Neighborhood parks may be combined with a school. Ideally, neighborhood parks should be configured to maximize accessibility and visibility into and through the park for safety. All developed parks must have access to water for irrigation and drinking fountains and for other maintenance purposes. There may be both passive and active recreation opportunities.

COMMUNITY PARK: A Community Park is a larger park that serves multiple neighborhood areas with a two-mile service area radius. The size range is 10-100 acres. There should be adequate land area that is fully developable for park uses; that is, it is not in environmentally sensitive areas such as floodplains, a designated retention pond or containing steep terrain. Community Parks may be combined with a school. A Community Park will include similar type of development as a Neighborhood Park and provide facilities and additional facilities that consolidate adult and youth programmed activities. Tournament level athletic facilities may be in this type of park. Safe, non-motorized routes link the park to other parks and the neighborhoods that they serve. Parking for vehicles is available, either on-street or adjacent to the park, so that crossing a road is not required. Generally, community parks include both ample active recreation opportunities with areas for passive use.

NATURAL AREA PARK: This type of park may include environmentally sensitive lands, steep terrain, floodplains and other natural areas that are only minimally developed and may serve as conservation areas, educational, and wildlife watching opportunities. Passive recreation is typical.

SPORT COMPLEX: This type of park encompasses Regional Park and Athletic Facility. Facilities include parking lot, drinking water, lighting, multiple organized ball fields and courts. Serves people from the city and county. Twenty (20) acre minimum size. Designed for active recreation use.

SPECIAL USE PARK: Covers a broad range of parks and recreation facilities oriented toward single-purpose uses, such as a nature center, historic site, plaza, urban square, aquatic center, campgrounds and golf course. Often these are fee- based activities and may or may not be public parks.

LINEAR PARK: Linear parks may be in a healthy, natural state or developed landscaped areas and other lands that follow corridors such as abandoned railroad right-of-way, creeks, canals, power lines, and other linear, elongated features. This type of park usually contains trails, landscaped areas, viewpoints, and seating areas. They may compose portions of a system of green infrastructure and serve as links from one park to another.

Table 11.1 City Park Classification

Name	Classification	Facilities	Ownership	Comments
Armstrong	Neighborhood	Playground, basketball, picnic area, restrooms and propane barbecue.	City	Citizen group upgraded the park & the City remodeled the bathrooms & barbecue area
City Hall	Pocket	Lawn, garden & benches	City	Garden club maintains landscaping
Fischer Pond	Community	Fishing pond, picnic, boat ramp, propane barbecue and a community-garden.	City	City, the high school and Horizon group maintained.
Cascade Sports Park	Sports Complex	Football field, Baseball field, softball fields & playground concession stand.	City	The City partners with School District, & SVCRD

Kelly's Whitewater Park (KWP)	Special Purpose	Visitor center, trail, 3.4 acres of landscaping, water – kayak park – www.kwpid.com	Private Non-profit	Class 2 & Class 3 rapids. Host to regional & national competitions. Visitor center can host small events.
County Fairgrounds	Special Purpose	Rodeo Arena, outdoor events www.valleycountyfair.com	County	Accommodates: 4-H activities during fair.
Cascade Golf Course	Special Purpose	Nine-hole golf course. Restaurant/Lounge www.golfcascade.com	Bureau of Reclamation	Public Golf Course

11.2.4. Park Inventory

In order to present a complete assessment of recreational and open space opportunities available to the Cascade citizens, the inventory includes local and private facilities. Map 4 indicates the general location of parks and trail system.

Map 4: City of Cascade Parks and Trail Facilities

Valley County Pathways has a county-approved pathways master plan that envisions more than 100 miles of pedestrian pathways between McCall and Cascade. Additionally, the Cascade Pathways Master Plan includes a trail system for the city.

The Cascade system includes a 12-foot pathway that extends for 2.25 miles along the Payette River from Water's Edge RV Park to Fischer Pond, including pathways in and around Kelly's Whitewater Park. Specific goals and policies related to trails can be found in the Transportation Element and the County Pathways plan. (Source: http://www.valleycountypathways.org/)

11.2.5. Public Lands

11.2.5.1. State Parks

The Lake Cascade State Park Office and Welcome Center is located in the City of Cascade. Lake Cascade State Park is Bureau of Reclamation (BOR) land managed by State Parks. Lake Cascade State Park is 4,450 acres in size and has facilities that are dispersed around Lake Cascade from Cascade to Donnelly. Lake Cascade State Park facilities include developed and primitive camp sites, trails for hiking and biking, boat ramps, docks, fishing sites, picnic areas, horseshoe pits, yurt rentals, and groomed cross-country ski trails. (Source: https://parksandrecreation.idaho.gov/parks/lake-cascade)

11.2.5.2. U.S. Forest Service

The Boise National Forest – Cascade Ranger District office is located in the City of Cascade. Although the Boise National Forest lands are located outside of the Impact Area, they are in close proximity to the city and offer abundant outdoor recreation opportunities to residents including hiking, snowmobiling, camping, hunting, fishing, and related activities. Such recreation opportunities are major tourism drivers in nearby communities and many studies have indicated that public lands have a positive effect on land values. Additionally, the national forest contributes to the rural character of the community. (Source: https://www.fs.usda.gov/recarea/boise/recarea/?recid=5029)

Map 5: Lake Cascade State Park – Southern Unit

(Source: http://parksandrecreation.idaho.gov/parks/lakecascade.aspx)

11.3. Future Conditions

11.3.1. Level of Service

Most recently, the National Recreation and Parks Association (NRPA) has recommended that rather than using standard benchmarks, such as park land per

capita, that communities undertake a systems analysis approach to park planning to reflect the unique characteristics of the city. The systems planning approach focuses on creating a comprehensive and interrelated system of parks, recreation, open spaces and pathways that:

- Respond to locally-based needs, values, and conditions;
- Provide an appealing and harmonious environment;
- Protect the integrity and quality of the surrounding natural systems;

The following level-of-service analysis provides indicators of potential system upgrades to the park and recreation facilities.

11.3.1.1. Spatial Analysis

The service area analysis is a spatial analysis to determine if park and recreation facilities are conveniently located to all residential areas of the city. Service Area is measured as the radius from a park location outward into the community. Neighborhood parks should be located within walking distance of neighborhood residents, typically within ½ mile.

There are areas of the city deficient in park space due to their long distance from existing neighborhood parks. Many of the deficient areas are in the central city where the land available is very limited and where redevelopment is occurring at higher densities than other parts of town. Increased density may have some positive effects, but the parks deficiency will continue to worsen if additional land is not secured for park space. Establishing neighborhood parks may require starting with a small parcel which is well situated to serve the deficient area and suitable for eventual expansion.

11.3.1.2. Functional Analysis

Analyzing the need for parks according to function provides a community with a way to assess if the park system contains all of the components to meet the various open space and recreation needs of the community.

Level of Service, Functional Analysis revealed strengths in areas involving wilderness activities (hiking, camping, wildlife, nature areas) primarily due to Boise National Forest with a Ranger office located in Cascade. Another area of strength is water access (fishing, boating, swimming, other water and fitness activities) due to availability of Lake Cascade, Payette River, Kelly Whitewater Park (KWP), and Cascade Aquatic and Recreation Center. The Strand trail connects KWP, Fischer Pond, and downtown with a pedestrian path from Highway 55 to Lakeshore Drive. (Refer to Addendum A and B)

The Functional Analysis identified gaps in service for several areas. Armstrong Park, Fisher Pond and Cascade School all have playgrounds; however, existing playgrounds are not conveniently located for the central part of town. The lack of soccer fields, tennis courts, skateboard park, and basketball courts at the Cascade Sports Park were noted. The Sports Park Master Plan addresses gaps in services at the Cascade Sports Park. (Refer to Addendum C)

11.3.2. Other Issues

In addition to the needs identified in the spatial and functional analyses, other issues involving the development of parks and recreation facilities include:

- Accessibility and Wellness– As the population ages, there will be an increased demand to design park facilities to accommodate people with disabilities. Parks provide fitness opportunities and can improve overall health and wellness of the community.

- Maintenance – Local governments are challenged to allocate adequate financial resources for on-going maintenance of parks. Often, fundraising and grants provide funds for park land acquisition and construction, but municipalities must then budget for operating and maintenance costs from the general fund and user fees. The source of these funds and an estimate of annual amounts needed should be considered when developing new facilities.

- Safety - Aging trees, dense vegetation and proximity to vehicular traffic influence the real and perceived safety for park users.

Environmental Benefits – Proper design and maintenance of parks can provide community-wide environmental benefits such as flood control, preservation of wetlands, improved water quality, open space, and improved wildlife habitat.

Vegetation Management – Weed control and weed control methods can influence park design. There is a trend to use native species and promote techniques that reduce the use of pesticides and promote water conservation.

11.3.3. Opportunities

To meet future park and recreation needs, the city can utilize the following resources:

- At present recreation plans are moving forward in the area within the city limits along Lake Cascade and within Lake Cascade State Park. Many campgrounds have been upgraded and modern hookups incorporated. This has somewhat alleviated past concerns for fire and

vandalism by having law enforcement and fire protection services within city boundaries.

- Future plans should include development around Kelly Whitewater Park in keeping with Kelly's Green Project vision. Along with the whitewater park and pathways, there are opportunities within this area for development of natural spaces and wetland restoration. Whitetail, mule deer, fox, waterfowl and other indigenous wildlife frequent this area.

- Identify areas for potential parks such as reclaimed landfills, the expansion of existing parks, and opportunities to acquire additional land from private owners.

- In 2005, the City of Cascade adopted a new subdivision ordinance that requires all new developments over 10 acres in size to set aside and improve parks on a ratio of .028 acres per residential unit. These parks may be dedicated to the public or privately owned and maintained by a homeowners' association. A third option allows payment of fees in lieu of park land that would be earmarked for a future neighborhood or community park in the general vicinity. Acceptable parks can be mini parks, neighborhood parks, or trails provided they meet an established set of standards and criteria.

- Consider fee tubes for collection of donations for grant match funds.

- Establishing partnerships with other government agencies, civic organizations, non-profit groups and private businesses to accomplish the goals of the plans. Partnerships can create cost efficiencies through pooling resources, sharing costs, and joint programming. Multiple partners can generate a broader base of community support for projects. Grant makers are more likely to fund projects that are leveraging community resources from several partners.

12. Private Property Rights

This element outlines the analysis of provisions which may be necessary to ensure that land use policies, restrictions, conditions, and fees do not violate private property rights, adversely impact property values or create unnecessary technical limitations on the use of property and analysis as prescribed under the declarations of purpose in Chapter 80, Title 67, Idaho Code.

Private property rights encompass not only the right to develop, invest, and profit from property, but also the right to hold and enjoy property as well. As population increases and a greater number of people live closer to each other, the opportunities for land use conflicts become greater. The City of Cascade must balance each individual's right with a respect for the property rights of neighboring owners.

The Fifth Amendment of the United States Constitution, as well as Article 1§14 of the Idaho Constitution ensure that private property, whether it be land or intangible property rights, not be taken by the government absent just compensation. The Idaho State Legislature has, in Chapter 80, Title 67, Idaho Code, also enacted statutory provisions requiring state and local governments to ensure land use policies do not result in a taking of private property without just compensation by utilizing, among other things, a taking checklist generated and amended from time to time by the Idaho Attorney General in reviewing the potential impact or regulatory or administrative actions on private property. The checklist as of the date of this plan is provided in Appendix A.

Land use policies, restrictions, conditions, and fees of the City of Cascade should not violate private property rights or create unnecessary technical limitations on the use of property as prescribed under the declarations of the purpose in Chapter 80, Title 67, Idaho Code and its subsequent amendments.

12.1. Goals, Objectives, and Actions

Goal: Protect the fundamental private property rights through all land use decisions made by the City of Cascade pursuant to this plan.

Objective: Protect private property from being taken for public use without just compensation.

Actions:

- Design land use regulations to protect the health, safety, and welfare of the community, avoiding any unnecessary conditions, delays, and costs.

Objective: Protect property rights of landowners from arbitrary and discriminatory actions.

Actions:

- Consider the protection and preservation of private property rights in the development of land use policies and implementation standards and regulations and as required by law.
- Make development decisions predictable, fair and cost effective (Smart Growth Principle IX).
- Encourage community and stakeholder collaborations in development decisions (Smart Growth Principle X).

Objective: Protect all persons from being deprived of property without due process of law.

Actions:

- Strive for stable and consistent policies and ordinances regarding development allowances and requirements.

13. Land Use

This section contains an analysis of natural land types, existing land covers and uses, and the intrinsic suitability of lands for uses such as agriculture, forestry, mineral exploration and extraction, preservation, recreation, housing, commerce, industry, and public facilities.

13.1. Smart Growth Principles

I. Mixed Land Uses.

II. Take Advantage of Compact Building Design.

III. Create a Range of Housing Opportunities and Choices.

IV. Create a Walkable Community with connections between developed areas that will create a connected trail system to any part of the impact area. (See Map 4, Chapter 11.1)

V. Foster a Distinctive, Attractive Community with a Strong Sense of Place.

VI. Preserve Open Space, Farmland, Natural Beauty, and Critical Environmental/Wildlife Areas.

VII. Strengthen and Direct Development towards the City Limits within the impact area until build out and the City can support more expansion.

VIII. Provide a Variety of Transportation Choices.

IX. Make Development Decisions Predictable, Fair, and Cost-Effective.

X. Encourage Community and Stakeholder Collaboration in Development Decisions.

13.2. Goals, Objectives, and Action Items

Land Use Decisions will be guided by Smart Growth Principles.

Goal: Provide for a mix of land uses that meet the community's needs and are suitably related to each other and their natural setting, within an efficient pattern of development, with density generally greater at the city's core and decreasing toward the edges of the city (transect), with nodes of higher density near primary services or other established intensive uses.

Objective: Designate appropriate areas to support the development of adequate housing quantities and types to meet projected housing needs, within a framework of interconnected neighborhoods.

Actions:

- Establish allowed housing densities at the minimum of the recommended range on the Future Land Use Map, but provide for density increases where proposals demonstrate compatibility with existing neighboring densities, hazardous areas, infrastructure capacities and service efficiency, and where mitigation of impacts to natural resources, the transportation network, parks and open spaces, and other public services are appropriately mitigated.

- Encourage varying lot sizes within subdivisions, thereby creating a mix of housing types and supporting a more diverse community.

- Allow and encourage the development of mixed-use and live-work developments.

- Permit only compatible types of uses in residential zoning districts, such as neighborhood service centers and home occupations that do not negatively impact the residential neighborhood.

- Require residential developments to connect roads and pathways to neighboring developments and to adjacent collector roads.

Objective: Designate appropriate areas to support desired economic development, while protecting the Central Business District as the City's primary retail center, and preventing commercial sprawl along the Highway 55 Scenic corridor.

Actions:

- Update commercial land use needs based on a comprehensive economic market analysis.

- In Commercial/Mixed Use areas outside of the downtown core (CBD and MU_a), retail uses should be limited to large items (hardware, lumber, automobiles, trailers, etc.) or be neighborhood focused (corner grocery, deli, etc.)

- Any future Commercial/Residential development should require sidewalk and drainage frontage on any main artery or Highway 55

along commercial blocks fronted by Main St. or possible Sawyer St. expansion.

- Identify desirable commercial uses that would not be appropriate within the Central Business District, and adopt zones, where these uses may occur, in accordance with the Future Land Use Map and with consideration of potential impacts on neighboring properties and the transportation network.

- Adopt a minimum setback for developments along Highway 55 and require highway accesses to conform to the ITD/City of Cascade Transportation Access Plan Agreement, thereby protecting traffic flow and safety and the scenic corridor. (The Transportation Access Plan is highly recommended due to the unpredictability of state funding for highway improvements. Having a plan ready to go will increase local control over how the resulting improvements will look and perform for the city.)

Objective: Ensure that development occurs in a manner that is safe, that facilitates efficient delivery of public services and does not outstrip available or potential capacities.

Actions:

- Encourage compact building and development design to increase the efficiency of service delivery.

- Add appropriate incentives to the zoning and development regulations and utility connection fee structure to encourage infill development in and around the Cascade town site and to encourage new Mixed-Use development at locations with optimal access to all primary services, in accordance with the Future Land Use Map.

- Delineate an “urban growth boundary”, which the city will not extend water service beyond.

- Assess the current boundaries of the Cascade Area of Impact and negotiate adjustment of these boundaries with the County based on the principles stated in the Land Use Recommendations.

Objective: Ensure that incompatible uses are buffered from one another.

Actions:

- Encourage Mixed-Use developments to be located between high and low intensity uses, in accordance with the Future Land Use Map.

- Require park and open space dedications within developments to be placed between uses of different intensities, in accordance with the Future Land Use Map, or Parks and Recreation Master Plan, when adopted.

13.3. Current Conditions

The planning area includes both the area within the city limits and the City of Cascade impact area. The area has a rural, small town feel, with a small city center area within sight of cattle ranches and open spaces in three directions. Regional land use decisions outside of the City's impact area are the responsibility of the respective County, State or Federal entity. Any development project in the Cascade Impact area should be given serious consideration by the City due to its potential impacts.

Existing land use in Cascade's impact area is primarily residential and agricultural, with the remaining land divided between other uses such as industrial and public use. Agricultural land use occurs on the north end of the city impact area and in a timbered area just to the south of the city center area. Within the Cascade city limits, the primary land use is high density residential, followed by medium density residential, low density residential, commercial, residential-commercial, industrial, and recreational. Commercial land use is primarily located in the city center and includes the former Boise-Cascade mill site. Residential-Commercial land use incorporates the other part of the city center area. Industrial land use is primarily located along the Highway 55 corridor south of the city center area, including the airport, storage units, and other light industrial developments. Recreation land use includes three city park areas, the Cascade Aquatic and Recreation Center, Kelly's Whitewater Park, the golf course and adjacent lands along Lake Cascade.

13.3.1. Origin of Existing Pattern

As a timber mill town in Central Idaho it was easy to see the driving force of why Cascade came to be. In the late 90's that way of life was being eliminated along with the largest employer of the area. This hit the community hard at first but has resonated ever since. Throughout this time, the community stuck together and began changing toward a recreational based economy. The Ashley Inn was built for better exposure of the community to the outside world. A strong emphasis was placed on winter sports and a strong economy and real-estate market sustained the community for a period of time. The economic collapse of our Country's economy in 2008 affected Cascade in a negative way.

In 2009 Mark and Kristina Pickard were the driving and financial support behind Kelly's Whitewater Park (KWP) and Welcome Center. With little hesitation they offered their assistance and within one year's time built a three-million-dollar world class Kayak training facility/park. KWP is an invaluable asset for economic growth in the decades to come. KWP is part of the "Kelly's Green Project", a long-term plan for diverse development, reclamation, and restoration of a 100-acre area along the Payette River. At this point, the Pickard's continue working with various groups and agencies to promote further development of all green or at least two-thirds green projects.

13.3.2. Agriculture

There still exists a strong agricultural community within Valley County and particularly the Cascade area. The Davis', McGregor's, Allen's, Kennedy's, Hasbrouck's Herrick's, Bilbao's are longtime residents and, some, pioneer families of southern Valley County and in close proximity to Cascade; cattle grazing or hay being the main product. Some of the agricultural ground has been subdivided but not to the extent of other areas of the state. There still remains a pioneer feeling among these ranches and the outlook is to remain that way.

13.3.3. Residential

Cascade has a base of single family residential type housing. There are also small areas of townhouse and condo type facilities. A small area of senior housing of about 8 to 12 units and a complex of low income housing units totaling 24 units. The downtown area has residential housing just off and mixed with the commercial area. Along the lake on both the west and east sides are subdivisions and higher dollar values due to view type property and paved roads.

13.3.4. Capital Improvement

- Roadway Improvements: Currently Highway 55 or Main Street runs the length of the commercial zone and had upgrades performed in 2012. In 2012, Main Street was reconstructed including new asphalt and concrete as well as storm drainage improvements. In 2012 a new southbound bridge with bike lanes started construction and was completed in 2013. In 2014 a new northbound bridge with bike lanes started construction and was completed in 2015. Other roadway projects projected or completed within the Cascade area consist of:
    - Lakeshore Drive: In 2015, the first phase of Lakeshore Drive included roadway reconstruction as well as sewer and water improvements from Lake Cascade Parkway to Par Drive (north intersection with Lakeshore Drive). In 2016, the second phase of improvements extended from Par Drive to Duffers Lane. The third

phase of Lakeshore Drive improvements (Lake Cascade Parkway to Dam Road) remains under consideration.

- Cabarton Road: In 2013, the City completed the first phase of roadway improvements on Cabarton Road beginning at its intersection with Highway 55 and extend to the south. In 2018, the second phase of improvements to the south will be completed. The project improvements directly benefit visitors to Trinity Pines Camp as well as both motorized and non-motorized users traveling to the west side of Lake Cascade. Overall improvements to Cabarton Road have included water and sewer upgrades to facilitate future growth.

- Sanitary Sewer Improvements: The City has completed a Facility Planning Study (FPS) that identifies long-range improvements to reduce inflow and infiltration (I&I) for the collection and improve treatment system effectiveness. Projects arising from the FPS include:

  - Phase I and City Shop Lift Station Improvements: Replacement and rehabilitation to sewer mains and manholes as well as the City shop lift station.

  - STAG Sewer Improvements: Replacement and rehabilitation to sewer mains and manholes.

  - The City anticipates additional improvements arising from the FPS consisting of:

    - Collection system improvements

    - Treatment system improvements

13.3.5. Commercial

This area encompasses between Spring Street and Kerby Street. Umpqua Bank and The Cascade Store are two of the oldest buildings; by contrast Watkins Pharmacy is one of the newest. At the present time the downtown area has many vacant buildings and areas of open lots. Historically there are a few buildings that predate the 1940's.

13.3.6. Industrial

Industry wise Cascade has lost a great deal of revenue with the closure of the Boise Cascade Mill over a decade ago. The City of Cascade area has become more of a tourist or vacation type business-destination area. The Ashley Inn is a 4 star rated Hotel type facility offering meeting rooms and other accommodations. There are

several camping and motor home facilities within the City and Impact area along with three other motels. Other industries revolve around the construction industry, Olson excavation has three separate companies ranging from concrete to road building. Granite Excavation specializes in road building. There are three auto shops in Cascade that sell new and used vehicles as well as a couple of auto repair and maintenance facilities.

13.3.7. Development Activity

The economy is currently on the increase after years of decline. Most of the activity lies within the City and the impact area. At this time there are several projects being built and designed that will improve the City's infrastructure.

13.3.8. Commercial Building Trend

Within the last fifteen years, Watkins Pharmacy, the historic Roxy Theatre, The Ashley Inn, Across the Tracks Sports Bar, REO's Pizza, Rustic Rose, Cascade Hardware, Remington's Restaurant in the Chief building, and Lake Cascade Sport and Marine represent some of the commercial upgrades in the City. Within the last twelve years, Subway, Family Dollar and the Cascade Aquatic and Recreation Center represent new additions to the City.

13.3.9. Future Conditions

Currently, Tax Exempt properties accounts for roughly nine percent (9%) of properties located within Cascade City limits. While many of these exempt properties provide essential programs and services, and are a community benefit, they also impact the City's revenue. Considering the City relies heavily on the property tax, the exemption of nonprofits from property taxation means homeowners and businesses must bear a greater share of the property tax burden. Care must be taken in the future as Cascade grows to maintain a healthy balance of land use.

13.3.10. Land Use Needs

Below are discussions of future commercial land use needs.

Commercial

- Retail: Two different retail uses will need land to grow in Cascade: Visitor Retail (restaurants, outdoor recreation stores, art and craft stores and galleries, etc.) and Community Retail (grocery, hardware, appliances, auto parts, etc.). Visitor Retail tends to need less land per square foot of space, while Community Retail tends to demand more land. Visitor Retail land needs (within the 15-year planning window)

should be able to be met within the existing Central Business District with a limited amount of land needed at strategic adjoining locations. Community Retail (e.g., new or expanded building materials store, furniture store, etc.) will need a larger area that is well connected to the transportation network, but discretely located to reduce impacts large stores can have on the scenic corridor and community character. Ideally, a portion of Community Retail would be supplied by local manufacturing. Neighborhood Retail (neighborhood grocery, café, etc.) is a third category, but its land needs can be met within the area of new residential and mixed-use developments. Retail use in Mixed-Use developments should be in a quantity and of a type that balances with the demands created by residents or workers in the development.

- Office: Most office uses require some visibility, though not as much as retail uses, and can therefore often be incorporated into the second floor of new mixed-use development. In two-story development, this should be anticipated because of the cheaper rental costs for upper floors compared to ground floor space. Office uses should be provided for around government buildings, to encourage migration of office uses off of prime ground floor retail space on Main Street. Other concentrations of office uses should be located adjacent to major roads in clusters of mixed-use development.

- Service: Service uses include two sub-groups --- one that is appropriate within the mixed-use areas (personal service shops, professional services, etc.) and one that includes more land, automotive or noise intensive services (auto garage, veterinary, self-storage, etc.) and should be located in pockets of commercial land that are well-buffered from residential uses.

- Manufacturing: Light Industrial uses can similarly be divided into two groups. One is smaller in scale with low impact (crafts shop, small contractor shops, microbrewery, etc.) and could be located with residential uses in a Mixed-Use project that is tailored towards that type of "Live/Work" situation. The other uses more land and/or produces disturbing noise or fumes and is best limited to a discrete area buffered from residences by other intense uses, such as the airport, and should have close proximity to Highway 55.

Residential

Cascade has more than enough undeveloped lots existing now to satisfy 15 years of projected 1% annual population growth. However, the need for new townhomes,

condominiums, apartments and other higher density, smaller lot residences will increase as the local business climate enhances. These new types of units can be incorporated on upper floors of Mixed-Use projects, or built in stand-alone developments, but within close proximity to neighborhood level retail and services. Ideally, a significant share of higher density development would be within walking or biking distance of the central business district and have close access to recreation areas and major roads.

A continuing demand for additional "high-end" or higher priced estate lot developments for second homeowners is anticipated. These neighborhoods should encompass the outlying areas of the city, and take advantage of open space and view sheds.

13.4. Land Use Recommendations

The Land Use recommendations below are referenced to the Future Land Use Map in the end of this document (Figure 13.1 and 13.2).

Airport

The proposed Airport land use was delineated based on platted airport related subdivisions and anticipated future airport needs, while incorporating room for an additional taxiway and some aircraft hangar space also on the south side. The zone could be condensed on the west side if existing non-airport related uses (e.g., storage units, residences, Arts Council building, etc.) do not desire transition to airport related uses. An Airport Zone should be created, with a perimeter fence eventually being developed around the zone and vehicle traffic controlled within. A more detailed neighborhood plan should be developed with assistance of property owners and the Cascade Airport Board. Consideration for expansion should be a futuristic goal to the south for a more regionalized airport. This would accommodate larger and small commercial flights and aide the fire protection of the area by having retardant capabilities for the Forest Service. This would as aid in economic development of the entire county. This could be a regional airport with County assistance or an expansion of the City.

Central Business District

Land Uses in the Central Business District should be encouraged to transition from primarily civic and professional to visitor retail - pedestrian-oriented shopping, restaurants and "after 5" activities. Offices and some residences should be encouraged on upper floors. The boundary of the district should not be greater than 2 blocks in any direction from Main Street, or a 4-block by 4-block core. Auto-intensive uses, such as auto garages, gas stations and drive thru restaurants should not be allowed in the CBD, however these and other services for local residents should be allowed in the remainder of the downtown core. The Central Business District will be designated as "CBD" on Zoning and Future Land Use maps.

Commercial

The Commercial land use areas are envisioned to contain uses that would not be appropriate in the Central Business District or Mixed-Use areas because of the larger amount of land required, the auto-intensive nature of the business, or the generation of noise or other impacts that should be more removed from residential areas. General Retail commercial uses appropriate for these areas would be large item retail, such as hardware, lumber yards, auto dealership, trailer sales, etc. These areas should be developed in a unified manner, with street like shared access from the highway for each area, in accordance with the Transportation Access Plan Agreement between the city and the Idaho Transportation Department. On Zoning and Future Land Use maps, Commercial is to be labeled sequentially (e.g. C_a, C_b, C_c, etc.)

Mixed-Use

Mixed-Use areas will vary from a mixing of residential types (detached single family, condos and row houses), to live/work districts that allow business owners to live in the same structure where their trade is pursued, to a three-story stacking of retail, office and condominium type development. Minimum residential to commercial ratios and restrictions on allowed commercial uses should be implemented to ensure that "mixed-use" does not become "commercial sprawl", but rather creates diverse neighborhoods, where people can walk to work and/or to get their daily essentials. Residential density in mixed-use projects should be in the high-density range. On Zoning and Future Land Use maps, Mixed-Use is to be labeled sequentially (e.g. MU_a, MU_b, MU_c, etc.)

Manufacturing

Large or high impact (noise, odor, etc.) manufacturing and industrial uses should be confined to an area north of the airport. Less intensive manufacturing uses may be appropriate in a live/work manufacturing area. On Zoning and Future Land Use maps, Manufacturing is to be labeled sequentially (e.g. M_a, M_b, M_c, etc.)

Public Facilities

Public Facilities include government and institutional buildings and uses. The Public Facility areas were drawn around the concentration of existing such uses and are not meant to be the only location for public oriented uses. The mixed-use and commercial zones are generally also appropriate for most public facilities; however, concentrating services provides better efficiency and also helps to create a buffer between commercial and residential areas. On Zoning and Future Land Use maps, Public Facilities are to be labeled sequentially (e.g. PUB_a, PUB_b, PUB_c, etc.)

Medium Density Residential (6 to 10 units per acre)

Medium Density Residential includes single and two family (townhome or duplex) units and accessory dwellings in the core of the city. Daycare facilities and other home businesses that are compatible with the character and intensity of the neighborhoods would be appropriate. Limited neighborhood serving commercial may also be appropriate in new Medium Density developments. On Zoning and Future Land Use maps, Medium Density Residential is to be labeled sequentially (e.g. MDR_a, MDR_b, MDR_c, etc.)

High Density Residential (11 to 16 units per acre)

High Density Residential areas should be carefully decided. Mixed-Use and existing HDR should be adequate to meet HDR housing needs for the timeframe considered in this plan. However, there may be opportunities to identify land needed for future HDR. In those cases, the land should be marked as a future land use. On Zoning and Future Land Use maps, High Density Residential is to be labeled sequentially (e.g. HDR_a, HDR_b, HDR_c, etc.)

Low Density Residential (2 to 5 units per acre)

Low Density Residential areas should be developed or maintained as quality neighborhoods, with good interconnectivity for vehicles and pedestrians, reasonable access to parks, including neighborhood parks embedded within developments, and sufficient buffering from incompatible uses. On Zoning and Future Land Use maps, Low Density Residential is to be labeled sequentially (e.g. LDR_a, LDR_b, LDR_c, etc.)

Estate Residential (1 or fewer units per acre)

This recommended land use category contains properties that are already developed under individual wells and septic systems, as well as properties in sensitive areas such as floodplains and wetlands and along the outer edges of the planning area where city water and sewer facilities may not reach within the 20-year outlook of this plan. On Zoning and Future Land Use maps, Estate Residential is to be labeled sequentially (e.g. ER_a, ER_b, ER_c, etc.)

Open Space / Park – Preferred

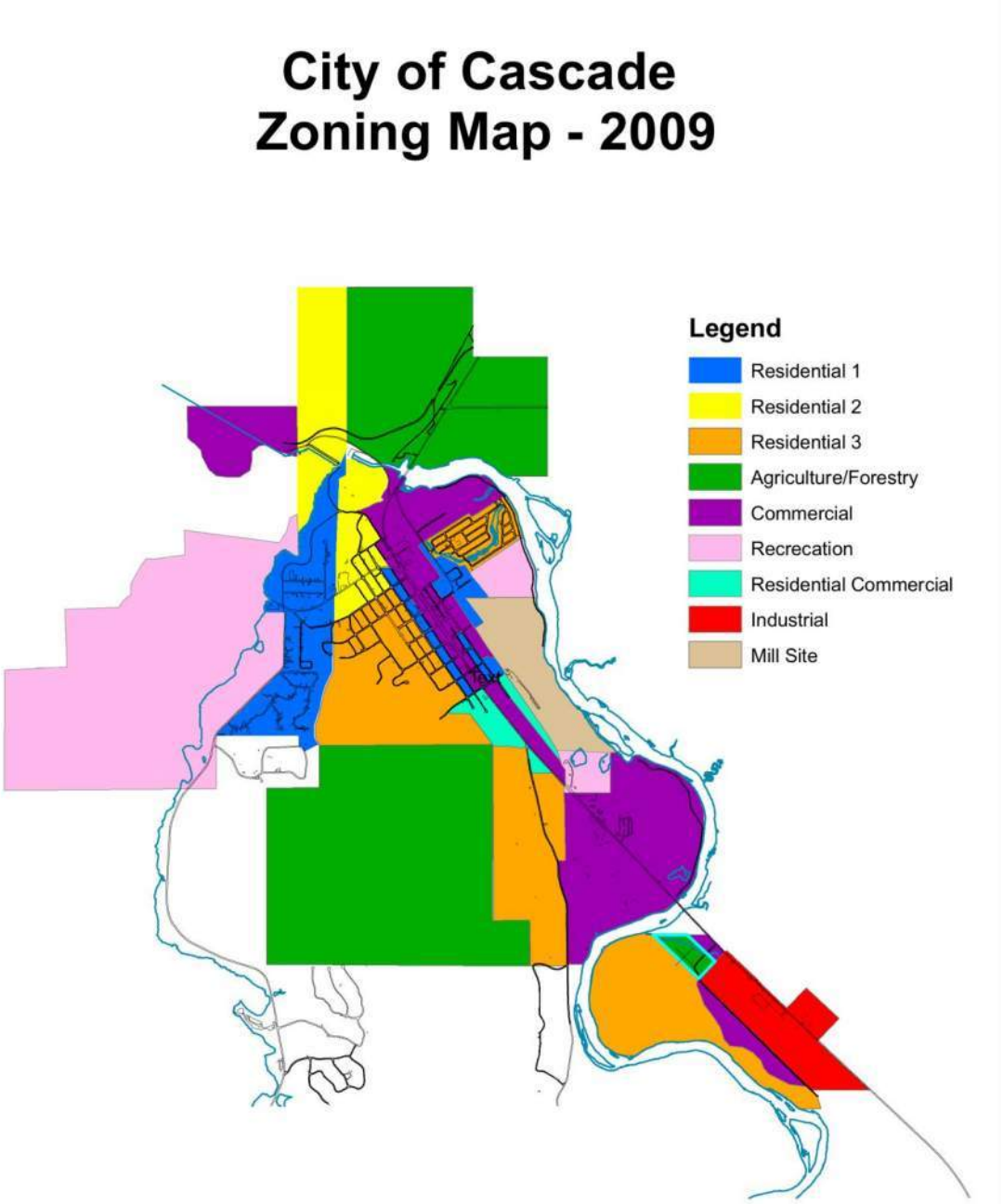
This category contains recommendations for preferred locations of significant community level parks or open spaces. Smaller neighborhood parks are likely to be established within residential developments through requirements of the Subdivision Ordinance. On Zoning and Future Land Use maps, Open Space/Park – Preferred is to be labeled sequentially (e.g. OS/P_a, OS/P_b, OS/P_c, etc.)

Area of Impact

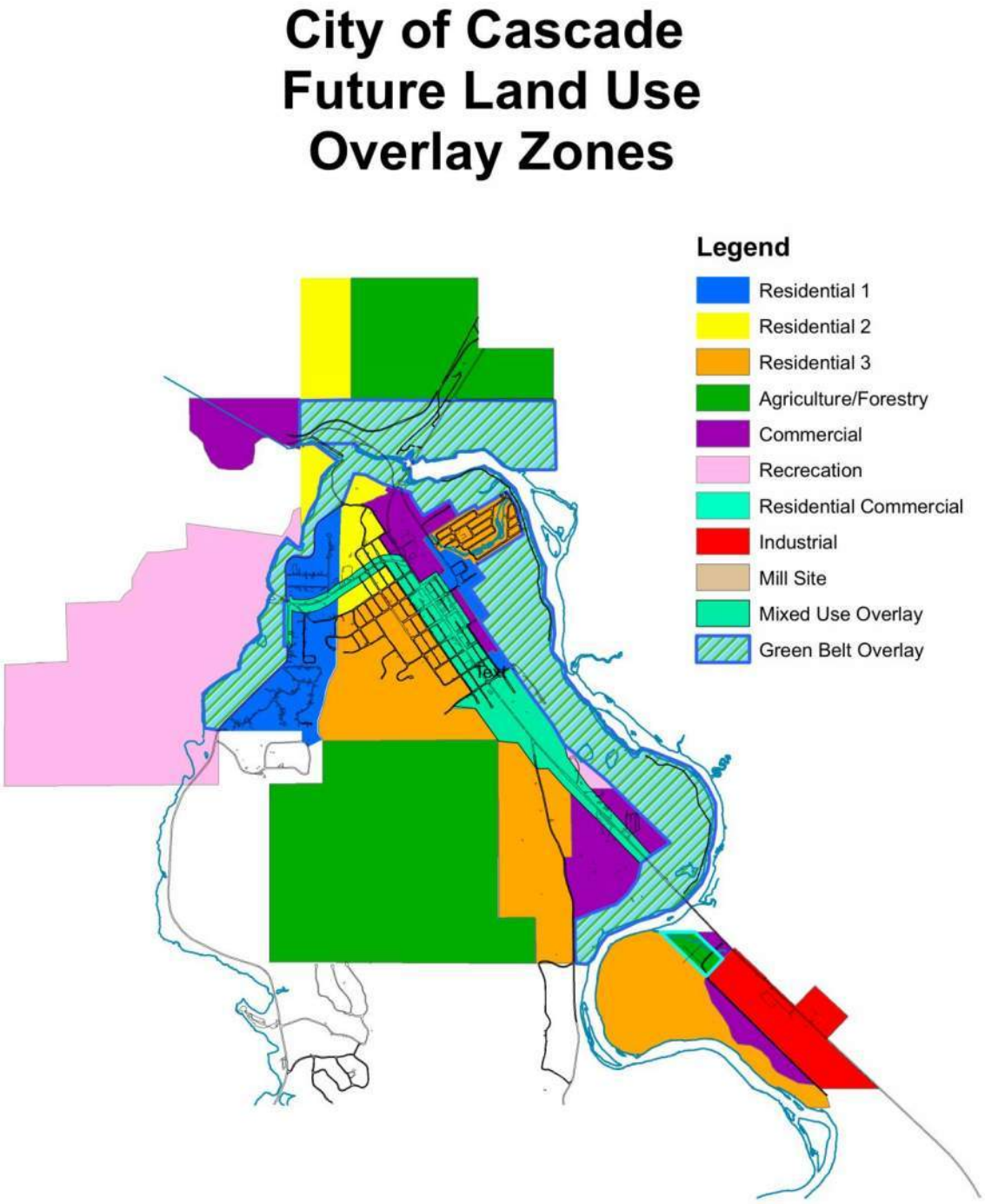
Title 67, Chapter 6526 of Idaho Code states that "In defining an area of city impact, the following factors shall be considered: (1) trade area; (2) geographic factors; and (3) areas that can reasonably be expected to be annexed to the city in the future." In negotiating the boundaries of the Cascade Area of Impact with the county, the city should also consider the impact on public service delivery (both capacity and efficiency) and the impact on city character (the growth pattern should support the Comprehensive Plan's vision of our community, which is to maintain a small, but smart growth theory orientated, town character and sense of place).

- The Area of Impact boundary should only be increased where:
- The City Limits have reached the Area of Impact boundary, or are anticipated to reach the Area of Impact boundary within 10 to 20 years.
- The Area of Impact boundary does not constitute or protect a significant natural growth boundary (one that uniquely or inherently defines the community).
- The property owners to be included have the ability to increase the water rights and source capacity to a level that will more than offset the potential development.
- The area is already served by city utilities, or the proposed expanded Area of Impact boundary would support an efficient delivery of public services and will not increase per lineal foot maintenance costs or become an otherwise inefficient peninsula of responsibility.
- Expansion does not create disincentives for infill development in the existing town or impact area that would be more efficient and desirable than new development on the outer edge of the community.

Map 6: Zoning Map



Map 7: Future Land Use Overlay Zones



14. Implementation

This section is an analysis to determine actions, program budgets, ordinances, or other methods including scheduling of public expenditures to provide for the timely execution of the various components of the plan.

It is intended that the recommendations of this plan will be carried out with special priority given to the Actions under each element of the plan. The plan must be treated as a living amendable document. A review of the plan by the Planning and Zoning Commission should occur annually to make recommendations on needed amendments or additions. Day to day decisions should be based on the plan's goals and objectives, and official actions and ordinances adopted by the city must be in harmony with the plan.

Below are specific recommended actions that will facilitate implementation of various actions listed under each of the plan's elements:

- Extend the city's Geographic Information System (GIS) to assist with and increase efficiency of functions within all other departments.
- Establish and maintain planning application and building permit fees at levels that ensures as close to a self-sustaining planning department as possible.
- Establish a business registration or business license requirement.
- Consider an additional Planning and Zoning staff position to work on short-term planning tasks.
- Enforce ordinance requirements in a fair and even manner.
- Consider a longer-term objective of establishing a Community Development Department to manage Short and Long-Range Planning, Economic Development, Building Code, GIS, and other tasks.
- Establish regular communications, such as through the utility bill, to educate and solicit feedback from residents and business owners on the city's goals and plans and projects.
- Foster neighborhood level planning committees in some areas to facilitate the development of more detailed recommendations than currently provided in the Comprehensive Plan.

- Consider substitute for property taxes, such as voluntary payments by non-profit/exempt agencies (called payments in lieu of taxes, or PILOTs for short). When looking forward, the City should not lose sight of the fact that nonprofits do indeed consume City services.

- Improve dialogue and agreement between city and county on all planning issues, including transportation, economic development, sewer facilities and water quality, and floodplain management.

- Work toward a joint Comprehensive Plan for the county and cities.

More recent community meetings identified the following issues and priorities:

- Keep downtown Cascade strong, viable, and the economic and cultural center of the community through encouraging downtown infill development and by discouraging commercial sprawl.

- Encourage and plan for walking and bike paths throughout town, and connect them to trails in the County.

- Encourage the expansion and diversity of the Cascade economy, including visitation, expanded use of southbound rail line, continued airport expansion efforts, and new business ventures not already present in the area.

- Incorporate the Sawyer Street through route into the local transportation plan, and work with Idaho Department of Transportation (IDOT) to pursue funding for its implementation.

(Cascade Community Review, April 2016, available for viewing at City Hall)

Addendum A
Bicycle and Pedestrian Plan

City of Cascade, Idaho Bicycle & Pedestrian Plan

A Plan for Action for the People of Cascade

June 2015

WWW.NEWMOBILITYWEST.ORG

Table of Contents

Acknowledgments

Thank you to the following organizations and individuals who made contributions to this plan.

The Citizens & Businesses of Cascade | City of Cascade Elected Officials and Staff | Cascade Mobility Team | Southern Valley County Recreation District | Valley County | Cascade School District | Cascade Medical Center | Cascade Chamber of Commerce | Idaho Transportation Department | Lake Cascade State Park | University of Idaho Extension Idaho Walk Bike Alliance | Idaho Smart Growth l Horizons' Lifestyle Education Team

Project Partners

New Mobility West | The Sonoran Institute l The LOR Foundation l Idaho Smart Growth l Idaho Walk Bike Alliance

Project Consultants

Chris Danley, Vitruvian Planning | Don Kostelec, AICP, Kostelec Planning | Joel Grounds, PE, Precision Engineering

PROJECT PARTNERS

ABOUT NEW MOBILITY WEST

New Mobility West (NMW) provides communities across the Rocky Mountain West with the tools and resources necessary to become stronger, more prosperous places through building smarter transportation systems. NMW offers technical assistance to communities in this region looking to generate real, on-the-ground progress with targeted issues and opportunities at the nexus of transportation planning and community development. Beyond their local impact, these assistance projects create models that inform and inspire smart transportation and land use throughout the region.

This report is the product of a collaborative effort between NMW team members and the partner community that was selected for technical assistance through the program. It provides an overview of the project's goals, process, outcomes and recommended next steps.

NMW is an initiative administered by the Sonoran Institute, a non-profit organization that inspires and enables community decisions and public policies that respect the land and people of western North America. Information about the New Mobility West technical assistance program can be found at www. newmobilitywest.org/community-assistance.

ABOUT VITRUVIAN PLANNING

Vitruvian Planning is an Idaho based consulting firm focused on active transportation and a healthier built environment. Since 2011, Vitruvian Planning has provided planning services throughout the state including plans in the realm of Safe Routes to School, Bicycle and Pedestrian, Health Impact Assessments, Activity Connection Plans®, Complete Street policy analysis and several active transportation workshops.

As a firm dedicated to making a difference in how traditional plans are conducted, Vitruvian Planning has been fortunate to carry out that vision with communities large and small and located from Ponderay to Pocatello and numerous places between.

Other contributors to this report included:

- Don Kostelec, AICP
  Kostelec Planning, Asheville, NC
- Joel Grounds, PE
  Precision Engineering, Boise, ID

Why a Plan for Cascade?

The City of Cascade and the Cascade Mobility Team submitted a request for funding for technical assistance from the Sonoran Institute and their New Mobility West program. The application was considered, along with others, from a four state area including Idaho, Wyoming, Montana, and Colorado. The selection committee determined Cascade's application to be a strong candidate for the limited technical assistance funding and were thus selected. The intent of the project was to develop a bicycle and pedestrian plan that achieved several stated goals and objectives. Those goals include the following:

1. Developing a community transportation vision that can inform the CIP and a project ranking process;

2. Identifying specific transportation needs and potential project solutions;

3. Developing the framework for an updated CIP;

4. Engaging the public and key stakeholders to generate the input and buy-in necessary for the community transportation vision and an updated CIP; and

5. Providing guidance on funding opportunities.

The plan created herein is the result of the technical assistance funding and the planning process undertaken from April through June 2015. This plan is one that will help to achieve an improved bicycle and pedestrian network for the City, current and future residents, and the many visitors who chose the community for its many recreational assets.

This plan is not simply the result of a few individuals but rather several parties representative of the many interests within Cascade. Inclusive in the planning process were citizens, business community members, public agency staff and leadership, recreational enthusiasts and representatives, educational institution staff, as well as contributions from the state Department of Transportation.

Worth noting is that this effort should not be considered a one time endeavor. The Cascade Bicycle and Pedestrian Plan should be viewed as a living document for a number of reasons.

Federal and State funding for transportation projects is muddled with an unpredictable future. MAP-21, the current (June, 2015) Federal Transportation Bill will be revised in the coming months and will likely result in a significant overhaul of funding programs and requirements.

Once projects are completed, others also deemed important should be added in a revised version as priorities and goals change. The plan should be updated and revised on a regular schedule similar to a comprehensive plan.

With the significant presence of Highway 55, this plan should be reviewed in conjunction with the ITD STIP to ensure that opportunities are not lost and that the Department is provided valuable information for consideration with roadway construction or maintenance.

Existing Conditions

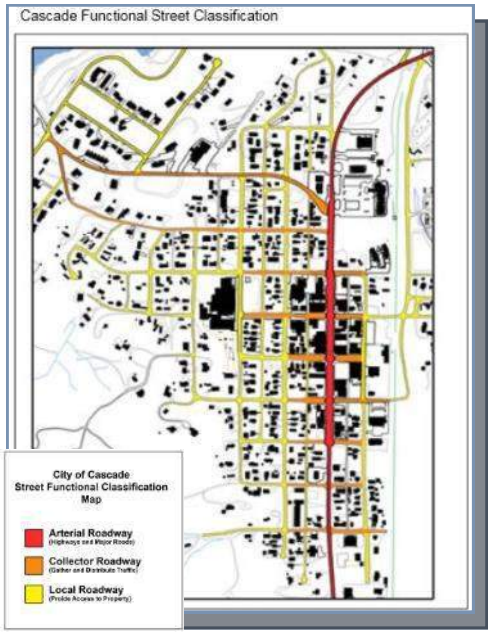
The city of Cascade, Idaho is located near the banks of Lake Cascade and situated along State Highway 55. The community of more than 900 residents has a mixture of housing stock established generations ago with a limited number of newer houses. The Highway 55 corridor is a dividing line between east and west Cascade and is home to the community's "Main Street." The eastern edge of the city is largely defined by the Payette River and larger ranch properties.

The street system of Cascade is comprised generally of a grid system layout with some curvilinear streets due mostly to topography. Though several streets are paved most are unimproved and without designated walking or bicycling surfaces. Streets that are paved generally also have some form of sidewalk and in some instances a paved shoulder is provided.

Due to the cost of paving and larger construction costs, the City does not have the intention of paving many of the existing streets into the foreseeable future. It is because of this situation in part, that the plan is mostly comprised of recommendations for those streets that are paved and have some type of additional designated active transportation element or characteristic.

The most significant corridor in Cascade is Highway 55. Through most of the downtown area, the road is a three lane configuration that also includes on-street parking. Several segments have been improved with significant pedestrian realm enhancements including ten-foot sidewalks, curb extensions, crosswalks, and aesthetic features.

The highway currently sees roughly 7,000 vehicles per day, though that is largely seen in the very busy summer months when recreational activity is at its highest.



Recent road projects on the highway have included the replacement of the North Bridge (underway) and the South Bridge as well as a new overlay that will occur in the summer of 2015. This overlay will include a new striping configuration which is to include a wider shoulder through downtown that will act as a suitable space for bicyclists.

Several projects were identified in the Cascade draft comprehensive plan, but since the plan has not been adopted, to date none of the projects have been formally adopted into the Idaho Transportation Department's State Transportation Improvement Plan or City led efforts.

Existing challenges facing the city and area residents are many. Due to the nature of the highway and nearby attractions, many freight vehicles, motorhomes, and truck/trailer set ups drive to and through Cascade. The balance that is needed is to provide safe crossings and minimal distances and reduce vehicular conflicts for both pedestrians and bicyclists.

Design elements such as turn radius, pedestrian refuge islands, curb extensions, bike lanes, and pedestrian actuated signals all have to be weighed with user demand, vehicle turning needs and the overall economic impacts of visitors operating larger recreational vehicles.

Plan Creation

The Cascade Bicycle and Pedestrian plan was crafted using several methods and inputs. The plan began with a series of stakeholder sessions with local residents, business leaders, elected officials, and various representatives from entities who have a vested interested in the success of bicycling and walking in the Cascade area. The sessions were held over two full days and included the following elements:

Kick-off Meeting. The project kick-off meeting was used to describe what "walkable" and "bikeable" are, what challenges are posed to the community, and to identify specific corridors and intersections most in need of improvement. The meeting was also helpful to understand local context, future desires beyond the transportation realm such as future land use and economic development and how the plan could help facilitate the changes sought.

Walk Audit and Street Inventory. At the conclusion of the stakeholder meeting the team split participants into two groups and led walk audits of Highway 55. Both groups attempted to evaluate the current system and find ways to improve the use and safety for walkers and bicyclists. The team was also attempting to further understand the needs of the Idaho Transportation Department as the highway plays a role of both regional highway and main street. The audits yielded many results and concepts that are described in the plan.

The remaining city streets and hot spot intersections were inventoried by bicycle to make sure that the team gained a user perspective. The team examined several streets, The Strand trail, sites such as Cascade School, the Lake State Cascade Park system, and Cascade Medical Center.

Implementation Meeting. At the start of day two, the stakeholders reconvened to learn of the initial findings and suggestions pieced together by the team. Attendees learned of the projects, improvements and preliminary costs and were asked to help identify priorities to be inserted into the plan as part of a Capital Improvement Plan.

Business Forum. A two hour block of time was set aside to specifically converse with the Cascade business community. The meeting was robust and included owners of at least a dozen local or regional businesses. Those who attended also got to hear about the preliminary findings, priorities, potential costs, and the impacts that making such investments could have on the local economy and their businesses.

Left: Stakeholder meeting, day one.

Above: Meeting attendees along the walk audit route.

Right: Roadway inventory by bike

Public Discussion. To conclude the two-day event, public meetings were held. Two meetings were offered so that members of the public could choose to attend the one most convenient to them and their families. The focus of the events were to describe the process, the streets and intersections of focus, initial recommendations, and to get their feedback. Attendees were asked to confirm the plan focus areas and to give their input on other elements that were missed or should be considered.

Plan of Action

The projects identified in this plan were derived principally from extensive stakeholder involvement coupled with the goals and objectives in the draft Comprehensive Plan. The list included specific corridors and intersections that were considered ripe for improvement, safety hazards, or contribute to the existing and/or future needs of the overall network.

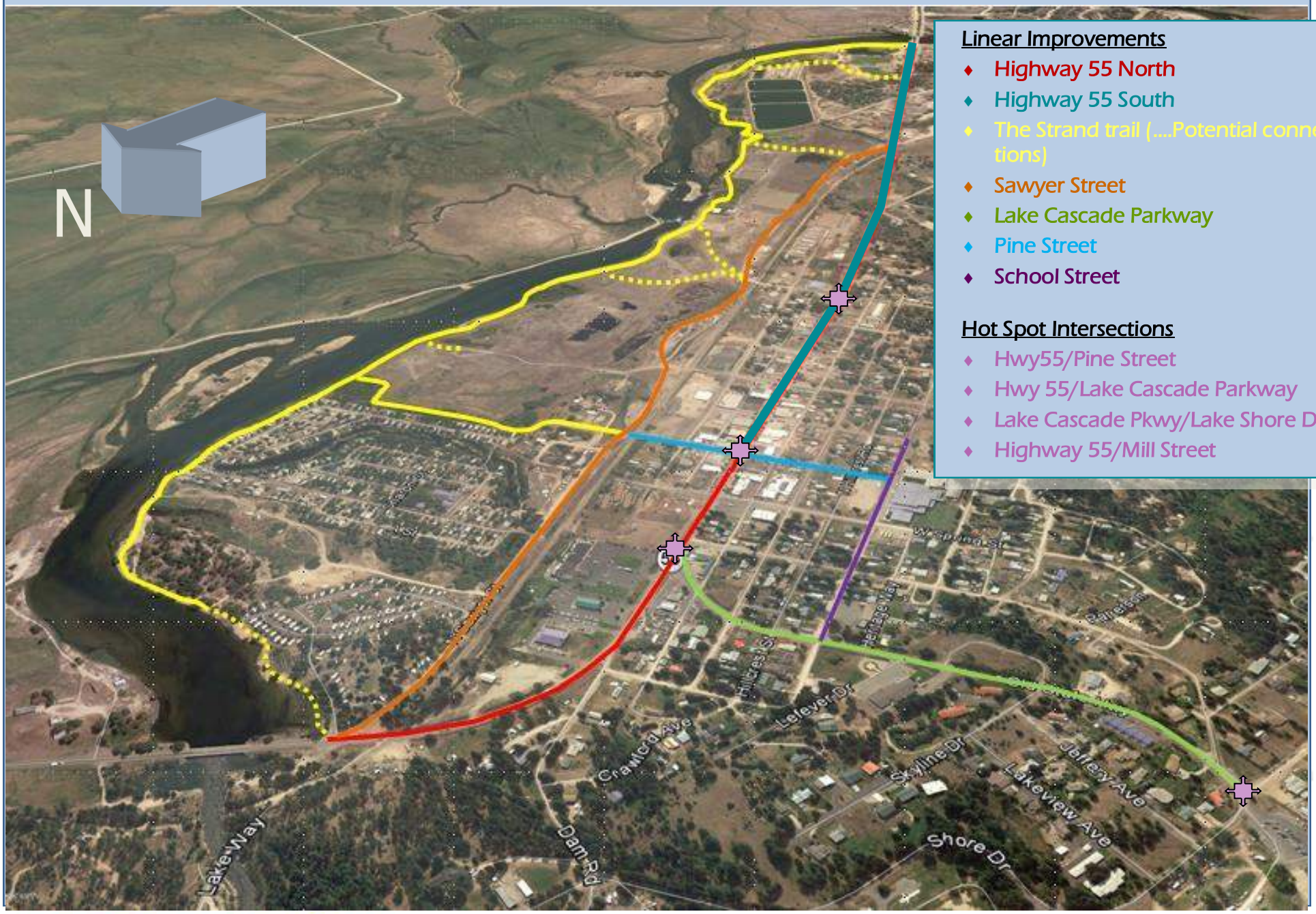
- **Highway 55 South**- this critical element of Cascade Main Street connects the southern end of the community with the heart of Downtown. After walking and riding the section, improvements mainly comprise safety shoulders to promote bikability with dedicated space for walking, though this is more limited due to land uses.
- **Highway 55 North**- the north section of Main Street is a connection between downtown and the many recreational land uses north of town along the Payette River. Significant improvements are suggested to achieve robust walking and bicycling and to optimize the desired land uses for both residents and visitors.
- **The Strand**- The Strand trail is a wonderful river trail that needs additional connections and enhancements to elevate the trail to world class status. New road and trail connections, signage and other improvements would increase use, enhance environmental health conditions, and further the recreational experience in the city.
- **Pine Street**- the Pine Street improvements attempt to take advantage of the existing asphalt and right-of-way in place but also significantly enhance the street for school children and users of The Strand trail to which it connects.
- **School Street**- Similar to Pine Street, the recommendations were made after walking the road and seeing the existing width, configuration of the school parking area, and understanding its value aligned parallel with Highway 55.

Access along State Highway 55, as well as safer crossings of the highway, were ideas generated the community meetings and walkabouts. Promoting and enhancing The Strand through signage and connectivity was also a major area of emphasis.

With an enhanced sidepath design, both user groups should find getting to and from the school, Cascade Community Center and Cascade Medical Center, improved.

- **Sawyer Street**- the recommended improvements to Sawyer are extensive and will take significant resources. However, if achieved, this newly constructed street will not only provide safe and extensive facilities for pedestrians and bicyclists but could easily be an economic catalyst formed around the concept of active transportation.
- **Lake Cascade Parkway**- With improvements already having been made to this street, using existing right-of-way to expand the roadway section to accommodate active transportation users is the primary intent of recommendations. This road that connects the numerous recreational outlets along Lake Cascade to Highway 55/Main Street, if improved can reduce local car trips and improve safety and mobility for all users.

Potential corridors for bicycle and pedestrian improvements



Ranking Process

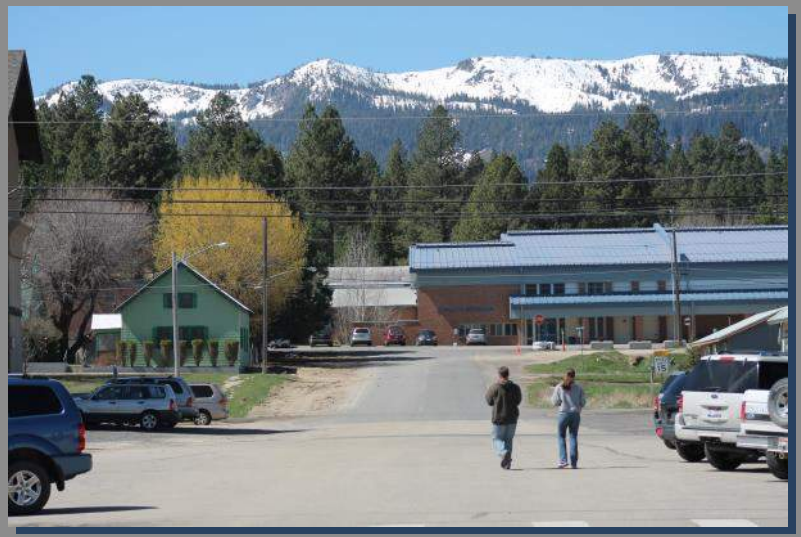
Having clear priorities is crucial to accomplishing a plan that contains many smaller and inter-connected projects. This plan identifies seven corridors for improvement which range from modest to complex.

To help identify which projects had the most support, participants were asked to list their top selections after learning of the recommended improvements, cost estimates, and complexity. They were then asked to identify additional partners and others affected by the project; and to relate why the corridors are important to the overall system of bike and pedestrian trails. At the public meeting, participants were asked to simply list their top priorities and top three intersections for improvement.

Once the project rankings were collected, each project was ranked from 1st to 7th by adding together the number of 1st, 2nd, and 3rd place votes and ranking them accordingly. The list below displays the result of this analysis.

Streets by Ranking

1. ***Pine Street***
2. ***Highway 55 South***
3. ***Highway 55 North***
4. ***Sawyer Street***
5. ***Lake Cascade Parkway***
6. ***The Strand Trail***
7. ***School Street***



The Pine Street corridor, which links The Strand trail to Highway 55 and to the Cascade School, rose to the top of shareholder priorities. This relatively short street is one of the most critical east/west street connections in Cascade and helps to circulate pedestrians and bicyclists in a unique way. With the improvements along the corridor and at the Highway 55 intersection, the street can be improved significantly.

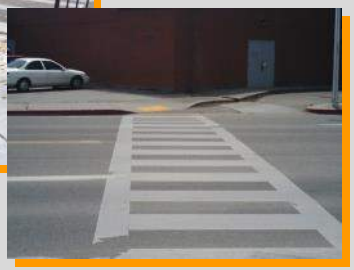
Project	Description	Complexity	Cost Estimate	Timeframe
Pine Street	Improve pedestrian access through minor widening, sharrows on the down hill side and bike lane up hill. RRFB at the intersection of SH-55 and Pine Street.	Low to Moderate	Design: $25,000 Construction: $62,000 Total $87, 000	0-3 years
Highway 55 South	Construct plant mix sidewalk from Payette St to Mill St on the east side of SH-55, widen shoulders on SH-55 from the South bridge to approximately the Whitewater Park entrance.	Low	Design: $10,000 Construction: $42,000 Total $52,000	4-6 years
Highway 55 North	Install pedestrian facilities on both sides of SH-55 north of Spring St through Lake Cascade Pkwy intersection; install multi-use facilities on the east side of SH-55 to the north bridge.	Moderate to Difficult	Design: $20,000-$80,000 Construction: $150,000-$250,000 Total $170,00-$330,000	4-6 years
Sawyer Street	Reconstruction of Sawyer Street to Collector road improvements.	Difficult	Design: $100,000 Construction: $1M-2M Total $1.1M-$2.1M	Beyond 6 years
Lake Cascade Parkway	Widen Shoulders to provide additional width for bikes and pedestrians; install "share the road" and wayfinding signs.	Moderate	Design: $20,000 Construction: $62,550 Total $82,550	4-6 years
The Strand	Install wayfinding signage and bike stations	Low	Design: $0 Construction: $22,440 Total $22,440	0-3 years
School Street	Construct paved pedestrian facilities on the east side of School Street from Lake Cascade Parkway to Cascade Street.	Moderate	Design: $20,000 Construction: $67,500 Total $87,500	4-6 years

Types of Improvements

The menu of options below provide some guidance on the types of facility investments Cascade may pursue in implementing improvements identified along the streets and trails within the City. The options are intended to provide cost-effective solutions that are proven to heighten safety and awareness.

Extruded Curb Side-walks

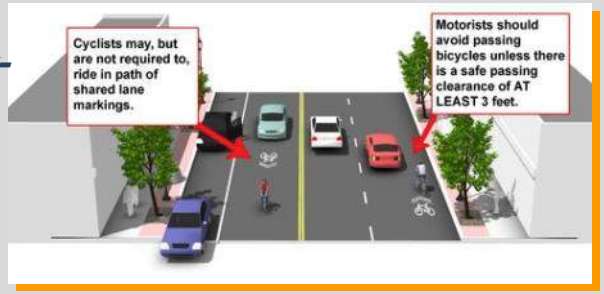
High Visi-bility Cross-walk



Bike Lanes

In-pavement Marker

Shared Lane Mark-ings



Buffered Bike Lanes

Rectangular Rapid Flash Beacon (RRFB)

PINE STREET

Pine Street from School Street to The Strand

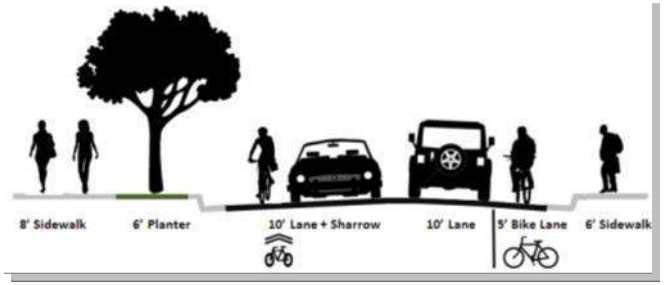
The Pine Street corridor is .35 miles and is a key east/west connection and links Cascade School to downtown and The Strand Trail. The road is only partially improved with a dirt road section east of north Front Street.

The land uses along the route are The Cascade School, Cascade Community Church, residential uses and The Strand trailhead.

Street Recommendations

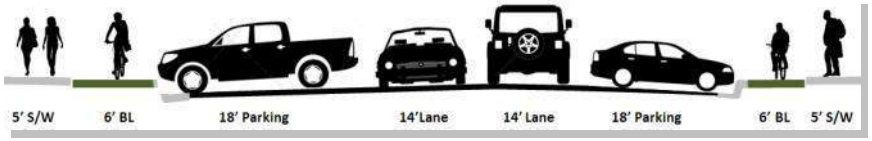
School Street to North Idaho

Pedestrian and Bike Realm– reconstruct street segment to accommodate all users, define the space, slow and calm traffic, and add a welcoming feel to the Cascade School complex. Using 47' of space (1.5' for each gutter pan + spaces depicted) would give students and residents a truly unique and accommodating street.



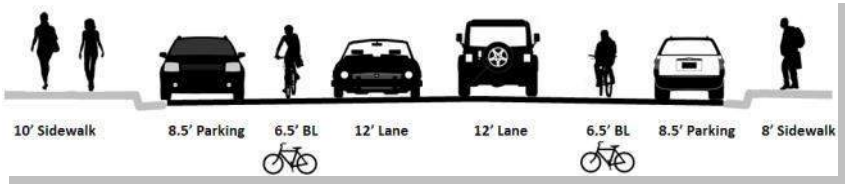
North Idaho to alley way

Pedestrian and Bike Realm– To take advantage of existing sidewalks and permit on-street parking, the one block section should be rebuilt by pulling the parking away from the buildings, and adding dedicated bike lanes. This approach minimizes conflicts by placing riders in front of parking and not in blind spots. With 90' of space from the back of both walking spaces, room for such a design is possible.



Alley way to Highway 55

Pedestrian and Bike Realm– For one block, reconstruct the roadway and the 78' of existing street width, using a design to take advantage of existing sidewalk space, and that accommodates on-street parking. Additionally, the intersection with Highway 55 has curb extensions, which require bicyclists to be aligned in a manner away from the curb.



Highway 55 to The Strand trail connector

Pedestrian and Bike Realm– this section is a mixture of paved and unpaved roadway and is mostly in residential areas and near the railroad spur. Minimal treatments are needed currently, though future consideration should be given to using the designs described when paving or significant reconstruction occurs.

- Short term, install wayfinding signage, bike fix-it station.

HIGHWAY 55 - SOUTH

Highway 55, from Pine Street to the South Bridge

The southern section of the Highway 55 corridor is approximately 1.45 miles and is comprised of two principal designs including a paved shoulder section mostly towards the south and a curb, gutter, sidewalk section in the downtown core. Ensuring adequate space along this section would allow a network to form for bicyclists and pedestrians and foster movement to land uses along the route and those that connect with the highway, like Kelly's Whitewater Park.

Land uses along this corridor include the downtown core, City Hall, The Cascade Store, D9 grocery, American Legion Hall, City Park, Fischer's Pond, The Strand trail, Kelly's Whitewater Park, Cascade Sports Complex, and Southern Valley County Recreation District.

Recommended Improvements:

Highway 55 and Mill Road

Pedestrian Realm

- Install rectangular rapid flash beacon

Highway 55 and Cascade Street

Pedestrian Realm

- Install rectangular rapid flash beacon

Mill Street to Payette Street

Pedestrian Realm

- Construct curb, gutter and sidewalk in the same fashion as the blocks north.

South Bridge to Mill Street

Pedestrian and Bike Realm

- Pave and extend the existing shoulders along the highway to a consistent five feet. This is particularly problematic from the South Bridge to the entrance of Kelly's Whitewater park.

While on site, the consultant team rode most of Cascade's streets and the Highway. Video footage was collected for later use and demonstration purposes. While watching, it is particularly evident how the existing paved shoulder shrinks as the bicyclist travels north. The usable space is minimized to a point where the users body and buffer space protrudes into the travel lane due to necessity and having a solid navigable surface.

Click here to watch Highway 55 video

HIGHWAY 55 - NORTH

Highway 55, from Pine Street to North Bridge

The northern segment of the highway corridor is 0.7 miles in length yet changes in design quickly as it heads north. From the Pine Street intersection to Spring Street, generous sidewalks are in place and intersection curb extensions utilized. From Spring Street north, the roadway loses all pedestrian facilities with the exception of a narrow and deteriorated sidewalk on the west side connecting Spring Street to Lake Cascade Parkway.

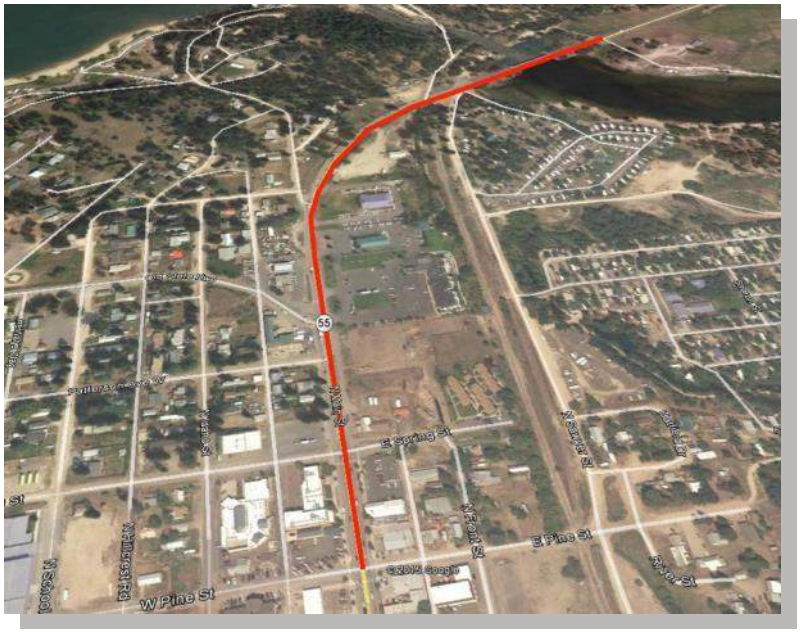
Land Uses: County Courthouse, Howdy's, the Ashley Inn, Family Dollar, LDS Church, National Forest Service, Water's Edge RV Park.

Recommended Improvements:

Pine Street Intersection
- Install Rectangular Rapid Flash Beacons

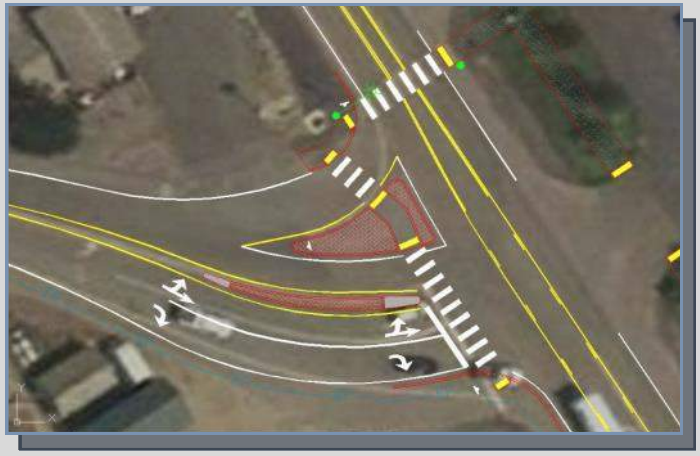
Spring Street to Lake Cascade Parkway
- On west side of highway, install asphalt sidewalks using existing roadway space until full reconstruction occurs in future.

Lake Cascade Parkway Intersection
- Reconstruct intersection to include high visibility crosswalk markings spanning Lake Cascade Parkway and Highway 55, pedestrian refuge island, and limited median as depicted in rendering below.



Lake Cascade Parkway to Dam Road
- Construct 6' sidewalk with 2' buffer on west side of roadway. Buffer can be stamped concrete or something similar to minimize long term maintenance by the City.

Crown Point Trail Connection
- Install high visibility crosswalk connecting to trail head and seek to extend reduced speed limits north of crossing and bridge.



Significant improvements are possible at the Highway 55/Lake Cascade Parkway intersection. The west leg of the intersection is over 120 feet wide, has high speed turning radii, and sees many large vehicle types including motorhomes and truck/boat set ups. Narrowing the crossing, elevating the pedestrian profile, and defining the travel spaces may improve the overall safety of the intersection and promote walking trips as sought by the residents of and visitors to Cascade.

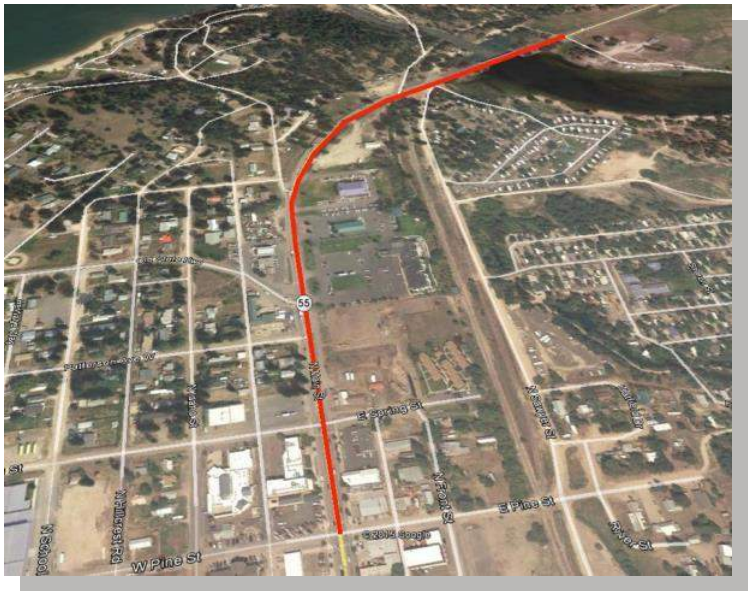
HIGHWAY 55 - NORTH

Recommended Improvements:
Pedestrian and Bike Realm

Spring Street to Sawyer Street
Install a 12' two-directional sidepath. There is adequate public right-of-way to create a facility that allows both bicycle and pedestrian traffic on the east side of the highway. The facility should be buffered from the travel lanes using any number of appropriate techniques.

Buffers can be created using paint and reflective candles, curbing, planters and concrete barriers. The buffer space is needed between the Spring Street intersection and the northern driveway to the LDS church. From that point heading north, the pathway can be aligned to the inside of the existing bio swales as ITD right of way extends east into the corner of the corridor.

Such a connection allows both pedestrians and bicyclists to not only access downtown, but also connect from the lake to the Payette River, The Strand trail, the RV park, and Ashley Inn, and many other highly sought after locations.



Sidepaths shown include the new path along Highway 95 in Sandpoint (Upper left); Sun Valley (Upper right); and Highway 44, Glenwood Boulevard in Garden City (Lower left). Additionally, having a 12' path allows a full sized snow plow to operate without restriction. (Lower right)

SAWYER STREET

Sawyer Street

Currently, Sawyer Street is an unimproved corridor that is under varying control. If improved, this street could not only provide a valuable parallel route to Highway 55, but also be a catalyst to future economic development including businesses, new residential, and hospitality sectors. The road spans approximately 1.35 miles and connects with Highway 55 on both the south and northern ends of the city. The most unique opportunity this street provides is to utilize a completely new design that takes full advantage of the valley view sheds, the slightly elevated alignment from the river floor, and few intersections that foster safer bicycle interaction.

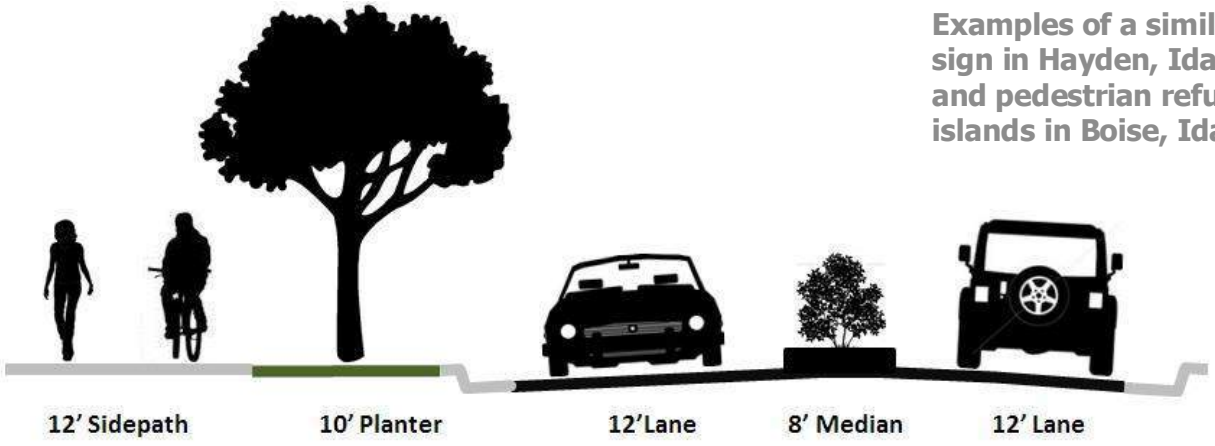
Land uses include Kelly's Whitewater Park, Southern Valley County Recreation District, and Water's Edge RV Park

Street Recommendations

Pedestrian and Bike Realm

Work with Kelly's Whitewater Park, the Southern Valley County Recreation District, and the owner of the old mill site to jointly fund and construct a roadway that includes a 12' sidepath for pedestrians and bicyclists, a landscape buffer for street trees, two 12' travel lanes, and an 8' planter median. Such a design is intended to be low volume, and slower speeds and not intended to be a bypass to Highway 55. Additional care should be given to limit stormwater run off by using the planters for collection and drainage; intersections should include refuge islands and turn radii at intersections minimized.

An example of more modern storm water collection practices which would reduce and/or eliminate stormwater discharge into the nearby Payette River



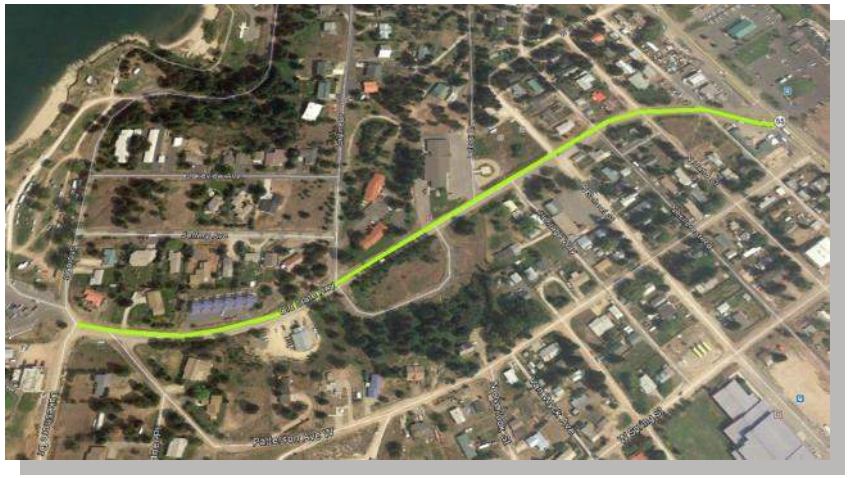
Examples of a similar design in Hayden, Idaho and pedestrian refuge islands in Boise, Idaho.

LAKE CASCADE PKWY

Lake Cascade Parkway

This street link may only be a half-mile in length but it is a critical connection for the community. Lake Cascade Parkway, the old state highway, connects the modern day Highway 55 with Lake Shore Drive, the Cascade golf course and numerous state parks sites that dot the eastern shoreline. In between these two points are the Cascade Community Center, Cascade Medical Center, and several residential streets and neighborhoods.

Land uses along the route include Howdy's, Cascade Community Center, Cascade Medical Center, Cascade golf course, and Lake Cascade.



Street Recommendations

Pedestrian and Bike Realm

The existing paved roadway is roughly 32' or less and includes a 5'-6' shoulder on the south side of the street. The shoulder is intended to provide a space for bicyclists and pedestrians in lieu of constructing full curb, gutter and sidewalk or bike lanes. Such upgrades would be difficult and expensive due to the lack of available right-of-way, grade, and drainage needs. In addition to serving active transportation users, the road also accommodates higher volume of large recreational vehicles and truck/camper combinations which necessitate improvements.

- Widen shoulder on the north side of the street to 5 feet, 6 feet where possible to balance the street. Due to the significant grade and instability of bicyclists, in the interim, restripe the road to allow a shoulder on the north side rather than the south. Since there are drastic speed differences between moving vehicles and either bicyclist or pedestrians the shoulder should be on the up-hill side of the street providing extra room and improve safety.

To watch video taken from the western portion of Lake Cascade Parkway Part I– Click Here

To watch video taken from the eastern portion of Lake Cascade Parkway Part II– Click Here

THE STRAND TRAIL

The Strand Trail

One of the true gems of Cascade is The Strand trail. The multi-use trail is located along banks of the Payette River and has some of the most stellar views in the valley. The trail spans 2.3 miles with multiple connection points.

Prominent land uses along The Strand include Fischer Pond, Cascade Athletic Complex, Southern Valley County Recreation District, Kelly's Whitewater Park, and Water's Edge RV Park.

Street Recommendations
The trail itself does not need any major improvements. What is needed for the trail to realize its full potential are several add-on elements that bolster overall appeal and functionality.

Connections
The trail has few official connections and several unofficial and less obvious connections. If a trail is limited to a few connections, it is limited in terms of accessibility. The farther a potential user has to travel to gain access to the trail, the more of a deterrent it poses.

Add connections at the following locations:
Water's Edge RV Park-

- Work with the property owner to determine the least invasive yet effective connection between The Strand and Highway 55/Sawyer intersection. Ideally this section should be paved as it would likely see high volumes of all user types.
- Seek to make the two unofficial connections official through either land purchase or property easements. Improve connections by improving surface and adding wayfinding signage along Sawyer.

- When the old mill site develops, make an additional connection to the trail from the end of the currently platted loop road connecting to Sawyer Street.

- Make a future connection linking Mill Street and the trail and improve with paving and wayfinding.

- Formalize connection at the beginning of Kelly's Parkway to trail.
- Make a short connection between the end of the dirt parking lot north of Fischer's Pond and the trail.

Video of the Stand Trail near Fisher Pond

SCHOOL STREET

School Street

School Street is a street that is aligned parallel with Highway 55 and provides direct access to the Cascade School complex. Only portions of the road are currently paved and there are no plans for improvement in the near future.

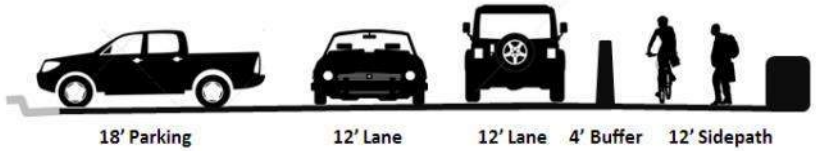
Land uses include housing, Cascade School, and Cascade Community Center.

Street Recommendations

Pine Street to Spring Street

Pedestrian and Bike Realm

Refine the existing space in conjunction with parking lot changes to foster improved movement to and from the existing cross-walk. Add a vertical barrier to create a 12' sidepath and calm traffic.



Spring Street to Lake Cascade Parkway

Pedestrian Realm

When the street segment is paved in the future, add 5' asphalt sidewalks to reduce project costs.

Bike Realm

Also when street is paved, add shared lane markings 11'-12' from curb face according to MUTCD standards.

By reconfiguring the school parking lot and closing the western driveway, safety for school kids will improve due to a more orderly ingress and egress. The lot is well suited for this type of movement and has more than enough room to accommodate the volumes.

(Parking stalls are not to scale as the space, if organized, can accommodate roughly 90+ stalls as stalls are typically 10' wide)

Implementation

Implementation of the recommendations made in this plan will require a menu of options ranging from typical maintenance level improvements to special projects, which will require partnerships and additional funding sources.

Maintenance. Projects falling under "maintenance" generally consist of paint, smaller improvement projects like shoulder paving and in some instances, adding facilities such as sidewalks or paths. Bike lanes, shared lane markings, crosswalks, or newly defined pedestrian walkways can be done at any time using a small crew and paint truck or paint equipment.

Paint applications can be applied using a variety of tools including by hand.

Development. New development in the city should be required to contribute to the public transportation realm when appropriate. Future sidewalks, pathway connections, bike parking, and lighting are examples of elements vital to the system ripe for private investment. These systematic characteristics are common in most communities and if not constructed by the private sector will be borne by the Cascade tax payers.

Reconstruction. Streets are often reconstructed due to damage, wear, or for significant underground utility projects. For these regularly scheduled projects, coordination of recommendations from this plan should be considered, reviewed and inserted into construction plans. Though improvements may take longer than anticipated with a standalone construction project, constructing new elements while reconstructing existing facilities can be financially advantageous.

Future Roadways. In the event of new streets being constructed in Cascade, sidewalks should be constructed and context considered when determining if attached or detached sidewalks are built. If the street is to carry local traffic only, bicycle facilities are likely not needed unless special circumstances are present. Bicycle facilities should also be added if the street provides collector like functions, has above average traffic volumes, or serves land uses which will be connected with or directly access those that have an expectation of attracting or generating bicyclists.

Special Projects. These kinds of projects occur out of the realm of normal operations, development, or even reconstruction. Special projects will include joint partnerships with railroads, pathway connections with ITD facilities, pathways in conjunction with parks and schools, or other such arrangements. These types of projects will take additional planning, dialogue and agreements as well as funding sources that may be grant related, endowment funds, or general purpose tax dollars.

Funding Options– Federal and state funding for active transportation projects is currently in a state of flux. The sources listed in the table below are viable options but are subject to change in the short term. More specific information about these funding sources, who applies for them, maximum award amounts, and timing cycles, can be found at the following sites:

http://itd.idaho.gov/bike_ped/undingGuide2013.pdf

http://www.fhwa.dot.gov/map21/summaryinfo.cfm

Funding Source	Projects	Programs	Max Award	Local Match
Transportation Alternatives Program (TAP)	X	X	$500,000	>7.34%
Recreational Trails	X		Varies	20%
Bikes Belong	N/A	X	$10,000	
Community Development Block Grant (HUD)	X	N/A	Varies	Varies
5310, Enhanced Mobility for Seniors	X		Varies	>20%
Federal Lands Access Program	X		Varies	>7.34%
Highway Safety Grant Program	X	X	Varies	25%
ID ADA Curb Ramp Improvement Program	X		$60,000	Not Req.
Idaho Community Foundation		X	$5,000	Not Req.
Local Rural Highway Investment Program	X	X	$100,000	Not Req.
5311, Rural Areas Formula Grants (Transit Focused)	X	X	Varies	8%-20%
5311 (F), Rural Formula	X	X	Varies	
Surface Transportation Program, Rural	X	X	Varies	>7.34%
USDA Community Facility Grants	X	X	Varies	25%
Rural Community Development Initiative		X	Varies	50%

Changing Policy

Cascade Policies and Regulations

The City of Cascade aspires to increase the access and safety of city streets for pedestrians and bicyclists. Current policies have begun to outline goals for how to make these improvements. The table below identifies specific chapters, goals, objectives and policies from the City Comprehensive Plan and City Code and suggests improvements to encourage more pedestrian and bicycle use and to likely enhance safety for those who want or need to walk and bike.

The policy support will only be implemented if the City changes the laws that govern how development occurs and the expenditures that it makes on infrastructure improvements. Included in the table are recommendations to consider revisions to the Comprehensive Plan and to adopt specific City standards for roadway design. There are also shorter term recommendations for lesser amendments to the code that could lead to improvements.

Additionally there are recommendations regarding transportation. The City should develop standard roadway cross-sections that require pedestrian and bicycle facilities and offer predictable clear guidance to developers and community members on what is expected. These cross sections should strive to provide safe facilities, including designated walking and bicycling surfaces which could include sidewalks, pathways, bike lanes, or other context sensitive tools. The City should also review the priorities for Capital Improvements and other planned expenditures on a regular basis in conjunction with the goals and projects listed in this plan.

Work cooperatively with Cascade School District in support of transportation polices that" offer opportunities offer opportunities to show support for the health benefits of walking and biking and to set goals for encouragement of walking and biking. Idaho Smart Growth has developed examples of what such policies look like and can be viewed at the following link: http://www.idahosmartgrowth.org/app/uploads/2014/05/Model-School-Policies.pdf

What	Existing Policy	Recommendations
Chapter 2, Economic Development	"Maintain streets and sidewalks including snow removal."	This can be strengthened as it does not identify the parties responsible for maintenance or enforcement thereof. Adding code enforcement language can be helpful.
Chapter 2, Economic Development	"Encourage office uses on the upper levels of Main Street retail fronts" "Encourage the development of residential units within walking distance of the downtown retail-shopping district."	Both goals point to a higher concentration of population and users within and near a short distance of downtown. These goals reiterate the need to improve walkability and bikability within 1/4 to 1/2 mile of Main Street. Such goals should drive priorities of resources to be a catalyst to encourage such private investment.
Chapter 3, Transportation	"Where practicable and appropriate to the development and location within the community, require all new commercial and residential developments to provide safe and efficient bicycle and pedestrian connections to existing networks, or provide easements for new ones consistent with adopted plans"	City code is less ambiguous about pedestrian infrastructure and states: "Sidewalks shall be required on both sides of the street. Pedestrian walkways shall have easements at least ten feet (10') in width and include a paved walk at least four feet (4') in width. Sidewalks and crosswalks shall be constructed in accordance with the standards and specifications as adopted by the council and comply with ADA standards" Amend Comprehensive Plan language to reflect the requirements of facilities as per City Code.

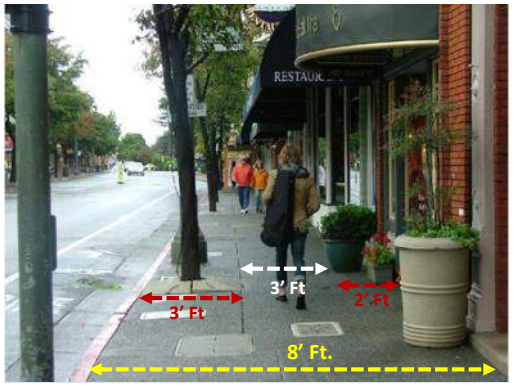
CHANGING POLICY

What	Existing Policy	Recommendations
Chapter 3 Transportation	Collectors– …"Recommended right-of way width for a 2-Lane collector is 80-120 feet with pavement width of 28 feet." Local Streets– …"Recommended right-of-way width for a 2-lane local street is 60-80 feet with pavement width of 26 feet."	Create a series of street cross sections based on typology including residential, commercial/retail, and industrial. Collector street width including 10'-12' travel lanes, 5' bike lanes, and sidewalks of 5'-8' are desirable for Collectors. In certain instances other street characteristics such as landscape buffers, on-street parking, or furniture zones can be included. The only difference between Local Streets and Collectors to date is two feet of pavement. Local streets should also be subject to new street designs. Bicycle facilities are subject to the context of the local road, but not typical of local streets. Sidewalks or walking facilities are necessary as typically is on-street parking.
Chapter 3 Transportation	Projects and Plans: "Another important community enhancement project is to obtain right-of-way and/or easement between State Highway 55 at the entrance to the Whitewater Park...This would facilitate a couplet with Sawyer Street and Highway 55…"	As per this plan, Sawyer Street should be improved and connected, however not as a couplet. Minimal, mainly local traffic that is two-way with significant bicycle and pedestrian facilities would boost access, enhance safety and stimulate economic development without faster moving one-way traffic like a couplet.
Chapter 3 Transportation	"Encourage new development to provide pathway connections between neighborhoods, parks, schools, shopping and other destinations…."	New developments could be subject to a connectivity index approach, and paths that bisect streets or connect with other streets at their terminus such as a cul-de-sac. (More information on the use of connectivity indices can be found at: http://www.vtpi.org/tdm/tdm116.htm
Chapter 10 School Facilities	"Ensure that school facility planning is a collaborative effort between cities county and school district."	Consider adding language that encourages school sites to be safer and efficient for walking and bicycling and for the schools to encourage such activities for those students able to participate in such modes.
City Code	"It shall be unlawful for any person to ride a bicycle upon a sidewalk within a business district of the City."	With most of the business district aligned along Highway 55, for a portion of bicyclists riding on the Highway is not a desired option and thus riding on the sidewalks more likely. This language could be amended to define an age such as 10-12 (Idaho Falls has similar language), or state that bicyclists must yield the right of way to pedestrians.
City Code	"Sidewalks shall be required on both sides of the street. Pedestrian walkways shall have easements at least ten feet (10') in width and include a paved walk at least four feet (4') in width ."	Four feet is exceptionally narrow and meets the bare minimum for ADA compliance. Sidewalks in residential areas should be at least five feet but six is optimum. Sidewalk width should also be subject to the new street designs.

Needs of Walkers & Bikers

Human beings require space while walking or bicycling. The space we need is determined by our size and shape as well as out physical ability to move.

As a pedestrian, we require buffer space to feel comfortable. We need space above and to our side to be comfortable and avoid being struck with objects. The speed at which we move greatly differs as much as people do. Runners can run up to 10 miles per hour while mobility impaired individuals may move at less than 1 mile per hour.



Bicyclists require just as much consideration with regard to width, height, and speed. A child riding a bike will ride at a slower speed and can be less predictable. A mother may chose to use a bicycle chariot to carry a toddler, adding both length and width to her needed space.

Yet despite these normal human tendencies both the walking and bicycling realm are seldom given the depth of thought necessary to accommodate such variability and instead a limited few design options made the default.

The intention of this section is to highlight how humans can differ and why context is such a valuable contributor to planning, design and operation of our communities transportation infrastructure.

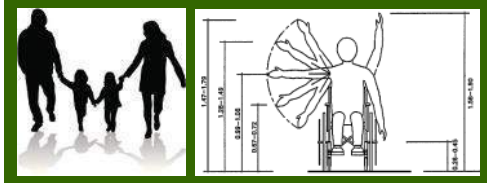
Dimensions of Humans: Pedestrians

Speed. Humans move at different speeds. Federal guidelines for crosswalks require enough time be given for people to walk at a 3.5 feet per second pace or 2.38 miles per hour. In many instances this may be appropriate, but in areas with school zones, population of senior citizens, or those with mobility limitations, additional time may be appropriate given user ability.

Width. The space we occupy also extends to our sides as much as in front or behind our bodies. Generally, an adult is 12-24" wide, but with an additional six inches of comfort space, a person may need up to three feet to feel comfortable walking in a given space. If a person is wheelchair bound, walking with another adult or child, the width demands are greater. Furthermore, if in an environment with opening doors, fences, mail boxes, and street furniture, space can become narrowed and less accommodating.

Height. Though still a factor, height is generally less of an issue for walkers as it may be for bicyclists. The taller of Americans are between 6'-6-3". To accommodate the normal height and beyond an 8' vertical minimum should be observed.

Width, height, and occupied space of users can vary



Other Needs. Other common users also need to be accommodated in various ways. A wheel chair user needs facilities to be compliant with ADA so that they are able to safely negotiate sidewalks, curb ramps, crossings and other such facilities. An elderly person using a walker for assistance is also in need of a relatively flat and smooth surface free of trip hazards. Parents pushing strollers, dog owners walking their dogs, and even the physiological changes seen in American populations with the epidemic of obesity, all have concerns and considerations when choosing how to design a pedestrian network.

Pedestrians can embody multiple user types and abilities. Travel speed, buffer spaces, and land uses can all shape the facilities used and the environments where people either flourish or struggle.

NEEDS OF WALKERS & BIKERS

Though often lumped together in the same category as pedestrians, bicyclists are very much their own category of road user. A bicyclist can be a child on a small bicycle traveling at a slow speed, a novice rider on a beach cruiser type bike out for a weekend ride or an expert road rider who may travel at speeds equal to moving traffic for the purposes of commuting. Each type of rider and circumstance is unique and deserving of specific context analysis to determine facility type.

Bicyclist Type

Just as there are a wide variety of pedestrian types, there are also several bicyclist types. The newest way to view population segments was created in 2006 by Roger Geller with the City of Portland. The four types described by Mr. Geller give a more relatable illustration as to the desires of bicyclists ranging from those willing to ride in any conditions or in any traffic scenario to those totally unwilling to ride under any circumstance.

- **The Strong and Fearless**. These are the people who will ride regardless of roadway conditions. They are 'bicyclists" and riding is a strong part of their identity and they are generally undeterred by roadway conditions.
- **The Enthused and the Confident.** Those who have been attracted to cycling because of supporting infrastructure. They are comfortable sharing the roadway with automotive traffic, but prefer to operate on their own facilities.
- **The Interested But Concerned**. Curious about bicycling and about the need for people to lead more active lives, they would like to ride more, but, are afraid to ride.
- **No Way, No How**. This group is currently not interested in bicycling at all, for reasons of topography, inability, or simply a complete and utter lack of interest.

Sources:
http://www.portlandoregon.gov/transportation/article/264746
http://bikeportland.org/2006/12/07/what-type-of-cyclist-are-you-2650

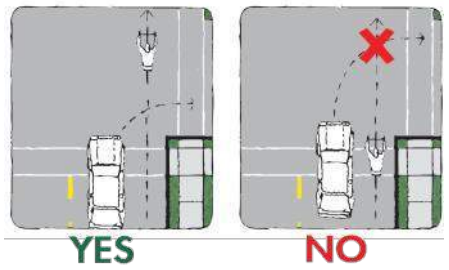
Dimensions of Humans: Bicyclists

Speed. Typically, most bike riders travel between 12-15 miles per hour. However, this can greatly vary as older riders or young children could ride slower than 10mph while expert, well conditioned riders as high as 25mph.

Width. Depending on the bicycle and to a degree the rider, width is generally defined as the width of the handlebars plus buffer space of one foot on either side. However this dimension could increase with the use of panniers, a child chariot or unique bicycle.

Height. Often a bicyclist has no greater demands for vertical clearance than does a pedestrian, however that can change for taller individuals or for bike riders riding bikes with frame dimensions outside the normal sizes. Eight feet vertical clearance is regarded as the minimum for objects, signs or landscaping.

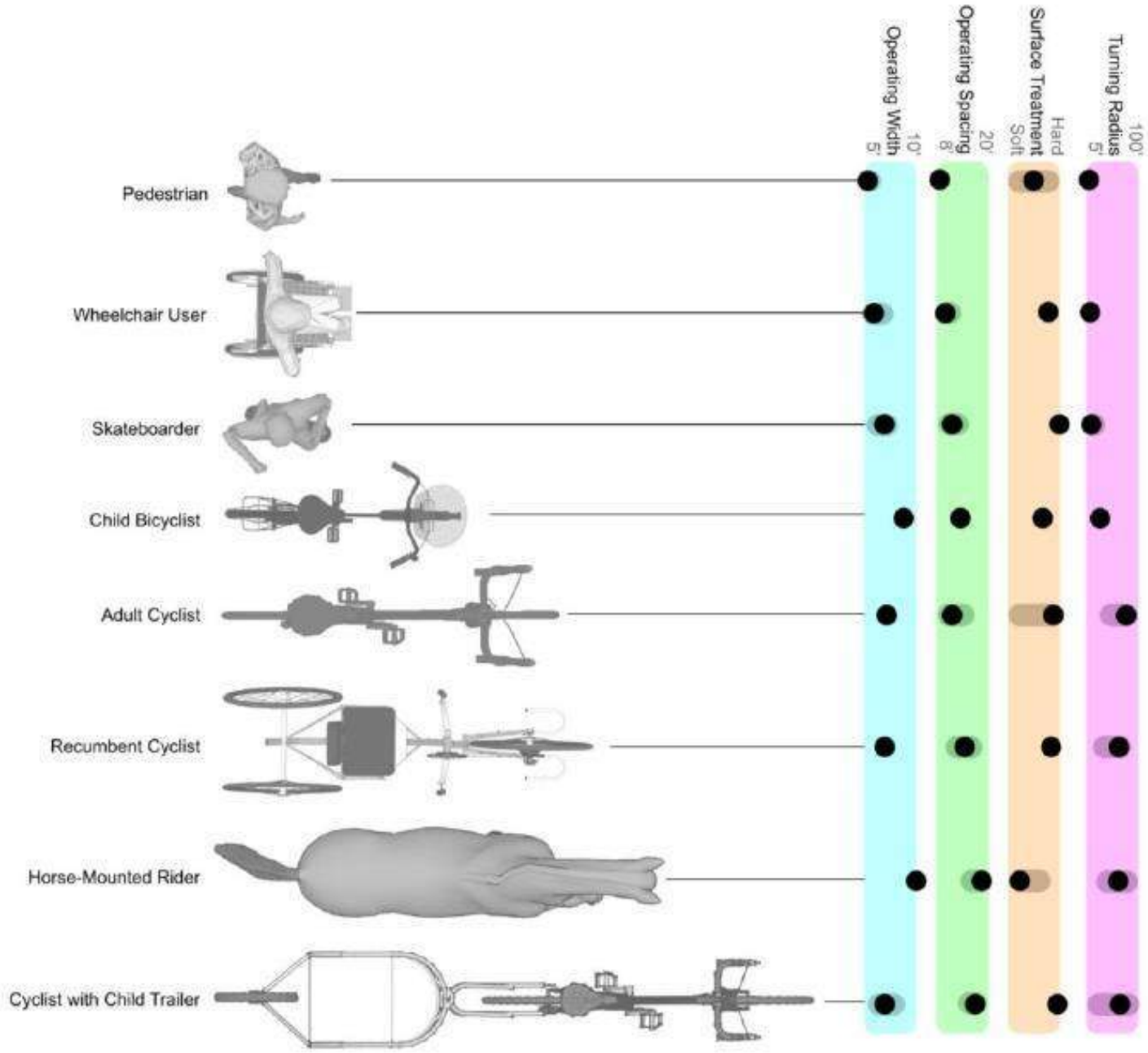
Other Needs. Often overlooked when thinking about bicyclists and their needs are other features not always synonymous with "infrastructure". System elements such as safe, stable, and usable bike racks, space free of debris and obstruction, and a driver awareness of poor etiquette such as "right hooks" and overtaking without giving bicyclists at least a 3 foot buffer., are all critical to making a communities investment into bicycle infrastructure successful and valued.



"Right Hook"" Source:
http://www.mybikeadvocate.com.html

"3 Foot Rule" Source:
http://onespeedgo.blogspot.com

The illustration below shows the different operating dimensions of pedestrians and bicyclists, as well as other multi-use trail users. It shows why planners and designers should be careful when identifying design options for facilities that incorporate these many user needs.



Typical operating widths, spacing requirements and turning radii depend on forward velocity as well as the experience of the operator. Skilled skateboarders frequently turn in less than the length of their own skateboards, for example. The preferred surface treatment for an adult cyclist will also depend on the type of bicycle (e.g., road or mountain or hybrid) that is being ridden as well as the purpose of the ride, for example, commuting as opposed to recreation.

Illustration: J. Scott Lane

Addendum B
Activity Connection Plan

City of Cascade
Activity Connection Plan

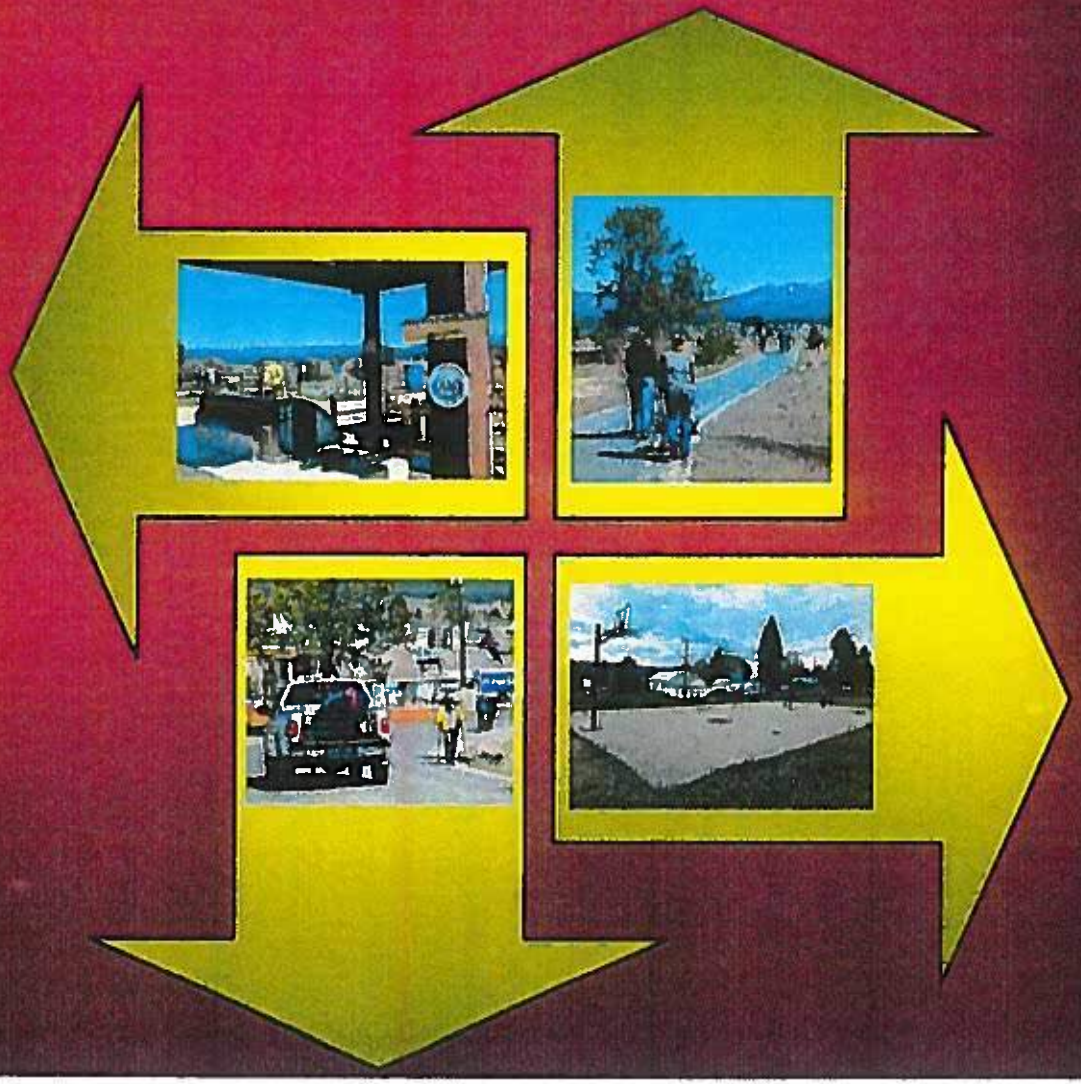
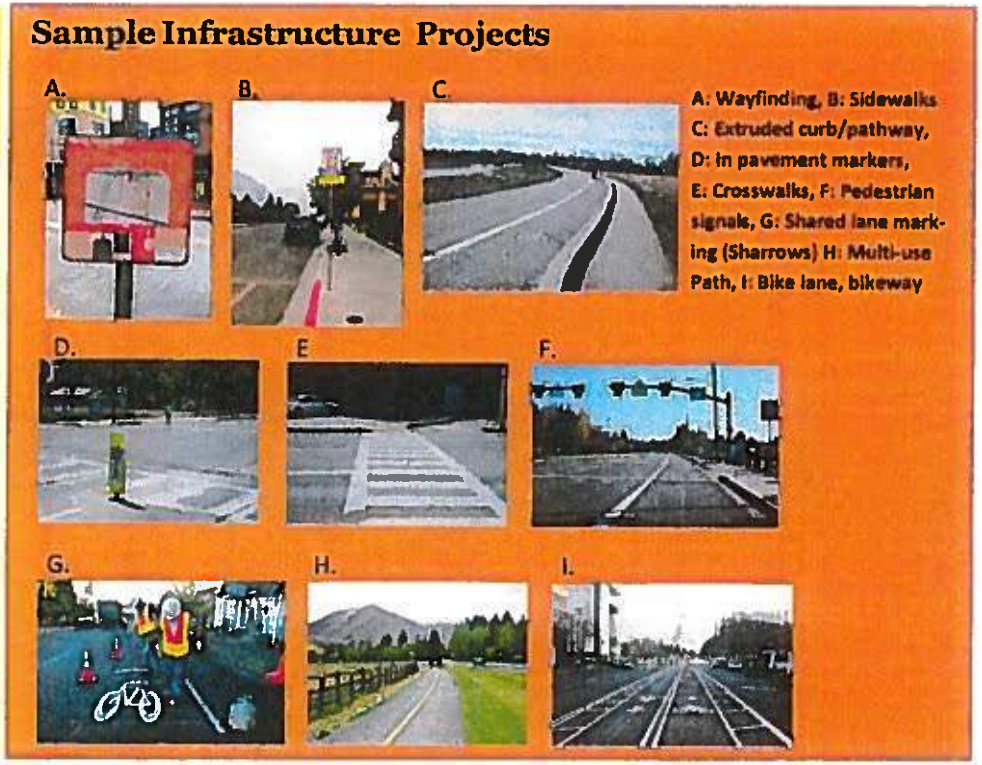


Table of Contents

What is an Activity Connection Plan...

...an Activity Connection Plan or ACP, is a planning model that improves the walking and bicycling environment of a given community by making infrastructure improvements that safely and efficiently deliver citizens to locations where they are most likely to participate in recreation or sport. Most active transportation trips are for recreation and many communities still have yet to either embrace or implement a comprehensive active transportation plan. The ACP is a means to get communities started on improvements proven to be affective and help usher users to desirable community assets. Additionally, the model identifies site improvements that further attract users or provide a better return on investment for city funding. The model contains several steps including: 1. Identify community activity sites (Parks, schools, trails, gyms) 2. Identify participant generator areas (neighborhoods, office, civic) 3. Identify the primary and secondary streets connecting sites with users 4. Meet with stakeholders and review plans for existing projects or ideas 5. Recommend physical and programmatic projects or policies to improve conditions of streets and sites. To illustrate the types of improvements most likely suggested in an ACP, the following graphics are shown which include on-site improvements and typical street infrastructure improvements:



ACP Site Plan Description

A. The name of the site

B. "Primary" site is a larger more popular location.
A "secondary" site is a smaller less popular location.

C. "Primary" street is a major thoroughfare, a "secondary" street has a local presence and is less significant communitywide.

D. Site assets are the facilities currently located within an activity site.

E. Site streets are the streets nearby which likely carry users to and from the activity site.

F. Image bar showing an overhead satellite view and support images

G. Site Description– a basic description of the site, its relative position and it's assets or potential.

H. Recommended Site Improvements is a list of on-site improvements that could optimize the space and enhance user experience.

I. Recommended Infrastructure Improvements are the necessary projects in and around the site on streets necessary for safety or accessibility.

The Strand Trail

Primary Activity Site

Secondary Street Access

Site Assets:

- ***Paved/ unpaved trail***
- ***Connection with Fischer Pond***
- ***Connection with KTVP***
- ***Benches***

Site Streets

- ***Pine Street***
- ***Highway 55 North (Future)***
- ***Whitewater Blvd***
- ***Highway 55 South***

Site Description– The Strand trail is a community gem for Cascade. The trail is aligned along the western banks of the Pavette River and nearly connects the northern and southern edges of the town bypassing the Highway 55 corridor. With focused enhancements the already stellar trail could be even better.

Recommended Site Improvements:

- Consider adding fix-it stations at each end of the trail as well as the existing Pine Street connection and future Mill Street connection
- Install wayfinding signage at each of the trail connections
- Near the Water's Edge to Pine Street section, add additional benches, and water fountains with lower trough for dogs.
- Develop a walking loop system using The Strand trail as a spine and other trail streets
- Work to create a Find the ___ program similar to Coeur d Alene

Walk loop system in Sandpoint community Find a Moose element in Coeur d'Alene

Recommended Infrastructure Improvements:

- All identified infrastructure improvements are included in the Cascade Bicycle and Pedestrian Plan.
- Consider future construction of a pedestrian bridge spanning the river with a pathway connecting to Weant Lane

Fix-it stations are simple manual air pump and repair stations useful for bicycles and strollers

5

City of Cascade Activity Connection Plan

The Strand Trail

Primary Activity Site

Secondary Street Access

Site Assets:

- ***Paved/unpaved trail***
- ***Connection with Fischer Pond***
- ***Connection with KWP***
- ***Benches***

Site Streets

- ***Pine Street***
- ***Highway 55 North (Future)***
- ***Kelly's Parkway***
- ***Highway 55 South***

Site Description– The Strand Trail is a community gem for Cascade. The trail is aligned along the western banks of the Payette River and nearly connects the northern and southern edges of the town bypassing the Highway 55 corridor. With focused enhancements the already stellar trail could be even better.

Recommended Site Improvements:

- Consider adding fix-it stations at each end of the trail as well as the existing Pine Street connection and future Mill Street connection.
- Install wayfinding signage at each of the trail connections.
- Near the Water's Edge to Pine Street section, add additional
- benches, and water fountains with lower trough for dogs.
- Develop a walking loop system using The Strand trail as a spine, and other trail/streets.
- Work to create a "Find the____" program similar to Coeur d'Alene.

Walk loop system in Sandpoint; community Find a Moose element in Coeur d'Alene

Recommended Infrastructure Improvements:

- All identified infrastructure improvements are included in the Cascade Bicycle and Pedestrian Plan.
- Consider future construction of a pedestrian bridge spanning the river with a pathway connecting to Weant Lane.

Fix-it stations are simple manual air pump and repair stations useful for bicycles and strollers.

Armstrong Park

Primary Activity Site

Primary Street Access

Site Assets:

- ***Picnic shelter***
- ***Half basketball court***
- ***Playground and swings***
- ***Walking path***

Site Streets

- ***Mill Street***
- ***Front Street***
- ***Highway 55***

Site Description– Armstrong Park is a testament to cooperation amongst community stakeholders given the upgrades and maintenance performed for numerous entities. The park does need to be upgraded in many ways and if undertaken can make the site one of the hubs of Cascade recreational activities.

Recommended Site Improvements:

- Completely rebuild skate park area using modular system to minimize costs (delete, RE: pg. 9 Master Plan)
- Add second basketball goal to court to allow a full–court, or two half-court games (delete, see pg. 9, re: master plan)
- Add life-sized games and concrete chess/checker tables
- Consider adding tetherball stations
- Add bike racks at various locations
- Consider a community garden space near the American Legion building

Modular skate park, Kellogg ID.

Examples of life-sized games and chess tables

Recommended Infrastructure Improvements:

- When Mill Street and Front Street are improved, full sidewalks and bicycle facilities of some sort should be included in the final design.
- Additional improvements identified to Highway 55 South and the Mill Street intersection are included in the Bicycle and Pedestrian Plan.

Existing basketball court

Cascade School

Primary Activity Site

Primary Street Access

Site Assets

- ***Open space***
- ***Playground***
- ***Basketball court***

Site Streets

- ***Pine Street***
- ***School Street***
- ***W. Spring Street***

Site Description– The Cascade School complex is situated on the west side of Cascade and nestled up against the ridgeline separating the city from Lake Cascade. The school has open ground that is largely without facilities and could not only improve school functions but also be used for by general citizens during off hours.

Recommended Site Improvements:

- Develop joint use agreement between the City and School
- Consider a perimeter walking path and youth exercise station (pictured)
- Consider a mini-soccer field, including goals and perimeter walls.

Recommended Infrastructure Improvements:

- Improvements to both School Street and Pine Street have been identified in the Cascade Bicycle and Pedestrian Plan
- West Spring Street can provide another access route for students, including those east of the railroad tracks. Eventual programmed improvements should include, sidewalks, bike lanes and a connection with Sawyer Street

A mini soccer field can be a natural draw for people of all ages as it requires fewer participants, is without formalities, and encourages impromptu participation.

Recreation District

Primary Activity Site

Secondary Street Access

Site Assets

Site Streets

Site Description– The Southern Valley Recreational District site is the future home of a state of the art multi-purpose facility including swimming pools, gym, ...
With minor added elements, the site could be even more enticing for recreational activity.

Recommended Site Improvements:

- Consider starting a Senior Citizen tricycle fitness course using The Strand and nearby community facilities.

Recommended Infrastructure Improvements *(If site improvements are made):*

- Site is currently under construction.

Cascade Sports Park

Primary Activity Site

Primary Street Access

Site Assets

- ***Playground***
- ***Baseball diamonds***
- ***Football/soccer field***

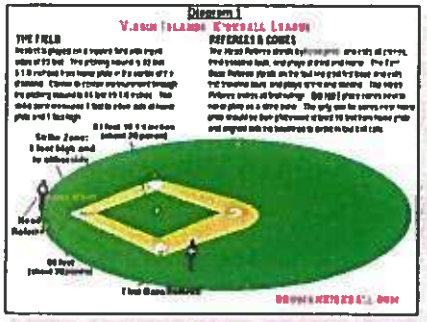
Site Streets

- ***Highway 55***
- ***Arrowhead Drive***

Site Description– The Cascade Sports Park has provided recreational and team activity outlets for several decades. The complex was subject to a recent Master Plan adopted in 2014. That Plan is chocked full of recommendations that appeal to the entire spectrum of area residents.

Recommended Site Improvements:

- Examine the merits and potential of an adult kickball league using the existing baseball fields
- Consider an adult workout area like pictured. Though The Strand may offer similar features, a consolidated space allows parents with kids to use the playground or participate in a sporting event while they workout.



The dimensions of a kick-ball field

Recommended Infrastructure Improvements:

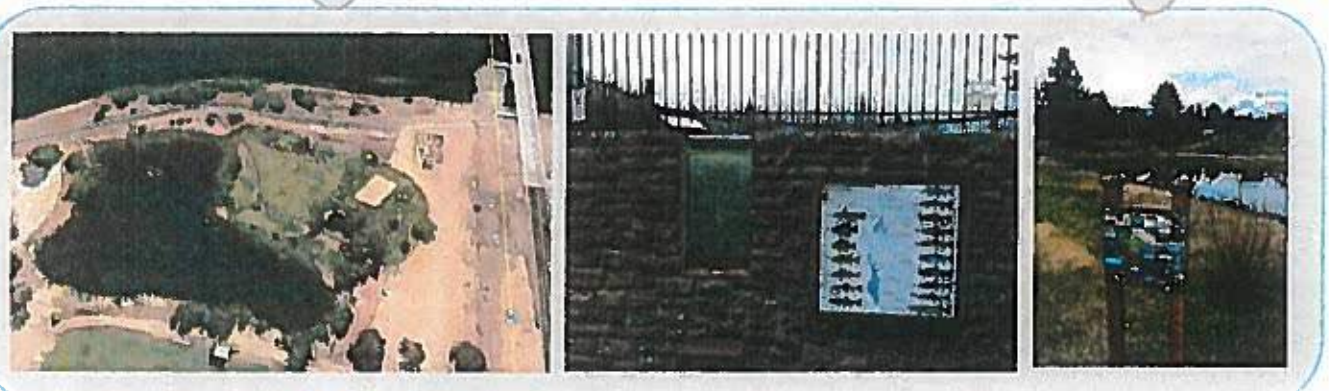
- Examine the potential for highway crossing in the vicinity of Arrowhead Drive to provide direct assess into the park site.
- Improving the shoulder along Highway 55 was called for in the Cascade Bicycle and Pedestrian Plan.
- Additional wayfinding signage in the park could help users and visitors know of additional features in nearby Fischer Pond, The Strand and even Armstrong Park.

Example of exercise park, is 45' in diameter.

Fischer Pond

Primary Activity

Primary Street Access



Site Assets

- ***Horseshoe pits***
- ***Volleyball courts***
- ***Badminton court***
- ***Community garden***
- ***Picnic tables***
- ***Gazebo***
- ***Frisbee golf***

Site Streets

- ***Highway 55***

Site Description– Located adjacent to the Cascade Sports Park, Fischer Pond is a gem of a site and appeals to users of all ages. The Pond is permitted for fishing, is a working science and biology site for area students, and has numerous education and cultural amenities located on-site. The site is also subject to the 2014 City's Sports Park Master Plan and will see continued investments in the years to come.

Recommended Site Improvements:

- Add a natural playground area
- Consider a nature walk trail including signage on local floor and fauna, song bird call stations, and stationary view finders.

Recommended Infrastructure Improvements:

- Shoulder widening on Highway 55 was recommended in the Cascade Bicycle and Pedestrian Plan.

Natural playgrounds can range from simple to more complex, and allow imagination and creativity to be the determinant of use.

Crown Point Trail

Secondary Activity Site

Secondary Street Access

Site Assets

- ***Multi-use pathway***
- ***Year round activities***
- ***Scenic views***
- ***Connections to campgrounds***

Site Streets

- ***Vista Point Blvd***
- ***Vista Point Loop***

Site Description– One of the hidden assets of the Cascade area, the Crown Point Trail is a former railroad line that is now a dedicated recreational trail. The 2.5 mile trail has a gentle grade, scenic views and is accommodating of virtually all possible users. One challenge and desire of the community is to connect the trail with Highway 55 so that users could possibly cross the highway and connect with The Strand Trail east side of the city.

Recommended Site Improvements:

- Trail head fix-it station
- Consider adding a Yellow bike station at trailhead

Recommended Infrastructure Improvements:

- Connect the trail on the southeastern end by using a combination of Vista Point Boulevard and a route similar to the one shown. For the on-road portion, the combination of a colored roadway material (Vista Point is dirt) and vertical barrier like small boulders could distinguish the trail from the road. The remaining section connecting to Highway 55 could be a natural surface path with one switchback to minimize the impacts from elevations. (This will require the cooperation from Idaho Power and one private property owner, and ITD for the Highway 55 crossing.)

Using larger rocks/boulders to define a pathway can help define the trail and minimize user/ vehicle interaction

Ridgeview Rec. Unit

Secondary Activity Site

Secondary Street Access

Site Assets

- ***Showers***
- ***Restrooms***
- ***Trails***
- ***Beach areas***

Site Streets

- ***Lakeshore Drive***
- ***Dam Road***

Site Description– This Lake Cascade State Park(LCSP) campground and day use area in the Cascade area, Ridgeview, has stunning views, sandy beaches, shower facilities, and a trail way.

Recommended Site Improvements:

- Add bike racks near restrooms and shower facilities
- Post way finding signage linking with other campgrounds and trails
- Post maps thoughout the site to show current location and proximity to other sites

Recommended Infrastructure Improvements:

- Employ a pedestrian/bikeway paint design throughout campground roads similar to shown. Thru ways can be as narrow as 9' with a defined path being 5' and now narrower than 4'. Traffic calming and a defined active transportation space will result.
- Consider a "water hole" concept at southern cove. This means floating docks to jump from, maybe a rope swing, or perhaps a large spray fountain. (shown right)
- Explore options near shower area to create small activity park with horseshoe pits, interpretive signs, and/or picnic area.

Van Wyck
Rec. Unit

Primary Activity Site

Primary Street Access

Site Assets

- ***Boat launch***
- ***Restrooms***

Site Streets

- ***Lakeshore Drive***
- ***Lake Cascade Parkway***

Site Description– Perhaps the busiest of the LCSP campground sites, Van Wyck location sees significant traffic from both local residents and visitors due to the many activities that take place at the grounds and the presence of the convenient boat launch. The campgrounds are heavily used and the park has recently expanded with a kayak and paddle board rental operation.

Recommended Site Improvements:

- Seek to expand trail along shoreline as shown
- Construct wading/waterfall structure similar to that at Lake Coeur d'Alene (shown)
- Consider turning Van Wyck into a day use park that promotes beach access and events with the community such as outdoor concerts
- Add splash pad concept either behind the beach area or near parking lot
- Long term consider small outdoor event center for events such as par- ties, receptions and other similar events

(left) With a day use transition, an event center (Barber Park, Boise) with the mountain and lake backdrop could be a sought after space and compliment the City of Cascade. (right) The water feature found at City Park in Coeur d'Alene. (upper right) proposed route for trail expansion.

Van Wyck

Rec. Unit

Primary Activity Site

Primary Street Access

Site Assets

- ***Boat launch***
- ***Restrooms***

Site Streets

- ***Lakeshore Drive***
- ***Lake Cascade Parkway***

Site Description– Continued

Recommended Infrastructure Improvements:

- Employ a pedestrian/bikeway paint design throughout campground roads. Thru ways can be as narrow as 9' with a defined path being 5' and now narrower than 4'. Traffic calming and a defined active transportation space will result.
- Look to better utilize the parking area with a new design similar to what is shown. (Rendering is NOT to scale) Though the number of vehicles with trailers or larger camper/RV stall would be similar, the number of typical day use vehicles would significantly increase and not require a parking lot expansion.
- Work with engineering professional to determine a better design for traffic operations and safety at the Lake Cascade Parkway/ Lakeshore Drive intersection. A preliminary assessment determined that a roundabout is possible and likely a solid solution to current functionality. Given the nature of the turning movements and dimensions of the intersection.

Sage Bluff Rec. Unit

Secondary Activity Site

Secondary Street Access

Site Asset

- ***Trail access***
- ***Beach areas***
- ***Restrooms***

Site Streets

- ***Lakeshore Drive***

Site Description– Located south of the Cascade golf Course, Sage Bluff has long linear beaches, and is the start of an interconnected trail with the campgrounds located south.

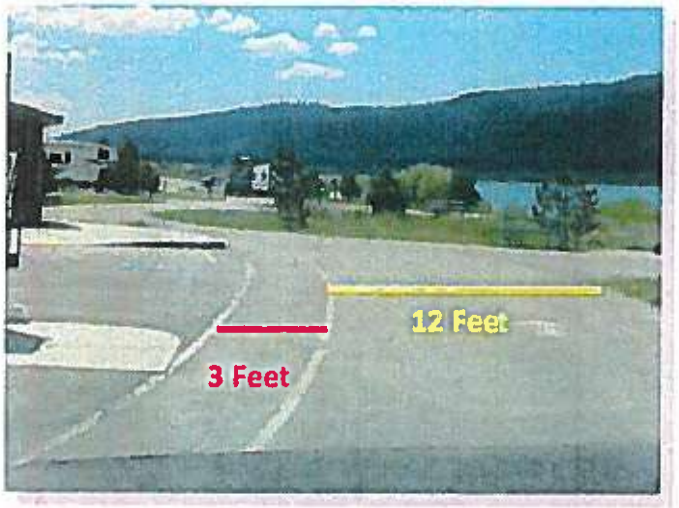
Recommended Site Improvements:

- Extend existing pathway through beach areas
- Add bike racks in vicinity of bathrooms, trail connections and parking areas
- Plant appropriate shade trees to give visitors additional breaks from sun exposure
- Consider a picnic shelter in clearing across the road from restroom area

Recommended Infrastructure Improvements:

- Widen the existing pedestrian way to 5 feet which in turn narrows the travel lane and promotes slower speeds. This can be done with next resurfacing. In the interim, widen the outside stripe to have the same effect.

The current configuration uses a 12' lane width which is a highway standard. By narrowing it to 10', the lane is still accommodating of RV's but adds two feet to the walk area allowing two people to walk side by side.



Big Sage
Rec. Unit

Secondary Activity Site

Secondary Street Access

Site Assets

- ***Trail***
- ***Beach areas***
- ***Picnic shelter***
- ***Restrooms***

Site Streets

- ***Lakeshore Drive***

Site Description– The next campsite along the Lakeshore Drive section of Lake Cascade is Big Sage. This linear shaped site has significant beach access, a day-use shelter, and impeccable views of the lake and adjoining areas.

Recommended Site Improvements:

- Add wayfinding signage linking with other campgrounds and orientation maps for visitors
- Add interpretive signs along the trail depicting historical images or information about the natural environment around the Lake Cascade area regarding floor and fauna
- Add wifi, outdoor sink, electricity to picnic facilities. Explore outdoor propane grill concept similar to the Fischer Pond site
- Add outdoor showers and bathroom area using a French drain concept

Recommended Infrastructure Improvements:

- Widen the existing pedestrian way to 5 feet which in turn narrows the travel lane and promotes slower speeds. This can be done with next resurfacing. In the interim, widen the outside stripe to have the same effect.

Pelican Cove Rec. Unit

Secondary Activity Site

Secondary Street Access

Site Assets

- ***Parking area***
- ***Beach areas***

Site Streets

- ***Lakeshore Drive***

Site Description– This site is virtually untouched and acts more as more of a habitat preserve in many ways with no structures, and only a natural parking lot area as features.

Recommended Site Improvements:

- Consider adding bike parking
- A fishing dock that extends into the lake could be a unique feature of the site and given the calm waters of the cove, a popular fishing site
- Improve the existing trail using rock fines to keep its form, minimize rutting and limit overgrowth of vegetation
- Along shoreline trail, install birding interpretive signs and popular bird calls feature using either battery operated or pneumatic operated speaker system

Recommended Infrastructure Improvements:

- None at this time

Powered by a turn of the crank, stories or bid calls can be heard. This simple technology could be used to enhance the natural experience around Lake Cascade.

Adding a simple fishing pier could be a unique attribute to the area and the southern end of Lake Cascade.

Blue Heron Rec. Unit

Secondary Activity Site

Secondary Street Access

Site Assets

- ***Boat launch***
- ***Beach areas***
- ***Restrooms***

Site Streets

- ***Lakeshore Drive***

Site Description– The Blue Heron campgrounds is situated on a peninsula that penetrates into Lake Cascade giving it a rare accessibility element unlike most others. With water on three sides, the setting of the small site is beautiful and one that could be further enhanced with additional investment.

Recommended Site Improvements:

- Consider adding exterior showers around the restroom sites
- Consider adding a dock side platform located outside of the launch area that is complete with a rope swing and perhaps a diving board or even water slide
- In the large unused grass area to the south of the campsite, consider adding either a beach volleyball court, natural playground or even a bicycle themed addition like a pump track or mountain bike terrain course

At over .25 of an acre, the southern area of the grounds presents great opportunity for grounds expansion.

Recommended Infrastructure Improvements:

- Extend the existing pathway so that it aligns along the shore and connects near the boat lunch area. The path does not have to be paved and could be either compacted gravel or rock fines.

Snowbank Rec. Unit

Secondary Activity Site

Secondary Street Access

Site Assets

- ***Beach area***
- ***Picnic benches***
- ***Restrooms***

Site Streets

- ***Lakeshore Drive***

Site Description– This quaint campground area is located near the southern shore of the lake and is geared towards daytime group activity. Several sites are available and a significant beach area nearby.

Recommended Site Improvements:

- Add bike rack parking stall
- Consider adding trail maps and wayfinding signage
- With presence of large group activities, an outdoor kitchen space may be a welcomed addition
- Look to do something creative with the picnic benches throughout the site. The approach taken by the City of Kuna includes painting the benches with a vibrant color while adding poems to the tabletop.
- Behind the restroom area consider adding a small playground to entertain kids, either a natural playground or more traditional place structure.
- Consider adding shelters to some of the bench sites

Recommended Infrastructure Improvements:

- None at this time

Cabarton

Rec. Unit

Secondary Activity Site

Secondary Street Access

Site Assets

- ***Beach area***
- ***Picnic tables***
- ***Restrooms***

Site Streets

- ***Lakeshore Drive***

Site Description– Cabarton is a small site intended for day use only. Equipped with picnic benches, restrooms and stunning views, this site needs little improvement but more enhancements to enrich the experience for users.

Recommended Site Improvements:

- See picnic tables on previous page (Snowbank Campgrounds)
- Add bike rack parking
- Add way finding and map orientation signage
- Consider adding shelters to some of the bench sites

Recommended Infrastructure Improvements:

- None at this time

Other City Ideas

Cascade Duelathon— Cascade has a rare opportunity to showcase its features within close proximity of one another. A duelathon is a race that incorporates two of three possible activities: running, bicycling, or swimming. A race could be held using the Lake and or Lakeshore Drive, the Strand Trail and Main Street. A one-mile swim from Sage Bluff to Van Wyke to start, followed by a run over Lake Cascade Parkway and down The Strand finishing in Fischer's Pond Park would be a unique course and event for the City, as an example.

Golf Course Terrain Park– With the amount of snowfall in winter, Cascade could host another unique event and winter time activity site with participation from the golf course. If covered with snow and possibly groomed, the course with its natural hills, slopes and views could be the site of some sort of weekend or continual Nordic event including cross county skiing, snow shoeing, or even tubing.

See another communities recent attempt to make such a transformation:

http://bangordailynews.com/2015/01/31/outdoors/volunteers-from-millinocket-turn-golf-course-into-a-great-place-to-ski/

Main Street Daylighting– At specific and strategic intersections along Highway 55, seek to remove corner on-street parking on two of the four corners to install bike racks such as shown. By doing this, bicycling into Cascade will be encouraged and better intersection visibility will occur to improve safety for all users of the Highway and cross streets.

Addendum C
Cascade Sports Park Master Plan

Cascade Sports Park Master Plan
March 20, 2014

A. History of the Cascade Sports Park

Bracketed [ ]items are clarification of the original quoted text.

The origin of the Cascade Sports Park dates back to January 25, 1967, when the City of Cascade purchased the property from Frank D. Callender. The parcel was acquired to allow expansion of the City's sewage lagoons. The site was also used for a short period of time as a transfer station for household garbage. There was at least one pit of solid waste that was buried on site during this period of time.

The first baseball diamond was constructed on the site in the spring of 1979. The effort, spearheaded by Greg Spangenberg, relied almost entirely on materials donated by local businesses and a volunteer work force. At the time, local businesses and churches sponsored six to eight softball teams.

On April 12,1982, the Mayor and Council of the City of Cascade dedicated a portion of the property as a site for a two-diamond-softball facility to promote and encourage recreational activities for the health and well-being of the citizens of the City of Cascade, their visitors, and guests.

The Cascade City Council approved filing of an application with the Idaho Department of Parks and Recreation (IDPR) on March 14, 1983. This application, under the Federal Land and Water Conservation Fund Act (LWCF) of 1965, was made to secure financial assistance for outdoor recreation purposes.

Information associated with the LWCF application disclosed that the "*total site under ownership of the City of Cascade is 51 acres. However, only 10.5 acres will be developed under this project.*" The LWCF described the existing facilities at the time stating, "*The site has a roughed in ballfield [ball field], parking area, temporary backstop and homerun fence.[,] A [a] pit toilet with temporary outhouse[,] and a plywood storage building.*"

The LWCF application also stated, "*Enclosed please find a use agreement between the City of Cascade and the Cascade School District. A football/soccer field will be developed as a part of this project and will be used in October and November for High School football games…At present there is no ballfield [ball field] facility in or near the City of Cascade. The temporary field developed for play four years ago, is now being utilized as a concrete mixing site for the Hydro electric [hydro-electric] dam project on Cascade Reservoir. The School [school] football field presently located on private ground has been sold and is to be developed for other uses in 1984. Cascade residence [residents] will be primary beneficiaries. However, the facility is located adjacent to the main north south highway through Idaho and many other beneficiaries are expected. The facility will be open to the public."*

A representative of IDPR inspected the Cascade Sports Park in September of 1987. Although a number of deficiencies were noted, the intra-departmental memo concluded by saying, "*Although there are still some minor items to be done on the area, I feel the City of Cascade should be congratulated for the fine job they have accomplished to date in converting a landfill into a worthwhile, usable recreation facility.*"

A representative of IDPR completed a second progress inspection of the Cascade Sports Park in June of 1988. Similar to the inspection in September of 1987, the letter from IDPR concluded by saying, "*The City is doing a good job with the park. The comments listed above are typical of nearly completed facilities.*"

The City of Cascade received a copy of an expenditure voucher from IDPR dated January 16, 1989. That voucher indicated that the City of Cascade had received $44,379.90 for the Cascade Sports Park.

In August of 1990, the City of Cascade received a letter from the IDPR announcing that Governor Cecil Andrus had signed a proclamation to celebrate the 25th year of the Land and Water Conservation Fund (LWCF) program. The letter reminded the City of Cascade that facilities associated with the Cascade Sports Park had been funded, in part, by the LWCF. Further, to celebrate the 25th anniversary of the LWCF, the Idaho Department of Parks and Recreation (IDPR) asked that the City of Cascade rededicate the Cascade Sports Park by adopting and recording a Deed of Right for Public Recreation Purposes. The letter went on to say, "*We hope this rededication will promote a statewide awareness of the commitment made to preserve L&WCF [LWCF] assisted property for outdoor recreation use. Currently, a major concern is the deterioration of this commitment. Conveyance of property rights or interest in property for nonrecreation [non-recreation] uses, discontinuance of public outdoor recreation use and/or development of indoor facilities can result in converted use[,] which is a violation of the agreement that we hope to avoid.*"

On November 13, 1990, Mayor Tad House signed the Deed of Right for Public Recreation Purposes for the 10.5 acre Cascade Sports Park. That document stated, "*This property has been dedicated solely to outdoor recreation use in perpetuity under the Land and Water Conservation Fund Act of 1965, as administered by the Idaho Department of Parks and Recreation.*"

Resolution No. 92-11, signed by Mayor Tad House in July of 1992, issued a second Deed of Right for Public Recreation Purposes for the Cascade Sports Park. The purpose of this resolution was to correct the description of the premises, which were erroneously described as 10.5 acres in 1990. The correct area included in the Cascade Sports Park is 12.06 acres.

In 2007, local volunteers removed the aging press box and constructed a new facility. The Cascade School District purchased the materials for the new press box, while Yanke

Machine Shop in Boise built and donated the mobile staircase. Idaho Power Company volunteered a crew and equipment to install the substructure poles for the new press box.

In 2008, a 400-meter native, surface track was developed immediately west of the lagoons. Again relying on donated materials and labor, a pole-vault-concrete approach and landing pit were constructed near the railroad car in 2008, and a discus-/shot put-throwing circle was installed immediately east of the football field.

In 2009, members of the local Church of Jesus Christ of Latter-day Saints rehabilitated two of the dugouts on one baseball diamond. The Southern Valley County Recreation District (SVCRD) purchased the materials and hired Huckaby Brothers Construction to rehabilitate the two dugouts on the second baseball diamond. The SVCRD replaced the aging backstops on both baseball diamonds and did some improvement work on the infields at the same time.

Over an unknown number of years, several dispersed camping sites were pioneered on City owned property adjacent to the RV Park. These sites have never been formally authorized by the City.

In the late 1990's, Idaho Fish and Game Conservation Officer, George Fischer, looked at the area and envisioned a community fishing-pond and wildlife-conservation area. After two years of writing grants and considering numerous designs, a conceptual plan finally came to fruition for Fischer Pond. The citizens of Cascade quickly adopted the project and have volunteered countless hours of hard labor to complete the design.

Cascade High School's Advanced Biology Class adopted Fischer Pond in 2001 and continues to work with the community to improve the facility. Over the years, the Advanced Biology Class has undertaken projects to make Fischer Pond more accessible by creating a wheel-chair accessible dock and installing asphalt paths throughout the area. Another completed project was the "pipeline" to Fischer Pond, which improved water quality by connecting it to the underground aquifer, thereby cooling and oxygenating the water in the pond. In recent years, the class constructed a fish-viewing aquarium, not only to add an educational feature, but also to improve oxygen levels in Fischer Pond. The Advanced Biology Class joined with volunteers in the community to install a sprinkler system in the area surrounding the pond. The Advanced Biology Class and various volunteers have laid sod and planted trees and shrubs that are native to the area. Their underlying goal with landscaping has been to maintain and enhance a native atmosphere for wildlife, while at the same time retaining a natural and rustic looking area through every season.

Horseshoe pits and a sand-volleyball court constructed adjacent to Fischer Pond, along with benches and picnic tables, are routinely used during the summer months by local residents and visitors to Cascade. The Advanced Biology Class and volunteers have also erected a fence around Fischer Pond for safety purposes and to control motorized access. In the future, the Advanced Biology Class hopes to partner with others to build a gazebo, continue to enhance the landscape, improve the water quality of Fischer Pond, possibly

add light structures around the pond, and perfect the maintenance schedule for the park.

In the spring of 1997, the City received a Federal Highway Administration Grant administered through the Idaho Transportation Department for the Cascade Bike Path Project. The amount of the grant was $65,000 and was used to cover engineering costs and construction of a paved bike path from the south bridge to the north boundary of the City property along the Payette River. The final payment document indicated the project was completed on August 25, 1997, for a total of $56,441. The Cascade Bike Path was later enhanced and renamed The Strand in the fall of 2010.

On November 12, 2013, the Cascade City Council appointed a Planning Committee to develop a Master Plan for the Cascade Sports Park. The Planning Committee consisted of Ronn Julian, Clint Kennedy, Karen Johnson, Larry Morton, Shauna Arnold, Luke Meter, Zack Redmon, and Logan Crevelt. The committee would like to recognize three individuals who provided critical technical support in development of this plan - Cascade High School student Josie Hubble who completed all the graphics and photo-shop work on the master plan map, Keith Dimmett who interpreted various notes and background records to establish a working document, and Carol Hines who helped with the editing process.

B. Master Plan Goals

On December 9, 2013, the City Council adopted 10 goals to be incorporated into the Cascade Sports Park Master Plan. The intent was to ensure that all activities and facilities considered by the Planning Committee for inclusion in the Cascade Sports Park Master Plan is consistent with City Official's expectations and included the following:

1. Be fully consistent with the intent of the Land and Water Conservation Fund (LWCF) Grant.
2. Provide a broad spectrum of outdoor recreational opportunities.
3. Ensure that the operational and maintenance costs associated with the Sports Park will not be a burden on City resources.
4. Minimize the impacts on wildlife and wetlands.
5. Provide adequate parking to support events.
6. Incorporate land occupancy dispersed camping sites in the northwest portion of the parcel.
7. Maintain existing access to and from State Highway 55.
8. Minimize areas devoted to vehicular travel.
9. Accept presence of lagoons and sand filters including adjacent monitoring wells.
10. Protect two deep, warm-water wells along the western portion of the parcel.

Two additional goals adopted by the Planning Committee to aid in selecting projects and new facilities included the following:

1. Emphasize facilities that will promote group events.

2. Do not duplicate facilities currently available on City property within city limits.

C. Public Involvement

As part of the master-planning process, the Planning Committee solicited input from the general public during an open house held at The Cascade Store on December 4, 2013. During that effort, written suggestions were received from 22 interested parties, many of whom voiced interest in similar or identical types of recreation.

The table below summarizes the numbers of individuals who expressed interest in similar types of recreational activities and a brief response from the Planning Committee for each activity. Items shown in **bold font** will be carried forward in the Cascade Sports Park Master Plan. It should be noted that the Master Plan is intended to be dynamic in nature and subject to change as demand dictates and funding permits.

Recreation Opportunity	Number of Individuals Expressing Interest	Response from Planning Committee
Miniature Golf	3	This is considered a high investment activity requiring active management for a relatively short season of use and is more compatible with a commercial venture.
Soccer/Frisbee Field	**5**	**Combine with Multipurpose Field facility (football, soccer, Frisbee, track and field). Carry forward into the Master Plan.**
Playground	**2**	**Already exists at the Sports Park and at Armstrong Park. However, provide for expansion. Carry forward into Master Plan.**
Fitness Trail/Station	3	**Already exists in the form of The Strand (i.e. paved path along the river). The Four Summit Challenge Organization is considering adding fitness stations to The Strand. Carry forward into the Master Plan.**
Track and Field	**6**	**Combine with Multipurpose Field facility (football, soccer, Frisbee, track and field). Carry forward into the Master Plan.**
Motocross Track	1	Would conflict with existing commercial facilities (i.e. motel).
Dog Park	1	The goal of the Master Plan would be to allow dogs to use the entire area (on leash), but no area would be designated specifically as a Dog Park.
Bowling Alley	3	A bowling alley would not be considered an outdoor recreation activity and would not be consistent with the intent of the LWCF.
Animal Habitat	3	The goal of the Master Plan would be to

		minimize adverse impacts to all wildlife and their habitats.
Tennis Court	**8**	**Combine with Ice Skating Rink facility. Carry forward into the Master Plan.**
Disc Golf	**5**	**Renovation/expansion of the existing course is currently ongoing. Carry forward into the Master Plan.**
BMX/Mountain Bike Dirt Jumping	**4**	**Have possible outside funding. Can build small and expand in the future as demand dictates. Carry forward into the Master Plan.**
Skateboard Park	**4**	**Have possible outside funding. Can build small and expand in the future as demand dictates. Carry forward into the Master Plan.**
Basketball Court	**2**	**Already exists at Armstrong Park and grade school. May combine with Tennis Court/Ice Skating Rink facility. Carry forward into the Master Plan.**
New Concessions	**3**	**Facilities already exist, but there is a need to renovate restrooms and concession area. Carry forward into the Master Plan.**
Remove Baseball Diamonds	1	Elimination of the baseball diamonds would be inconsistent with the original purpose for the Sports Park and would eliminate one of the primary recreational uses.
Parking	**3**	**There is a need to organize and delineate parking areas while retaining the flexibility to expand parking facilities in the future. Carry forward into the Master Plan.**
Relocate Football Field	**2**	**Combine with Multipurpose Field facility (football, soccer, Frisbee, track and field). Carry forward into the Master Plan.**
Volleyball	1	Already exists at Fischer Pond and Kelly's Whitewater Park.
Badminton	1	Already exists at Fischer Pond.
Deer Feeding Station	2	Establishment of a feeding station would encourage deer to congregate within the city limits and near the heavily traveled State Highway 55.
Deer Crossing Sign Near Bridge	1	Installation of such a sign on State Highway 55 is the responsibility of the State.
Shade Trees along River	4	Other entities are establishing vegetation, including trees, along the river.
4 Square/Hopscotch	**3**	**Combine with Tetherball facility. Carry forward into the Master Plan.**
Tetherball	**1**	**Combine with 4 Square/Hopscotch facilities. Carry forward into the Master Plan.**

Ice Skating Rink	**2**	**Combine with Tennis Court facility. Carry forward into the Master Plan.**
Croquet	1	Already exists at Fischer Pond.
Reader Board	2	Such a facility is not being considered for the Sports Park due to operational requirements.
Zip Line	1	Already exists at Trinity Pines and Tamarack Resort.
Fishing Pier	1	Already exists at Fischer Pond.
Community Garden	1	Already exists at Fischer Pond.
Covered Pavilion	**1**	**Already exists at Fischer Pond. A second pavilion is planned near the badminton area if funding becomes available. Carry forward into the Master Plan.**
Pocket Parks	1	Pocket Parks are difficult to define and provide for in this scheme of development. Park benches and fitness stations along The Strand will aid in meeting this need.
Outdoor Gym	2	The Four Summit Challenge Organization is considering adding fitness stations to The Strand (i.e. paved path along the river).
Artificial Turf for Soccer/Football Field	**2**	**Artificial turf on the Multipurpose Field facility (football, soccer, Frisbee, track and field) will be considered. Carry forward into the Master Plan.**
Connect with Kelly Whitewater Park	**2**	**Connection through The Strand, possible Fitness stations, and/or the Disc Golf facility will be considered. Carry forward into the Master Plan.**
Third Baseball Diamond	1	Creation of a third baseball diamond would emphasize only one aspect of recreation and preclude the desired array of facilities.

D. Short-Term Enhancements of Existing Facilities

There are several opportunities to improve and enhance existing facilities. These projects are designed to eliminate congestion, reduce conflicts, broaden individual recreational experiences, address the backlog of maintenance needs, and capture significant signature elements of the Park's overall stature.

In the short term, the Planning Committee has identified the following enhancements of existing facilities that should be implemented to move the area toward the long-term goals for the Sports Park. Refer to the Master Plan Map for specific locations of individual-enhancement projects, which are shown on the map by the project's initials.

1. Construct a bell tower to elevate the old school bell and to protect it from the elements and vandalism.

2. Construct 40" high chain-link, top-rail fences along the outfield perimeter of the north baseball diamond and along the north side of the south baseball diamond. Fences must be sturdy enough to withstand persons using the fence as leverage to jump over. These fences would be cosmetic in nature but serve a useful purpose of delineating the playing surface.
3. Relocate the railroad car used for storage to interior road and set on a concrete foundation. Existing location of railroad car will become the tennis center.
4. Eliminate congestion by relocating the two storage sheds currently adjacent to the baseball diamonds to the new vicinity of the railroad car.
5. Install traffic barriers to protect the outfield fence on the north baseball diamond and designate parking area.
6. Install a gate on the road traveling east/west that is located between the two baseball diamonds.
7. Retain the access road from the north lot to the river, but install barriers to prevent motorized vehicles from leaving access road and parking area.
8. Eliminate the road traveling east/west that is located between the football field and Fischer Pond. Erect barriers on each end of the road if necessary to prevent motorized access.
9. Increase bleacher capacity adjacent to the press box for spectators supporting visiting teams.
10. Post signs on State Highway 55 identifying the south entrance as the access point to Fischer Pond, The Strand, the river, etc. Signs on State Highway 55 should identify the north entrance as the access point for the football field and both baseball diamonds.
11. Expand the existing playground area to include additional playground equipment, tetherball, and hopscotch. Expansion would involve reducing the size of the current parking area and installing traffic barriers (boulders) to restrict vehicles to the designated parking lot. This alteration is intended to improve outdoor recreation facilities for the very young and to eliminate the congestion and hazards associated with parking near the concession stand and playground. This parking area will be intended for users of the playground and Fischer Pond facilities. This parking area would be paved and include grading and drainage work to minimize dust and enhance the appearance of the overall Sports Park.
12. Eliminate both north roads accessing the Sports Park from the City Shop area. If necessary, erect barriers on each end of the roads to prevent motorized access.
13. Over time, as materials and supplies are used, eliminate use of the area for municipal storage. Prohibit delivery of new materials and/or supplies to the area. Convert this area to a large event-parking lot and line perimeter with traffic barriers.
14. Remove the remnants of the existing nine-hole disc golf course and replace it with a new 18- to 22-hole course. The 18- to 22-hole course would include two holes in the lodge-pole-pine stand on the northwest corner of the parcel, holes adjacent to The Strand along the curvature of the area south and east of the lagoon facility, and would include two or three holes on adjacent Cloverdale Nursery property under a temporary easement. In the long term, one or two holes may occur on the

river island. The island is managed by the State of Idaho and would necessitate one or two footbridges for access. The bank, at the bend in the river near the end of the pavement of The Strand, is experiencing significant undercutting and would need to be stabilized prior to applying for authorization to use the island.

15. Formally authorize the RV Park to obtain a permit for its dispersed camping area. Dispersed camping is a form of outdoor recreation. The City should receive compensation for use of the camp sites and the receipts should be earmarked for maintenance and operation of the Sports Park. The camping permit should address existing hazard trees, vehicle restrictions to protect tree-root integrity, and list the City as a co-insured on the declaration for the RV Park's liability policy.
16. Capture and perpetuate the 2014 property-line survey by erecting permanent markers designating the survey-stake perimeter of the northwest property boundary.
17. Erect permanent markers to designate the locations of the two water wells to provide an element of protection.
18. Renovate the concession building by first doing a needs assessment and developing plans.

E. Long-Term Enhancements/Facilities

This section of the document details the activities and facilities envisioned for the Cascade Sports Park in the long term. Many of these facilities will require several years to construct and a level of funding not available at this time. Long-term facilities reflect a fully developed Park that offers a broad range of outdoor-recreational experiences. Refer to the Master Plan Map for specific locations of individual enhancement projects.

1. **Combination Tennis Court/Ice Skating Rink/Basketball Court** – Located immediately east of the new railroad car location. Facility would include a fenced tennis court with basketball hoops on one court. This would be built to accommodate an ice skating rink in winter with adjacent warming shelter.
2. **Multipurpose Field** – the field would be a football/soccer field with an artificial surface. A rubberized, asphalt track would surround the field. Bleachers would be located only on the west side of the facility. The storage of sawmill-yard residue on the site for the last five to six years has increased the acidic nature of the soil to a point that it will not support vegetation in its current condition.
3. **Fitness Stations and Solitude Benches** – These would be located along The Strand. These facilities are being considered for adoption by the Four Summit Challenge Organization.
4. **BMX/Mountain Bike Dirt Jumping** - Both would be located in the vicinity of the existing burn pile and near the old trap-shooting area.
5. **Skateboard Park** - The site for these facilities would require considerable clean-up, grading, and drainage work.
6. **Riverfront Parking Area** – This would include traffic barriers and would serve as the primary parking area for skateboard, BMX, and tennis court facilities**.**
7. **Jumping Dome –** Construct a plastic dome over the high jump runway and landing pit immediately east of the tennis center. This dome would be large

enough to accommodate an approach ramp and landing pit for the high-jump and would provide a covered facility for pole vaulting and high jumping.

8. **Parking Lot (north) –** Develop and delineate a parking scheme to maximize available space. Entry and exit points would be clearly marked, as would individual parking spots.
9. **Alternate Irrigation Project –** Install a pump in Fischer Pond and lay pipe connecting it to the existing sprinkler system for the landscaped area around Fischer Pond and the existing sprinkler system for the two baseball diamonds. A timer is currently in use for the sprinkler system associated with Fischer Pond. A separate timer would be installed for the sprinkler system associated with the two baseball diamonds. It is suspected that the current sprinkler system applies water to these areas, which percolates through the sandy soil and returns to Fischer Pond, carrying fertilizers with it and causing some of the algae blooms and plant growth in the pond. Reusing water from Fischer Pond in the suggested manner would save the city its drinking water supply and reuse the fertilizers, thus reducing the need to buy and apply as much fertilizer to the fields and lawn. It is suspected that this will also result in a situation where colder, fresh water will percolate into Fischer Pond; thereby, increasing circulation in the pond and improving water quality.
10. **Covered Pavilion** - Install a pavilion near the badminton area on the east side of the landscaping berm. An electrical outlet has already been installed for the pavilion.

F. Industrial, Commercial, Municipal (Non-recreational) Uses

As previously mentioned, municipal use of the area for the storage of materials and supplies will need to be eliminated over time. Commercial and/or industrial use of the area would not be permitted.

G. Maintenance and Operation of the Cascade Sports Park

Operation and maintenance of any and all facilities at the Sports Park is critical to its long-term viability. Sources for maintenance include the City's general fund, user fees, fundraisers, and donated labor. The master plan effort did not address the level of funding that would be necessary to meet the maintenance requirements. It did, however, take into consideration the city's concern to, "Ensure that the operational and maintenance costs associated with the Sports Park will not be a burden on City resources." The Committee is sensitive to this issue and is recommending new revenue sources be identified and suggests any Sports Park fees collected be utilized for expenses of the Park. The purpose is in recognition that facilities such as the Sports Park will enhance the City of Cascade in many ways, one being increasing overall revenues into the city's economy by attendance at events and drawing visitors into the area.

Funds received by the City over the years, from the LWCF, have certainly been beneficial in development of the Cascade Sports Park. Likewise, donated materials and labor for many of the existing facilities have also been instrumental in the Park's

evolution. Funds available for maintenance and operation of the Sports Park are, however, inadequate. While the City receives $3,000 each year from School District 422 for access to the football field for school-related activities, the largest source of funding for maintenance and operation is the general fund of the City budget. Unfortunately, the average funding level for maintenance and operation costs of the City's parks and the cemetery is an annual budget of $9,106.75. At the current funding levels, existing facilities at the Sports Park will continue to deteriorate and development of new facilities is unlikely to occur.

In an effort to address this funding dilemma, the Planning Committee recommends that all funds generated from use of the Sports Park facilities be dedicated to the long-term maintenance and operation of the complex. In addition, the Planning Committee recommends that the City consider generating revenue by permitting "naming rights" to various components of the Sports Park. This could provide a source of matching funds required for grants and/or improvement projects. Existing Sports Park components that lend themselves to naming rights include the press box, north baseball diamond, existing combination football field and south baseball diamond, playground, and concession stand. Future Sports Park components that lend themselves to naming rights include the tennis center, 18-hole disc-golf course, multi-purpose field, parking area, BMX track, skateboard center, and isolated features including but not limited to fitness stations and/or benches. It is important to note that naming rights include the right to post an appropriate sign on or near the specific facility (e.g. Joe's Dairy Queen Press Box). Naming rights would not permit extensive advertisements or excessive verbiage about the sponsor. The content and location of any sponsor's sign is not described herein but would be at the discretion of the City Council. Naming rights should not be a one-time payment but should be set to generate income on a yearly or set-term basis to insure ongoing viability of the complex.

Although there has been some interest in changing the name of the Cascade Sports Park to the Greg Spangenburg Sports Park to recognize his effort in the initial development, doing so would not enhance the long-term maintenance or operation of the Sports Park. Further, Mr. Spangenberg has indicated he is more interested in improvements and maintenance of the facilities than having his name attached to the complex.

The Planning Committee encourages the City to investigate the possibility of turning over management of the Sports Park to the Southern Valley County Recreation District (SVCRD). Such an arrangement would need to include financial supplementation from the City's general fund. This partnership would improve the operation and maintenance of the complex since the SVCRD is directly involved in recreation management. The Sports Park would justify the attention of a groundskeeper for two or three days per week during the summer season. A dedicated groundskeeper could organize and direct volunteers in regular clean-up, improvement, or maintenance activities as well as possible fundraisers for park maintenance and operation funds.

The presence of a population of noxious weeds will require diligent monitoring and treatment to protect the integrity of the Sports Park and its facilities.

There is a growing need to provide trash cans along The Strand to facilitate dog-waste and litter disposal. This will also require regular removal of the trash and providing new trash bags.

There is a heron rockery in the north-east area of the Sports Park. The minimal development in the lodge-pole-pine stand to accommodate the dispersed camping and two holes of disc golf are deemed compatible with the presence of the blue heron in the area. This rookery use occurs in the spring when camping and disc-golf activities are minimal or nonexistent. Further development in the lodge-pole-pine stand should be discouraged in order to minimize impacts on the rookery.

The mosaic of riparian and wetland areas present between The Strand and the lagoon facilities should be restricted from development. This is an important component of the overall Sports Park and does provide an element of wildlife habitat. The disc-golf facility will be designed so as to not impact any wetland areas.

The current practice of using heavy equipment to plow snow on The Strand should be reconsidered. This practice is damaging the paved surface, which in turn will escalate maintenance needs and costs. A less damaging option would be to use a snow blower mounted on a skid steer.

The City should commit to revisit and revise, as necessary, this Master Plan no later than five to ten years after its completion.

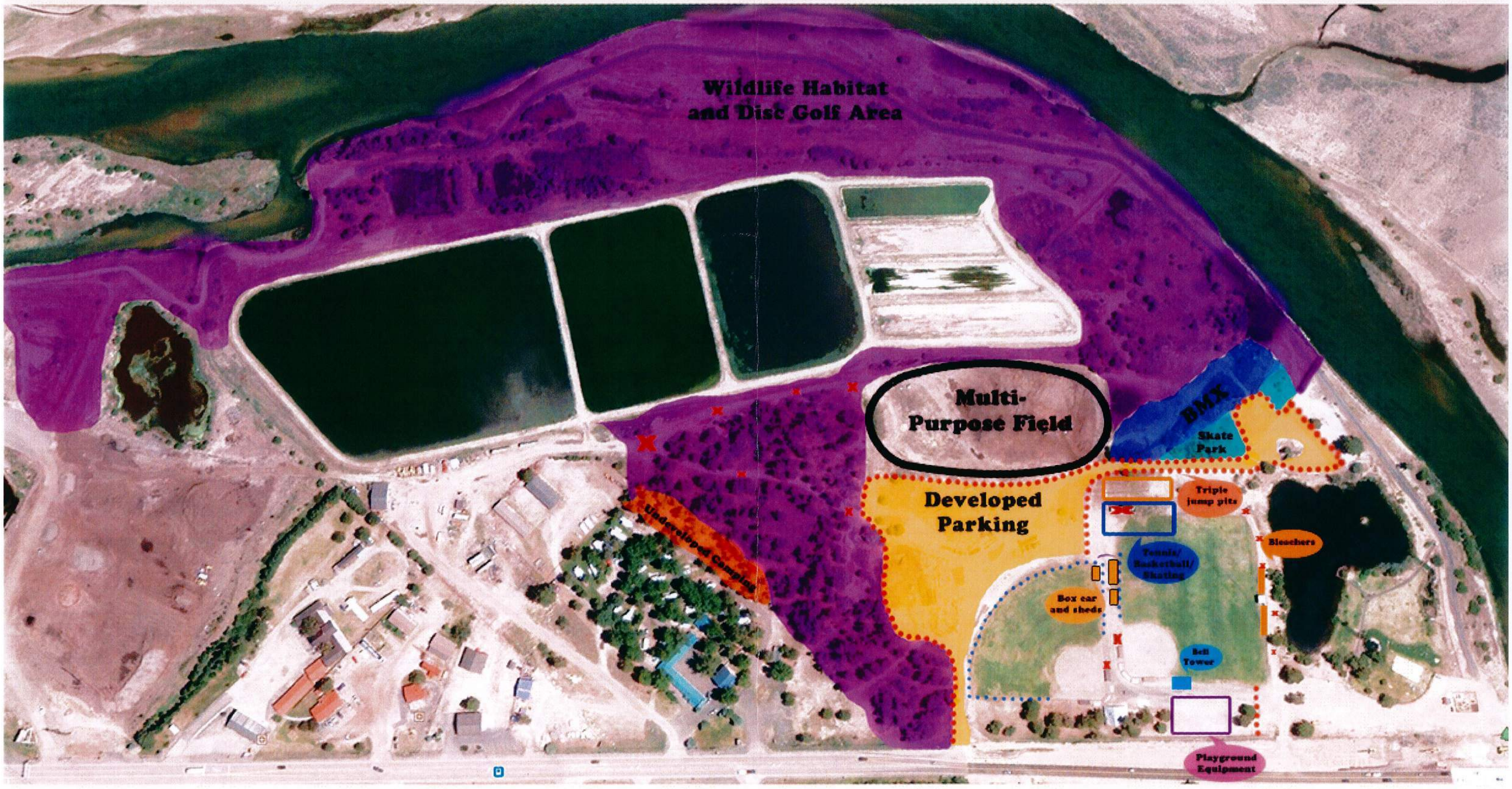
Cascade Sports Park Master Plan
Amendment #1

The initial version of the master plan did consider a "pocket picnic site" in the center of the waterfront parking lot, but it was not included in the final edition of the master plan. However, a modest level of development (barrier rocks, top soil, and picnic table) has occurred and the SP2IT recommends the following:

The master plan is amended to include this site improvement. The parking barrier rocks shall be upgraded to include use of 24" or greater diameter rock, coverage of the site with shredded bark or wood mulch, and the placement of the picnic table.

Amendment effective: October 18, 2014.

Mayor: _____


Wildlife Habitat
and Disc Golf Area
Multi-
Purpose Field
BMX
Skate
Park
Developed
Parking
Triple
jump pits
Bleachers
Tennis/
Basketball/
Skating
Box car
and sheds
Bell
Tower
Playground
Equipment
Undeveloped Camping
-Rock Barrier
-Baseball Field Fence
-Will not be accessible
or is moved.

APPENDIX C

Existing Paved Roads Numeric Ratings

CITY OF CASCADE
PAVED ROADS SURFACE RATINGS

This map represents a compilation of public information from diverse records gathered by the City of Cascade and Holladay Engineering Company. The purpose for which this map is prepared is an overall general representation of positional relationships, and not a definitive description of location of any class of objects or conditions. Hence, no responsibility for errors can be or is assumed. The City of Cascade and Holladay Engineering Company CANNOT AND DO NOT GUARANTEE the absence of errors or the corrections of all information furnished to them for the preparation of this map.

HOLLADAY ENGINEERING CO.

0 950 1,900 3,800 5,700 7,600
Feet

N.

Legend

- GRAVEL ROADS
- **PAVED ROADS**
- **RATINGS**
- 0.00 - 10.00
- 10.01 - 25.00
- 25.01 - 45.00
- 45.01 - 65.00
- 65.01 - 80.00
- 80.01 - 95.00
- 95.01 - 100.00
- VALLEY COUNTY

ROAD NAME	SURFACE RATING	ROAD LENGTH (FEET)
cabarton road	35.03	3096.993
pine st	63.47	1054.492
idaho st	66.67	401.664
lefever dr	66.67	258.088
divot cir	72.07	547.03
jeffrey ave	73.33	861.528
school street	73.83	715.216
skyline dr	74.57	1251.158
lake way	75.21	3097.308
par drive	76.37	2319.236
market st	76.67	475.62
paterson dr	76.67	472.226
birdie dr	76.67	333.783
bogie st	76.67	1330.408
caddy ln	76.67	703.662
lakeview dr	76.67	854.798
lake shore dr	77.09	13067.674
dufers ln	78.34	2892.958
3rd st	80.00	579.442
fairview ln	86.67	750.209
front street	93.33	748.926
cascade rd	93.33	232.533
shwy55	93.33	15038.868
old state highway	93.33	2545.865
cascade st	93.33	485.159
sprinstreet	93.33	733.232

APPENDIX D

Existing Unpaved Roads Numeric Ratings

CITY OF CASCADE
GRAVEL ROADS RATINGS

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HOLLADAY ENGINEERING CO.

Legend

- VALLEY COUNTY

GRAVEL ROADS RATINGS

- 60.00 - 65.00
- 65.01 - 70.00
- 70.01 - 75.00
- 75.01 - 80.00
- 80.01 - 85.00
- 85.01 - 95.00

0 1,375 2,750 5,500 8,250 11,000

Feet

ROAD NAME	SURFACE RATING	ROAD LENGTH
fairway cir	65.00	325.106
idaho st	75.23	3502.069
lefever dr	78.18	608.982
alder st	79.52	187.003
hatfield dr	79.97	730.076
payette st	80.00	1073.009
overlook	82.56	808.594
hilcrest dr	82.65	2423.894
kerby st	83.06	1069.01
river st	83.49	534.451
cabarton road	84.11	4139.177
mill street	84.23	1772.421
basque rd	85.00	679.97
bogie st	85.00	180.832
crawford ave	85.00	818.451
glen street	85.00	798.652
heritage way	85.00	862.233
hilcrest	85.00	422.188
parks road	85.00	438.15
sawyer st	86.22	3070.276
pine st	86.28	1055.795
vanwyck ave	86.60	1889.328
market st	87.24	1337.196
paterson dr	87.64	2243.866
riverview pkwy	88.82	4222.323
lake way	88.83	477.803
school st	88.88	2716.856
front street	89.02	1891.149
cascade st	89.96	1123.033
dam road	90.00	1973.06
cascade st	90.71	976.021
spring street	90.91	1862.961
spring street	90.91	1862.961
cemetery rd	93.78	806.429
cemetery rd	93.78	806.429

APPENDIX E

Level of Service Definitions

Level of Service

The level of service (LOS) characterizes the operating conditions on a facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Level of Service is a description of different operating conditions, which occur on a roadway or at an intersection when accommodating various traffic volumes. The levels of service range from 'A' (least congested) to 'F' (most congested). The following table shows the general definitions of levels of service applicable to two lane rural highways.

Level of Service Criteria for Two-Lane Highways

Level of Service	General Operating Conditions
A	Describes completely free-flow conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway and by driver preferences. Maneuverability within the traffic stream is good. Minor disruptions to flow are easily absorbed without a change in travel speed.
B	Describes free-flow conditions, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS 'A', but drivers have slightly less freedom to maneuver. In simple words, it can be defined as "reasonably free flow traffic".
C	The influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles. Minor disruptions in traffic stream can cause serious local deterioration in service, and queues will form behind any significant traffic disruption. LOS 'C' can be defined as a "stable flow condition".
D	The ability to maneuver is severely restricted due to traffic congestion. Average travel speed reduces by the increasing volume. Only minor disruptions can be absorbed without extensive queues forming and the service deteriorating. LOS 'D" can be defined as "approaching unstable flow conditions".
E	The traffic operation is at or near capacity, an unstable flow condition, in this LOS. Vehicles will operate with the minimum spacing for maintaining uniform flow. Disruptions cannot be dissipated readily, often causing queues to form and service to deteriorate further. The traffic flow in this LOS can be defined as "unstable flow condition".
F	This LOS represent forced or breakdown flow conditions. This type of traffic occurs when the forecast demand exceeds the computed capacity of a planned facility.

(Source: Highway Capacity Manual 2000)

Unsignalized Intersections

Two-way Stop Controlled (TWSC) and All Way Stop Controlled (AWSC) intersections are two types of unsignalized intersections. The 2000 Highway Capacity Manual and HCS provide methodologies and models to estimate control delays at unsignalized intersections. A qualitative description of different service levels related to an unsignalized intersection is presented in the following table below.

Level of Service	Average Delay per Vehicle on Minor Street
A	• Almost all drives find freedom of operation through intersection. • Gaps are available on major streets for minor streets vehicles. • More than 1 vehicle in queue on minor streets found very rarely.
B	• Some drivers may feel inconvenience because of slight delay • More than 1 vehicle in queue on minor streets maybe found occasionally
C	• Most drivers may feel restricted in traffic, but may not have severe inconvenience. • More than 1 vehicle in queue on minor streets maybe found frequently. • Gaps in major street traffic may not be available frequently.
D	• Drives on minor streets feel restricted and may experience inconvenience. • Mostly more than 1 vehicle in queue on minor streets maybe found.
E	• Drivers find delays inconvenient and intolerable. • Queue lengths maybe longer than 3 vehicles most of the time. • The demand will be close to or equal to the capacity of a movement at an intersection.
F	• Gaps in major street traffic are not available for minor street drivers and result in aggressive driving with forced traffic flow. • The demand in this case will be more than the capacity of a movement and represents failure of an intersection.

Based on the qualitative and quantitative measures, LOS ‘E’ is generally considered as a minimum design LOS for unsignalized intersections.

APPENDIX F

GPS Centerline Map with Culverts

CITY OF CASCADE
CULVERT LOCATIONS

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HOLLADAY ENGINEERING CO.

0 950 1,900 3,800 5,700 7,600
Feet

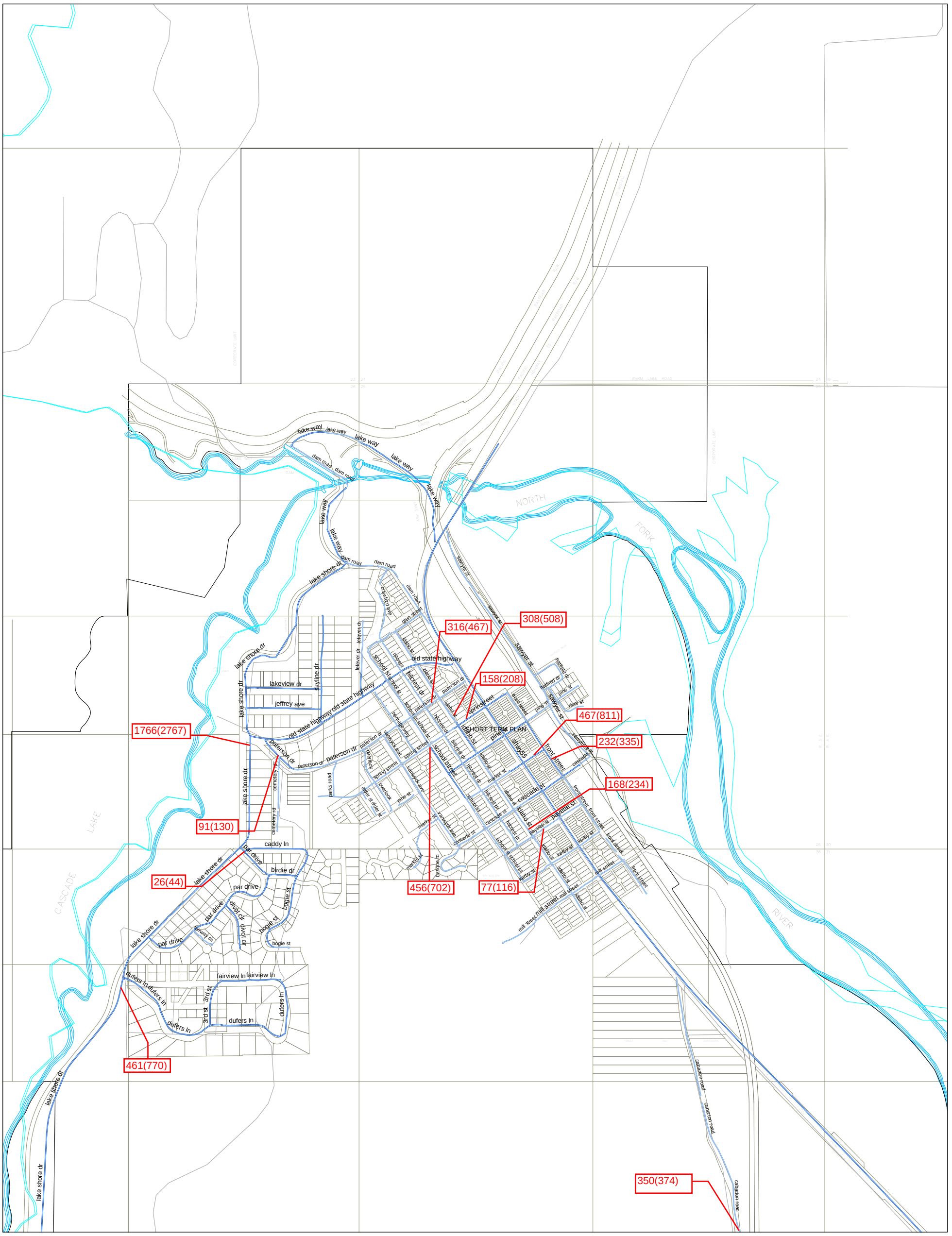
N.

Legend

- CULVERT
- PAVED ROADS
- GRAVEL ROADS
- VALLEY COUNTY

APPENDIX G

Current Traffic Counts on Identified City Streets



Note: Numbers without Parenthesis represent average daily traffic on week days.
Numbers with Parenthesis represent average daily traffic in weekends.

HOLLADAY ENGINEERING CO.

CITY OF CASCADE
EXISTING TRAFFIC COUNTS

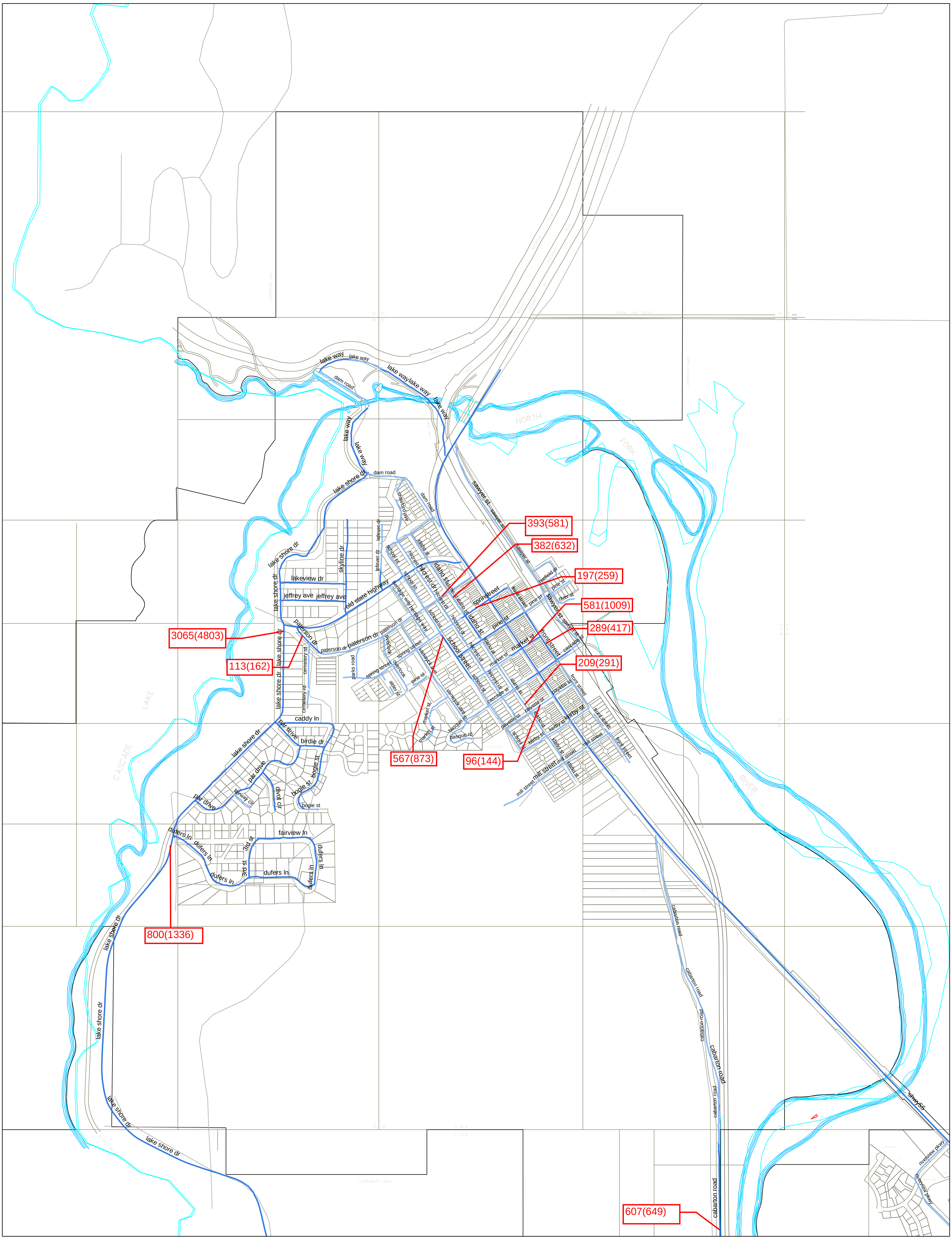
Legend

- VALLEY COUNTY
- GRAVEL ROADS
- PAVED ROADS

0 800 1,600 3,200 4,800 6,400 Feet

APPENDIX H

Projected Traffic Counts on Identified City Streets



Note: Numbers without parenthesis represent average daily traffic on weekdays.

Numbers with parenthesis represent average daily traffic on weekends.

CITY OF CASCADE
PROJECTED TRAFFIC COUNTS

This map represents a compilation of public information from diverse records gathered by the City of Cascade and Holladay Engineering Company. The purpose for which this map is prepared is an overall general representation of positional relationships, and not a definitive description of location of any class of objects or conditions. Hence, no responsibility for errors can be or is assumed. The City of Cascade and Holladay Engineering Company CANNOT AND DO NOT GUARANTEE the absence of errors or the corrections of all information furnished to them for the preparation of this map.

Legend

- VALLEY COUNTY
- PAVED ROADS
- GRAVEL ROADS

0 1,000 2,000 4,000 6,000 8,000 Feet

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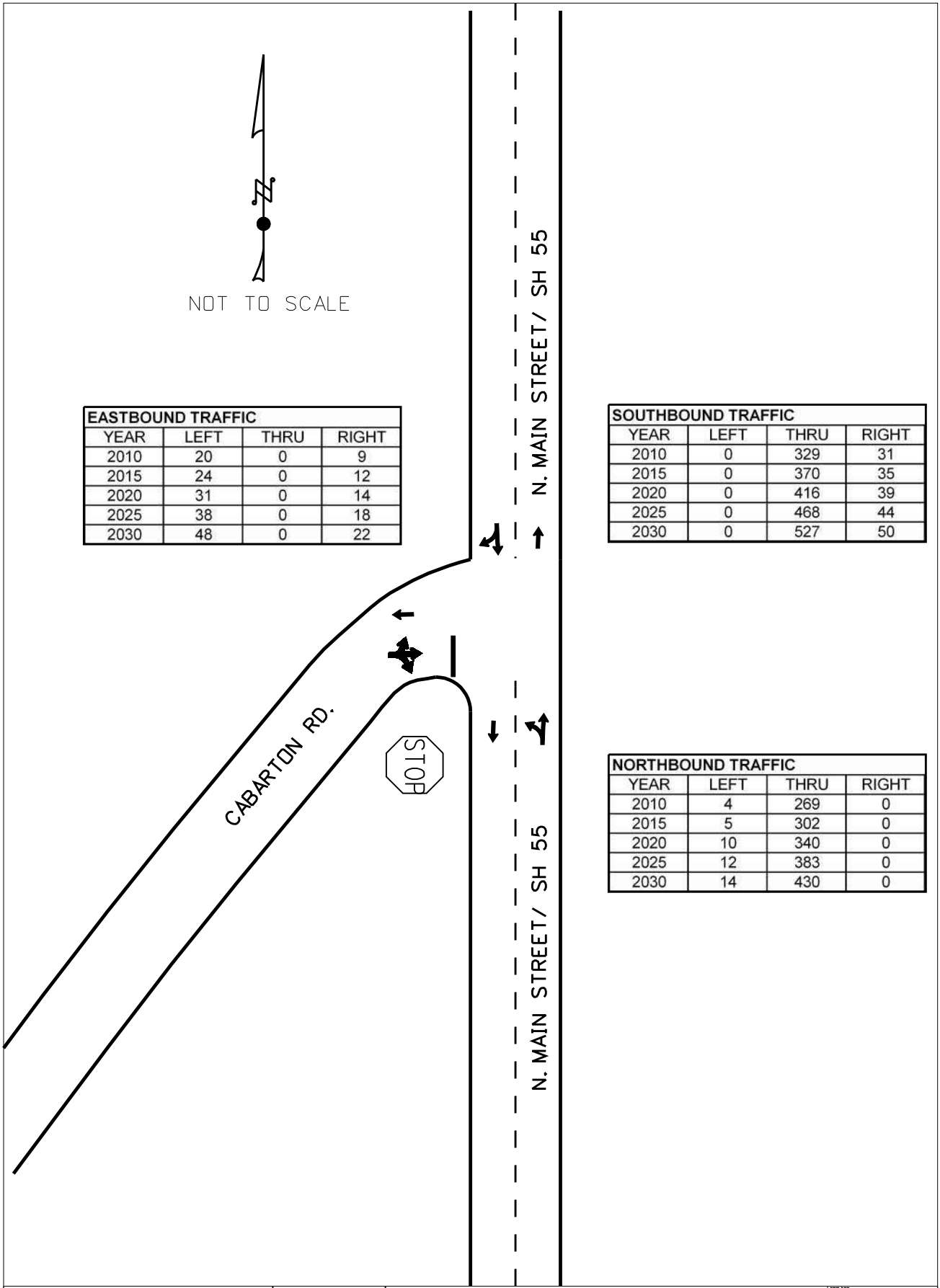
APPENDIX I

Projected Turn Traffic at 4 Key Intersections and LOS

Projected LOS at Key Intersections

Intersection	Year	East Bound			West Bound			North Bound			South Bound		
		LT	THR	RT	LT	THR	RT	LT	THR	RT	LT	THR	RT
SH 55 and Old State Highway	2010	C	C	B	C	C	C	A	A	A	A	A	A
	2015	D	D	B	C	C	C	A	A	A	A	A	A
	2020	D	D	B	C	C	C	A	A	A	A	A	A
	2025	E	E	B	D	D	D	A	A	A	A	A	A
	2030	F	F	B	E	E	E	A	A	A	A	A	A
SH 55 and Pine Street	2010	B	B	B	B	B	B	A	A	A	A	A	A
	2015	B	B	B	B	B	B	A	A	A	A	A	A
	2020	C	C	C	C	C	C	A	A	A	A	A	A
	2025	C	C	C	C	C	C	A	A	A	A	A	A
	2030	C	C	C	C	C	C	A	A	A	A	A	A
SH 55 and Cascade Street	2010	B	B	B	B	B	B	A	A	A	A	A	A
	2015	B	B	B	C	C	C	A	A	A	A	A	A
	2020	C	C	C	C	C	C	A	A	A	A	A	A
	2025	C	C	C	C	C	C	A	A	A	A	A	A
	2030	C	C	C	D	D	D	A	A	A	A	A	A
SH 55 and Cabarton Road	2010	B	N/A	B	N/A	N/A	N/A	A	A	A	A	A	A
	2015	C	N/A	C	N/A	N/A	N/A	A	A	A	A	A	A
	2020	C	N/A	C	N/A	N/A	N/A	A	A	A	A	A	A
	2025	C	N/A	C	N/A	N/A	N/A	A	A	A	A	A	A
	2030	D	N/A	D	N/A	N/A	N/A	A	A	A	A	A	A

Note: N/A represents not applicable to that approach.
These LOS are for an average non-peak seasonal traffic conditions.



EASTBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	20	0	9
2015	24	0	12
2020	31	0	14
2025	38	0	18
2030	48	0	22

SOUTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	0	329	31
2015	0	370	35
2020	0	416	39
2025	0	468	44
2030	0	527	50

NORTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	4	269	0
2015	5	302	0
2020	10	340	0
2025	12	383	0
2030	14	430	0

HOLLADAY ENGINEERING CO.
ENGINEERS · CONSULTANTS
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(208) 853-6281 · FAX# (208) 853-2554
EMAIL: hec@holladayengineering.com

HWY. 55 & CABARTON RD.
PM PEAK HOUR TURNING MOVEMENTS
CITY OF CASCADE, IDAHO

JOB NO: VC 082504
DATE: 12/4/07
PLOTTED: 12/4/07
LOCATION: I/Scott/VCTRANS.dgn
DRAWN BY: RSP
CHECKED BY: SSK
PAGE 1/1

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Cabarton Road*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*11/21/2007*	Analysis Year	*2007*
Analysis Time Period	*AM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Cabarton Road*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*7*	*266*	*0*	*0*	*165*	*8*
Peak-Hour Factor, PHF	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*8*	*320*	*0*	*0*	*198*	*9*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*12*	*0*	*1*
Peak-Hour Factor, PHF	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*14*	*0*	*1*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*8*						*15*	
C (m) (vph)	*1364*						*519*	
v/c	*0.01*						*0.03*	
95% queue length	*0.02*						*0.09*	
Control Delay	*7.7*						*12.1*	
LOS	*A*						*B*	
Approach Delay	--	--				*12.1*		
Approach LOS	--	--				*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Cabarton Road*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*11/21/2007*	Analysis Year	*2007*
Analysis Time Period	*PM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Cabarton Road*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

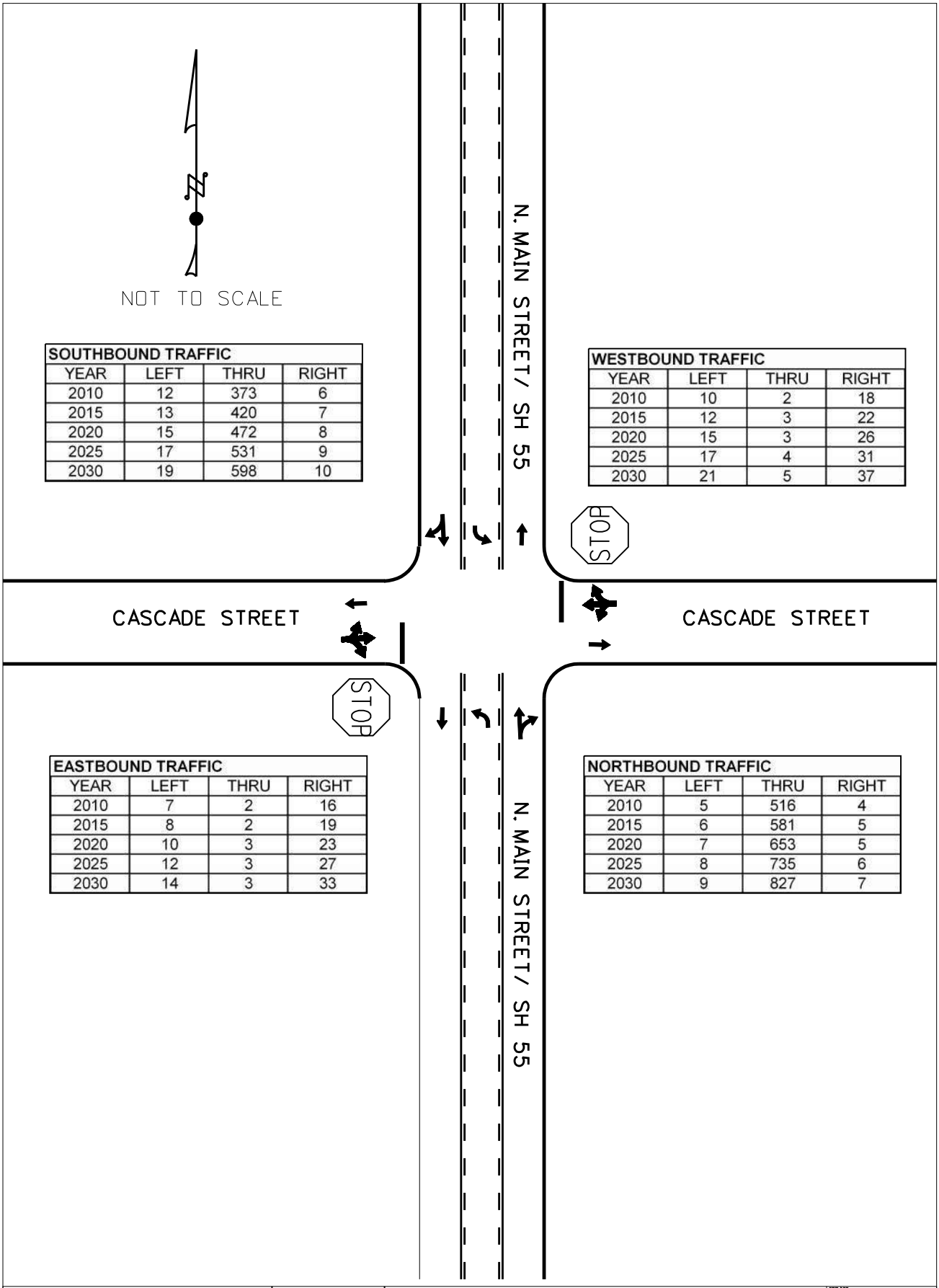
Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*4*	*250*	*0*	*0*	*306*	*29*
Peak-Hour Factor, PHF	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*4*	*301*	*0*	*0*	*368*	*34*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*17*	*0*	*8*
Peak-Hour Factor, PHF	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*20*	*0*	*9*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (vph)	*4*						*29*	
C (m) (vph)	*1157*						*467*	
v/c	*0.00*						*0.06*	
95% queue length	*0.01*						*0.20*	
Control Delay	*8.1*						*13.2*	
LOS	*A*						*B*	
Approach Delay	--	--				*13.2*		
Approach LOS	--	--				*B*		



SOUTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	12	373	6
2015	13	420	7
2020	15	472	8
2025	17	531	9
2030	19	598	10

WESTBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	10	2	18
2015	12	3	22
2020	15	3	26
2025	17	4	31
2030	21	5	37

EASTBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	7	2	16
2015	8	2	19
2020	10	3	23
2025	12	3	27
2030	14	3	33

NORTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	5	516	4
2015	6	581	5
2020	7	653	5
2025	8	735	6
2030	9	827	7

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HWY. 55 & CASCADE ST.
PM PEAK HOUR TURNING MOVEMENTS
CITY OF CASCADE, IDAHO

JOB NO: VC 082504
DATE: 11/30/07
PLOTTED: 11/30/07
LOCATION: I/Scott/VCTRANS.dgn
DRAWN BY: RSP
CHECKED BY: SSK
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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Cascade St.*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*11/21/2007*	Analysis Year	*2007*
Analysis Time Period	*AM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Cascade St.*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*1*	*208*	*7*	*11*	*161*	*1*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*1*	*239*	*8*	*12*	*185*	*1*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*16*	*0*	*13*	*2*	*0*	*4*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*18*	*0*	*14*	*2*	*0*	*4*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*1*	*12*		*32*			*6*	
C (m) (vph)	*1388*	*1319*		*663*			*738*	
v/c	*0.00*	*0.01*		*0.05*			*0.01*	
95% queue length	*0.00*	*0.03*		*0.15*			*0.02*	
Control Delay	*7.6*	*7.8*		*10.7*			*9.9*	
LOS	*A*	*A*		*B*			*A*	
Approach Delay	--	--	*10.7*			*9.9*		
Approach LOS	--	--	*B*			*A*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Cascade St.*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*11/21/2007*	Analysis Year	*2007*
Analysis Time Period	*PM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Cascade St.*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

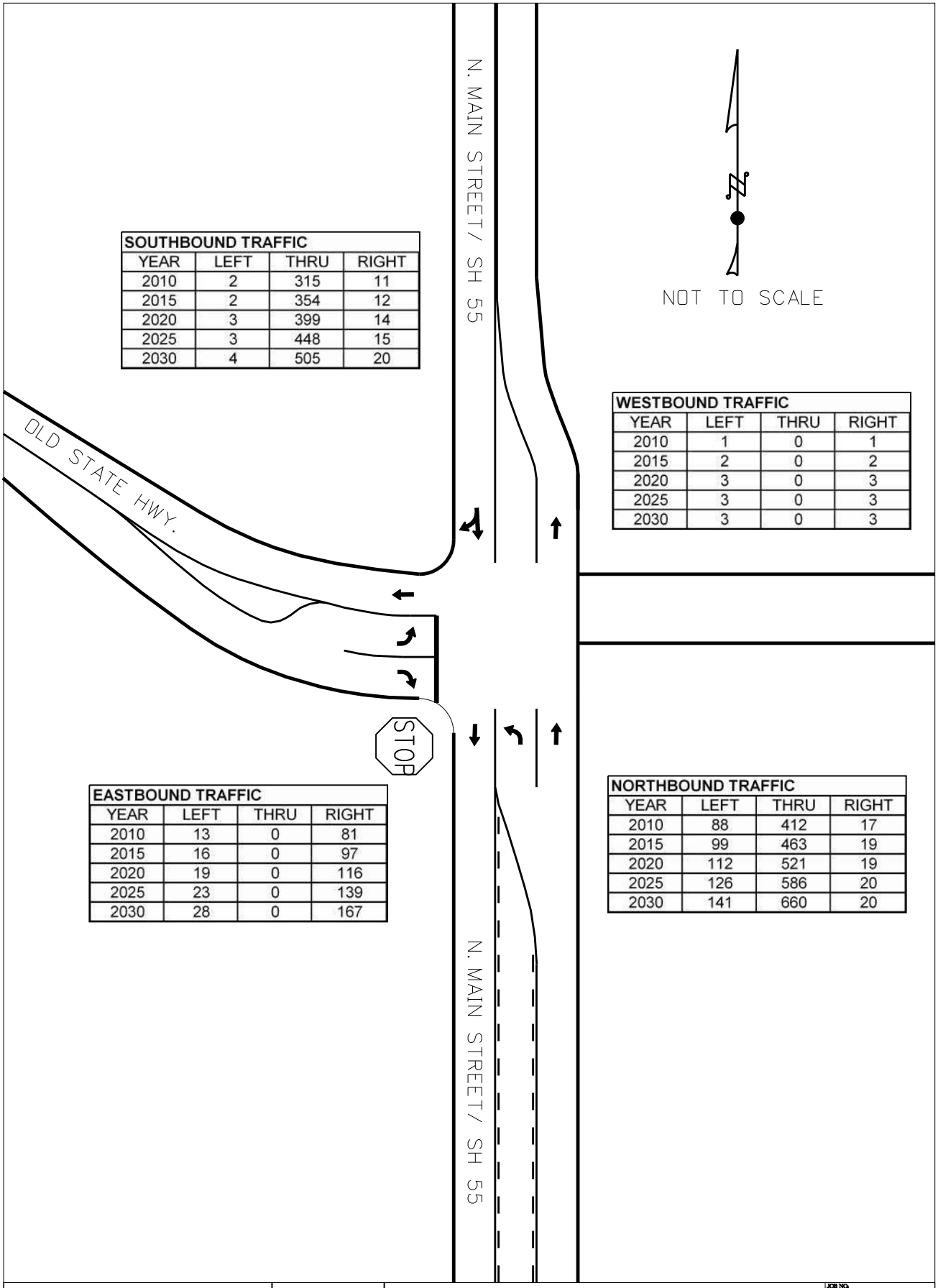
Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*5*	*480*	*4*	*11*	*347*	*6*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*5*	*551*	*4*	*12*	*398*	*6*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*9*	*2*	*16*	*6*	*0*	*14*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*10*	*2*	*18*	*6*	*0*	*16*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*5*	*12*		*30*			*22*	
C (m) (vph)	*1155*	*1015*		*440*			*520*	
v/c	*0.00*	*0.01*		*0.07*			*0.04*	
95% queue length	*0.01*	*0.04*		*0.22*			*0.13*	
Control Delay	*8.1*	*8.6*		*13.8*			*12.2*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*13.8*			*12.2*		
Approach LOS	--	--	*B*			*B*		



SOUTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	2	315	11
2015	2	354	12
2020	3	399	14
2025	3	448	15
2030	4	505	20

WESTBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	1	0	1
2015	2	0	2
2020	3	0	3
2025	3	0	3
2030	3	0	3

EASTBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	13	0	81
2015	16	0	97
2020	19	0	116
2025	23	0	139
2030	28	0	167

NORTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	88	412	17
2015	99	463	19
2020	112	521	19
2025	126	586	20
2030	141	660	20

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HWY. 55 & OLD STATE HWY.
PM PEAK HOUR TURNING MOVEMENTS
CITY OF CASCADE, IDAHO

JOB NO: VC 082504
DATE: 12/4/07
PLOTTED: 12/4/07
LOCATION: I/Scott/VCTRANS.dgn
DRAWN BY: RSP
CHECKED BY: SSK
PAGE 1/1

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Old Hwy*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*6/29/2007*	Analysis Year	*2007*
Analysis Time Period	*AM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Old Hwy*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*61*	*145*	*7*	*2*	*157*	*6*
Peak-Hour Factor, PHF	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*73*	*174*	*8*	*2*	*189*	*7*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*		*TR*	*LT*		*R*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*2*	*0*	*4*	*11*	*0*	*48*
Peak-Hour Factor, PHF	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*2*	*0*	*4*	*13*	*0*	*57*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*1*
Configuration		*LTR*		*LT*		*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*LT*		*LTR*		*LT*		*R*
v (vph)	*73*	*2*		*6*		*13*		*57*
C (m) (vph)	*1377*	*1393*		*628*		*449*		*858*
v/c	*0.05*	*0.00*		*0.01*		*0.03*		*0.07*
95% queue length	*0.17*	*0.00*		*0.03*		*0.09*		*0.21*
Control Delay	*7.8*	*7.6*		*10.8*		*13.3*		*9.5*
LOS	*A*	*A*		*B*		*B*		*A*
Approach Delay	--	--	*10.8*			*10.2*		
Approach LOS	--	--	*B*			*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Old Hwy*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*6/29/2007*	Analysis Year	*2007*
Analysis Time Period	*PM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Old Hwy*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

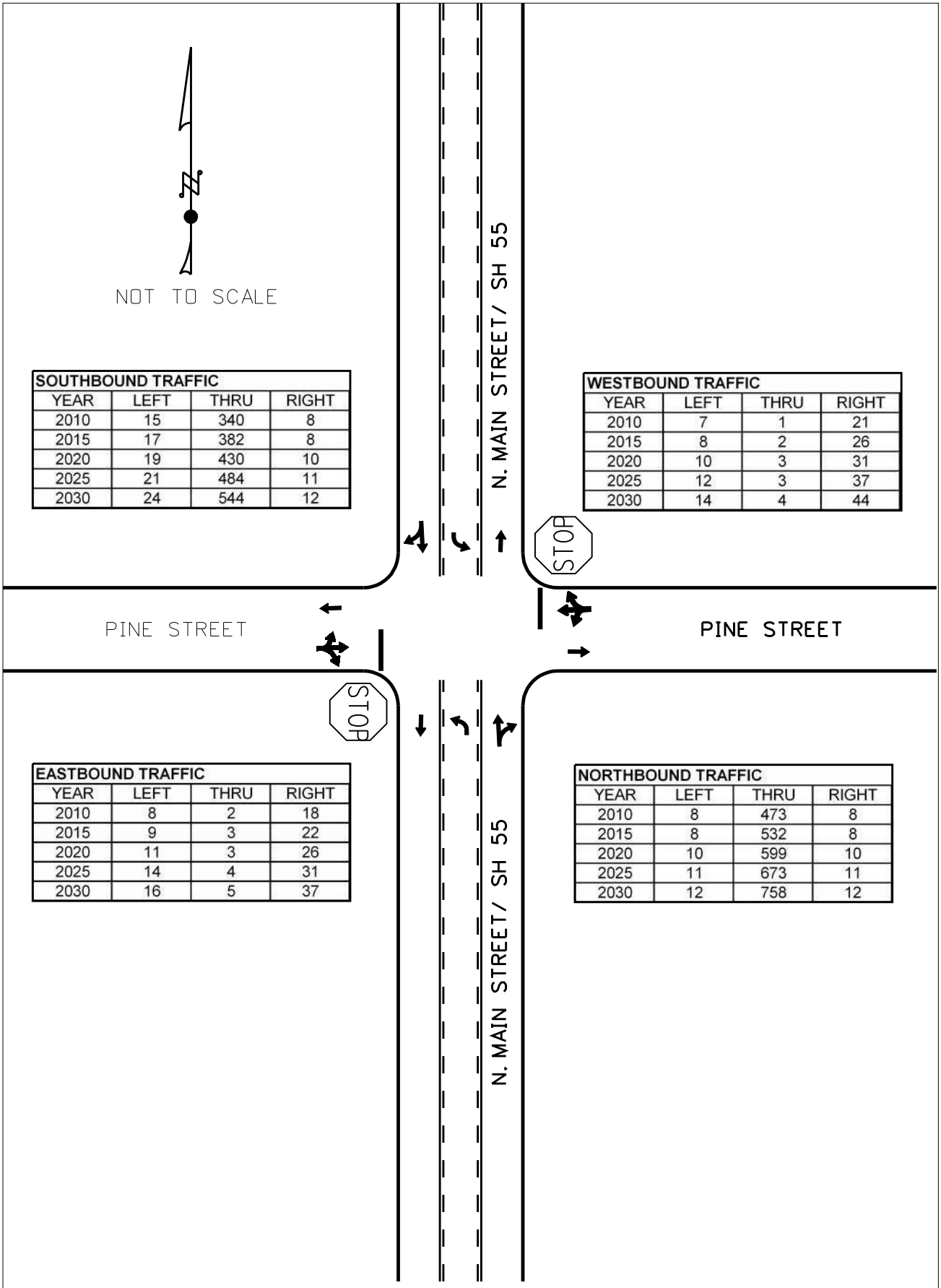
Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*82*	*383*	*16*	*2*	*293*	*10*
Peak-Hour Factor, PHF	*0.97*	*0.97*	*0.97*	*0.97*	*0.97*	*0.97*
Hourly Flow Rate, HFR	*84*	*394*	*16*	*2*	*302*	*10*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*		*TR*	*LT*		*R*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*	*0*	*2*	*12*	*0*	*72*
Peak-Hour Factor, PHF	*0.97*	*0.97*	*0.97*	*0.97*	*0.97*	*0.97*
Hourly Flow Rate, HFR	*1*	*0*	*2*	*12*	*0*	*74*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*1*
Configuration		*LTR*		*LT*		*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*LT*		*LTR*		*LT*		*R*
v (vph)	*84*	*2*		*3*		*12*		*74*
C (m) (vph)	*1248*	*1149*		*391*		*256*		*742*
v/c	*0.07*	*0.00*		*0.01*		*0.05*		*0.10*
95% queue length	*0.22*	*0.01*		*0.02*		*0.15*		*0.33*
Control Delay	*8.1*	*8.1*		*14.3*		*19.8*		*10.4*
LOS	*A*	*A*		*B*		*C*		*B*
Approach Delay	--	--	*14.3*			*11.7*		
Approach LOS	--	--	*B*			*B*		



SOUTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	15	340	8
2015	17	382	8
2020	19	430	10
2025	21	484	11
2030	24	544	12

WESTBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	7	1	21
2015	8	2	26
2020	10	3	31
2025	12	3	37
2030	14	4	44

EASTBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	8	2	18
2015	9	3	22
2020	11	3	26
2025	14	4	31
2030	16	5	37

NORTHBOUND TRAFFIC			
YEAR	LEFT	THRU	RIGHT
2010	8	473	8
2015	8	532	8
2020	10	599	10
2025	11	673	11
2030	12	758	12

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HWY. 55 & PINE ST.
PM PEAK HOUR TURNING MOVEMENTS
CITY OF CASCADE, IDAHO

JOB NO: VC 082504
DATE: 11/30/07
PLOTTED: 11/30/07
LOCATION: I/Scott/VCTRANS.dgn
DRAWN BY: RSP
CHECKED BY: SSK
PAGE 1/1

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Pine St.*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*6/29/2007*	Analysis Year	*2007*
Analysis Time Period	*AM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Pine St.*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*5*	*223*	*13*	*6*	*182*	*3*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*5*	*256*	*14*	*6*	*209*	*3*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*7*	*0*	*12*	*3*	*1*	*8*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*8*	*0*	*13*	*3*	*1*	*9*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*5*	*6*		*21*			*13*	
C (m) (vph)	*1358*	*1293*		*677*			*719*	
v/c	*0.00*	*0.00*		*0.03*			*0.02*	
95% queue length	*0.01*	*0.01*		*0.10*			*0.06*	
Control Delay	*7.7*	*7.8*		*10.5*			*10.1*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*10.5*			*10.1*		
Approach LOS	--	--	*B*			*B*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Sai Sarepalli*	Intersection	*SH 55 and Pine St.*
Agency/Co.	*Holladay Engineering Co.*	Jurisdiction	*City of Cascade*
Date Performed	*6/29/2007*	Analysis Year	*2007*
Analysis Time Period	*PM Peak Hour*		
Project Description	*Cascade Transportation Plan*		
East/West Street:	*SH 55*	North/South Street:	*Pine St.*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*7*	*440*	*7*	*14*	*316*	*7*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*8*	*505*	*8*	*16*	*363*	*8*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*6*	*1*	*19*	*7*	*2*	*16*
Peak-Hour Factor, PHF	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*	*0.87*
Hourly Flow Rate, HFR	*6*	*1*	*21*	*8*	*2*	*18*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

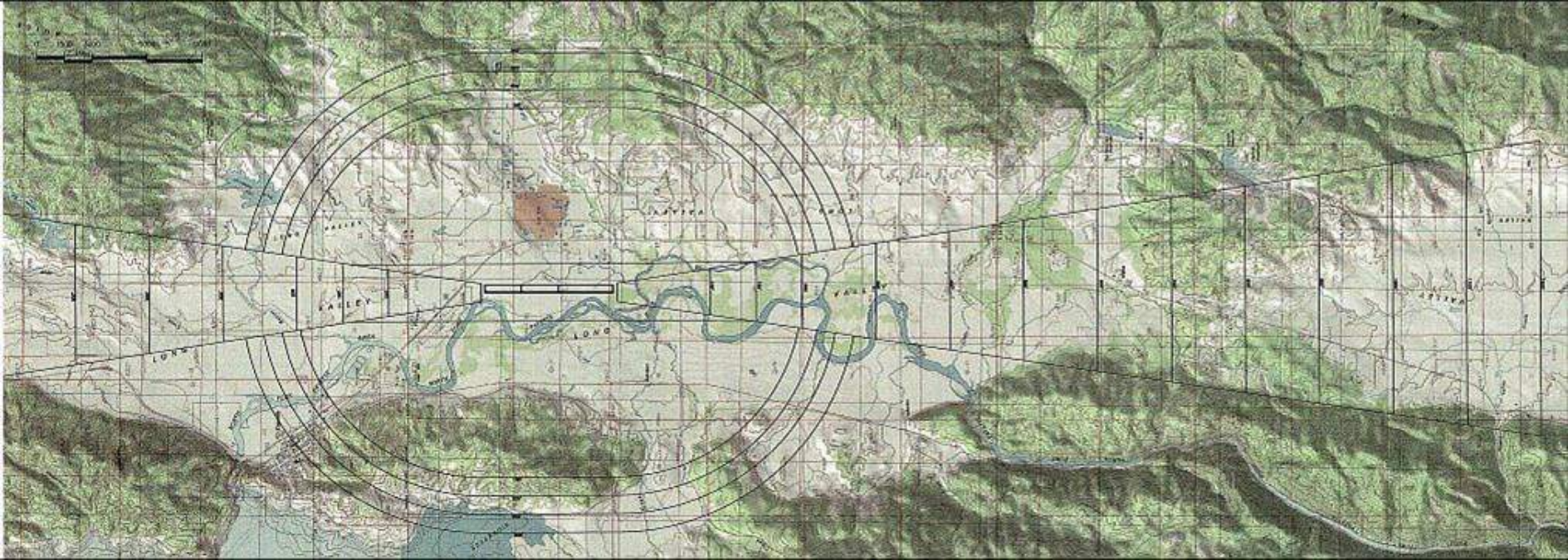
Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*8*	*16*		*28*			*28*	
C (m) (vph)	*1188*	*1052*		*498*			*515*	
v/c	*0.01*	*0.02*		*0.06*			*0.05*	
95% queue length	*0.02*	*0.05*		*0.18*			*0.17*	
Control Delay	*8.1*	*8.5*		*12.7*			*12.4*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*12.7*			*12.4*		
Approach LOS	--	--	*B*			*B*		

APPENDIX J

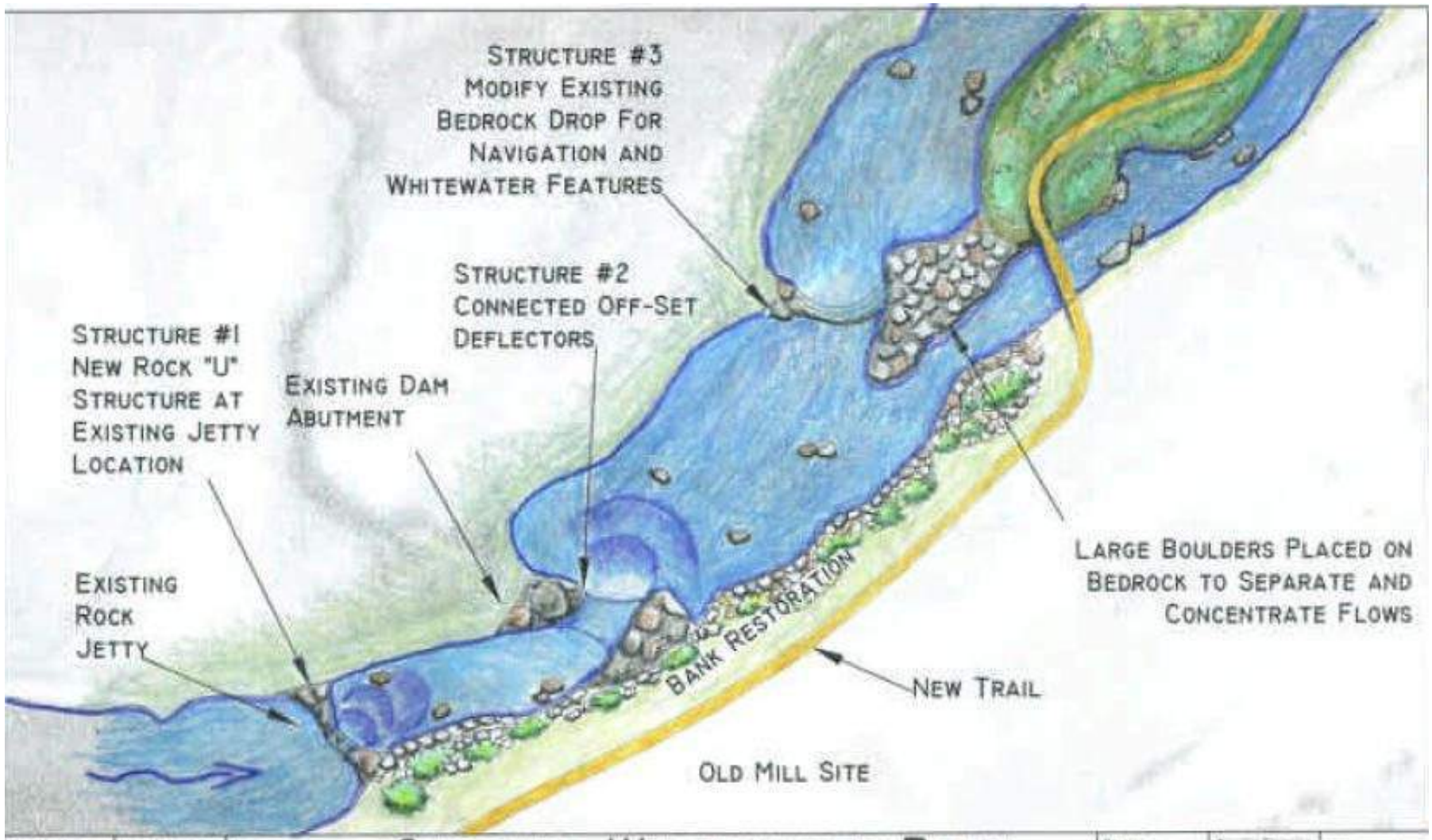
Conceptual Plan of the Feasible New Runway Location


LORD
VALLEY
RESERVOIR


LONG VALLEY
LONG VALLEY
LONG VALLEY
LONG VALLEY

APPENDIX K

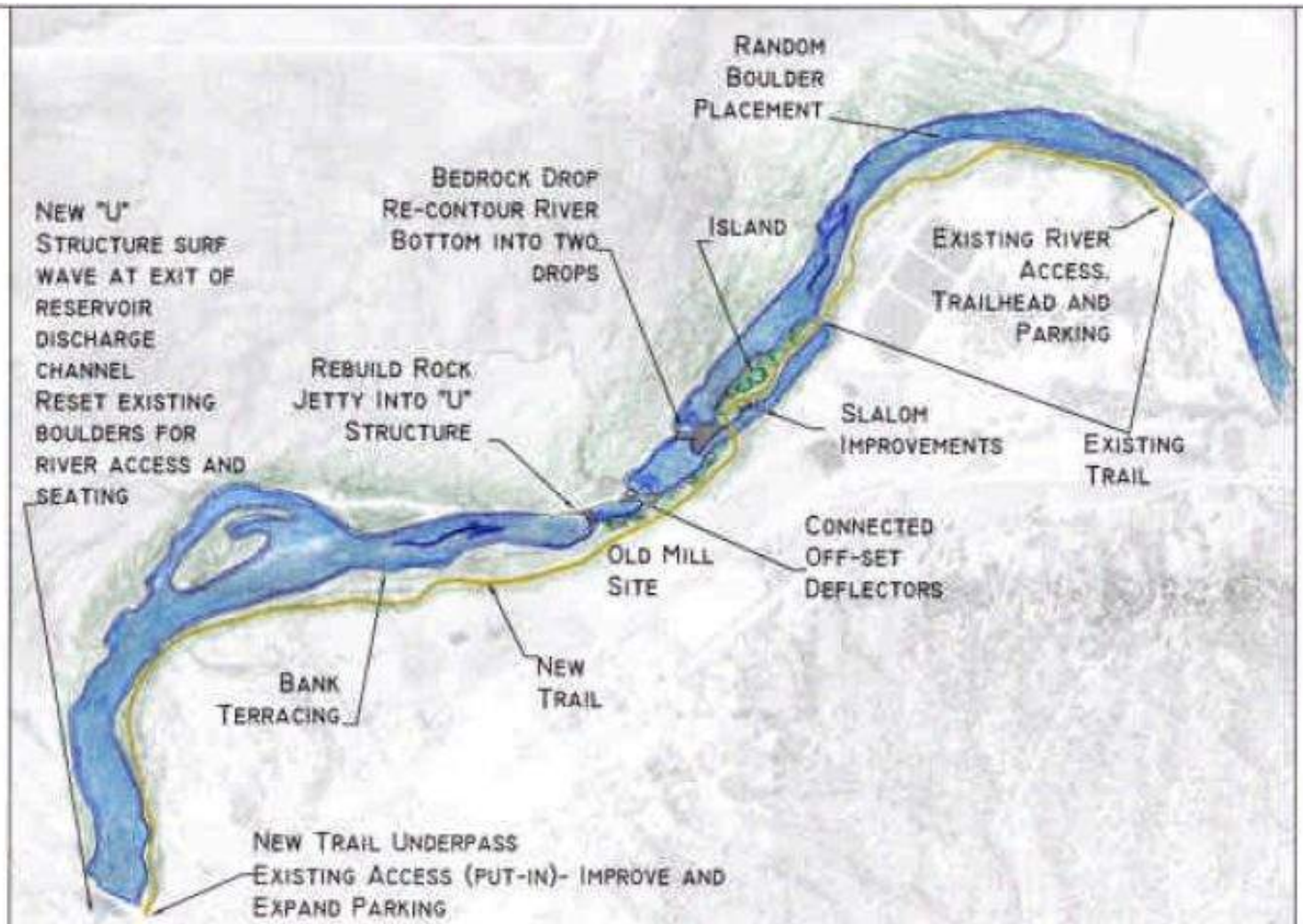
Conceptual Plan of the Proposed Whitewater Park



CASCADE WHITEWATER PARK

CASCADE, IDAHO

CONCEPTUAL DESIGN



Page Number:

Client Information:
City of Cascade
PO Box 649
Cascade, ID
83611

Project:

North Fork Payette River Improvements

North Bridge to South Bridge, Cascade, Idaho

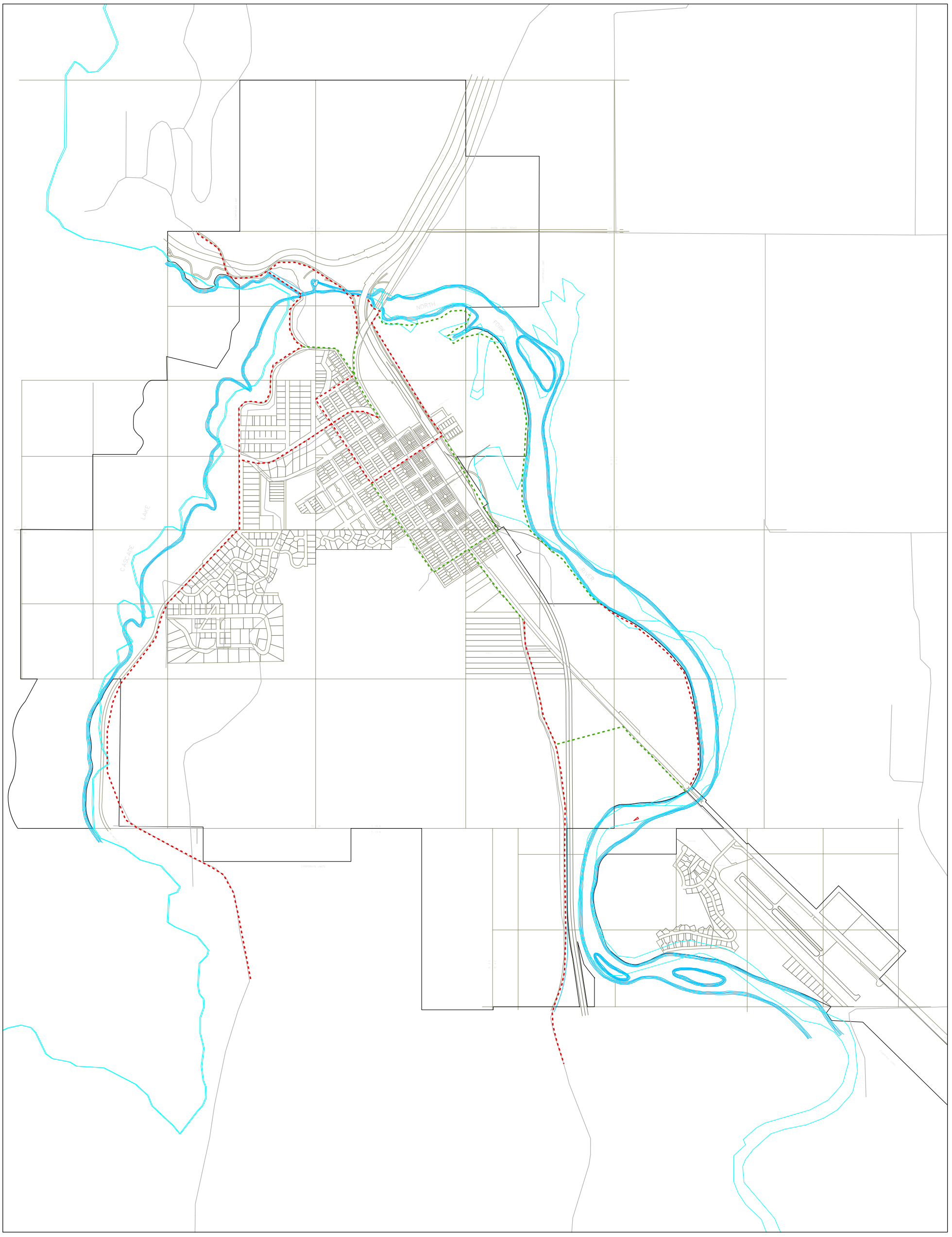
Conceptual Design

Revisions:

Recreation Engineering and Planning

APPENDIX L

Pedestrian and Bike Pathways Conceptual Plan



CITY OF CASCADE
PEDESTRIAN AND BIKE PATH
CONCEPTUAL PLAN

Legend

- PROPOSED PATHWAY
- PLANNED PATHWAY
- VALLEY COUNTY

0 1,375 2,750 5,500 8,250 11,000 Feet

This map represents a compilation of public information from diverse records gathered by the City of Cascade and Holladay Engineering Company. The purpose for which this map is prepared is an overall general representation of positional relationships, and not a definitive description of location of any class of objects or conditions. Hence, no responsibility for errors can be or is assumed. The City of Cascade and Holladay Engineering Company CANNOT AND DO NOT GUARANTEE the absence of errors or the corrections of all information furnished to them for the preparation of this map.

HOLLADAY ENGINEERING CO.

APPENDIX M

Future/Proposed Street Functional Classification Map

CITY OF CASCADE
PROPOSED FUNCTIONAL CLASSIFICATION MAP

This map represents a compilation of public information from diverse records gathered by the City of Cascade and Holladay Engineering Company. The purpose for which this map is prepared is an overall general representation of positional relationships, and not a definitive description of location of any class of objects or conditions. Hence, no responsibility for errors can be or is assumed. The City of Cascade and Holladay Engineering Company CANNOT AND DO NOT GUARANTEE the absence of errors or the corrections of all information furnished to them for the preparation of this map.

HOLLADAY ENGINEERING CO.

Legend

- PROPOSED MINOR COLLECTOR
- PROPOSED MAJOR COLLECTOR
- VALLEY COUNTY

0 875 1,750 3,500 5,250 7,000 Feet

APPENDIX N

Capital Improvement Plan Map – Projects for 5 Years

Capital Improvement Projects for the next 5 years

Priority	Project Name	Funding Source	Projected Construction Year				
			FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Front Street (From Cascade St. to Payette Street) Improvement	LHTAC - STP Rural	X				
2	School Street Improvement	LHTAC – Investment		X			
3	West Spring Street (Idaho St. to School St.) Improvement	LHTAC – STP Rural and Private	X				
4	S Van Wyck Street (W Cascade St. to W Market St.) Improvement	LHTAC – Enhancement & Recreational Trails Program		X			
5	W Payette St. (S School St. to SH-55) Improvement	LHTAC – STP Rural			X		
6	N Sawyer Street (SH-55 to E Pine St.) Improvement	LHTAC – STP (Enhancement) & Recreational			X		
7	Kirby Street (S Idaho St. to S School St.) Widening	Local Funds			X		
8	Dam Road (from SH 55 to Van Wyck Park)	Local Funds					
9	N Pine Street Sidewalk						
10	Downtown Revitalization						

Note: * Preliminary Planning and Design
The above listed projects are not included in the current STP.

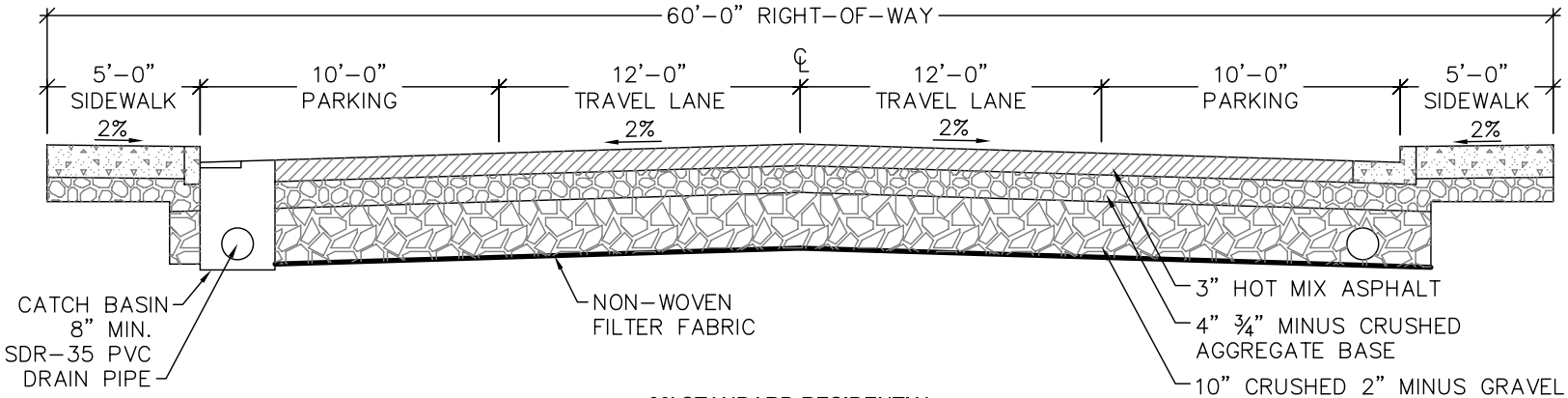
Note: All federal funding through the State is restricted to Major Collectors and Arterials in the Surface Transportation Improvement Program (STIP). Some of the proposed projects are not currently listed as Major Collectors in the STIP. Application may be made to the State to change the classification of qualified streets. Federal funded projects time frame is an average of four to six years. Please note that the given approximate costs are for construction only as per current unit costs, costs for application, design engineering, construction engineering, project administration, contingency and other costs associated with a street construction project need to be added based upon site specific review. Project size may have to be varied to meet available funding.

APPENDIX O

Standard Drawings

HOLLADAY ENGINEERING CO.
ENGINEERS · CONSULTANTS
32 N. MAIN, P.O. BOX 235 · PAYETTE, ID 83661
(208) 642-3304 · FAX# (208) 642-2159
EMAIL: holladay@ministron.net

STANDARD DRAWING SD-1
LOCAL STREET SECTIONS
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

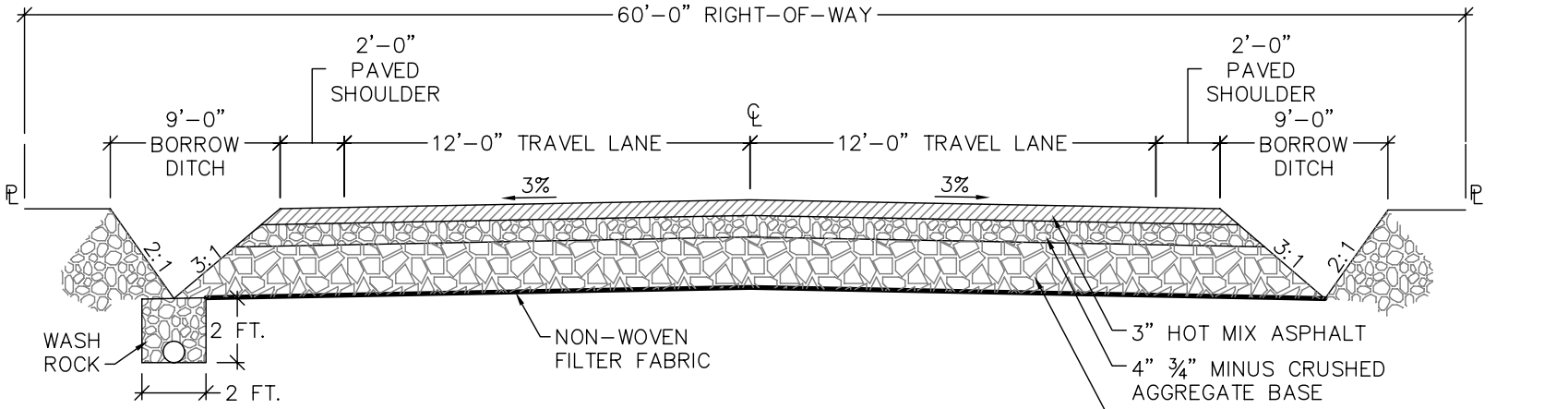


60' STANDARD RESIDENTIAL STREET SECTION (W/ CURB, GUTTER, & SIDEWALK)

NOT TO SCALE

NOTE:

5 FT. WIDE PEDESTRIAN & BIKE LANES CAN BE ACCOMMODATED ON BOTH SIDES OF STREET SECTION. IN ALL CASES EITHER SIDEWALKS OR PATHWAYS WILL BE REQUIRED BY THE CITY ENGINEER.



ALTERNATE 60' STANDARD RESIDENTIAL STREET SECTION (NO CURB & GUTTER)

NOT TO SCALE

NOTE:

5 FT. WIDE PEDESTRIAN & BIKE LANES CAN BE ACCOMMODATED ON BOTH SIDES OF STREET SECTION. IN ALL CASES EITHER SIDEWALKS OR PATHWAYS WILL BE REQUIRED BY THE CITY ENGINEER.

JOB NO.	VC082504 CS T05
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DATE	5/4/05
PLOTTED	03/21/07
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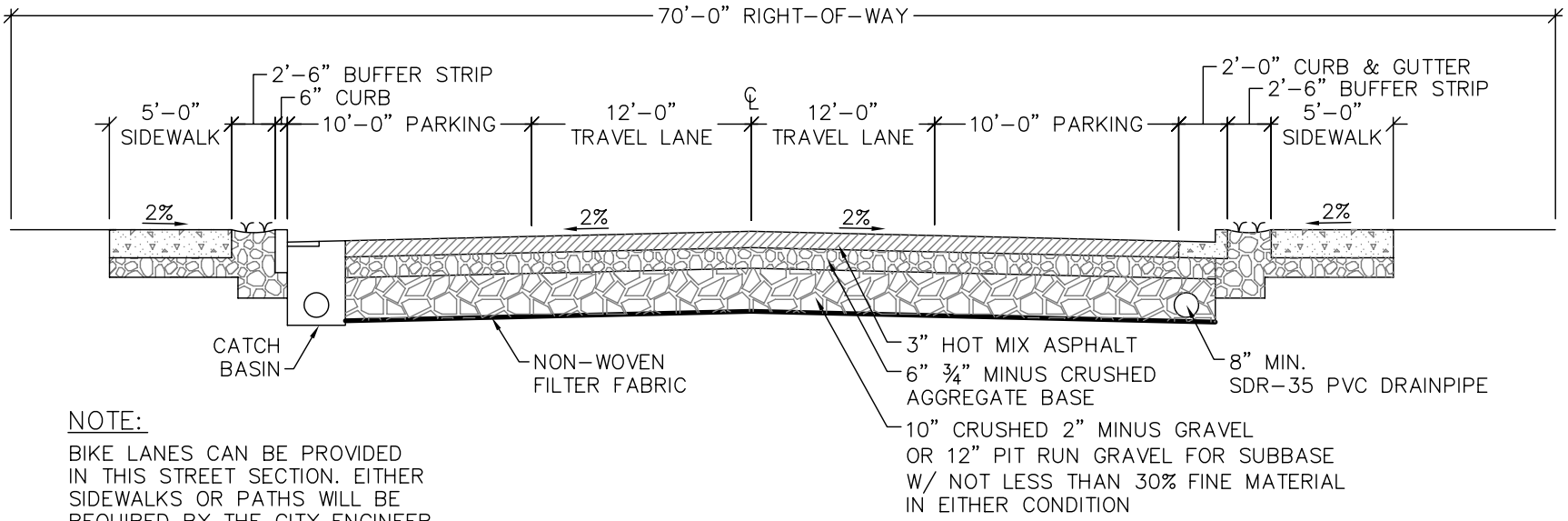
STANDARD DRAWING SD-2
COLLECTOR STREET SECTIONS
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

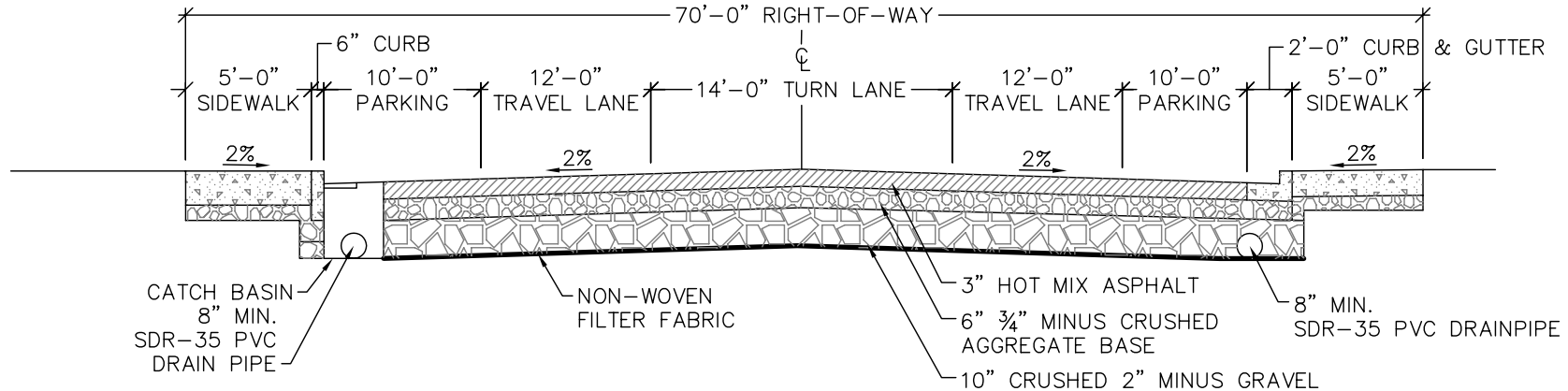


NOTE:

BIKE LANES CAN BE PROVIDED IN THIS STREET SECTION. EITHER SIDEWALKS OR PATHS WILL BE REQUIRED BY THE CITY ENGINEER.

70' STANDARD COLLECTOR/LOCAL STREET SECTION (W/ CURB, GUTTER, & SIDEWALK)

NOT TO SCALE



NOTE:

BIKE LANES CANNOT BE PROVIDED IN THIS STREET SECTION. EITHER SIDEWALKS OR PATHS WILL BE REQUIRED BY THE CITY ENGINEER.

70' STANDARD COLLECTOR STREET SECTION (W/ CURB, GUTTER, SIDEWALK, & TURN LANE)

NOT TO SCALE

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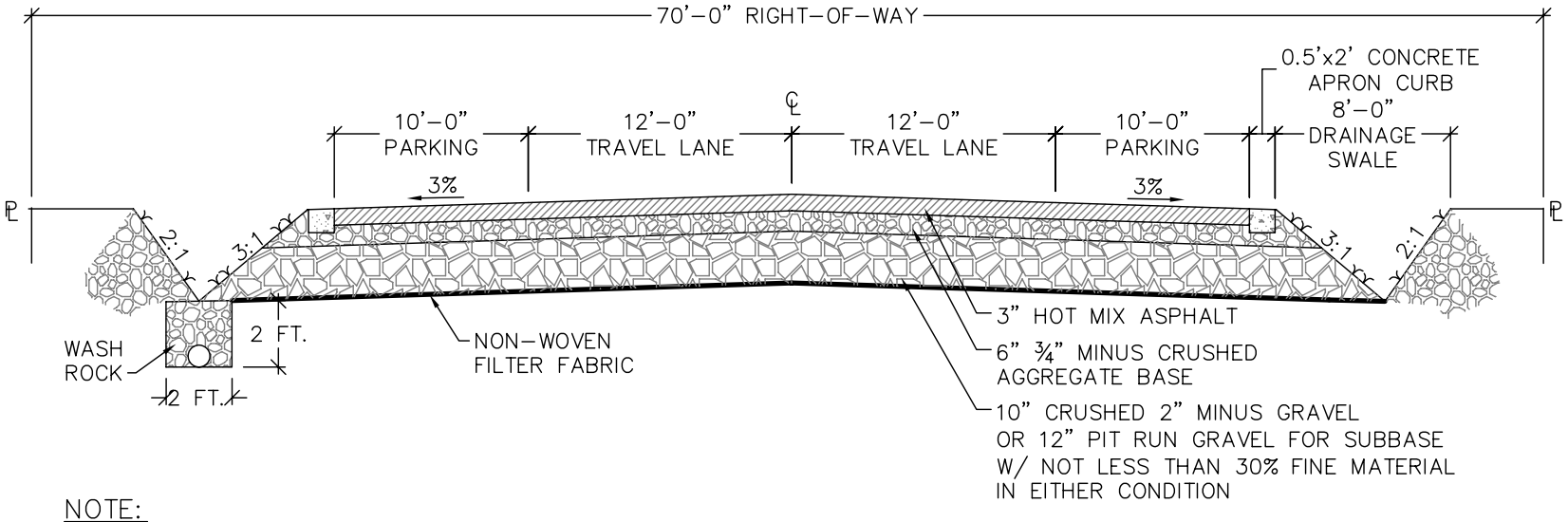
STANDARD DRAWING SD-3
ALTERNATE COLLECTOR STREET SECTION
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO



NOTE:

5 FT. WIDE PEDESTRIAN & BIKE LANES CAN BE ACCOMMODATED ON BOTH SIDES OF STREET SECTION. EITHER SIDEWALKS OR PATHS WILL BE REQUIRED BY THE CITY ENGINEER.

ALTERNATE 70' STANDARD COLLECTOR/LOCAL STREET SECTION (NO CURB & GUTTER)

NOT TO SCALE

NOTE:

THE CITY ENGINEER WILL DECIDE IF PARKING WILL BE ALLOWED ON COLLECTORS OR ARTERIALS.

JOB NO.	VC082504 CS T05
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PAGE	SSK

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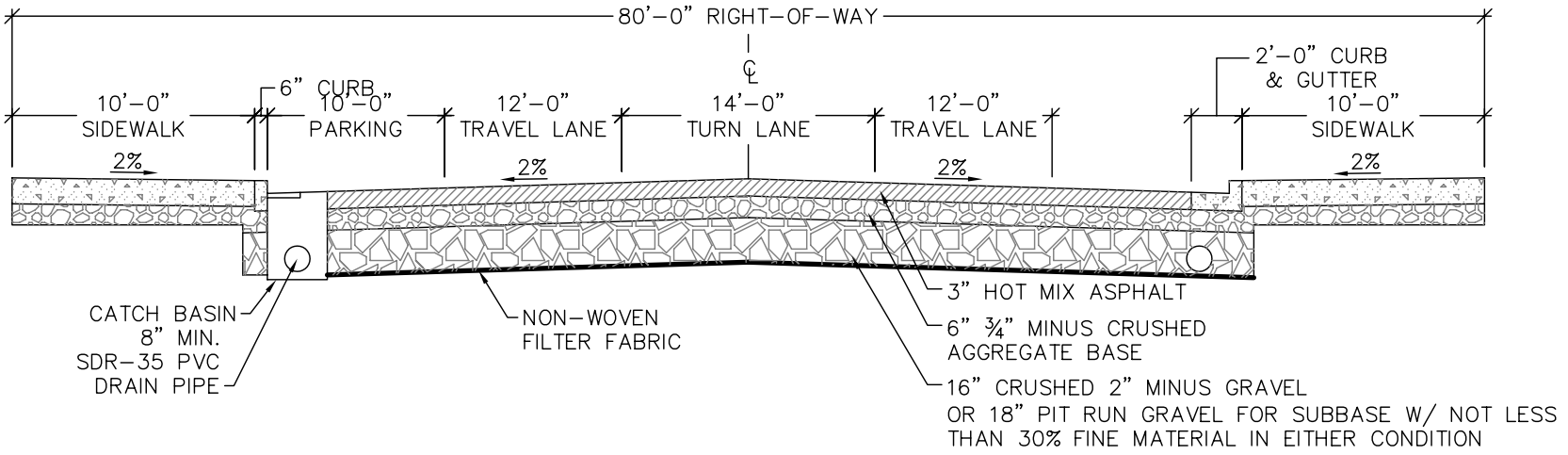
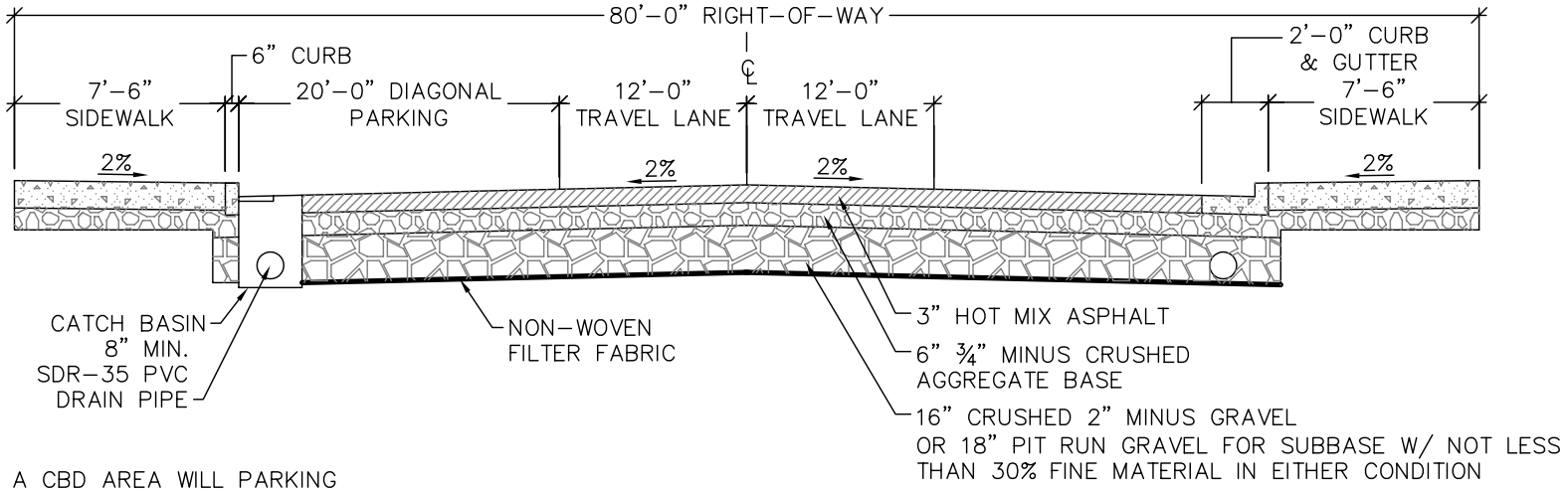
STANDARD DRAWING SD-4
ARTERIAL STREET SECTIONS
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO



ARTERIAL STANDARD SECTION
(W/ CURB, GUTTER, SIDEWALK, PARKING, & TURN LANE)

NOT TO SCALE



NOTE:
ONLY IN A CBD AREA WILL PARKING BE ALLOWED ON AN ARTERIAL. THE CITY ENGINEER SHALL DETERMINE IF DIAGONAL OR PARALLEL PARKING WILL BE ALLOWED.

STREET STANDARD SECTION
(W/ CURB, GUTTER, SIDEWALK, & DIAGONAL PARKING)

NOT TO SCALE

JOB NO.	VC082504 CS T05
REVISED	2/21/06
DATE	5/4/05
PLOTTED	03/21/07
DRAWN BY	JLM
CHECKED BY	SSK
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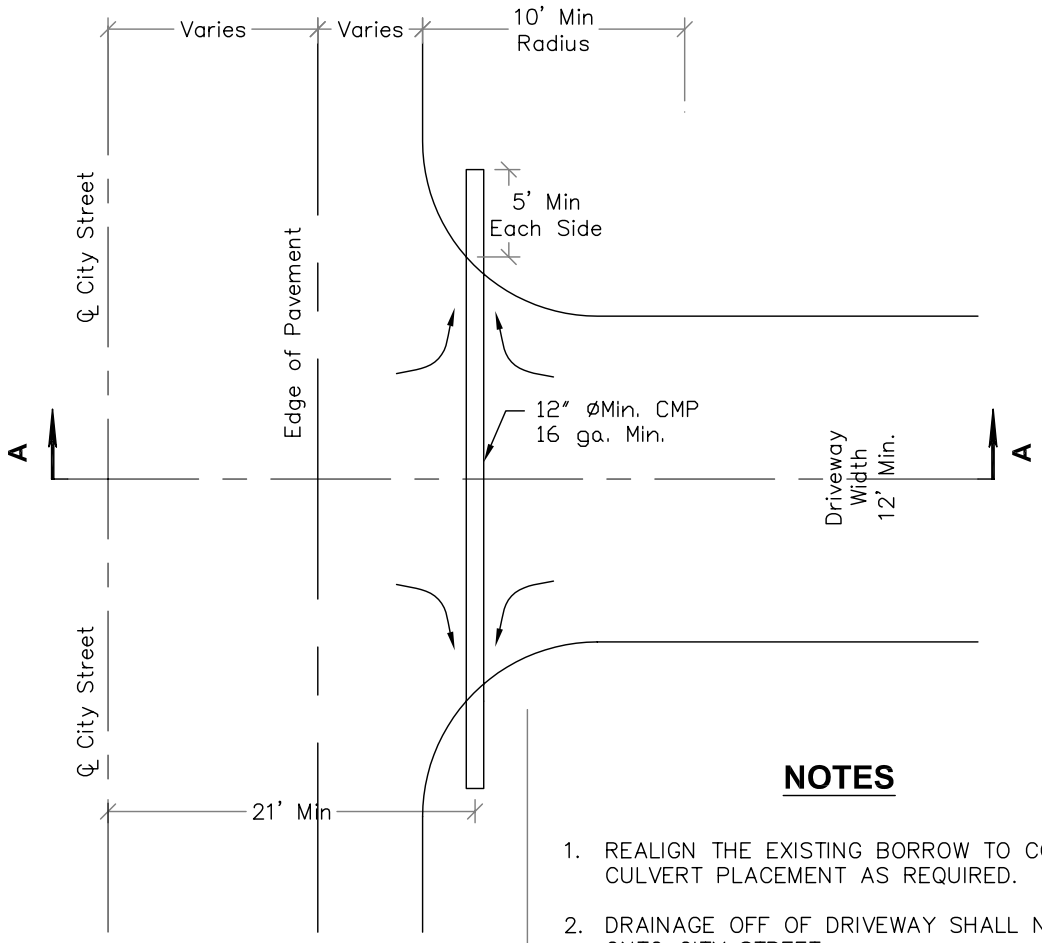
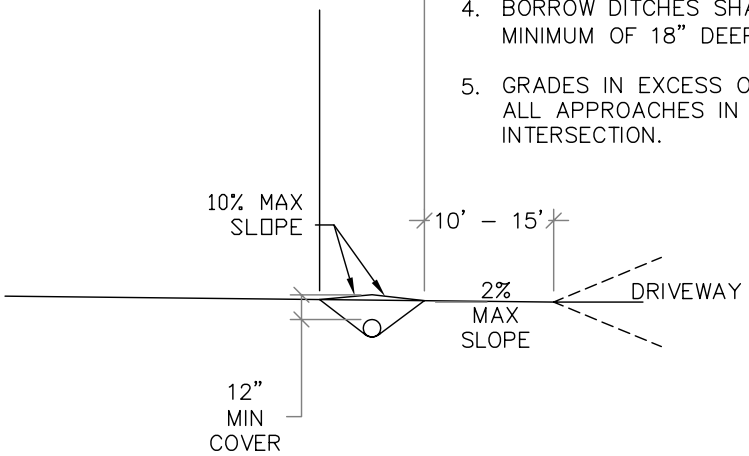


PLAN

(Not To Scale)

NOTES

1. REALIGN THE EXISTING BORROW TO CONFORM TO CULVERT PLACEMENT AS REQUIRED.
2. DRAINAGE OFF OF DRIVEWAY SHALL NOT ENTER ONTO CITY STREET.
3. WHEN USING STREET SECTION WITH BORROW DITCH, ALL DRIVEWAYS SHALL HAVE CULVERTS INSTALLED, UNLESS CITY COUNCIL GRANTS PERMISSION OTHERWISE.
4. BORROW DITCHES SHALL BE CONSTRUCTED A MINIMUM OF 18" DEEP BELOW CENTER LINE.
5. GRADES IN EXCESS OF 3% SHOULD BE AVOIDED ON ALL APPROACHES IN THE VICINITY OF AN INTERSECTION.



Adopted from ISPWC

SECTION A-A

HOLLADAY ENGINEERING CO.
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EMAIL: holladay@micron.net

STANDARD DRAWING SD-5
DRIVEWAY CULVERT DETAIL
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO:	VC082504 CS TO5
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DATE:	05/10/05
PLOTTED:	02/13/07
DRAWN BY:	JLM
CHECKED BY:	SSK
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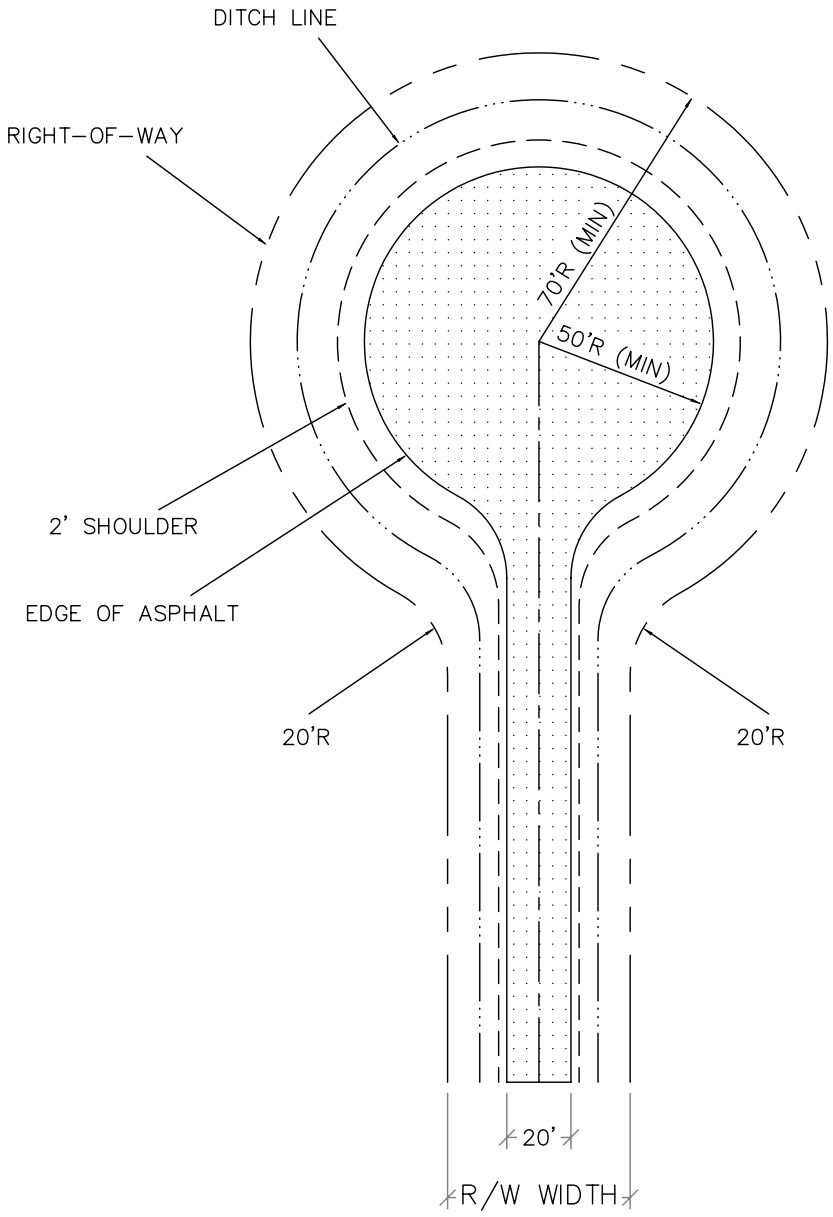

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STANDARD DRAWING SD-6
CUL-DE-SAC DETAIL
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO: VC082504 CS TO5
REVISED:
DATE: 05/10/05
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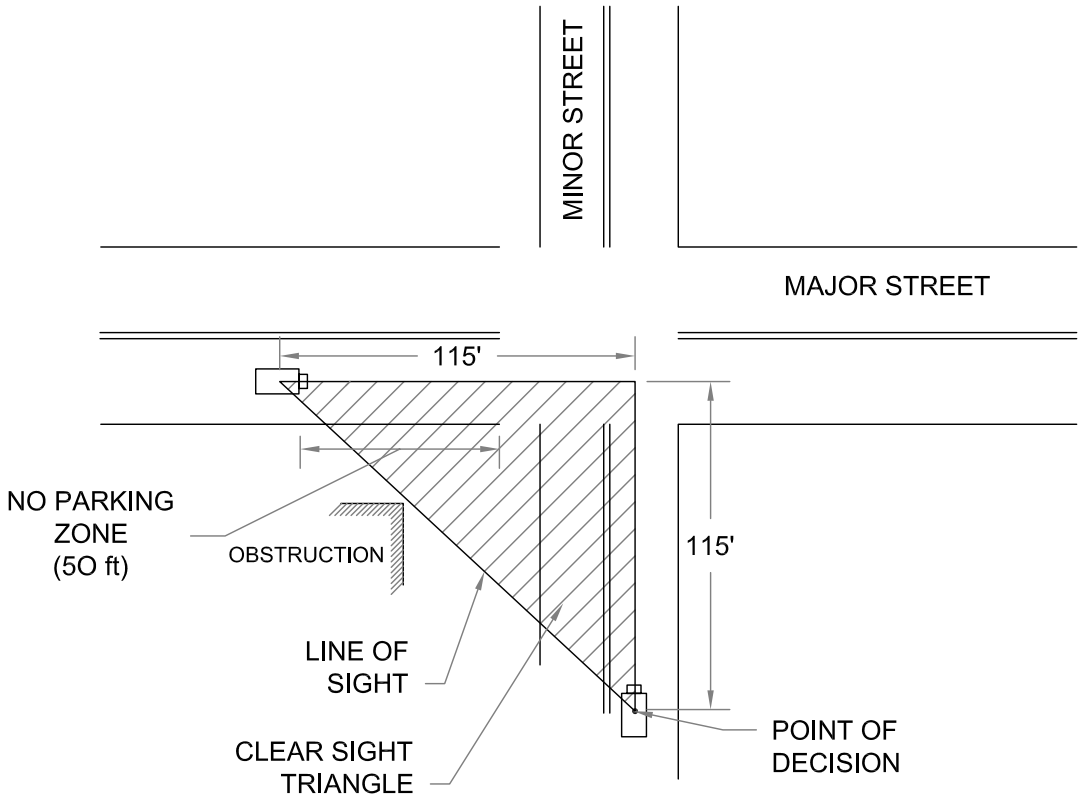
UNCONTROLLED INTERSECTION:
APPROACH SIGHT TRIANGLE FOR SPEED LIMIT 25 MPH

NOT TO SCALE



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STANDARD DRAWING SD-7
APPROACH SIGHT TRIANGLE
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO.	VC082504 CS T05
REVISED:	08/18/05
DATE:	05/06/05
PLOTTED:	02/13/07
DRAWN BY:	JLM
CHECKED BY:	SSK
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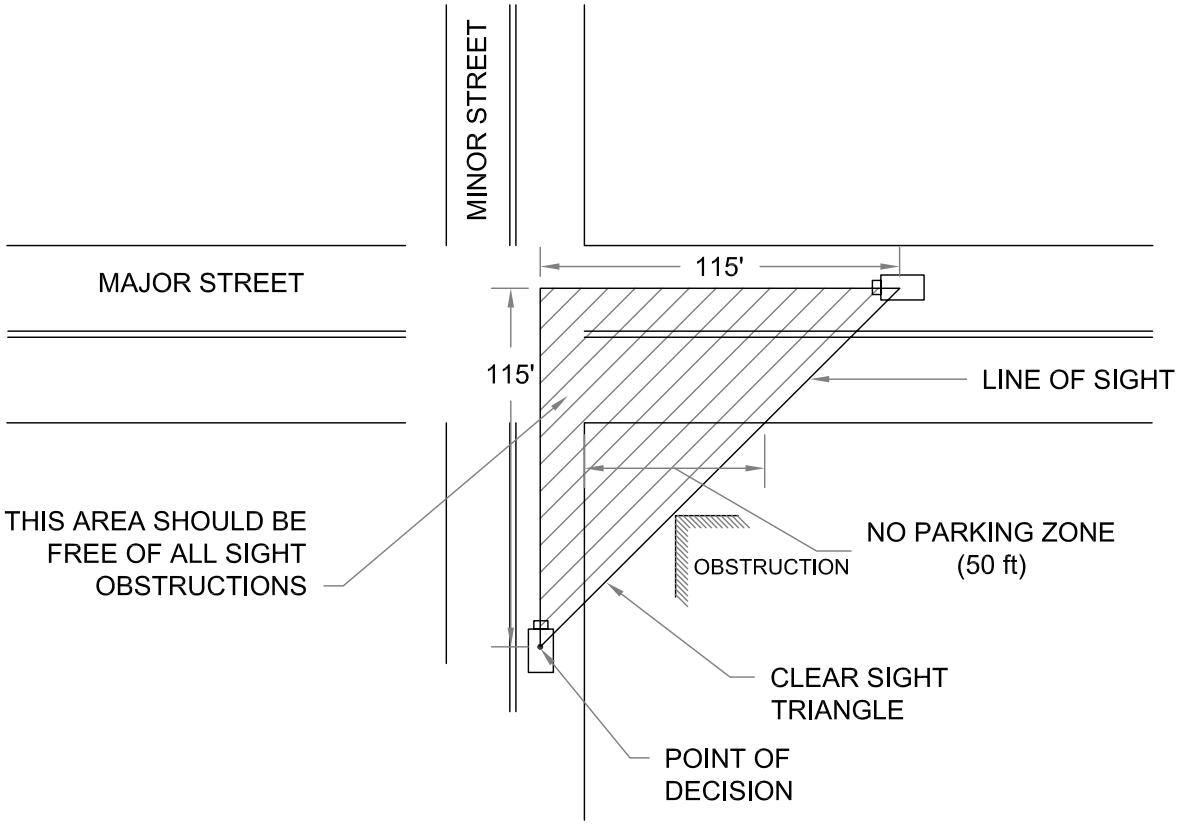
UNCONTROLLED INTERSECTION:
APPROACH SIGHT TRIANGLE FOR SPEED LIMIT 25 MPH

NOT TO SCALE



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STANDARD DRAWING SD-8
APPROACH SIGHT TRIANGLE
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO.	VC082504 CS T05
REVISED:	08/18/05
DATE:	05/06/05
PLOTTED:	02/13/07
DRAWN BY:	JLM
CHECKED BY:	SSK
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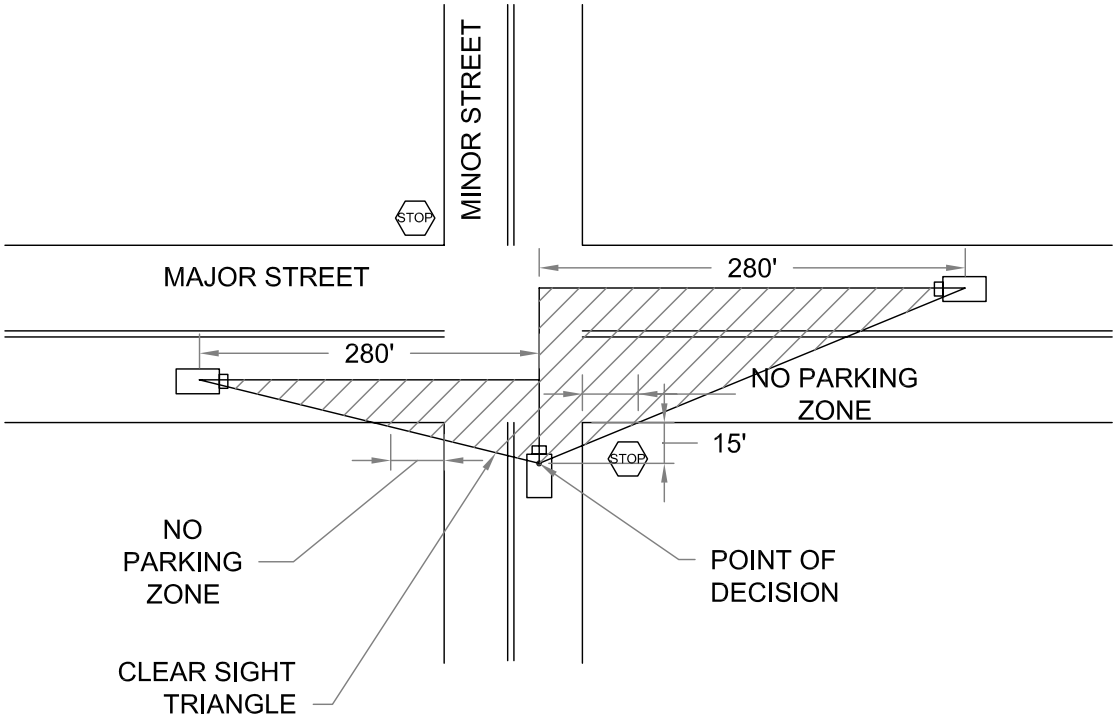
STOP CONTROL INTERSECTION:
DEPARTURE SIGHT TRIANGLE FOR SPEED LIMIT 25 MPH

NOT TO SCALE



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EMAIL: holladay@micron.net

STANDARD DRAWING SD-9
DEPARTURE SIGHT TRIANGLE
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO.	VC082504 CS T05
REVISED:	08/18/05
DATE:	05/06/05
PLOTTED:	02/13/07
DRAWN BY:	JLM
CHECKED BY:	SSK
PAGE	

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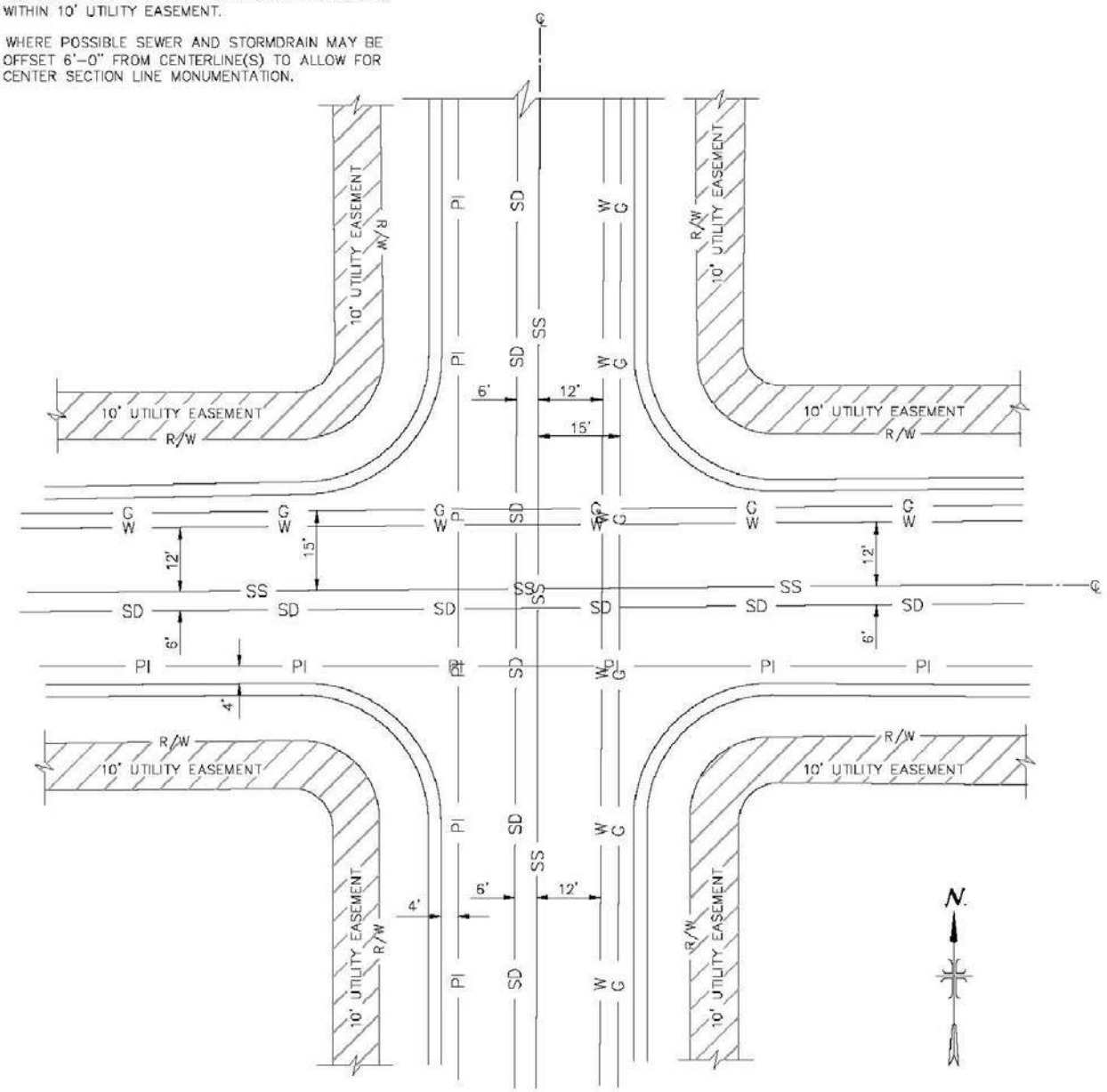
NOTES:

1. THIS DRAWING SHOULD BE CONSIDERED A GUIDE FOR UTILITY LOCATIONS. ADJUSTMENTS MAY BE MADE FOR LOGICAL UTILITY EXPANSION.
2. GAS LINE SHOWN IS REPRESENTATIVE OF EXISTING ROADWAYS. ALL NEW GAS LINES SHALL BE LOCATED WITHIN 10' UTILITY EASEMENT.
3. WHERE POSSIBLE SEWER AND STORMDRAIN MAY BE OFFSET 6'-0" FROM CENTERLINE(S) TO ALLOW FOR CENTER SECTION LINE MONUMENTATION.



PLAN

N.T.S.

DIGLINE:

CONTACT DIGLINE AT:
1-800-342-1585
48 HOURS BEFORE
YOU DIG.

Adopted from ISPWC

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EMAIL: holladay@micron.net

STANDARD DRAWING SD-10
UTILITY CORRIDOR PLAN DETAIL
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO.	VC082504 CS T05
REVISED:	
DATE:	03/15/07
PLOTTED:	03/15/07
DRAWN BY:	JEH
CHECKED BY:	RDG
PAGE	

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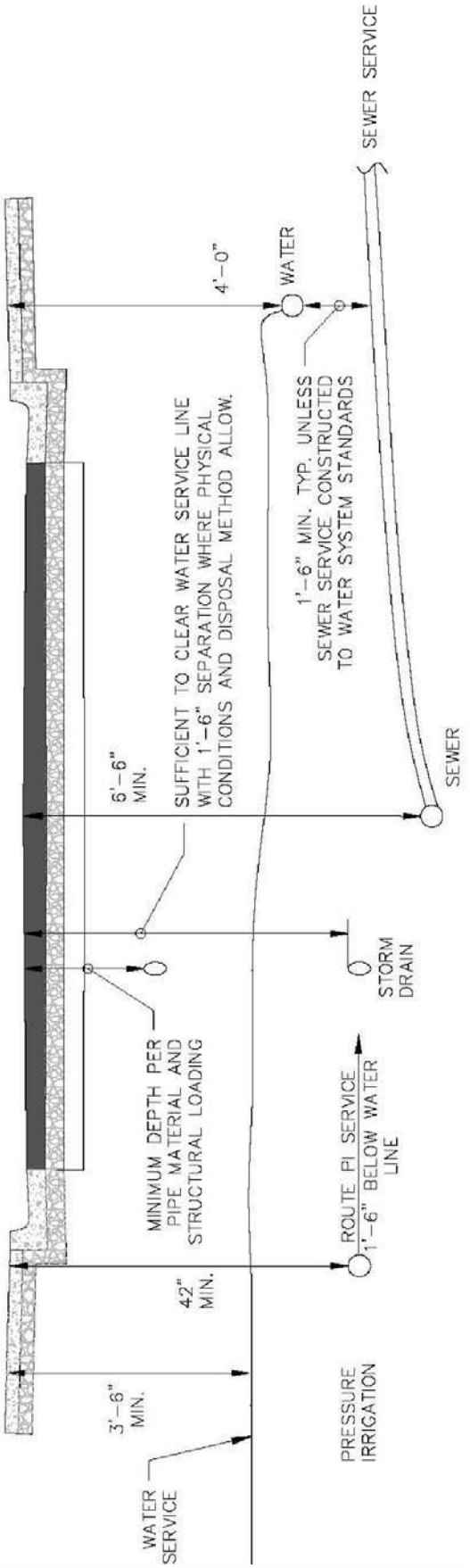

Adopted from ISPWC

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(208) 642-3304 · FAX# (208) 642-2159
EMAIL: holladay@micron.net

STANDARD DRAWING SD-11
UTILITY CORRIDOR SECTION DETAIL
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO: VC082504 CS T05
REVISED:
DATE: 03/15/07
PLOTTED: 03/15/07
DRAWN BY: JEH
CHECKED BY: RDG
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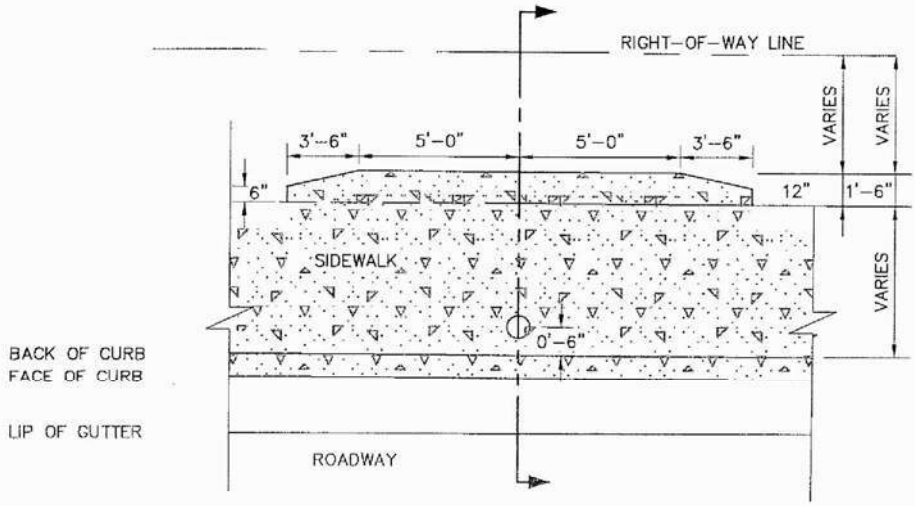

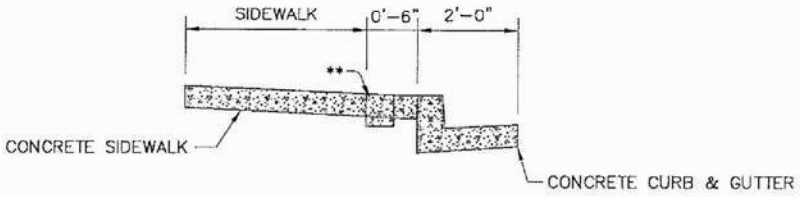

** 8"x6" PVC PIPE TO BE USED AND BACKFILLED OR COVERED FOR USE AT A LATER TIME.

NOTES:

1. LOCATIONS SHOWN ON CONSTRUCTION PLANS. TYP. AT PROPERTY LINES.
2. SEE STANDARD SPECIFICATIONS SECTION 700 FOR DETAILS NOT SHOWN.
3. ALL SIDEWALK CONSTRUCTION OF MAILBOX LOCATIONS SHALL BE PLACED MONOLITHICALY.

Adopted from ISPWC

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STANDARD DRAWING SD-12
CURBSIDE MAIL BOX STAND
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO. VC082504 CS T05
REVISED:
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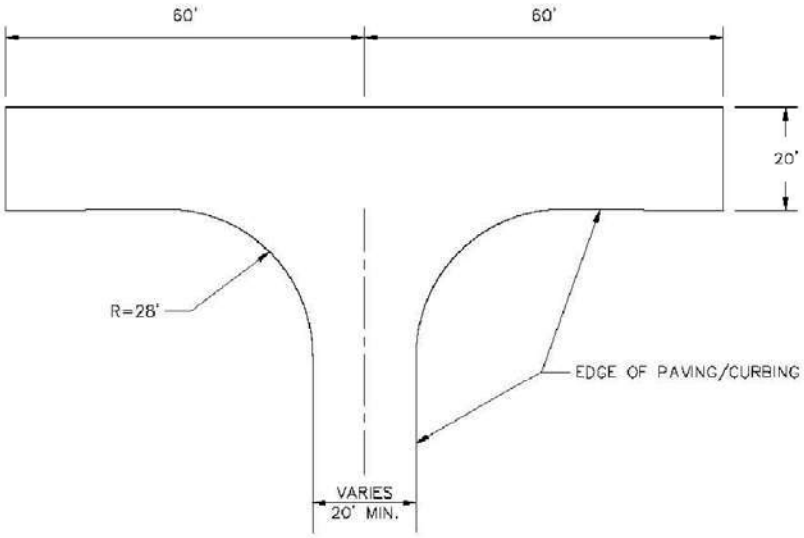
NOTE:

THESE ALTERNATIVE TURNAROUNDS ARE TO BE UTILIZED ONLY WHEN ONE WILL CONNECT TO OR BE A PART OF A NON-RESIDENTIAL SUBDIVISION DEVELOPMENT, A PARKING LOT AREA, A PRIVATE SINGLE FAMILY RESIDENTIAL DRIVEWAY OVER 150' LONG, OR A CITY APPROVED COMMON DRIVEWAY AND MUST MEET CASCADE FIRE DEPARTMENT REQUIREMENTS. SITE SPECIFIC APPROVED OF THE CITY ENGINEER IS REQUIRED.

DIAGRAMS OF ACCEPTABLE TURNAROUND EXAMPLES:

TURNAROUND ALTERNATIVE 1:



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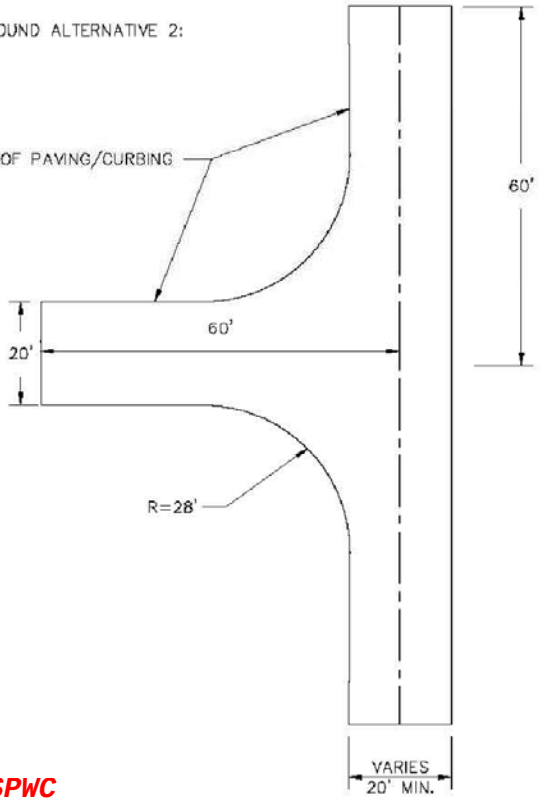
TURNAROUND ALTERNATIVE 2:



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STANDARD DRAWING SD-13
ALTERNATE TURNAROUND
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

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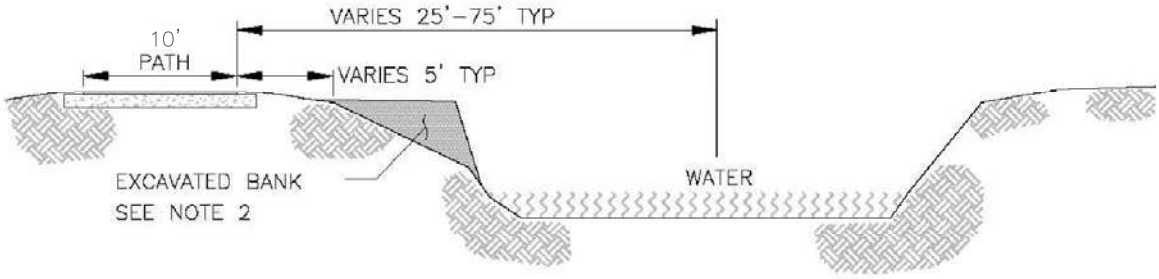
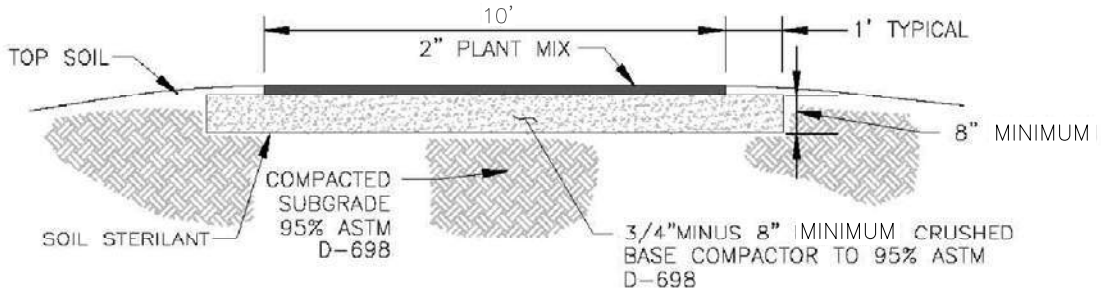
TYPICAL PATH LOCATION



NOTES:

1. PATH TO BE CONSTRUCTED IN A CURVILINEAR FASHION WHICH BEST FITS EXISTING TOPOGRAPHY, EXISTING VEGETATION AND CREATES A MEANDERING ALIGNMENT.
2. SOME AREAS WHERE THE BANK IS HIGH AND STEEP A PORTION OF THE BANK WILL BE EXCAVATED TO PROVIDE A MORE GENTLE SLOPE TO WATER SURFACE. (SLOPE NOT TO EXCEED 1:5)
3. PATH TO BE CONSTRUCTED ON THE SIDE OF DRAIN ON WHICH CITY/DEVELOPER HAS AN EASEMENT, DEDICATION OR OWNERSHIP.

TYPICAL PATH CROSS SECTION



NOTES:

1. PAVEMENT CROSS SLOPE IS VARIABLE TO MATCH EXISTING GROUND WITH A MINIMUM SLOPE OF 2% AND A MAXIMUM SLOPE OF 5%.
2. PAVEMENT CENTERLINE GRADE IS VARIABLE WITH A MAXIMUM SLOPE OF 12%.
3. AREA ADJACENT PAVING SHALL BE GRADED AND PLANTED WITH A SEED MIXTURE RECOMMENDED BY CITY OF CASCADE PARKS DEPARTMENT
4. PATH CROSS SECTION MAY BE REQUIRED TO MEET HIGHER STANDARDS, AS DETERMINED BY THE CITY, IF PATH IS USED FOR/BY MAINTENANCE EQUIPMENT OR FOR UTILITY ACCESS.

Adopted from ISPWC

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STANDARD DRAWING SD-14
TYPICAL PATH SECTION AND LOCATION
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

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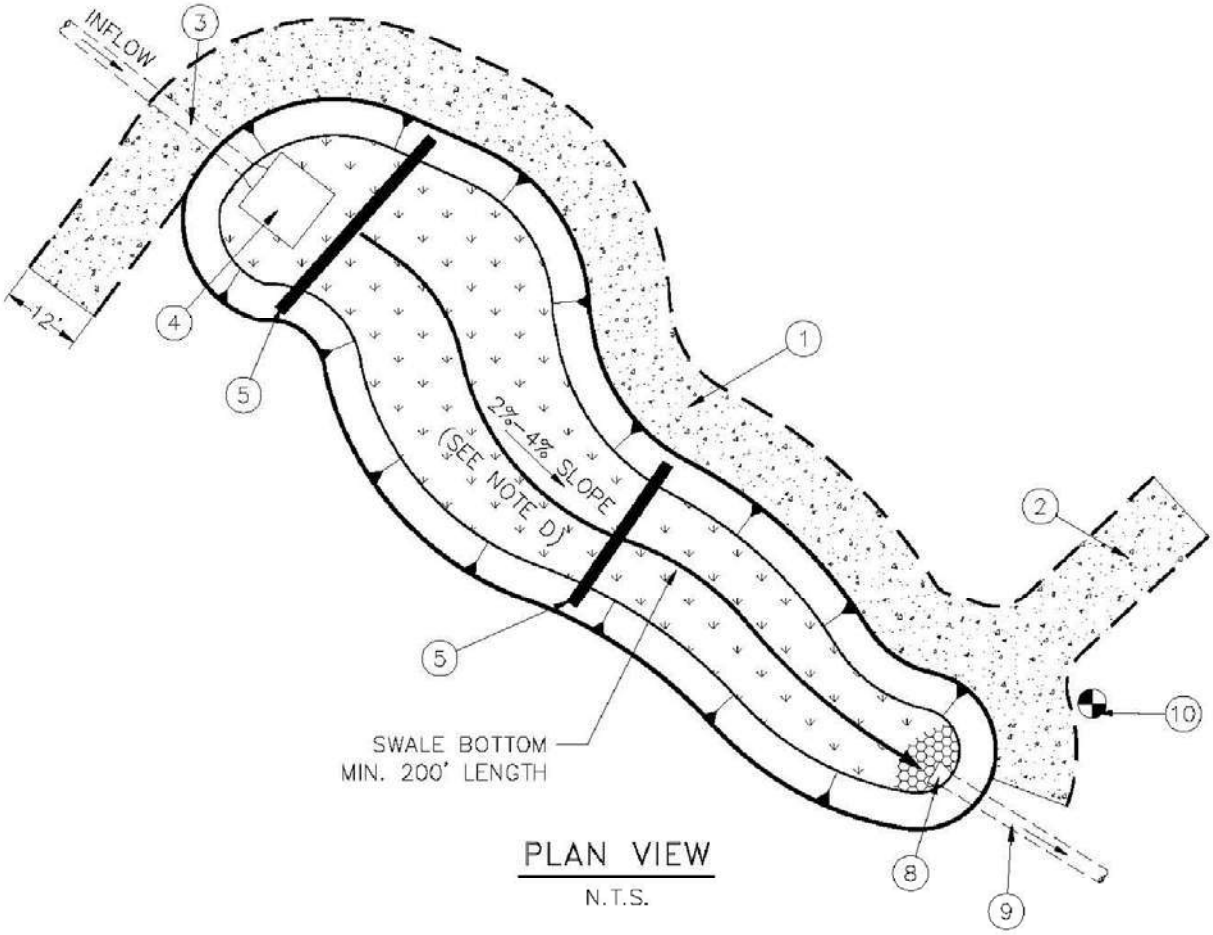
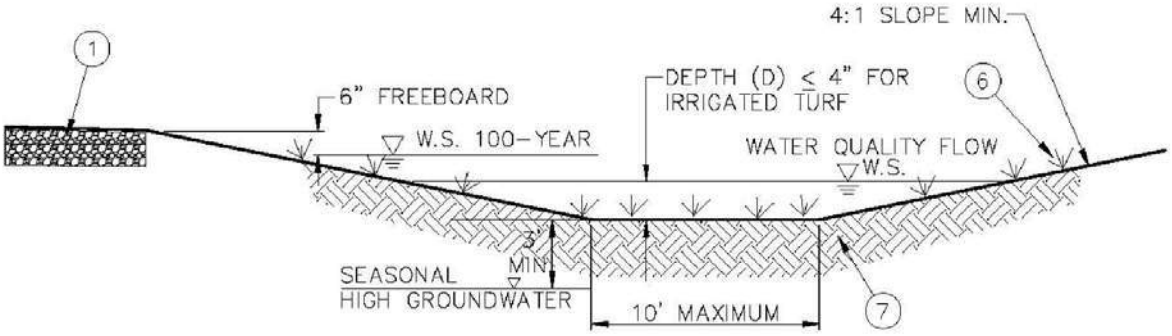


PLAN VIEW
N.T.S.



SECTION
N.T.S.

NOTES:
THIS IS THE CITY'S PREFERRED METHOD FOR SURFACE WATER TREATMENT. OTHER METHODS MAY BE USED IF APPROVED BY THE CITY ENGINEER.

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STANDARD DRAWING SD-15
WATER QUALITY BIOFILTRATION SWALE
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

JOB NO: VC082504 CS T05
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LEGEND

(1) 14' WIDE ACCESS ROAD, GRAVEL (SD-304 TYPE 3, 4" OF $\frac{3}{4}$" MINUS CRUSHED AGGREGATE OVER 10" OF 6" MINUS UNCRUSHED AGGREGATE), ASPHALT (3" PLANT MIX ASPHALT WITH 8" CRUSHED AGGREGATE BASE), OR MODULAR GRID PAVEMENT WITH APPROVAL. MINIMUM 30' INSIDE RADIUS ON ACCESS ROAD CURVES.

(2) ACCESS ROAD TURNAROUND (CONSTRUCT PER SD-305), WITH APPROVAL IF ACCESS ROAD EXCEEDS 50' IN LENGTH AND IS NOT LOOPED.

(3) INLET PIPE.

(4) INLET PROTECTION APRON. SEE N-1030.

(5) FLOW SPREADER. SEE N-1033.

(6) TURF GRASS WITH IRRIGATION OR APPROPRIATE DRYLAND GRASS. TURF GRASS SHALL BE BUFFALOGRASS, BLUE GRAMA GRASS, OR OTHER GRASS WITH APPROVAL.

(7) IMPORT AS NECESSARY MIN. 1' DEPTH.

(8) FLARE END SECTION W/ RIPRAP OUTLET APRON AND STEEL BAR GRATE ON 0'-6" CENTERS.

(9) OUTLET PIPE. CMP 12" MINIMUM DIAMETER

(10) GROUNDWATER OBSERVATION WELL. SEE N-1031.

NOTES:

A PRETREATMENT WITH SAND AND GREASE TRAP.

B MAXIMUM 1.5 FPS FLOW VELOCITY IN BIOFILTRATION SWALE.

C AVOID COMPACTION OF BIOFILTRATION SWALE.

D SWALES WITH LONGITUDINAL SLOPES FROM 1% TO 2% MAY BE USED WHERE AN UNDERDRAIN IS PROVIDED ALONG THE FLOWLINE OF THE SWALE AND THE OUTLET IS DEPRESSED TO ALLOW COLLECTION OF UNDERDRAIN FLOWS.

E. LICENSE AGREEMENT WITH CITY FOR STORM WATER FACILITY MAINTENANCE REQUIRED.

Adopted from ISPWC

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STANDARD DRAWING SD-15A
WATER QUALITY BIOFILTRATION SWALE
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

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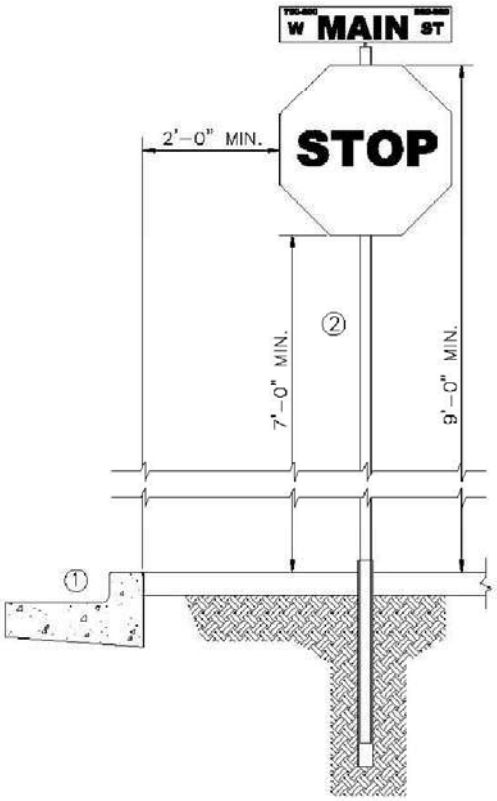

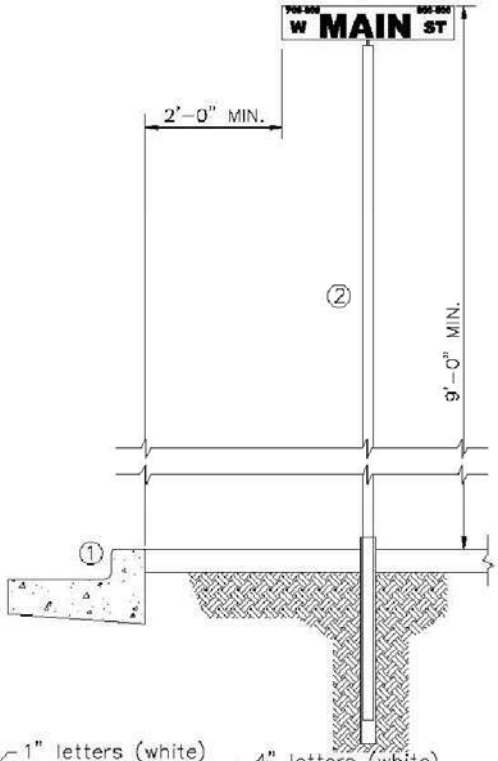

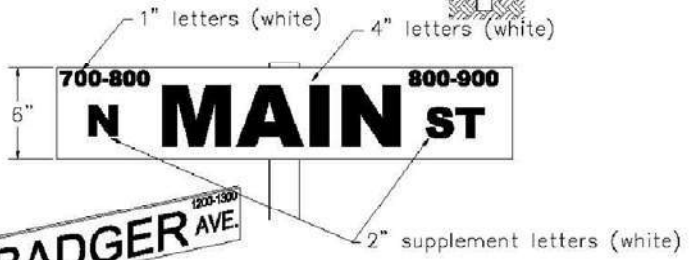

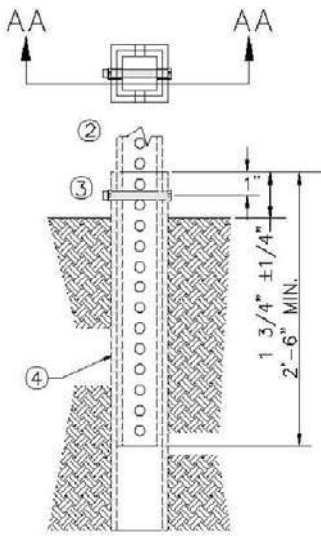

SECTION AA

LEGEND

① Face of curb
② Type E-1 sign post
2" x 2" perforated square tubing
14 guage
③ 3/8" x 3" hex head bolt
w/locknut & 2 flat washers
④ Type E-1 anchor post
2 1/2" x 2 1/2" square tubing
3/16" wall thickness
no perforations
5.59 LB./FT. weight
⑤ 2 in. square post bracket for
extruded blade

NOTES

1. All posts shall be perforated 2" square telspar posts with anchor.
2. Street signs shall be 6" wide extruded edge aluminum blanks, brackets to match.
3. Lettering shall be 4" letters, white on green.
4. Street signs on local streets in subdivisions shall show address number ranges and directional designations (i.e., E for east, N for north, S for south, or W for west).

Adopted from ISPWC

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STANDARD DRAWING SD-16
STREET SIGN INSTALLATION
TRANSPORTATION PLAN
CITY OF CASCADE, IDAHO

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APPENDIX P

Unit Cost Schedule

Unit Cost Schedule

No.	Item description	Item cost	Units	
1	Construct ditch, 10" of base, 2" hot overlay	$4.50	SF	Pavement
2	Clean ditches and haul away dirt, remove surface, excavate base,10" of base & 2" of hot overlay	$2.50	SF	Pavement
3	Remove surface, excavate 10" of base & 2" of hot overlay	$1.90	SF	Pavement
4	Remove surface, excavate base, 6" of base & 2" of hot overlay	$1.65	SF	Pavement
5	Removal of Bituminous Surface	$15.00	SY	
6	Recycle existing pavement and some base gravel, 2" of overlay	$0.56	SF	Pavement
7	Plane off 1" existing surface, 1" overlay	$0.45	SF	Pavement
8	Chip Seal (double)	$0.28	SF	Pavement
9	Chip Seal (single)	$0.16	SF	Pavement
10	Grout and fill/seal cracks	$1.60	LF	Pavement
11	Remove broken surface and base, cold patch areas	$0.75	LF	Pavement
12	Removal of Fence	$1.50	LF	General
13	Add 2 feet of shoulder	$2.40	LF	Pavement
14	Reconstruct ditch, base as needed, 4" of surface material	$4.50	SF	Gravel
15	Reconstruct surface and base	$3.00	SF	Gravel
16	Reconstruct surface, base, and drainage	$4.00	SF	Gravel
17	Add major gravel, regrade and compact	$6.00	SF	Gravel
18	Add minor gravel, regrade and compact	$0.47	SF	Gravel
19	Regrade, breaking up surface crust, reshape	$0.08	SF	Gravel
20	Reshape, smooth, minor addition of material, reshape	$0.12	SF	Gravel
21	Spot gravel with gravel/calcium Chloride	$0.25	SF	Gravel
22	Granular Borrow	$25.00	CY	Gravel
23	Backfill Compaction	$20.00	CY	General
24	Grade road, apply solid dust control	$0.15	SF	Gravel
25	Grade road, apply liquid dust control	$0.10	SF	Gravel
26	Water for dust abatement	$30.00	MG	General
27	Clean ditches, haul away dirt	$0.28	LF	General
28	Clean ditches	$0.20	LF	General
29	Clearing and Grubbing	$5,500.00	Acre	General
30	Grade shoulders and ditches	$0.25	LF	General
31	Tree removal	$250.00	EA	General
32	Blasting	$5.87	LF	General
33	Excavation	$6.00	CY	General
34	Excavation of Soft Spots	$20.00	CY	General
35	Soft Spot Repair	$23.00	CY	General
36	Excavate hillside	$12.50	CY	General
37	Obliteration of existing roadbed	$2.00	LF	General
38	Pitrun Gravel	$6.52	CY	General
39	Subbase Aggregate	$18.00	CY	General
40	3/4" minus Aggregate Base	$30.00	Ton	General
41	6" Vertical Curb and gutter	$35.00	LF	Concrete

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Suite 101
Eagle, ID 83616

42	Concrete Sidewalk	$50.00	SY	Concrete
43	Surface aggregate	$10.60	CY	General
44	2.5" thick Asphalt surfacing	$7.10	CY	Asphalt
45	3" thick Asphalt surfacing	$10.20	CY	Asphalt
46	Geotextile fabric	$1.80	SY	General
47	Erosion control netting	$2.58	SY	General
48	Rip Rap	$40.00	CY	General
49	Rip Rap bedding	$24.00	CY	General
50	Seed and seeding	$0.25	SF	General
51	Removal of Guard Rail	$7.50	LF	Guard Rail
52	Metal Guard Rail	$23.00	LF	Guard Rail
53	Eroision repair, excavate, fill & compact by layer, 2" hot overlay	$1,000.00	LF	General
54	Tree & bush removal	$50.00	LF	General
55	Excavate soil or rock slide, haul away material	$500.00	LF	General
56	Excavate rock outcrop, controled blasting, haul away material	$625.00	LF	General
57	Road drain, excavate base material, install drain, replace base and 2" hot overlay	$9.90	LF	General
58	Silt fence	$7.00	LF	General
59	CSS-1 Dil Emulsified Asphalt for Tack Coat	$8.00	Gal	Asphalt
60	Asphalt for seal coat	$500.00	Ton	Asphalt
61	CRS-2R Emulsified Asphalt for Seal Coat	$550.00	Ton	Asphalt
62	Plant Mix Asphalt CL I	$28.00	Ton	Asphalt
63	Plant Mix Asphalt CL II	$35.00	Ton	Asphalt
64	Plant Mix Asphalt CL III	$50.00	Ton	Asphalt
65	PL Mix Leveling Course	$30.00	Ton	Asphalt
66	Pipe Culvert 10"	$30.00	LF	Culvert
67	Pipe Culvert 12"	$35.00	LF	Culvert
68	Pipe Culvert 18"	$45.00	LF	Culvert
69	Pipe Culvert 24"	$55.00	LF	Culvert
70	Pipe Culvert 30"	$65.00	LF	Culvert
71	Pipe Culvert 36"	$75.00	LF	Culvert
72	Sign Board	$16.50	SF	Signs
73	Breakaway Sign Post	$7.50	LB	Signs
74	Pavement Marking	$1.00	LF	Marking
75	Special Pavement Markings	$4.00	SF	Marking
76	Fire Hydrant Assembly	$4,000.00	EA	

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Appendix Q

Cascade Airport Master Plan

CASCADE AIRPORT MASTER PAN
WORKING PAPER 1 - JULY 2017

Prepared for:

Cascade Airport

Prepared by:

T-O Engineers Inc.

T-O ENGINEERS

NOTE

This **Working Paper #1** includes the ***Chapter 2-Inventory of Existing Conditions*** and ***Chapter 3-Aviation Activity Forecasts*** of the 2016 Airport Master Plan for Cascade Airport in Idaho.

The final Airport Master Plan document will include additional chapters and appendices, as described in the Scope of Work for this project. Among these chapters, ***Chapter 1*** will be an introduction chapter summarizing the goals and objectives of the Airport Master Plan.

2.0 INVENTORY OF EXISTING CONDITIONS

2.1 INTRODUCTION AND PLANNING CONTEXT

2.1.1 GENERAL

The purpose of the inventory section of this 2016 Airport Master Plan (AMP) is to summarize existing conditions of all facilities at Cascade Airport (U70) as well as summarize other pertinent information relating to the community, the airport background, airport role, surrounding environment and various operational and other significant characteristics.

The information in this chapter describes the current status of Cascade Airport and provides the baseline for determining future facility needs. Information was obtained from various sources including consultant research, review of existing documents, interviews and conversations with airport stakeholders including the airport sponsor (City of Cascade), the airport manager, airport tenants, Idaho Transportation Department (ITD) division of Aeronautics and other knowledgeable sources.

2.1.2 FAA NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS (NPIAS) AND ASSET STUDY

The FAA is required to maintain the National Plan of Integrated Airport Systems (NPIAS). This plan identifies public-use airports considered by the FAA, state aviation agencies, and local planning organizations to be in the national interest and essential for the U.S air transportation system. Per the 2015-2019 NPIAS Report to Congress, guiding principles of the NPIAS include:

- The NPIAS will provide a safe, efficient and integrated system of airports;
- The NPIAS will ensure an airport system that is in a state of good repair, remains safe and is extensive, providing as many people as possible with convenient access to air transportation;
- The NPIAS will support a variety of critical national objectives such as defense, emergency readiness, law enforcement, and postal delivery.

In addition, this system plan helps promote airport permanence to ensure these airports will remain open for aeronautical use over the long term. The plan also ensures development remains compatible with the surrounding communities and maintains a balance between the needs of aviation, the environment and the requirements of the residents.

Only airports in the NPIAS are eligible for financial assistance and Federal Grants under the Airport Improvement Program (AIP). The NPIAS report is published every other year and is

submitted to Congress. The NPIAS reports identifies and reaffirms airports in the system and the amounts and types of airport development eligible for AIP funds over the next 5 year period.

Currently, there are 3,331 public-use airports included in the NPIAS. The airports included in the NPIAS are classified into different categories:

- *Primary Commercial Service Airports*: At least 10,000 annual enplanements, they are divided into four categories including Large Hub, Medium Hub, Small Hub, and Non-Hub.
- *Non-Primary Commercial Service Airports*: Less than 10,000 but more than 2,500 enplanements per calendar year.
- *General Aviation (GA) Airports*: Less than 2,500 enplanements or without commercial services.
- *Relievers*: GA airports designated as relievers for major congested airports.

Furthermore, GA airports are usually classified as:

- *Basic Utility*: Design to handle single-engine and small twin-engine propeller aircraft.
- *General Utility*: Design to accommodate larger aircraft than basic utility.

Note: Small aircraft are aircraft of 12,500 lbs. or less maximum certificated take-off weight, while large aircraft are those of more than 12,500 lbs. maximum certificated take-off weight.

All commercial service airports and selected GA airports are included in the NPIAS. The FAA also released a study providing a deeper classification of the GA airports included in the NPIAS. In this study, known as *General Aviation Airports: A National Asset* (Asset Study), the FAA further classifies the General Aviation airports into the following categories: National Airports, Regional Airports, Local Airports and Basic Airports.

Cascade Airport is part of the NPIAS and is recognized as a Public GA Local airport. As part of the AIP, the FAA will fund between 90% and 95% of eligible projects for airport development.

2.1.3 IDAHO AIRPORT SYSTEM PLAN

In 2010, ITD Aeronautics published the Idaho Airport System Plan (IASP) to ensure that the state's airport system is designed to meet all of the state's air transportation, economic, and safety needs. During this comprehensive study each airport in the system was evaluated to gauge its role, activity and needs for infrastructures, in order to:

- Improve individual airports as part of the larger state system and meet the needs of economic development, transportation services and tourism.
- Understand the economic impact of each airport to local communities and the total economic value of the state aviation system.

The 2010 IASP assessed 75 of the 119 public-use airports in Idaho. These airports are divided according to their role in the state system. Five different functional roles are identified: Commercial Service, Regional Business, Community Business, Local Recreational, and Basic Service.

The 2010 IASP identifies the role for Cascade Airport as Community Business. The economic impact of the airport was also evaluated. The conclusions are as presented in **Table 2-1**.

Community Business airports accommodate general aviation activities, including business, recreational, and personal flying. They play a limited role in regional economies and mainly support their communities.

TABLE 2-1 – U70 ECONOMIC IMPACT

Airport Area	IDA Economic Impact	Idaho Aviation Economic Impact
Total Employment	31 Jobs	23,000 Jobs
Total Payroll	$673,900	$718.5 Million
Total Economic Activity	$3.1 Million	$2.1 Billion

Source: 2010 IASP

Table 2-2 compares the state plan objectives for Cascade Airport with the existing conditions at the airport. As of 2010, the main recommendations made in the IASP included:

- Runway Extension and Widening (120 x 15 feet)
- Taxiway Extension to Full Parallel (Completed in 2010)
- Upgrade to Non –Precision Approach
- Install Precision Approach Path Indicators (PAPIs) and Runway End Identifier Lights (REILs).

TABLE 2-2 – IASP 2010 –U70 OBJECTIVES AND EXISTING CONDITIONS

Facilities	System Objective	Existing	Recommendation
AIRSIDE*			
Primary Runway Length	4,420' or greater	4,300'	Extend 120'
Runway Width	75'	60'	Widen 15'
Runway Strength	12,500 lbs SW	12,500 lbs SW	None
Taxiways	Partial	Partial Parallel**	Upgrade to Full Parallel**
Approach Type	Non-Precision	Visual	Upgrade to Non-Precision
Visual Approach Aids	REILs, PAPI/VASI	None	Install REILs and PAPIs
Runway Lighting	MIRL	MIRL	None
Rotating Beacon	Yes	Yes	None
Lighted Wind Indicator	Yes	Yes	None
Weather Reporting	AWOS/ASOS	None	Install AWOS/ASOS
LANDSIDE*			
Hangar Aircraft Storage	10	34	None
Apron Spaces	8	23	None
Terminal	Yes	Yes	None
Auto Parking	Yes	10	None
SERVICES*			
Fuel	AvGas & Jet A	AvGas and Jet A	None
FBO	None	Yes	None
Ground Transportation	Courtesy/Loaner Car	Courtesy/Loner Car	None
Restrooms	Yes	Yes	None
Telephone	Yes	Yes	None
Maintenance Facilities	None	Yes	None

*Data as provided in the 2010 IASP
** Taxiway upgraded to full parallel in 2010
Source: 2010 IASP

2.1.4 AIRPORT DESIGN STANDARDS

FAA *Advisory Circular (AC) 150-5300-13A - Airport Design* describes airport design standards that must be met by every airport included in the NPIAS that receives federal funds.

This document encompasses dimensional standards for runways, taxiways, aprons, as well as the associated safety areas. Dimensions are based on airport characteristics such as the type of aircraft accommodated and the type of approach procedures available.

The **Design Aircraft** (or Critical Aircraft) is an aircraft (or composite of several) that uses the airport on a regular basis (at least 500 annual operations), with characteristics that determine the application of airport design standards.

Aircraft are typically classified using the following groups and categories.

- **Aircraft Approach Category (AAC)**: A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight (VRef). The categories are defined as shown in **Table 2-3**. The existing AAC for Cascade Airport is shown in bold.

TABLE 2-3: AIRCRAFT APPROACH CATEGORY (AAC)

Group	VRef
A	< 91kts
B	**91kts - < 121kts**
C	121kts - < 141kts
D	141kts - < 166kts
E	>= 166kts

Source: FAA AC 150/5300-13A Change 1

- **Airplane Design Group (ADG)**: A classification of airplanes based on their wingspan or tail height. The groups are depicted in **Table 2-4** below. The existing ADG for Cascade Airport is shown in bold.

TABLE 2-4: AIRPLANE DESIGN GROUP (ADG)

Group	Tail Height	Wingspan
I	**< 20'**	**< 49'**
II	20' - < 30'	49' - < 79'
III	30' - < 45'	79' - < 118'
IV	45' - < 60'	118' - < 171'
V	60' - < 66'	171' - < 214'
VI	66' - < 80'	214' - < 262'

Source: FAA AC 150/5300-13A Change 1

The **Runway Design Code (RDC)** is a runway codification determining the dimensions of a specific runway and associated safety areas. It is composed of the AAC and ADG of the critical aircraft using the runway. A third visibility component is added based on the type of approach procedure serving the runway and is defined as follows:

- **Visibility Minimums**: A grouping of Runway Visual Range (RVR) values based on flight visibility category (statute mile). The existing RVR for U70 is shown in bold. The RVR's are as follows:

  - 5000: Not Lower than 1 mile.
  - 4000: Lower than 1 mile but not lower than ¾ mile (Approach Procedure with Vertical Guidance (APV) ≥ ¾ but < 1 mile).
  - 2400: Lower than ¾ mile but not lower than ½ mile (CAT-I PA).
  - 1600: Lower than ½ mile but not lower than ¼ mile (CAT-II PA).
  - 1200: Lower than ¼ mile (CAT-III PA).
  - **VIS: Visual approach only**

The **Approach Reference Code (APRC)** is composed of the same elements as the RDC and determines which aircraft can operate on taxiways adjacent to a runway under particular meteorological conditions with no operational procedures necessary.

The **Departure Reference Code (DPRC)** is composed of two components, AAC and ADG, and characterizes the aircraft that can take off from a runway while any aircraft are using an adjacent taxiway.

The **Airport Reference Code (ARC)** is a codification used to plan for the appropriate dimensions of the airport infrastructures and safety areas. It is equal to the highest Runway Design Code (RDC) of all runways at the airport minus the visibility component.

The **Taxiway Design Group (TDG)** is a design standard for taxiways based on the gear configuration and dimensions of the critical aircraft using the taxiways.

The most recent Airport Layout Plan (1996) for Cascade Airport lists an ARC of B-I Small (Runway strength <12,500lbs) with an RDC of B-I Small-VIS for Runway 12-30. More details about RDC, APRC, DPRC, and TDG at U70 are presented in the Section 2.4.

2.2 AIRPORT AND COMMUNITY BACKGROUND

2.2.1 GENERAL AND REGIONAL SETTING

Cascade Airport is a city owned public use airport located in Valley County, Idaho, approximately two miles southeast of downtown Cascade, Idaho. The airport covers an area of approximately 75 acres. It serves Valley County and the community of Cascade. In this local, the Average Highest Monthly Temperature is 80°F.

The nearby attractions include the cities of Cascade and McCall, the Payette River, Lake Cascade, and the Kelly's Whitewater Park. Outdoor activities are predominant all year long with renowned spots for hiking, camping, fishing, hunting, snowmobiling, whitewater rafting, and boating. Cascade Airport is also a launching platform for backcountry flying activities in Idaho.

2.2.2 AIRPORT LOCATION

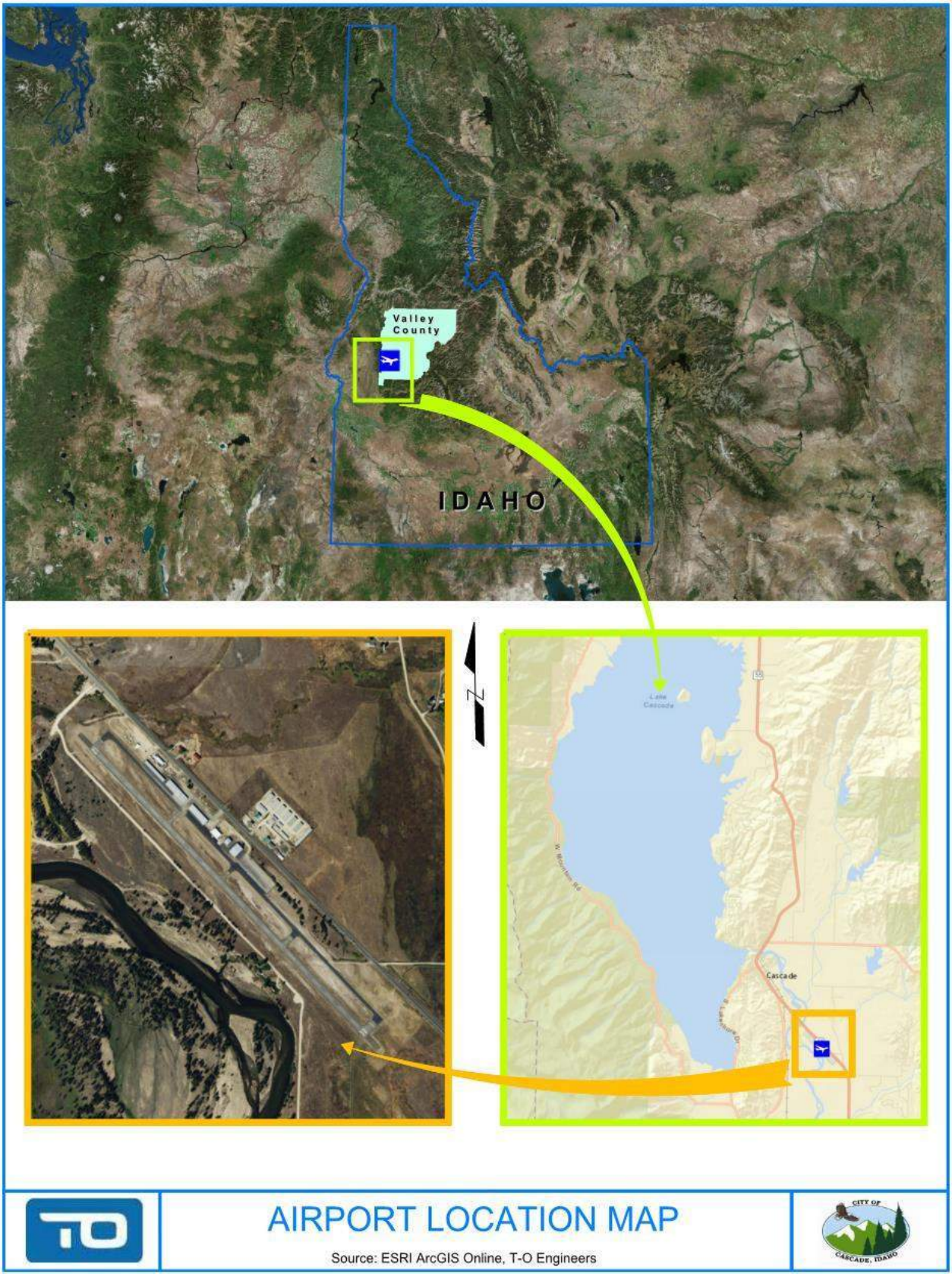
The airport is located in western Idaho at 44° 29' 32.4" North Latitude and 116° 00' 53.2" West Longitude. This point is called the Airport Reference Point (ARP), which is the geometric center of the airport's only runway, 12-30. The airport elevation is 4,742 feet AMSL (Above Medium Sea Level) and the magnetic declination at this location is 13° 37' East changing by 7' West per year.

U70 is located along Highway 55, 2 miles southeast of the city of Cascade. Highway 55 is a north-south highway passing through southern Idaho between Boise, ID and McCall, ID. The airport is located alongside the north fork of the Payette River in a valley with East and Oro Mountains to the east, and Snowbank Mountain to the west. The airport is located on relatively flat terrain. **Figure 2-1** depicts the location and vicinity map for reference.

2.2.3 AIRPORT OWNERSHIP AND MANAGEMENT

The Airport is currently owned, operated, and managed by the City of Cascade. A part-time airport manager reporting to the City Council is located on site and oversees day-to-day operations at the airport.

FIGURE 2-1 – LOCATION MAP



2.2.4 AIRPORT HISTORY, PROJECTS AND MILESTONES

Cascade Airport in 1949
Source: Cascade Airport Website

Cascade Airport opened in 1949 with a basic dirt/grass strip. The airport has been the starting point for weekly U.S. Mail delivery to the Idaho backcountry for nearly 40 years. Currently, the oldest building on the airport was constructed in 1977.

Cascade Airport has had a total of 14 projects funded through the AIP Grant Program. The last major project was completed in 2015 with the reconstruction of a portion of the parallel taxiway.

Table 2-5 summarizes the recent projects granted as part of the AIP between 2005 and 2016 at Cascade Airport.

TABLE 2-5: AIP PROJECTS HISTORY – U70

Year	Grant Sequence Number	Amount	Description
2005	7	$56,976	Rehabilitate Runway 12-30
2006	-	-	-
2007	8	$188,000	Acquire Snow Removal Equipment
2008	-	-	-
2009	9	$269,016	Extend Taxiway Phase 1 (Land Acquisition)
2009	10	$175,000	Extend Taxiway Phase 2 (Design) Rehabilitate Runway 12-30
2010	11	$549,422	Extend Taxiway Phase 3 (Construction) Rehabilitate Runway 12-30
2011	-	-	-
2012	12	$1,892,983	Install Misc. NAVAIDS Rehabilitate Runway 12-30
2013	-	-	-
2014	-	-	-
2015	13	$576,355	Rehabilitate Taxiway
2016	14	$154,642	Update Master Plan

Source: Federal Aviation Administration – Grant History

2.2.5 AIRPORT CHARACTERISTICS

Table 2-6 summarizes the existing characteristics for Cascade Airport.

TABLE 2-6: EXISTING AIRPORT CHARACTERISTICS

Item	Existing Data
Airport Role - NPIAS	General Aviation
Airport Role – Idaho Airport System Plan	Community Business
FAA Identification	U70
Airport Property (Acres)	75
ARC	B-I Small
ARP Coordinates (NAD83)	44° 29' 32.4"N – 116° 00' 53.2"W
Elevation	4,742' AMSL*
Magnetic Declination (10-26-2016)	13°37'E – Changing 7'W/year
Runway Configuration	One Runway 12-30
Approach	Visual Only
Mean Daily Maximum Temperature of Hottest Month (10 years)	80°F

*As published in NFDC. 4747.5' AMSL According to New Runway Profile after Reconstruction in 2013

Source: National Flight Data Center (NFDC), T-O Engineers 2016

2.2.6 SOCIOECONOMIC CONDITIONS

Local and regional socioeconomic conditions in Cascade and its regional area (Valley County) will influence the dynamic of the airport and its activity. Several indicators exist to evaluate the economic and social conditions around Cascade Airport. They include Population, Income, and Employment. Further study of these indicators will be presented in **Chapter 3 – Forecasts of Aviation Activity** This section summarizes key characteristics of these socioeconomic elements.

Population

Table 2-7 summarizes the population for the City of Cascade and Valley County. It also presents a comparison with the State of Idaho population.

The population in Valley County is estimated to have increased between the last 2010 census and 2015. Its share of the state population slightly decreased but this area seems to follow the same pattern as the state in terms of population evolution.

TABLE 2-7: POPULATION

Area	Population		Percentage of State	
	2010 Census*	2015**	2010 Census*	2015***
Cascade	939	964	0.06%	0.06%
Valley County	9,862	10,103	0.6%	0.6%
State of Idaho	1,567,582	1,654,930	100%	100%

*2010 Census
**Estimation Idaho Commerce
*** Estimation for 2015 – Census Bureau
Source: United States Census Bureau, Bureau of Economic Analysis (BEA)

Per Capita Personal Income

Table 2-8 summarizes the Per Capita Personal Income (PCPI) for the City of Cascade and Valley County, as well as the State of Idaho.

The average income per capita in Cascade appears to be significantly lower than in Valley County and in the State. On the other hand, the county has a greater income than the State.

TABLE 2-8: PER CAPITA PERSONAL INCOME

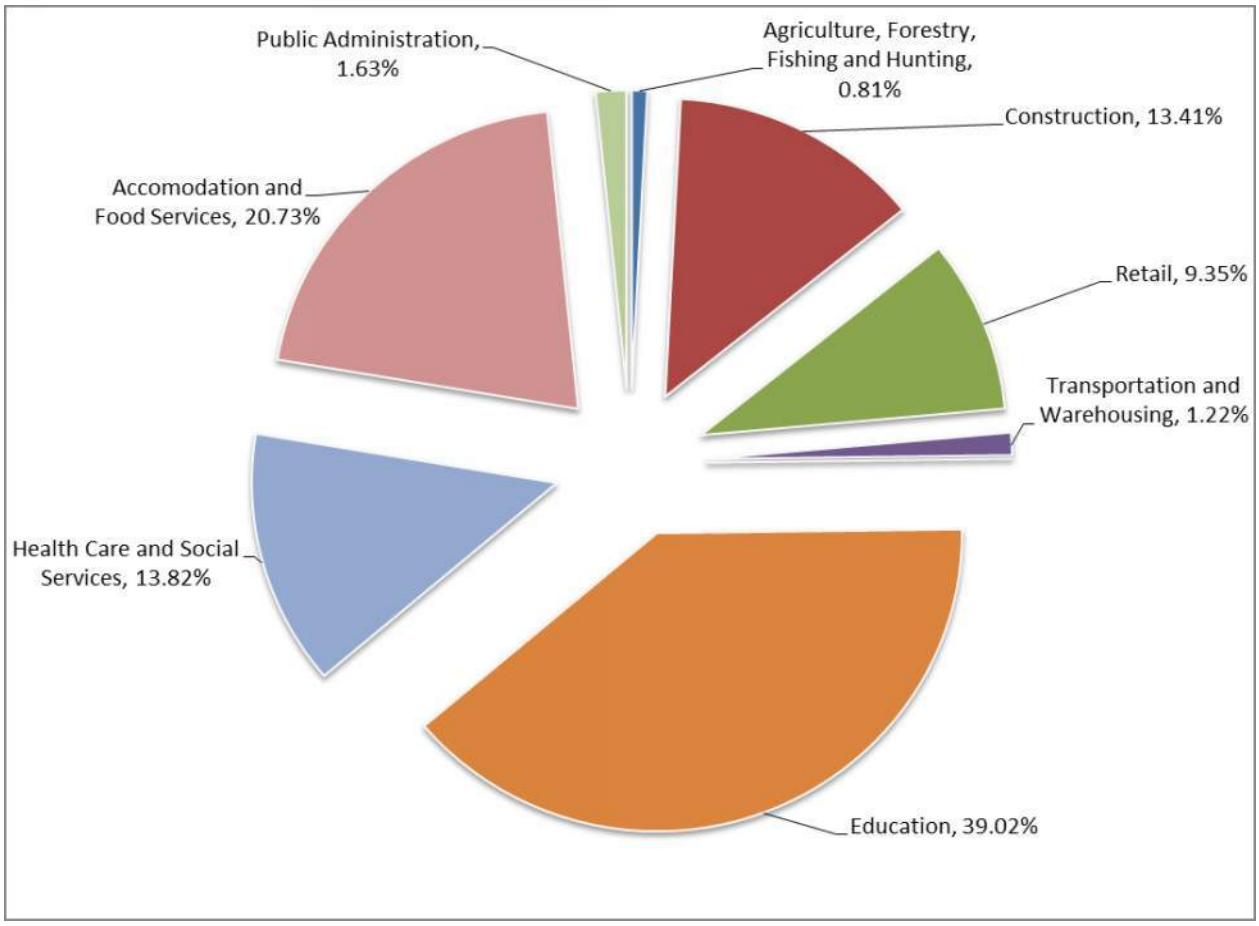
Area	PCPI
Cascade	$19,762
Valley County	$42,397
State of Idaho	$37,153

Source: Bureau of Economic Analysis (BEA) – 2014

Employment

As of May 2016, the dominant industry in terms of employment in the City of Cascade and in Valley County is Retail, including Home, Food, Automobiles, Personal Care, Hobby, Media, and General Merchandise. The second and third industries in cascade are Education and Health Care, respectively. Other dominant industries in Valley County are Construction, as well as Accommodation and Food Services. **Figure 2-2** summarizes the employment in Cascade, ID by type of industry. **Table 2-9** shows the breakdown of employment for Valley County.

FIGURE 2-2: EMPLOYMENT PER INDUSTRY IN CASCADE, ID



Source: Info USA, May 2016

TABLE 2-9: EMPLOYMENT PER INDUSTRY IN VALLEY COUNTY, ID

Industry	% Employment
Agriculture, forestry, Fishing and Hunting	2.5%
Mineral, Oil and Gas Extraction	0.06%
Utility Services	0.05%
Construction	6.27%
Manufacturing	1.51%
Wholesalers	1.22%
Retail	10.86%
Transportation and Warehousing	1.62%
Information	0.97%
Banking, Finance and Insurance	1.68%
Real Estate	4.62%
Science and Technology	3.83%
Waste and Remediation	2.49%
Education	6.74%
Health Care	9.59%
Arts and Sports	4.37%
Accommodation and Food Services	17.52%
Other Services	11.11%
Public Administration	12.73%
Unclassified	0.25%

Source: Info USA, May 2016

2.3 AVIATION ACTIVITY

2.3.1 EXISTING AIRPORT ACTIVITIES AND USERS

Cascade Airport provides for a variety of aviation uses and activities. The airport predominantly serves single-engine aircraft, with occasional use by small multi-engine aircraft, turboprop as well as some small jet traffic. The Airport also accommodates extensive helicopter operations during fire season between July and September.

Principal aviation activities occurring at this airport include recreational, corporate/business, air

taxi, medical related transport, and government firefighting (U.S. Forest Service - USFS). The airport is also the departure point for weekly U.S. mail delivery in the Idaho backcountry. It also serves as a stop for numerous backcountry pilots and hunters during the hunting season.

Most of the aircraft using the airport are single-engine aircraft, such as Cessna 182, Piper Cub, or Cessna 206. In addition, turboprop aircraft and light jets occasionally use the airport.

2.3.2 EXISTING ACTIVITY LEVELS

The activity at Cascade Airport can be evaluated by looking at the total number of aircraft operations and the number of based aircraft. This section summarizes the most current reported values for each of these parameters.

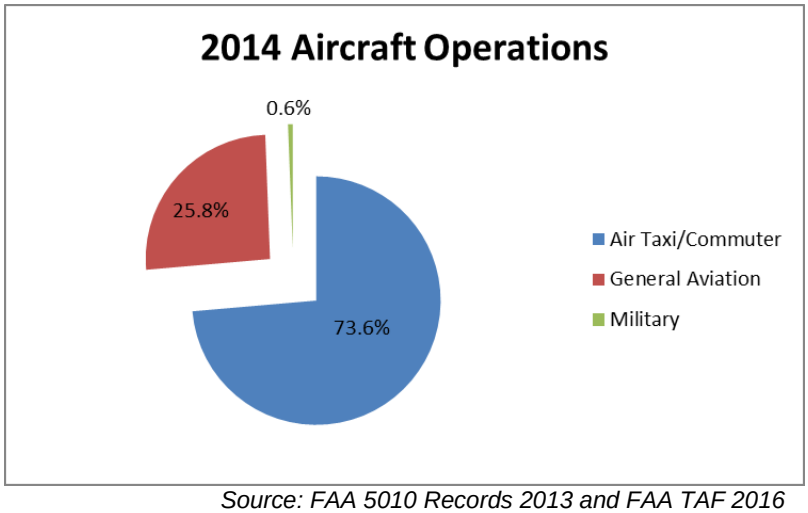
The FAA's 5010-1 Airport Master Record is the official record kept by the FAA for public-use airport activities and facility conditions. The 5010 activity data is populated by the reporting actions taken by the airport management and ITD Aeronautics. The FAA Terminal Area Forecast (TAF) also summarizes airport activity over the years.

Operations and Based Aircraft

The activity is reported in operations where a single aircraft operation is defined as either an aircraft take-off or landing; therefore, a "touch-and-go" counts as two operations.

Based on the latest 5010 records available (2013) and the last FAA TAF published in January 2016, 8,150 annual operations occurred in both 2013 and 2014 at the airport. As shown on **Figure 2-3** and based on FAA records, approximately 74 percent of all the operations were Air Taxi/Commuter. General Aviation accounted for 26 percent while Military operations represented less than 1 percent of the total annual operations.

FIGURE 2-3: OPERATION SPLIT



Source: FAA 5010 Records 2013 and FAA TAF 2016

Air Taxi operations are done by aircraft with less than 60 passenger seat or with a cargo payload of no more than 18,000lbs and that "carry cargo or mail on either a scheduled or charter basis, and/or carry passengers on an on-demand basis or limited scheduled basis". Game cameras were located at the airport to capture and identify the true nature of the traffic at Cascade Airport. More details about the aircraft activity at the airport are available in **Chapter 3 - Forecasts of Aviation Activity**.

The 5010 Airport Master Record (2013) reports a total of 20 fixed wing aircraft based at U70, including 18 single-engine and 2 multi-engine airplanes**.** The type of based aircraft at Cascade include :

- Cessna Aircraft: 172, 182, 206, 210
- Piper J3
- Aeronca 7AC
- Britten Norman Islander

Summary of Airport Activity

Table 2-10 summarizes the various parameters characterizing the existing airport activity. More details of airport activity and history are given in **Chapter 3** (Forecasts of Aviation Activity).

TABLE 2-10: EXISTING AIRPORT ACTIVITY

Aircraft Operation Type	Annual Operations	Percentage of Total Activity
Itinerant*		
General Aviation	1,000	12.3%
Air Taxi/Commuter	6,000	73.6%
Military	50	0.6%
Local*		
General Aviation	1,100	13.5%
Total	**8,150**	**100%**
Based Aircraft		
Single Engine		18
Multi Engine		2
Total		**20****

*2014 Data

** 18 with Valid Registration

Source: FAA 5010 (2013),FAA TAF (2016)

According to the FAA, local operations are performed by aircraft which:

- Operate in the local traffic pattern or within sight of the airport, or
- Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the airport, or
- Execute simulated instrument approaches or low passes at the airport.

Itinerant operations are all aircraft operations, other than local operations.

2.4 EXISTING AIRSIDE FACILITES

Airside facilities encompass all airport infrastructure used for aircraft operations including runways, taxiways, navigational and visual aids, and aprons. **Figure 2-4** provides an aerial view of existing airport airside facilities.

2.4.1 RUNWAY

Runway 12-30 at U70
Source: T-O Engineers

Runways are the main component of all airports. Aircraft use them for taking off and landing. The existing airfield configuration at Cascade Airport consists of one active runway identified as Runway 12-30. The runway is 4,300-foot long and 60-foot wide. It is a visual only runway with no instrument approach capabilities. **Table 2-11** shows the dimensions and characteristics of all protections associated with the runway at the airport. These protections are depicted on **Figure 2-5** and include:

Runway Safety Area (RSA)
The RSA is a defined by the FAA as a surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. It is designed to minimize damages in case of aircraft missing or leaving the runway, but also to provide greater accessibility for emergency equipment. The RSA should be cleared and graded and not have potentially hazardous ruts, humps, depressions, or other surface variations. It should be free of objects, except for objects that need to be there because of their function, such as navigational aids.

Runway Object Free Area (ROFA)
The ROFA is defined by the FAA as a surface surrounding the runway that is required in order to keep above ground objects from protruding above the RSA edge area. Objects can be

located in the ROFA for air navigation or aircraft ground maneuvering purposes including taxiing or holding aircraft. Parked aircraft are not allowed in the ROFA.

Obstacle Free Zone (OFZ)

One type of OFZ applies at Cascade Airport. The Runway Obstacle Free Zone (ROFZ) is a three-dimensional volume of airspace. When an aircraft is taking-off or landing, nothing can protrude into the OFZ including signs, tails or wingtips of aircraft. Its elevation at any point is the same as the closest point on the centerline.

Runway Protection Zones (RPZ)

The RPZ is defined by the FAA as an area at ground level beyond the runway ends or prior to the thresholds that is maintained clear of incompatible objects and activity (land use) in order to enhance the safety and protection of people and property on the ground. The FAA recommends that airport sponsors control the RPZs by acquiring sufficient property interest in the RPZ. This property interest can be either fee simple ownership or acquisition of an avigation easement. The RPZ must be cleared and maintained free of incompatible uses or objects.

The airport currently controls the RPZ at the Runway 30 end and needs to acquire a portion of land in the north corner of the RPZ at the Runway 12 end to achieve full control. Current control is realized by combination of avigation easements and fee simple ownership. A dirt road is located in the RPZ at the Runway 12 end.

Table 2-12 summarizes the existing physical characteristics for Runway 12-30. The runway was last rehabilitated in 2012.

FIGURE 2-4: AIRPORT AIRSIDE FACILITIES

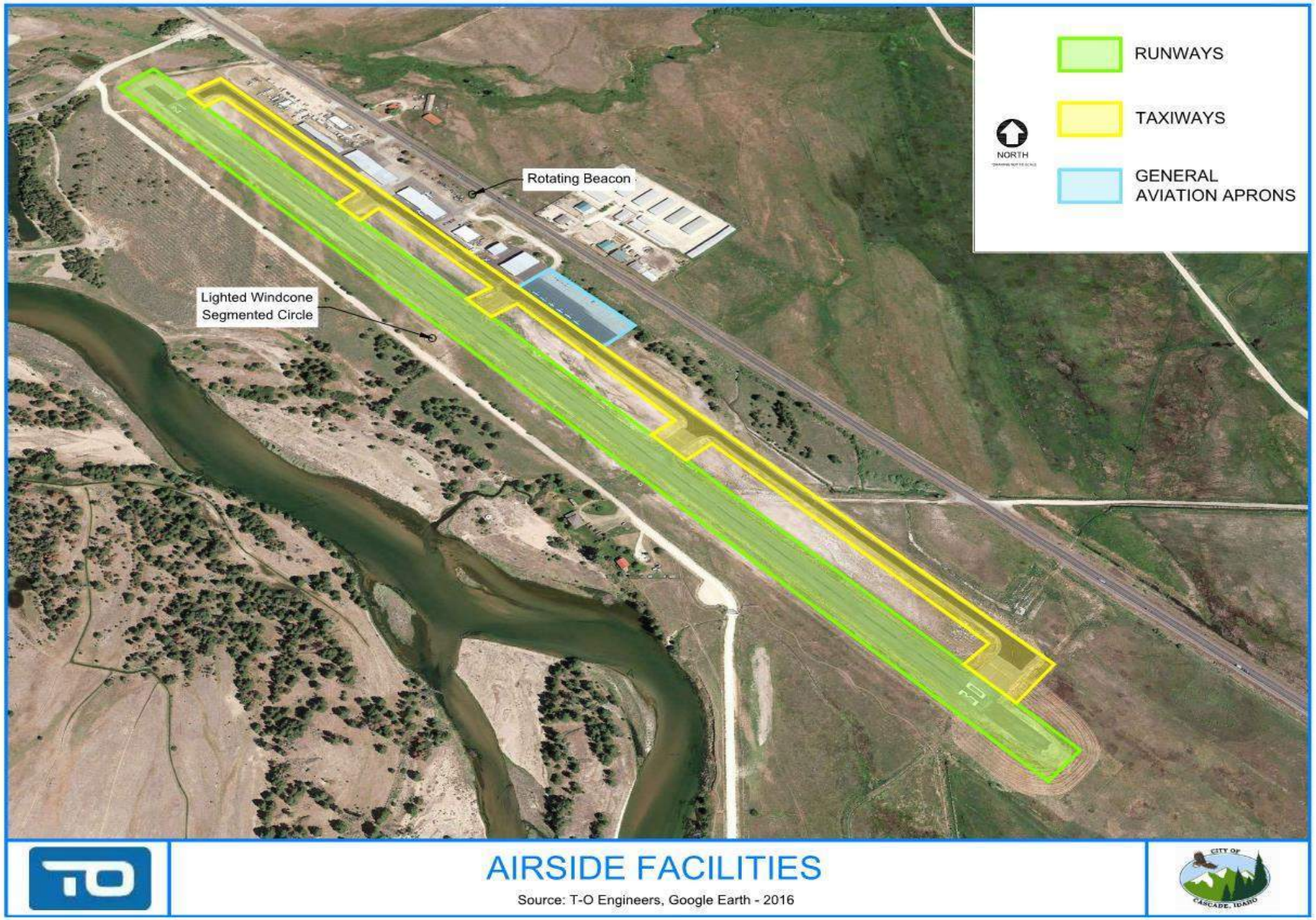


TABLE 2-11: RUNWAY PROTECTION STANDARDS

Item	RWY 12		RWY 30	
	FAA Standards	Existing	FAA Standards	Existing
Runway Design Code (RDC)	B-I –Small-VIS		B-I –Small-VIS	
Runway Length	4,300’		4,300'	
Runway Width	60’	✓	60’	✓
Shoulder (unpaved)	10’	✓	10’	✓
RSA - Length Beyond Departure Runway End	240’	✓	240’	✓
RSA - Length Before Threshold	240’	✓	240’	✓
RSA Width	120’’	✓	500’	✓
ROFA - Length Beyond Departure Runway End	120’	✓	120’	✓
ROFA - Length Before Threshold	240’	✓	240’	✓
ROFA Width	250’	✓	250’	✓
Departure RPZ Length	1,000’	✓	1,000’	✓
Departure RPZ Inner and Outer Width	250’ / 450’	✓	250’ / 450’	✓
Approach RPZ Length	1,000’	✓	1,000’	✓
Approach RPZ Inner and Outer Width	250’ / 450’	✓	250’ / 450’	✓
RPZ Control	Dep: 100% - Fee Simple App: Partial – Fee Simple and Easement		Dep: Partial – Fee Simple and Easement App: 100% - Fee Simple	
ROFZ Length beyond RWY End / Width	200’ / 250’ Centerline Elevation	✓	200’ / 250’ Centerline Elevation	✓
Penetration / Incompatible Land Use	None except if object is fixed by function	Dirt Road in Approach RPZ	None except if object is fixed by function	Dirt Road in Departure RPZ
Runway Separation Standards				
Parallel Taxiway	150’	230’	150’	230’
Holding Position	125’	✓	125’	✓
Aircraft Parking	125’	250’	125’	250’

Source: FAA AC 150/5300-13A Change 1, 1996 Airport Layout Plan, T-O Engineers

FIGURE 2-5: RUNWAY PROTECTIONS

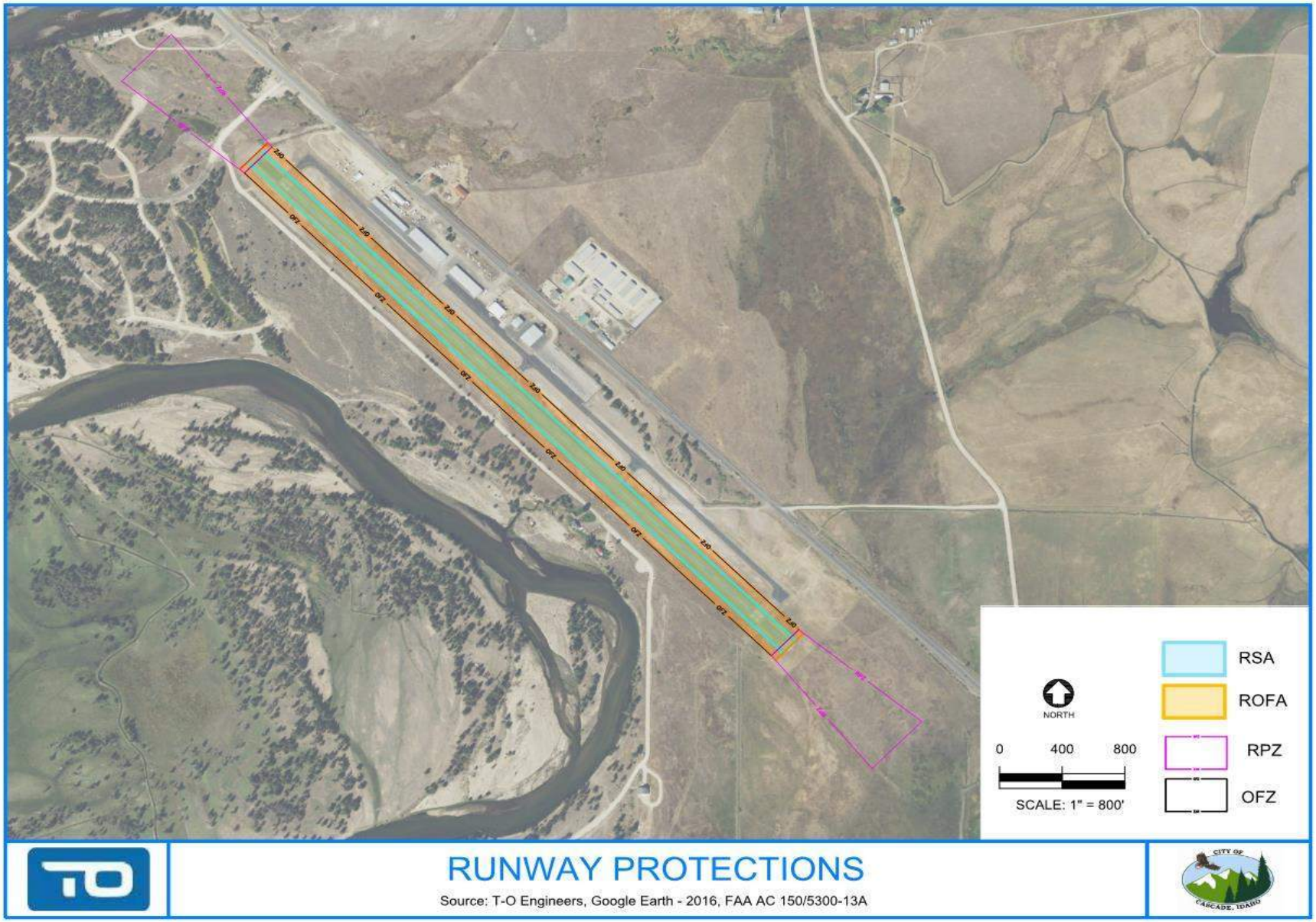


TABLE 2-12: EXISTING RUNWAY CHARACTERISTICS

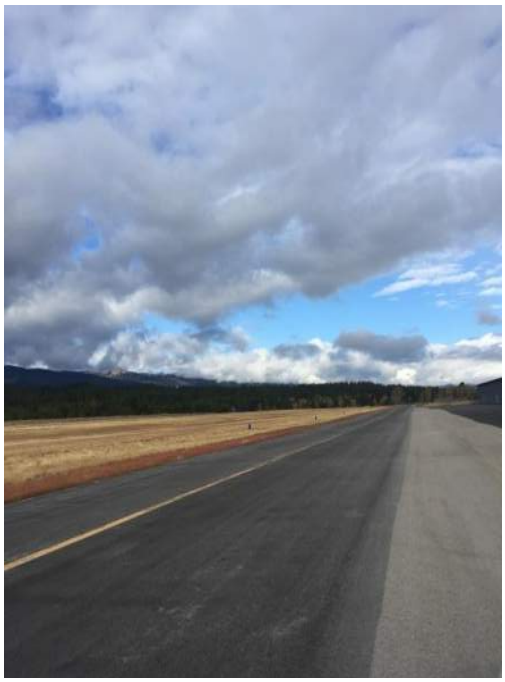
Runway Elements	Runway 12-30	
	RWY 12	RWY 30
Critical Aircraft*	N/A	
Runway Design Code	B-I Small-VIS	
Runway Length	4,300’	
Approach Reference Code	B/I/VIS	
Departure Reference Code	B/I	
Runway Width	60’	
Surface Type	Asphalt	
Surface Condition	Excellent	
Pavement Strength	SW 12,500lbs	
True Alignment	133°	313°
Traffic Pattern	Left	Right
Markings	Basic	Basic
Marking Condition	Good	Good
Runway Edge Lights	Medium Intensity	Medium Intensity
Latitude	44°29’47.24”N	44°29’17.51”N
Longitude	116°01’14.37”W	116°00’32”W
Elevation**	4747.4’ AMSL	4743.4’ AMSL
Threshold Crossing Height	-	-
Visual Glide Path Angle	-	-
Visual Slope Indicator	No	No
Runway End Identifier Lights	No	No
TDZE	4747.5’ AMSL	4742.5’ AMSL
Instrument Approach	Visual	Visual
Last Rehabilitation	2013	

*Not Defined in the 1996 ALP by CH2M

**Based on New Runway Profile after Reconstruction in 2013-Different from 1996 ALP

Source: IQ 5010, National Flight Data Center, T-O Engineers, 2010 AMP

2.4.2 TAXIWAY SYSTEM



Taxiway A at U70
Source: T-O Engineers

Taxiways are a crucial element of the airport because they allow traffic to move to and from the runway safely and efficiently by decreasing the time aircraft are on the runway. They are also an important link providing access to the runway from aircraft aprons and parking areas. Taxilanes are taxiways designed for lower speed. They are usually located outside the movement area (area used for aircraft operations excluding loading aprons and aircraft parking areas), to provide a link between taxiways and aprons.

Cascade Airport has one main taxiway Alpha (A) as shown on **Figure 2-4**. Taxiway A is a full parallel taxiway to Runway 12-30 with five connectors identified A1 through A5 from the south to the north. The last major rehabilitation of the taxiway took place in 2015. The middle third of the taxiway was reconstructed and seal coat and crack fill were applied to the other portions.

Table 2-13 shows the existing physical characteristics, as well as the dimensions and penetrations of all protections associated with the taxiway at Cascade Airport. Existing taxiway protections are depicted on **Figure 2-6** and include:

Taxiway/Taxilane Safety Area (TSA)
The Taxiway Safety Area (TSA) is defined by the FAA as a surface centered on a taxiway centerline. This surface should be cleared and graded, free of obstructions, capable under dry conditions of supporting aircraft, snow removal equipment and aircraft rescue and firefighting equipment. The TSA is designed to reduce the risk of damage to an airplane unintentionally departing the taxiway and to provide room for rescue and fire-fighting operations.

Taxiway/Taxilane Object Free Area (TOFA)
The Taxiway Object Free Area (TOFA) is defined by the FAA as a surface centered on a taxiway centerline. This area prohibits roads, service vehicles, parked aircraft and other objects except for those objects that need to be located in the TOFA for air navigation or aircraft ground maneuvering purposes. Vehicles may operate in the TOFA provided they give right of way to oncoming aircraft by either maintaining a safe distance ahead or behind the aircraft or by exiting the TOFA to let the aircraft pass.

TABLE 2-13: EXISTING TAXIWAYS CHARACTERISTICS AND PROTECTIONS

Item	Taxiway A and Connectors	
	FAA Standards	Existing
Critical Aircraft*	Unknown	
ADG	I	
TDG	Unknown	
Taxiway Width	n/a	25’
Shoulder Width (unpaved)	n/a	10’
Surface Type	Asphalt	
Surface Condition	Good	
Pavement Strength	12,500lbs	
Lighting	Blue Reflectors (Taxiway) Blue Lights (Connectors)	
Marking	Fair	
Last Rehabilitation	2015	
Taxiway Protection Standards		
TSA Width	49’	✓
TOFA Width	89’	✓
Taxilane OFA	79’	✓
Penetrations	None except if object is Fixed by Function	None

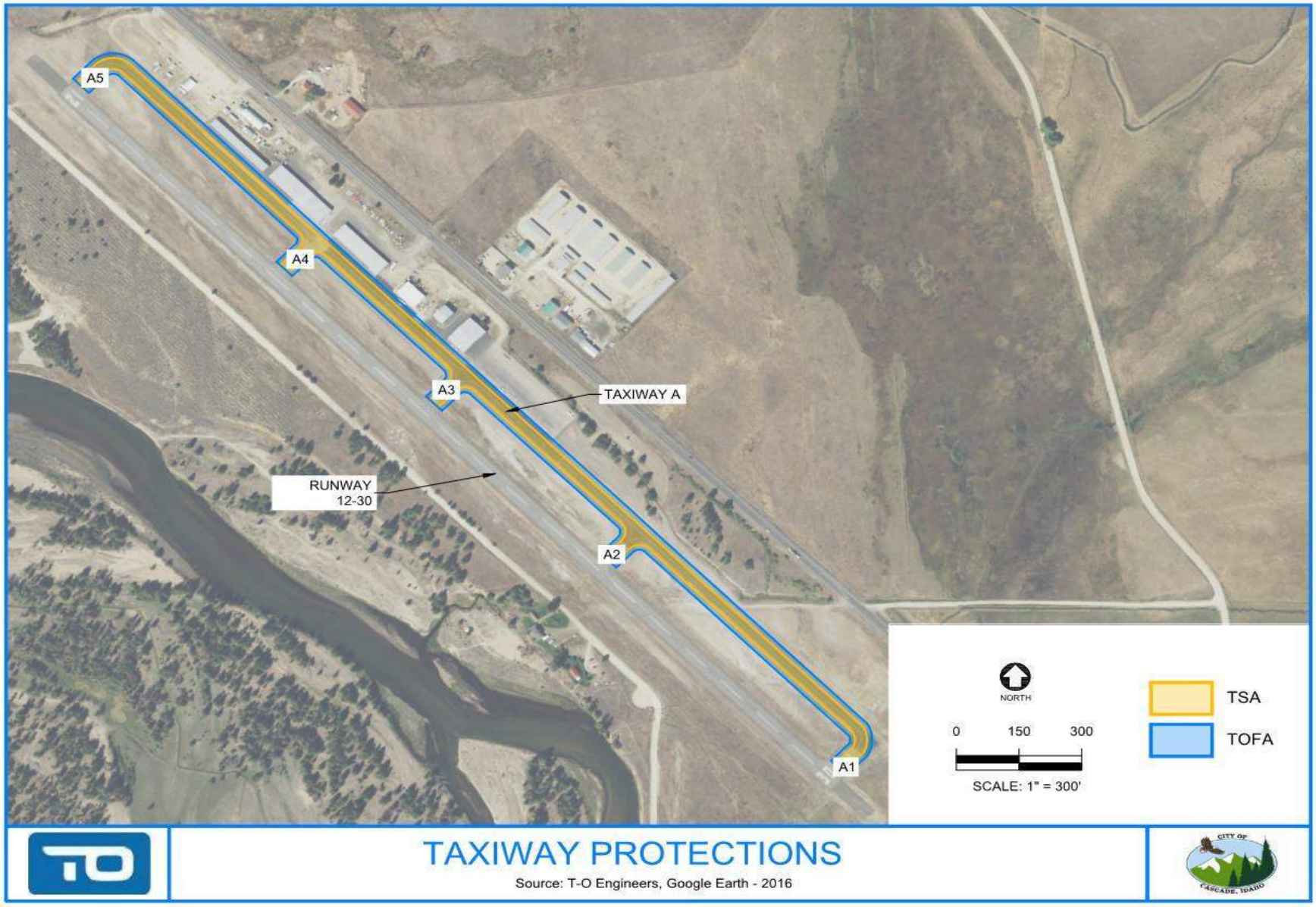
*Unknown in the 1996 ALP by CH2M

Source: 1996 ALP, Pavement Condition Report - 2012, T-O Engineers

2.4.3 HELIPAD

There are currently no dedicated helipads for rotorcraft operations at Cascade Airport. Most helicopters using the airport operate on existing runway and parking areas. Landing and takeoff also occurs in the area behind the Fixed Base Operator (FBO) hangar and in the unpaved field east of parallel Taxiway A.

FIGURE 2-6: TAXIWAY PROTECTIONS



2.4.4 AIRCRAFT APRON AND TIE-DOWNS

Cascade Airport has one main aircraft parking apron located as depicted on **Figure 2-4**. and used by GA aircraft. The airport is equipped with a total of 24 tie-downs. Additional parking space is available in front of the various hangars. **Table 2-14** summarizes apron space usage and characteristics.

GA Apron at U70
Source: T-O Engineers

TABLE 2-14: APRON USAGE AND CHARACTERISTICS

Item	GA Apron
Space	24 Tie-Downs
Marking	None
Area	1.7 Acres / 74,420 sq.ft.
Condition	Poor
Last Rehabilitation	Unknown

Source: T-O Engineers, 2010 IASP

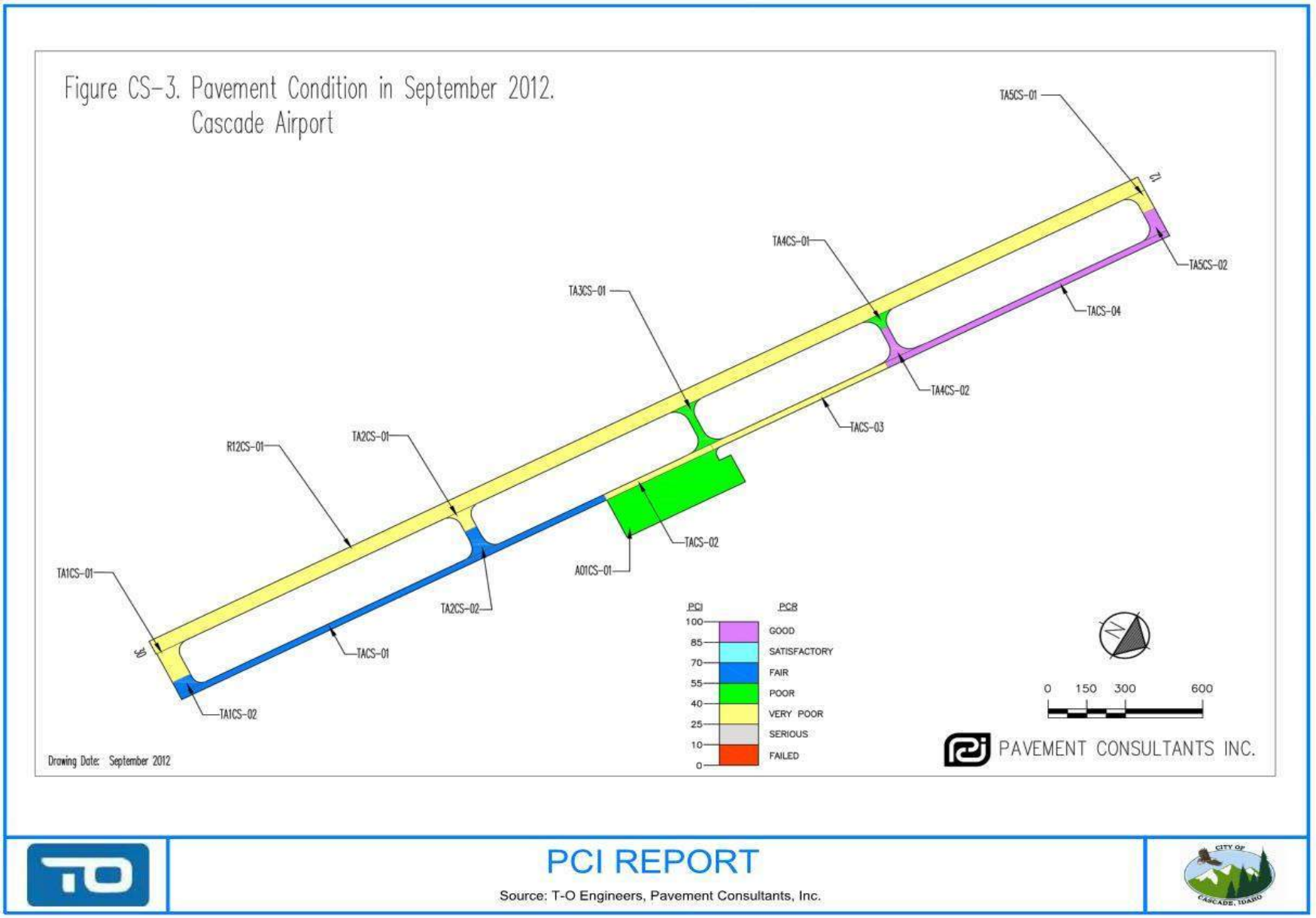
2.4.5 AIRPORT PAVEMENT CONDITION

The Pavement Condition Index (PCI) and Pavement Condition Rating (PCR) are solely based on a visual inspection of pavement condition. PCI computation follows a specific methodology and provides a numerical evaluation of pavement condition with a scale ranging from 0 to 100. The PCR is a qualitative evaluation of pavement associated with ranges of PCI values. The last PCI inspection conducted at Cascade Airport was in 2012. **Figure 2-7** depicts the pavement condition for various areas of the airport in September 2012.

Runway 12-30 was rebuilt during the summer 2013 is now in excellent condition. Taxiway A was last rehabilitated in 2015 and is in good to excellent condition, showing light cracking at some places. The apron has not been rehabilitated since the 2012 pavement inspection. Its pavement has a PCR evaluated to “poor” and shows multiple deep cracks.

The next pavement project at the airport is rehabilitation of the GA apron. At the time of this master plan, the apron rehabilitation was scheduled for summer 2018.

FIGURE 2-7: PAVEMENT CONDITIONS



2.4.6 AIRFIELD MARKING, LIGHTING, VISUAL AIDS AND NAVAIDS

U70 Rotating Beacon (Left) and Windcone (Right)
Source: T-O Engineers

A NAVAID is defined by the FAA as any facility used in the aid of air navigation. This includes lights, any apparatus or equipment emitting weather information, radio signals or other electronic communication, and any other structure or mechanism having similar purpose and controlling flight in the air or the landing or takeoff of aircraft.

Table 2-15 summarizes the existing NAVAIDS available at Cascade Airport. Their location on the airfield is as depicted on **Figure 2-5**. Cascade Airport owns and is responsible for maintaining all the NAVAIDS on the airfield because none of them are federally owned.

TABLE 2-15: U70 MARKING, LIGHTING AND NAVAIDS

Item	Type and Condition
Marking	
Runway 12-30	Basic - Good
Taxiway	Yellow Centerline - Good Yellow Holding Lines - Good
Lighting	
Runway 12-30	Edge (White) / Runway Ends and Thresholds - MIRL
Taxiway	Blue Edge at Connectors Blue Reflectors
NAVAIDS	
Visual	Rotated Beacon - Good Lighted Windcone - Good Segmented Circle - Good
Communication	CTAF: 122.9Mhz
Surrounding NAVAIDS	VOR/DME - DONNELLY - 116.2MHz - 18.4Nm/153.6° NDB - USTIK - 356KHz - 55.3Nm/13.5° VOT - BOISE - 116.7MHz - 56.1Nm/9.5° VORTAC - BOISE - 113.3MHz - 56.9Nm/7.7°
Weather	
On-Site Weather Station Report	None
Surrounding Weather Report Station	MYL ASOS - 119.925MHz - 24.1Nm BOI ASOS - 56.4Nm EUL AWOS-PT - 135.075MHz - 57.7Nm MAN AWOS-3 - 118.325MHz - 58.8Nm

Source: T-O Engineers, NFDC

2.4.7 APPROACH CAPABILITIES AND AIR TRAFFIC CONTROL

Cascade Airport has no instrument approach capabilities. Runway 12-30 has visual-only approaches on both ends. The airport does not have a permanent Airport Traffic Control Tower (ATCT). USFS uses a temporary ATCT for firefighting activity during the annual wildfire season.

2.4.8 HOT SPOTS AND COMMON INCIDENTS

Hot spots on an airport are places where pilots might be confused and where incidents or accidents are most likely to occur. Hot spots can occur for several reasons including faulty design, inadequate or confusing marking, or bad geometry. No hot spots have been identified at Cascade Airport.

2.5 EXISTING LANDSIDE FACILITES

Landside facilities encompass all airport infrastructure not used for aircraft operation, including hangars, terminal building, car parks, access and other facilities. The following **Figure 2-8** provides an aerial view of existing airport landside facilities.

FIGURE 2-8 – AIRPORT LANDSIDE FACILITIES

2.5.1 FIXED BASE OPERATOR AND TERMINAL

A Fixed Base Operator (FBO) is a company owning or leasing infrastructures on the airport and providing different services to the airport's users. Arnold Aviation is the only FBO on Cascade Airport. It provides various services including:

- Full Service Jet-A and Avgas 100LL (refueling)
- Aircraft Maintenance
- Aircraft Charter
- Scenic Flights
- Propane
- Flying the Idaho Backcountry
- Courtesy Car

Pilot's Lounge, Arnold Aviation, U70
Source: T-O Engineers

Arnold Aviation operates in one multi-purpose building on the airport, as shown on **Figure 2-8.** This building is approximately 65' x 95' (6,175 sq. ft.) It includes approximately 4,875 sq. ft. for aircraft storage and maintenance, and 1,300 sq. ft. for offices, storage, and pilot's lounge. The building was built in 1977.

Arnold Aviation FBO, U70
Source: T-O Engineers

Two other operators operate from the airfield:

- Rich Stowell's Aviation Learning Center: emergency maneuver, aerobatic, and tailwheel training.
- G&S Aviation: flying the Idaho backcountry, flight instruction.

2.5.2 AIRCRAFT HANGARS

Hangars are used for aircraft storage and can be owned or leased by different airport users. There are 37 hangar units available on the airport property, including the FBO facilities, as shown on **Figure 2-8**. There are 22 different tenants at Cascade Airport (tenant names are listed on the Airport Layout Plan).

Hangars vary in shape and size. Some are identified as T-Hangar, for smaller GA aircraft, and others are known as conventional box hangars for bigger and corporate aircraft. Cascade Airport has two twelve-unit T-Hangars, one seven-unit T-Hangar, two conventional box hangars

(including the FBO), and one four-unit box hangar. **Figure 2-9** summarizes hangar configuration at Cascade with their main characteristics.

T-Hangars - U70
Source: T-O Engineers

Box Hangar - U70
Source: T-O Engineers

2.5.3 AIRPORT ROADSIDE ACCESS

The primary mode of transportation in the Cascade area and in Valley County is private automobiles. The airport offers parking lots, as described in Section 2-5-4, to accommodate the various vehicles using the airport.

As shown on **Figure 2-8**, the main access to the airport is a paved road linking Main Street/US 55 to the FBO parking lot. This road allows direct access from the airport to the road network surrounding the airport and adjacent areas. Unpaved roadway sections serve the various hangars on the airport.

2.5.4 AUTOMOBILE PARKING AND GROUND TRANSPORTATION

Cascade Airport offers two main dedicated parking areas for automobiles. One paved parking lot is located near the FBO hangar and has a total of 14 spaces. Another area near the airport entrance is unpaved and can accommodate several vehicles.

Figure 2-10 depicts the location and summarizes the characteristics of the existing parking areas at Cascade Airport. There is no specific ground transportation serving the airport but a courtesy car is available for pilots using the airfield.

FIGURE 2-9 – HANGARS CONFIGURATION AND CHARACTERISTICS

FIGURE 2-10 – CAR PARKING AREAS

2.6 SUPPORT FACILITIES

Support facilities at the airport include infrastructure and equipment used for support, airport maintenance and emergency response. These include fuel facilities, Aircraft Rescue and Fire Fighting (ARFF), snow removal, airport maintenance, and utilities. Support facilities for Cascade Airport are depicted on **Figure 2-11**.

2.6.1 PERIMETER FENCING AND PERIMETER ROAD

The airport perimeter is not fully fenced. In addition, the airport does not have a consistent fence type along the fenced portions. The existing fence is in poor condition with many sections missing. There is no dedicated perimeter road for airport inspections. **Figure 2-11** depicts the existing perimeter fence at Cascade Airport.

2.6.2 UTILITIES

The airport is equipped with all common utilities as shown on **Figure 2-11**. These include water, sewer, electricity, and phone/internet

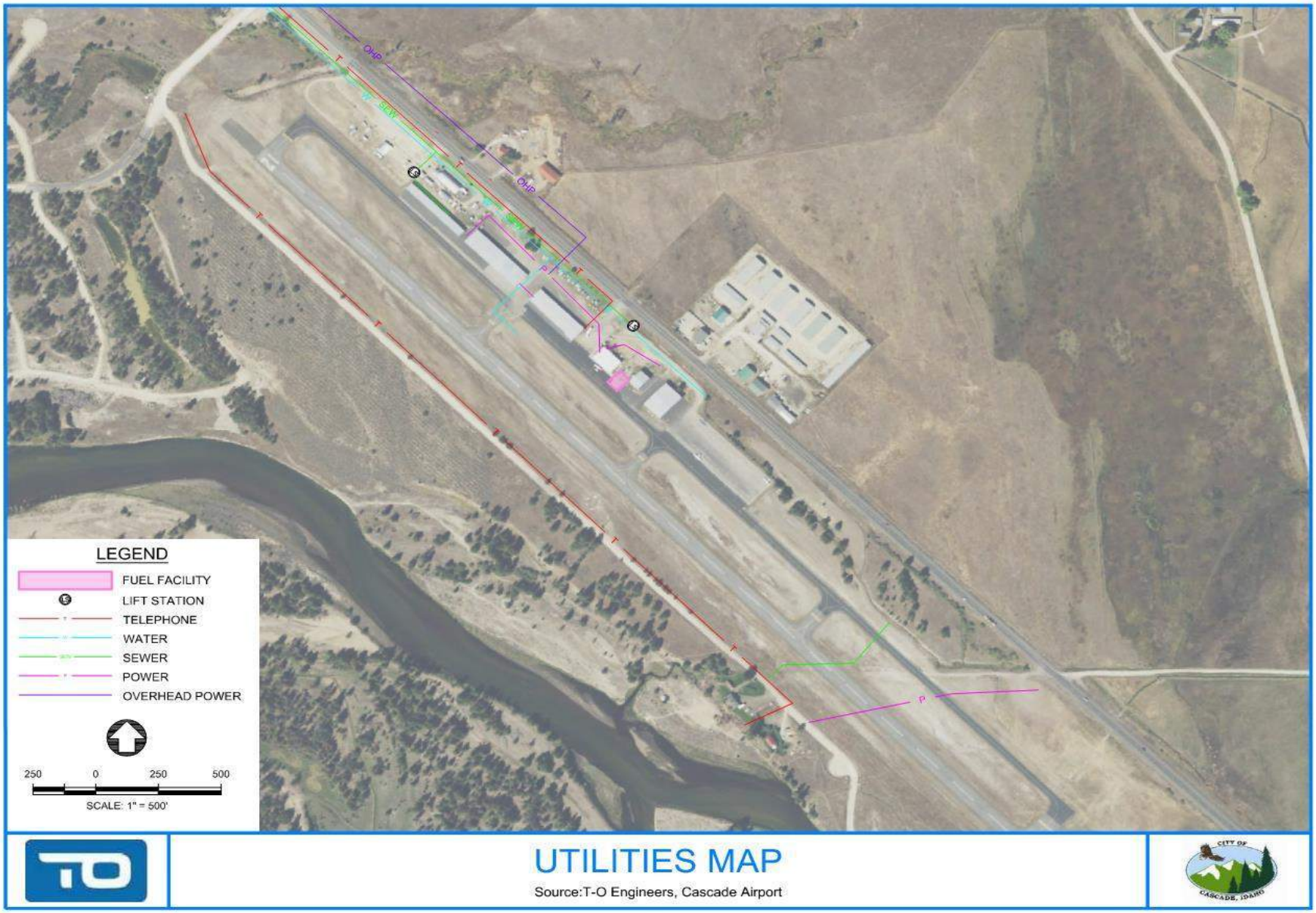
Table 2-16 summarizes the current utilities and service providers at Cascade Airport.

TABLE 2-16: AIRPORT UTILITIES AND SERVICE PROVIDERS

Utility	Source and Provider
Water	City of Cascade
Sewer	City of Cascade
Electricity	Idaho Power
Phone	Frontier
Internet	Frontier

Source: T-O Engineers, Cascade Airport

FIGURE 2-11 – SUPPORT FACILITIES



2.6.3 FUEL FACILITIES

Cascade Airport accommodates GA and Air Taxi/Commuter aircraft and offers appropriate fuel services including AvGAS 100LL (Low Lead) and Jet A fuels.

Fuel Facilities - U70
Source: T-O Engineers

Fuel services are offered by the airport's FBO Arnold Aviation. The fuel farm is located as shown on **Figure 2-11**. Fuel farm equipment includes:

- Two 12,000-gallon Fiberglass Tanks for AvGas and Jet A
- One 2,000-gallon Jet A Truck

2.6.4 EMERGENCY RESPONSE SERVICES (ARFF)

Cascade Airport does not have a dedicated Airport Rescue and Firefighting (ARFF) facility. The Cascade Fire Protection District is in charge of emergency response at the airport (fire, rescue and EMS). The department has a total of 3 full-time paid firefighters and 36 volunteers. As shown of Figure 2-11, the closest fire station is located 2 miles from the airport, which represents 3 to 4 minutes of driving time.

Fire Station Cascade, ID
Source: Google Earth 2016

2.6.5 AIRPORT MAINTENANCE

Airport maintenance includes maintenance of the airport facilities and property. It includes but is not limited to: airport buildings, pavement, fence, lawn, and snow removal. The airport director is in charge of airport maintenance at Cascade Airport.

Cascade Airport does not have a dedicated storage building for maintenance purposes. All the airport's equipment is stored outside. Requirements for storage facilities are explained later in this AMP. This equipment consists of the following:

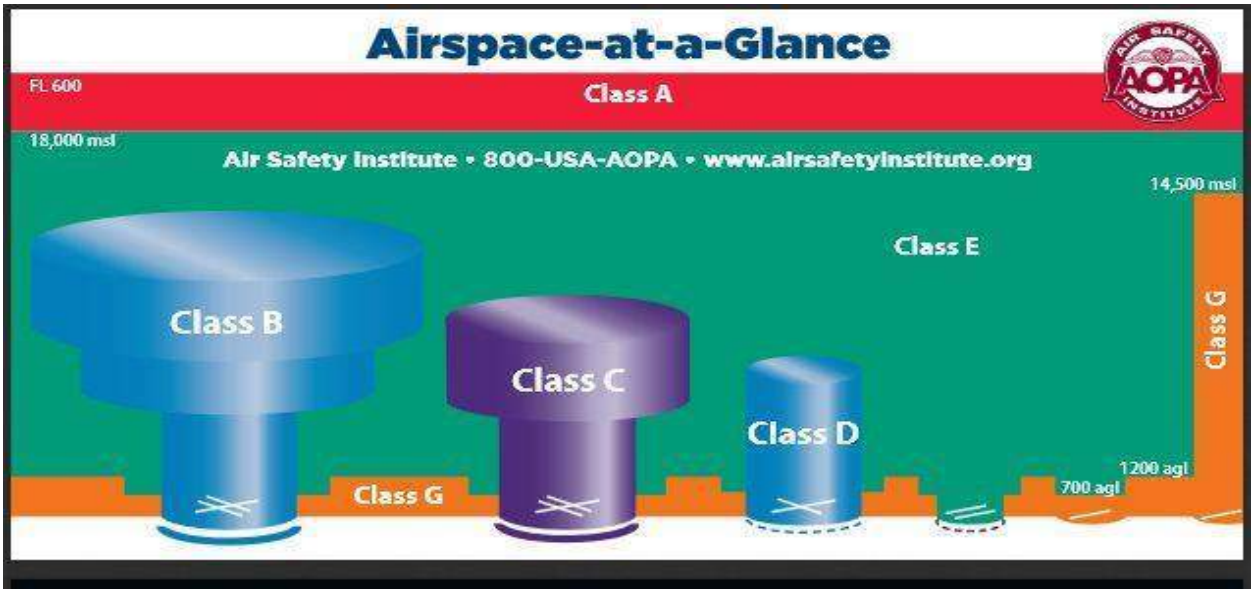
- Snowblower 1968 Oshkosh, City owned
- John Deere Loader 2008, FAA Acquired with Blade and Broom
- Ford Tractor with mowing deck, tow behind, City owned

2.7 AIRSPACE

The National Airspace System (NAS) is a combination of the various airspace, navigational facilities, and airports in the U.S. An airspace is a volume in the national sky in which aircraft operations have to follow a certain set of rules.

The NAS consists of airspace controlled by Air Traffic Control facilities (ATC), as well as uncontrolled airspace. The NAS has established operating procedures and requirements in both controlled and uncontrolled airspace. Controlled airspace includes more stringent requirements in terms of ATC procedures, aircraft equipment and pilot certification. Typically, the busier the airport and airspace, the more restrictive the airspace is and the more stringent the operating requirements.

2.7.1 SURROUNDING AIRSPACE



Communication Requirements and Weather Minimums

Features	Class A	Class B	Class C	Class D	Class E	Class G
Minimum Pilot Qualifications	Instrument Rating	Student*	Student*	Student*	Student*	Student
Entry Requirements	IFR: ATC Clearance VFR: Operations Prohibited	ATC Clearance	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: None	None
VFR Visibility Below 10,000 msl**	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	Day: 1 Statute Mile Night: 3 Statute Miles
VFR Cloud Clearance Below 10,000 msl***	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal
VFR Visibility 10,000 msl and Above**	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	5 Statute Miles	5 Statute Miles
VFR Cloud Clearance 10,000 msl and Above	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal

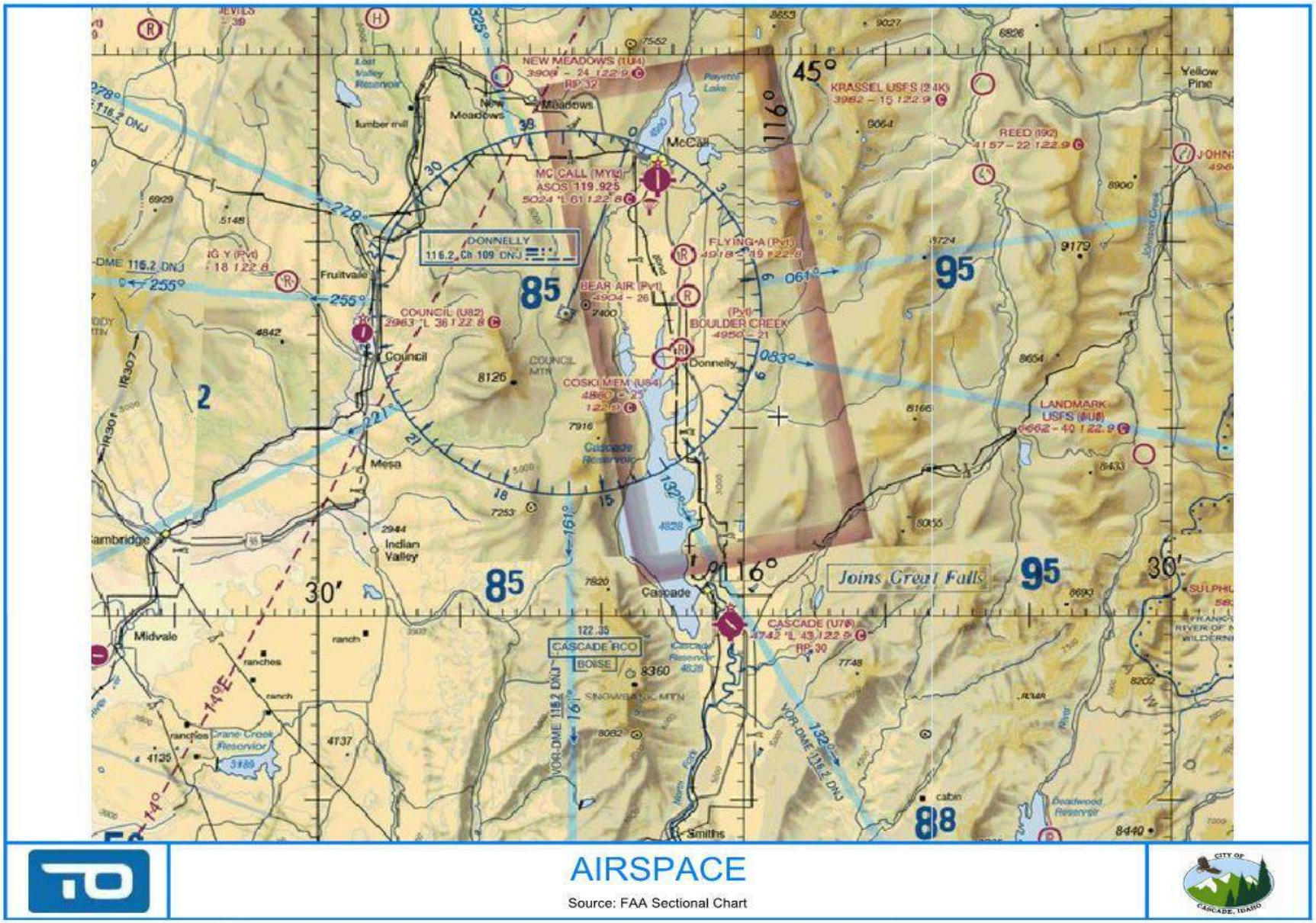
Airspace at a Glance
Source: AOPA-2011

U70 is currently in uncontrolled Class G airspace. Directly north of the airport, the Class E airspace of McCall Municipal Airport starts at 700 feet Above Ground Level (AGL). Cascade Airport is under the jurisdiction of the Salt Lake Air Route Traffic Control Center (ARTCC) and the Boise Flight Service Station (FSS).

Pilots using Cascade Airport should be diligent in learning about and understanding the airspace environment before operating in the vicinity of the airport. No special use airspaces, such as restricted areas, prohibited areas, warning area, military operation areas or alert areas exist in the immediate vicinity of the airport. There are occasional Temporary Flight Restrictions (TFR) during the fire season.

Figure 2-12 depicts the airspace sectional in the immediate vicinity of the airport.

FIGURE 2-12: CASCADE AIRPORT SURROUNDING AIRSPACE



2.7.2 CODE OF FEDERAL REGULATIONS PART 77 IMAGINARY SURFACES

Code of Federal Regulations (14 CFR) *Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace,* provides airspace protection requirements at public-use airports. It defines surfaces around the airport that will limit the height of objects in the vicinity (via zoning), in order to protect aircraft operations.

Airspace requirements and surfaces are determined by the weight of the aircraft that predominantly operates at an airport and the type of instrument approaches, if any, that exist or are planned at an airport.

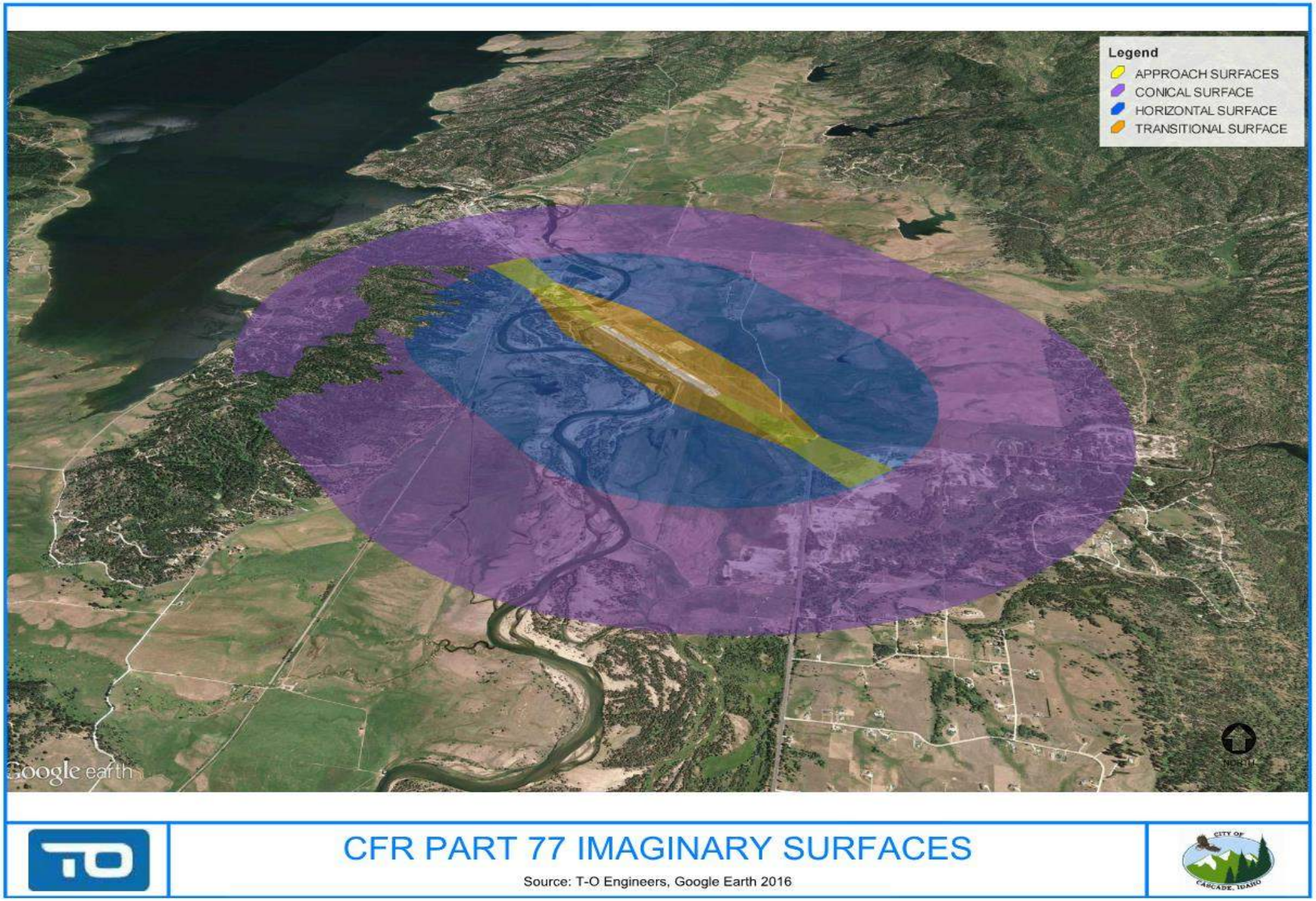
Airport runways which predominantly accommodate aircraft 12,500 pounds maximum gross takeoff weight (MGTOW) or less are designated as “Utility” runways. Runways accommodating aircraft of greater than 12,500 pounds MGTOW are designated as “Other Than Utility” runways. Either “Utility” or “Other Than Utility” CFR Part 77 runway designations can include visual only runways, runways with a precision instrument approach or runways with a non-precision instrument approach (straight-in approaches only).

Once a runway has been designated as either ‘Utility or “Other Than Utility” and the type of approach identified, specific airspace surface dimensions can be determined. For public-use civilian airports, CFR Part 77 identifies the following “imaginary” airport airspace surfaces:

- Primary Surface
- Approach Surface
- Transitional Surface
- Horizontal Surface
- Conical Surface

Currently, for purposes of CFR Part 77, Runway 12-30 at Cascade Airport is considered a utility runway with visual approaches only. A description of each CFR Part 77 airspace surface and specific dimensions for U70 are included below. **Figure 2-13** depicts the Primary, Approach and Transitional “imaginary” airspace surfaces as defined in CFR Part 77.

FIGURE 2-13: CFR PART 77 IMAGINARY SURFACES



Primary Surface
The Primary Surface is a rectangular surface longitudinally centered on the runway. For hard surfaced runways, the surface extends a distance of 200 feet beyond each runway end. Its elevation is the same as that of the closest point on the runway centerline. The width of the Primary Surface is set by the most demanding type of approach, existing or planned, for either end of the runway. The width of the Primary Surfaces at Cascade Airport is 250 feet.

Approach Surface
The Approach Surface is trapezoidal in shape. It begins at the ends of the Primary Surface and slopes upward and outward. An Approach Surface is applied to each runway end and is based upon the type of approach planned for that runway end.

The dimensions of the Approach Surfaces at Cascade Airport are:

- Inner Width = 250 feet
- Outer Width = 1250 feet
- Length = 5,000 feet
- Slope = 20:1

Transitional Surface
The Transitional Surface is a sloping area that begins at the edge of the primary surface and slopes upward at a ratio of 7:1 until it intersects the horizontal surface.

Horizontal Surface
The Horizontal Surface is an oval-shaped, level plane situated 150 feet above the airport elevation, the perimeter of which is established by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The arcs at either end of a runway will have the same value. The radius of each arc at Cascade Airport is 5,000 feet. The elevation of the Horizontal Surface at Cascade Airport is 4,897.5 feet MSL

Conical Surface
The Conical Surface is a sloping area whose inner perimeter conforms to the shape of the Horizontal Surface. It extends outward for a distance of 4,000 feet measured horizontally, while sloping upward at a 20:1 ratio resulting in an additional 200 feet of height around the Horizontal Surface. The elevation at the outer edge of the conical surface at Cascade Airport is 5,097.5 feet MSL.

2.7.3 APPROACH/DEPARTURE STANDARDS

Mitigation of obstructions to the CFR Part 77 Imaginary Surfaces, as defined previously, is not required by the FAA. However, additional Obstacle Clearance Surfaces (OCS) are defined to

evaluate the minimum required obstruction clearance for approach and departure procedures. This surfaces must be cleared of obstructions:

- Threshold Siting Surface (TSS): Its characteristics are based on the type of approach and aircraft that use the runway. This surface influences the location of a runway threshold.

- Departure Surface: Its dimensions are the same for all runways with instrument departure regardless of the type of aircraft that use the runway. This surface affects the Take Off Distance Available (TODA).

- Glide Path Qualification Surface (GQS): It applies to runways having instrument approaches with vertical guidance.

Neither the departure surface nor the GQS currently apply at Cascade Airport for the existing visual approaches. It is important that approach areas be clear of obstacles. Mitigation measures, if needed, will be evaluated in **Chapter 4 - Facilities Requirements** and **Chapter 6 - Alternatives Analysis.** All appropriate surfaces will be evaluated if future instrument approaches are proposed to be implemented at the airport.

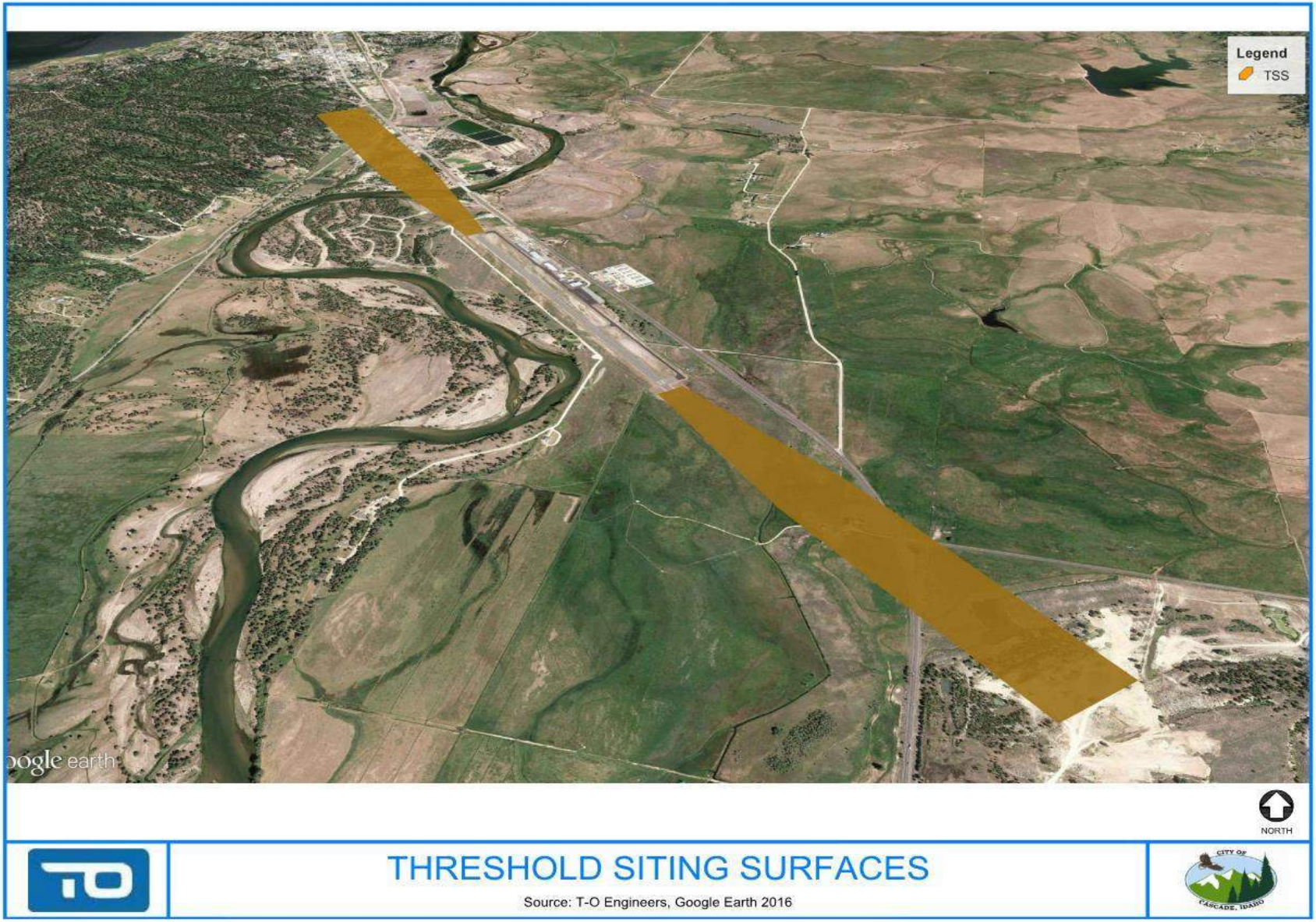
TSS

The runway threshold must be located in order to avoid any penetration of the TSS. For Cascade Airport, the TSS are defined by:

- Inner Width = 250 feet
- Width at 2,250’ = 700 feet
- Outer Width = 700 feet
- Length = 5,000 feet
- Starts at Runway Thresholds
- Slope: 20:1

Figure 2-14 depicts the TSS for Runway 12-30 at Cascade Airport.

FIGURE 2-14: THRESHOLD SITING SURFACE



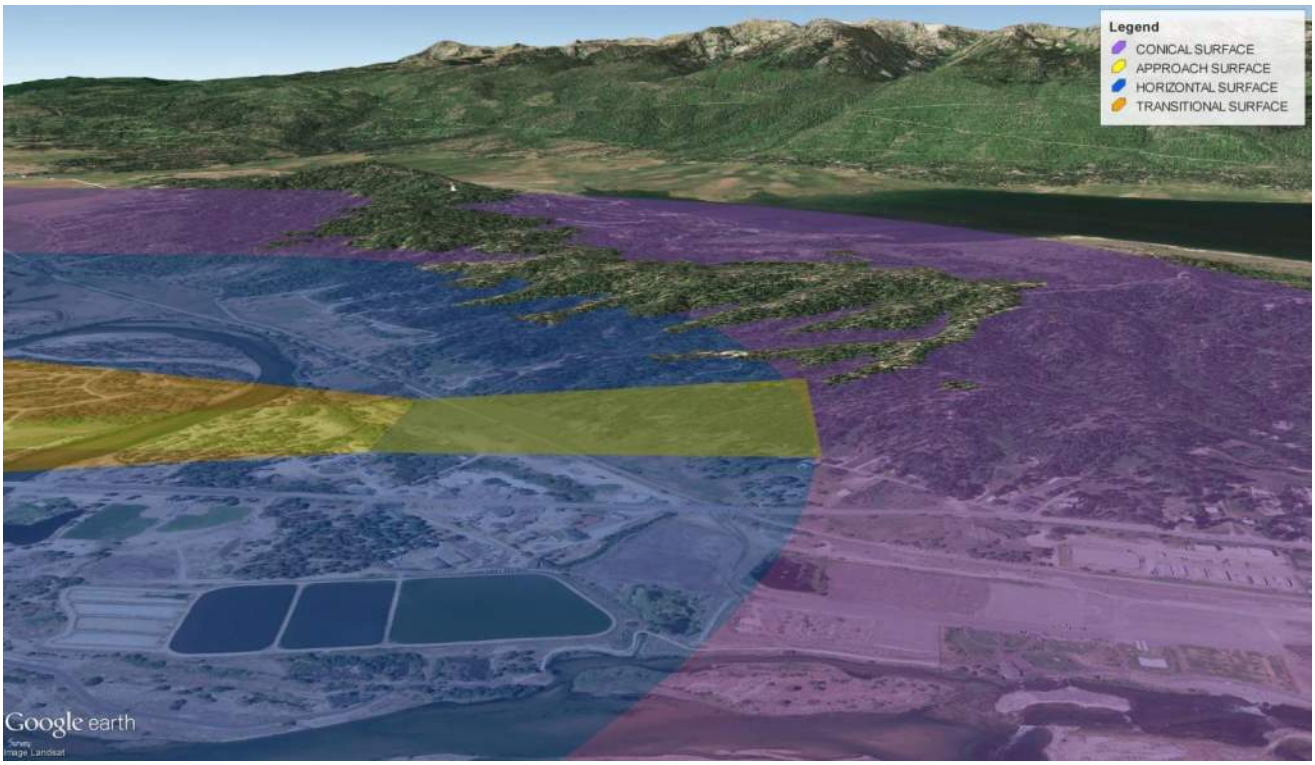
2.7.4 OBSTRUCTIONS TO AIR NAVIGATION

Any existing or future object penetrating a CFR Part 77 Imaginary Surface, or OCS will be considered an obstruction. Obstructions to the OCS must be mitigated. **Table 2-17** lists the obstructions to air navigation in the vicinity of the runways at Cascade Airport.

TABLE 2-17: OBSTRUCTION DATA

Runway End	Object	Height Above RW CL*	Distance from RW CL	Penetration	Surface Penetrated	Close In Obstruction?**
12-30	Ground	151' Min	4000'	1' Min	Part 77 Horizontal and Conical Surfaces	No
12-30	Antenna		Not Available		Part 77 Conical Surface	No

*Object elevation is estimated. New survey data is required
**Obstruction inside the Primary Surface
Source: FAA Form 5010, T-O Engineers, Google Earth



Ground Obstruction
Source: Google Earth 2016, T-O Engineers

2.8 ENVIRONMENTAL AND LAND USE COMPATIBILITY

Airports not only play an important role in their region's economy but also at a national level, and so is the case for Cascade Airport. Compatible land use around the airport aims to avoid land uses that could conflict with aircraft activity and airport infrastructures. Incompatible land use could lead to unjustified constraints to the airport's development and jeopardize its economic role.

Effective land use planning via mechanisms such as zoning protects airspace, defines use of land and considers aircraft noise impacts. Currently the FAA considers airport compatible land use planning to be a top priority for airport sponsors to be aware of, concerned with, and prepared to address through local planning and the airport planning process.

Following is a summary of the land use planning related to the airport per Valley County and surrounding jurisdictions in close proximity to Cascade Airport. Per Idaho Statewide Land Use Legislation, effective July 1, 2014, all local jurisdictions with a public-use airport in or near their jurisdiction are required to include a separate Airport section in their Comprehensive Plans. This section must consider current and future needs of the airport, as well as impacts on the communities in the vicinity of the airport. In addition, the local planning and zoning commissions must adopt standards and zoning mechanisms to protect lands around airports from incompatible land use or incompatible development.

Environmental considerations are required as part of the National Environmental Policy Act (NEPA) for every project involving federal actions, such as funding or approval. It also ensures that all environmental impacts have been identified, addressed and mitigated through adequate actions and documentations.

2.8.1 ENVIRONMENTAL OVERVIEW

An exhaustive Environmental Overview has been conducted as part of this project and is presented in **Chapter X or appendix X**.

This document assesses the environmental baseline of the airport based on criteria defined by NEPA. It provides background data used to develop environmental-friendly alternatives for proposed development at the airport. It also gathers data that can be used for any environmental documentation that might be required for future development, such as a Categorical Exclusion (CATEX), Environmental Assessment (EA), or Environmental Impact Statement (EIS).

2.8.2 City of Cascade Comprehensive Plan and Zoning Ordinances

Comprehensive Plan

Cascade Airport is located within the jurisdiction of the city of Cascade and is owned and operated by the city. The city's current Comprehensive Plan (CCP) was revised and adopted in 2013. This plan sets the general vision for zoning in the city.

The plan states that the airport plays an important role in the local economy and promotes its development. The plan also refers to the IASP for future development and to the ITD land use guideline for compatible land use. The plan must be updated as required to reflect current Idaho Law.

Zoning Ordinance

The City of Cascade has implemented a zoning ordinance for its zoning requirements with 8 zones. As shown on **Figure 2-15**, the airport infrastructures are located in an area with a zoning code of I for Industrial. Per the zoning ordinance, the airport is a compatible use for this zone. Land uses surrounding the airport include Mixed Use and Commercial. The ordinance does not set specific height requirements related to airport protection surfaces.

2.8.3 Valley County Comprehensive Plan and Zoning Ordinances

Comprehensive Plan

The Valley County Comprehensive Plan (VCCP) was adopted in 2001 and was last revised in 2010. The plan's recommendations for zoning include:

"Seek to balance protection of the public investment in airports with private property rights and the importance of quiet in our communities."

Source: Valley County Comprehensive Plan, 2010

The plan must be updated as needed to reflect current Idaho Law.

Zoning Ordinance

The last zoning ordinance for Valley County was adopted in 1978 and amended in 2006. The ordinance defines 8 different zones but does not specify height restrictions.

2.8.4 Area of Impact Agreement

Idaho Code Section 67-6526 requires Valley County and the City of Cascade to define a city Area of Impact (AOI) and to determine the comprehensive plan and zoning ordinances that apply to this area. The AOI for Cascade is shown on **Figure 2-16**.

The County's comprehensive plan and zoning ordinance applies in the AOI and is supposed to match the City's zoning recommendation and regulation. Outside this area of impact, the County is in charge of the zoning.

FIGURE 2-15: ZONING MAP CASCADE, ID

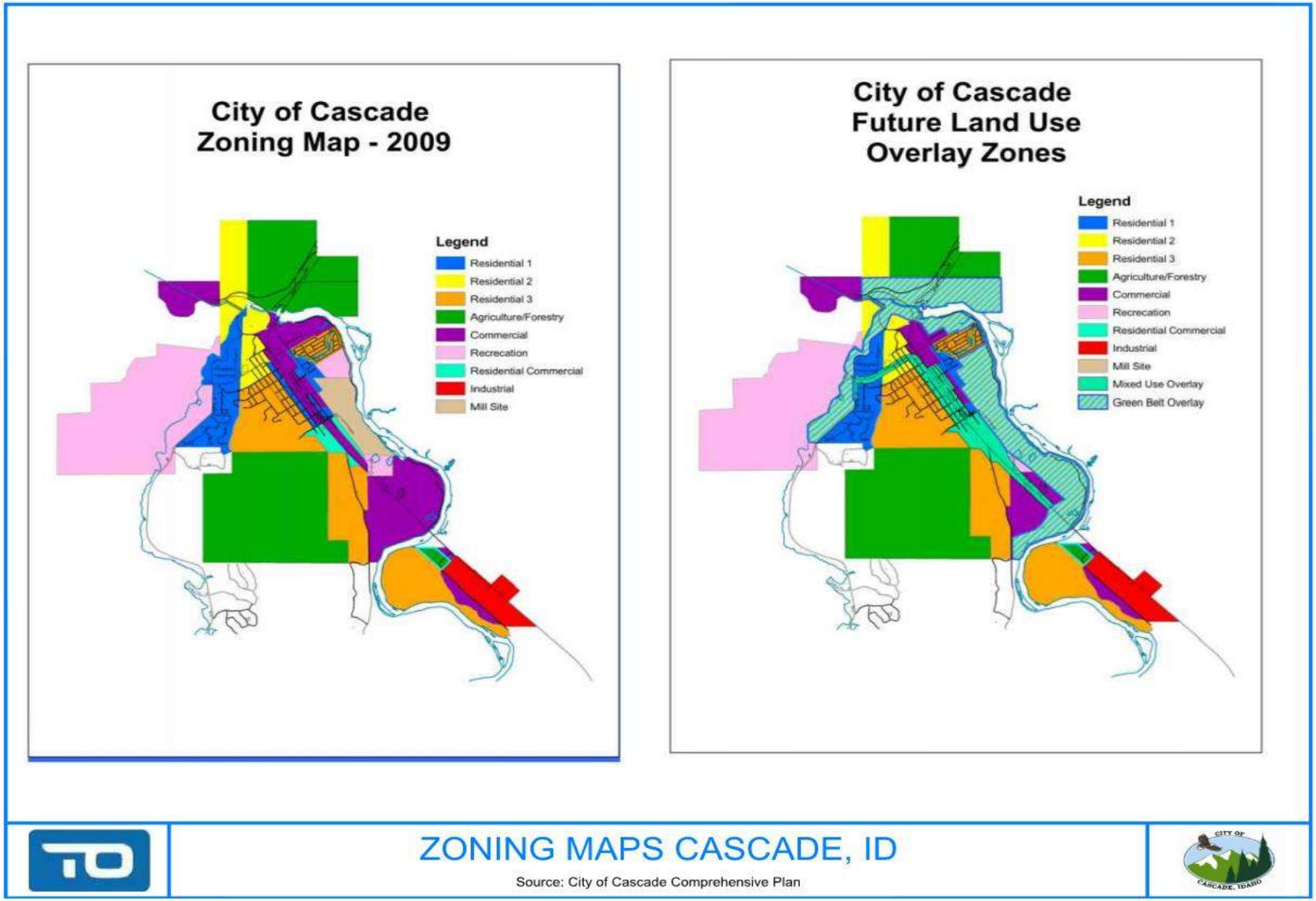
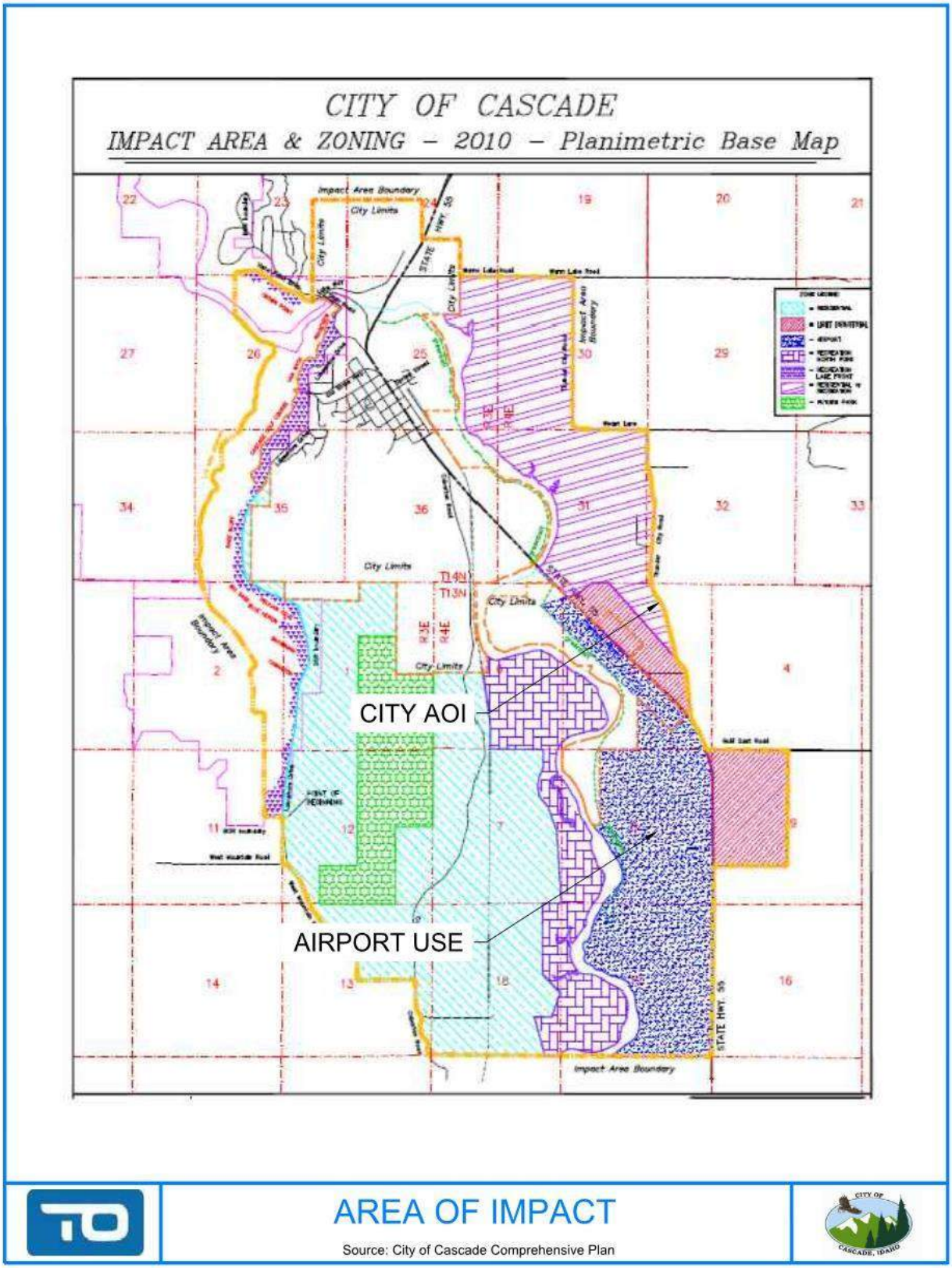


FIGURE 2-16: AREA OF IMPACT CASCADE, ID



2.8.5 INCOMPATIBLE LAND USE

Because Cascade Airport receives federal funds from the FAA, the grant assurances require the owner to maintain appropriate land use on airport property and within the various protection areas and zones.

As mentioned in Section 2.4.1, the airport has a dirt road located within the RPZ at the Runway 12 end. According to the FAA's land use requirements, this type of use is incompatible with the intent of the RPZ and should be mitigated.

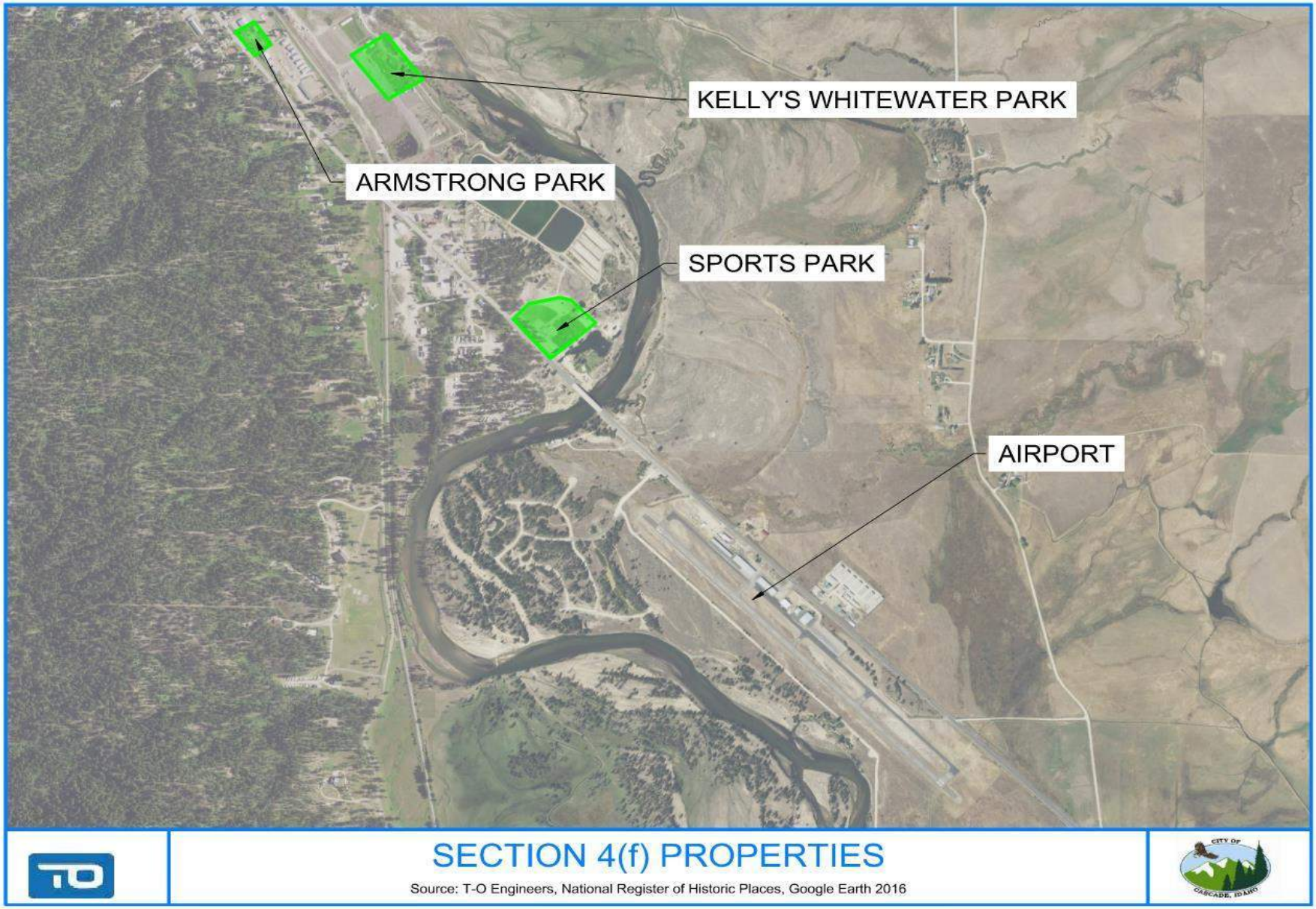
2.8.6 SECTION 4(F) PROPERTIES

Section 4(f) of the Department of Transportation Act (DOT Act) of 1966 has a goal of protecting the following types of properties from any development:

- Publicly Owned Park and Recreation Areas
- Publicly Owned Wildlife and Waterfowl Refuges
- Public or Privately Owned Historic Sites

As shown on **Figure 2-17,** there are three publicly owned parks within the City of Cascade approximately 1 mile north of the airport. There are no historic sites registered in the National Register of Historic Places in the vicinity of the airport.

FIGURE 2-17: SECTION 4(F) PROPERTIES



2.8.7 NOISE LEVEL

Airport noise is generated by aircraft operations. Its level and area of impact will be influenced by the number of aircraft operations and the type of aircraft using the airport. The noise impact should be limited as much as possible with appropriate land use in order to protect both the surrounding community and the ability for the airport to develop.

Noise level measurements use the Decibel (dB) unit to characterize the Day Night Average Sound Level (DNL). The DNL represents the average noise level over a period of 24 hours. The noise between 10pm and 7am is increased by 10dB to account for the inconvenience of noise generated by night operations.

The FAA and State regulations define appropriate land use around the airport based on the DNL contours (industrial, churches, schools, hospitals, residences…). Further details are provided about compatible land use in **Chapter X**. Significant noise is commonly defined as the DNL 65dB.

2.8.8 THROUGH-THE-FENCE (TTF)

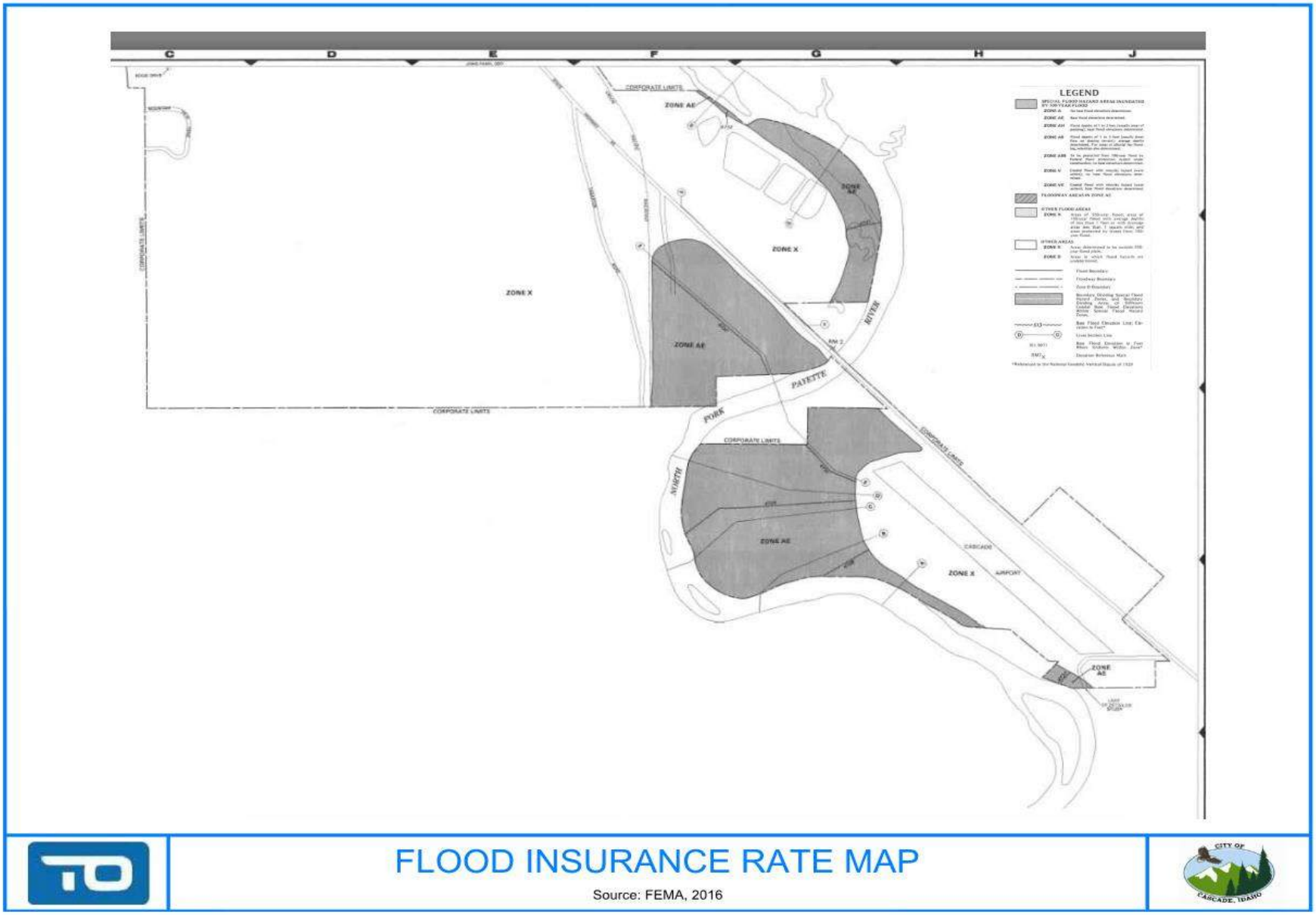
Through-the-fence activities are those which reside on property outside of the airport property boundary that have an access directly onto airport property. No TTF activities currently exist at Cascade Airport.

2.8.9 FLOODWAY/FLOODPLAIN IMPACTS ON THE AIRPORT

An examination of the Flood Insurance Rate Maps (FIRM) depicted on **Figure 2-18** shows that Cascade Airport is in a mapped area of the Federal Emergency Management Agency (FEMA).

The map shows the area around the Payette River (Zone AE) as a FEMA Special Flood Hazard Area (SFHA), also known as the “100-year flood”. The airport is located in Zone X which indicates an area with minimal flooding (500-year flood plain).

FIGURE 2-18: FIRMA



2.9 WEATHER AND CLIMATE

2.9.1 LOCAL WEATHER AND CLIMATE

Cascade is located in the west central part of Idaho characterized by its humid continental climate. This type of climate has large seasonal temperature differences with warm to hot summers and generally cold winters. Cloudy days are common in winter and spring is typically wet and windy.

According to the National Oceanographic and Atmospheric Administration (NOAA), over the last ten years (2006-2016), the coldest months have been January and February with minimum temperatures in the teens and maximums in the 30's. The hottest months appear to be July and August with maximum temperatures in the mid 80's and minimums in the 50's. The rainiest months are November-December and February-March.

2.9.2 TEMPERATURE AND PRECIPITATION

The National Centers for Environmental Information (NCEI) from the NOAA, gathers data for temperature and precipitation available from a weather station located 2.5 miles northwest of the airport. The station is at longitude W116.048° and latitude N44.5228° with an elevation of 4,896 feet MSL.

Table 2-18 summarizes the data available, for a 10-year period between 2006 and 2016, for temperature and precipitation respectively.

TABLE 2-18: TEMPERATURE AND PRECIPITATION HISTORY

Statistic-10 years	Value
Temperature	
Average Annual	41.8°F
Average Maximum Annual	55.9°F
Average Minimum Annual	27.6°F
Hottest Month	July-August
Mean Daily Maximum of Hottest Month	80°F
Coolest Month	January-February
Precipitation	
Average Annual Precipitation	2 in.
Months with Most Precipitation	November-December & February-March
Average Annual Snowfall	6.8 in.

Source: NCEI NOAA 2006-2016

2.9.3 AUTOMATED WEATHER

Cascade Airport is not equipped with a FAA certified Automated Surface Observing System (ASOS) or Automatic Weather Observing System (AWOS).

2.9.4 WIND DATA AND WIND ROSE

The airport does not have an AWOS/ASOS and the weather station located northwest of the airfield does not provide wind information. The closest weather station with wind information is the ASOS located on McCall Municipal Airport, 24.1Nm north of Cascade.

Wind data from the McCall ASOS were summarized in FAA format, counting the number of observations in 10-degree increments by standard wind speed increments. The observations from the 10-year period were then entered into the FAA's Wind Analysis design tool on the FAA Airport GIS Program website to produce wind roses.

A minimum wind coverage of 95 percent must be achieved for the primary runway, for a maximum allowable crosswind component based on the Runway Design Code (RDC). The results of the wind analysis are summarized in **Table 2-19.** The wind rose for Runway 12-30 is depicted in **Figure 2-19**.

Even though the wind rose is based on data from McCall Municipal Airport, the analysis is believed to be representative of the conditions at Cascade Airport. The two airports are located in the same valley and the wind is assumed to follow the same trend due to common geographic conditions.

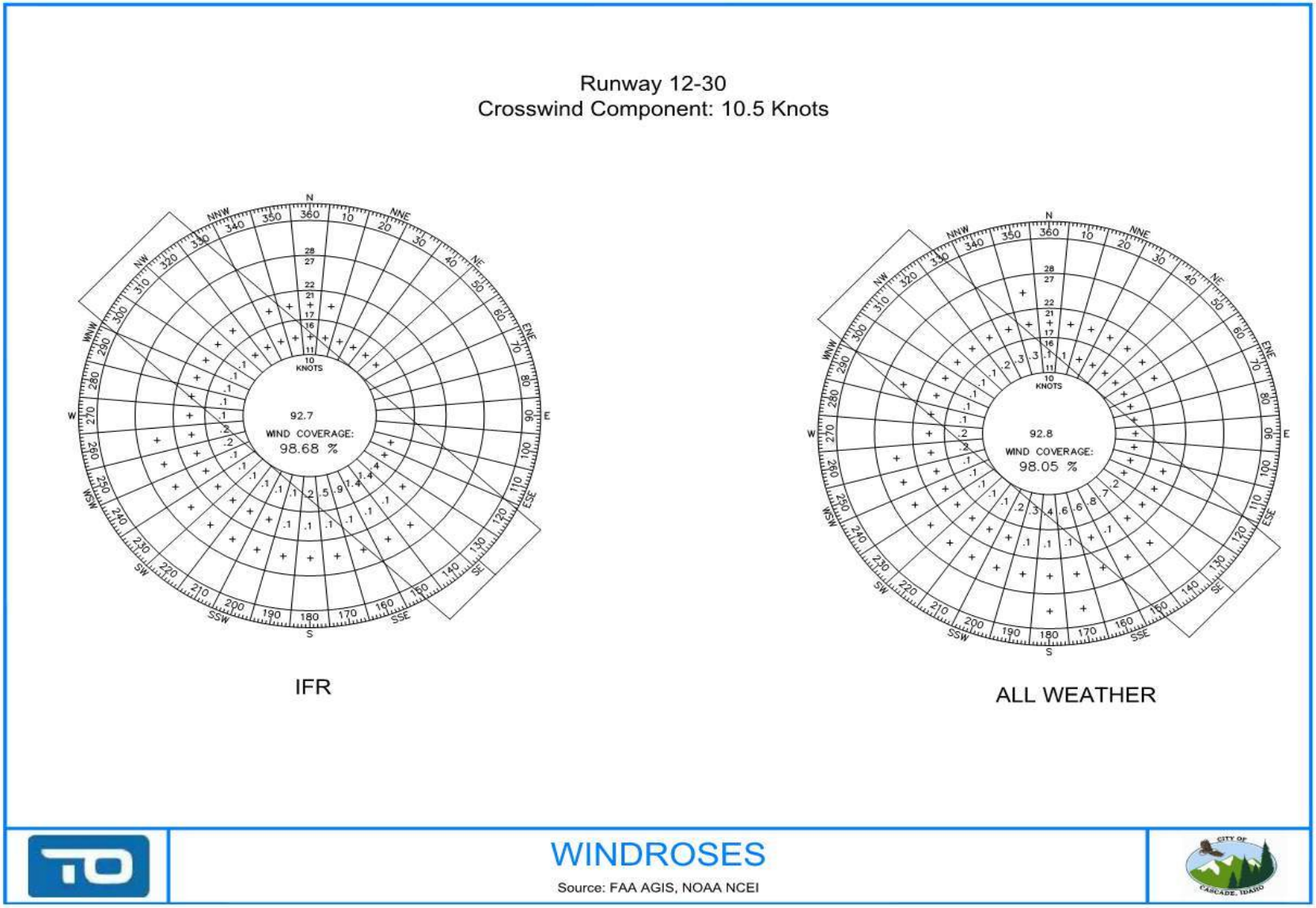
TABLE 2-19: WIND ANALYSIS

Runway	Crosswind Component	Wind Coverage*
All Weather		
12-30	10.5 Knots	98.05%
IFR		
12-30	10.5 Knots	98.68%

*Wind data from ASOS on McCall Municipal Airport

Source: FAA AGIS Wind Rose Tool

FIGURE 2-19 –WIND ROSES[1]



[1] Wind data from ASOS located on McCall Municipal Airport

3.0 AVIATION ACTIVITY FORECASTS

3.1 INTRODUCTION

This chapter discusses the findings and methodologies used to project aviation demand at Cascade Airport (U70). The forecasts developed in the airport master plan provide a framework to guide the analysis for future development needs and alternatives. It should be recognized that there are always short- and long-term fluctuations in an airport's activity due to a variety of factors. These fluctuations cannot be anticipated but this forecast attempts to account for them using industry accepted standards.

Projections of aviation activity for the airport were prepared for the 20-year planning horizon, including near-term (2017-2021), mid-term (2022-2026), and long-term (2027-2036) timeframes, with 2016 as the base year. These projections are generally unconstrained and assume the airport will be able to develop the various facilities necessary to accommodate based aircraft and future operations. The projections of aviation demand developed for Cascade Airport are documented in the following sections:

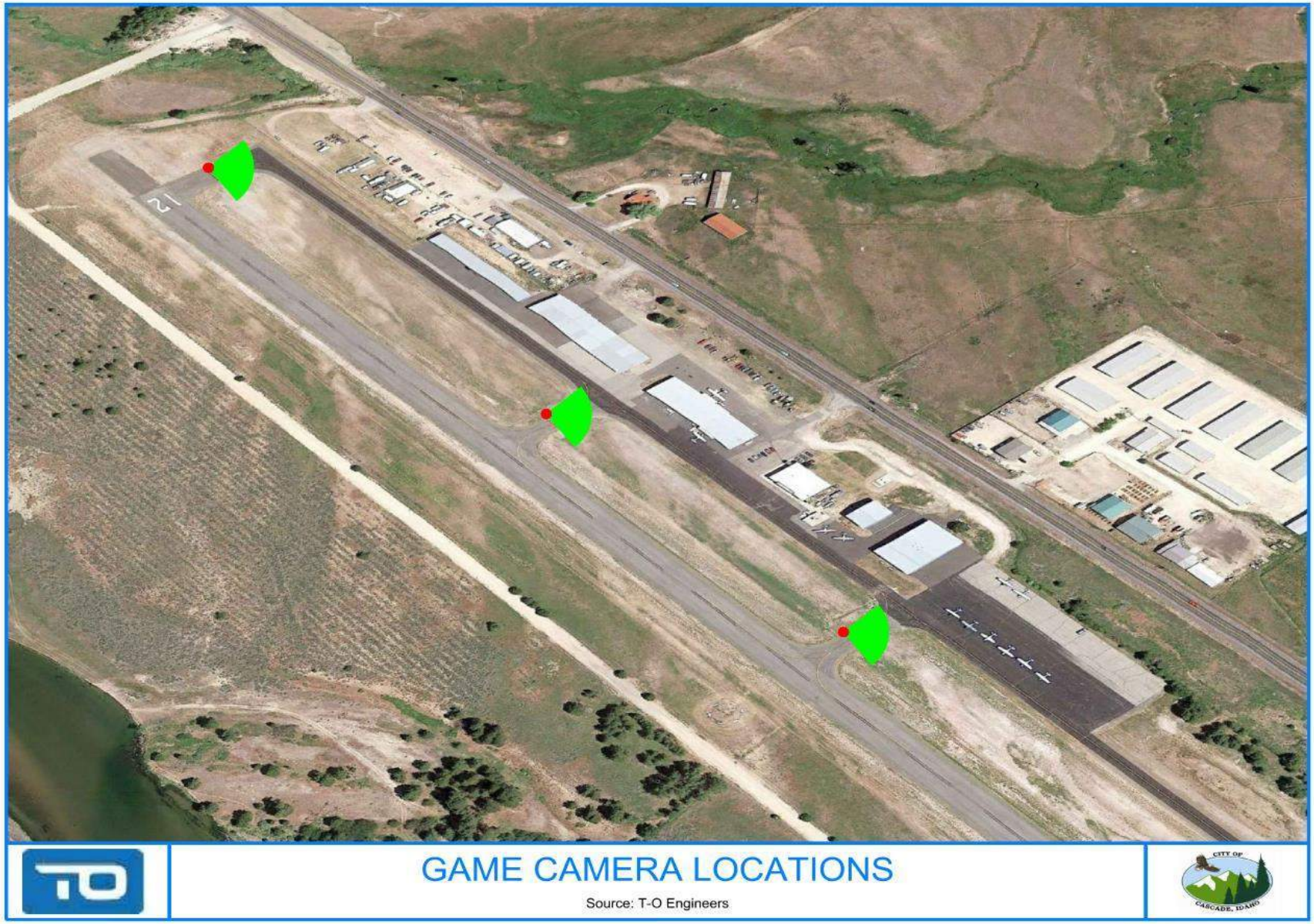
- Aviation Activity Evaluation
- Historic Aviation Activity
- Trends/Issues Influencing Future Growth
- Projections of Aviation Demand
- Peaking Analysis
- Instrument Approach Operations
- Critical Aircraft
- Summary

3.2 AVIATION ACTIVITY EVALUATION

In order to have an appropriate knowledge of the type and level of activity at Cascade Airport, T-O Engineers installed game cameras at strategic locations on the airfield. These cameras were intended to catch the ongoing traffic at the airport for a six-month period from June to November 2016.

A total of three cameras were installed as shown on **Figure 3-1,** at three different positions along the runway**. Table 3-1** summarizes the activity captured by the cameras. Aviation activity is measured in operations where an operation is defined as either a takeoff or a landing. A touch-and-go is defined as two operations.

FIGURE 3-1 – GAME CAMERA LOCATIONS



The cameras' specifications include a detection angle of +/-25° with a detection range of 85 feet. Several parameters can influence the efficiency of the sensors, such as heat, tall vegetation, and speed of aircraft.

The vegetation directly in front of the sensors was trimmed. All three cameras were located at holding line positions to capture aircraft taxiing to and from the runway. The orientation of the cameras enabled them to catch aircraft taxiing on the parallel taxiway and parking on the main apron. During the period they were installed, the cameras also provided valuable insight into the type of wildlife active on the airport.

TABLE 3-1 – GAME CAMERA STATISTICS

Information	Value
Time Period	June 2016-November 2016 (6 months)
Total Aircraft Captured	1,099
Total Aircraft Type*	41
% ADG I Operations	96.5%
% ADG II Operations	2.5%
% Other Operations**	1.0%
Most Operating Individual Aircraft	CESSNA 206
% Operations of Most Operating Individual Aircraft	18.6%
ADG Most Operating Individual Aircraft	I-SMALL
TDG Most Operating Individual Aircraft	1A
AAC Most Operating Individual Aircraft	A

*More details are presented in Section 3.3.3
**Helicopters, Experimental, Balloon, Drone
Source: T-O Engineers, Inc.

Several parameters influence the cameras' performance, including the aircraft speed, air temperature, vegetation, and even the camera's reliability. For instance, faster aircraft are more likely to be missed due to the activation delay of the camera sensor. Also, vegetation may trigger cameras limiting the possibility to detect aircraft during the sensor's delay.

During their installation, a car was driven in front of the cameras to evaluate their efficiency. While remaining in the detection range, approximately one third of the passes were not detected. In addition, based on the speed of the vehicle, the sensor would be activated without being able to take a framed picture of the vehicle, resulting in a picture without the vehicle. This level of efficiency is consistent with the results from previous uses of the game cameras in similar situations.

To account for these results and based on professional opinion, it is safe to assume that approximately 40 percent of the actual aircraft activity at the airport was not captured during the experiment timeframe:

- 30 percent (approximately 1/3) of missing detections
- 10 percent of late and false sensor activations

Table 3-2 summarizes the number of annual aircraft operations at Cascade Airport derivate from the game cameras, according to the following assumptions:

- The late spring/summer/fall period is typically considered to be the most active for the airport with approximately 2/3 of the annual activity occurring at this time.
- Each aircraft captured by the cameras will perform a minimum of 2 operations.
- Based on observations and to account for training activities, it assumed that 25 percent of the aircraft will perform at least two touch-and-go (4 operations).

TABLE 3-2 – ADJUSTED OPERATION STATISTICS

Information	Value
Number of Aircraft Captured by Cameras	1,099
% of Missed Aircraft	40
Corrected Number of Aircraft	1,832
Minimal Number of Operations per Aircraft	2
Operations without Touch-and-Go	3,664
Percentage of Touch-and-Go*	25%
Operations with Touch-and-Go Over Installation Period	5,496
USFS Helicopter Operations***	164
Total Estimated Annual Operations	**8,408**
% ADG I Operations	**94.6%**
% ADG II Operations	**1.4%**
% Other Operations	**4.0%**
% Local Operations	**15%**
% Itinerant Operations	**85%**

*% of aircraft performing at least 2 touch-and-go (4 operations) in addition to the minimal number of operations (2)
**1.5 x operations with touch-and-go
***Helicopter activity recorded by the U.S. Forest Services
Source: T-O Engineers, Inc., USFS

The cameras also provided valuable information about the aircraft mix using the airport. Due to project schedule constraints, the cameras were mounted only for a period of six months between June and November 2016. Thus, the 1,099 operations captured constitute a sample for late spring/summer/fall activity at the airport.

Estimating 5,496 actual operations over the installation period, a sample size of 1,099 aircraft gives a confidence level, for aircraft mix, of more than 99 percent with a margin of error of 3.5%. In other words, there is a 99-percent probability that the fleet mix represented by this sample matches the real fleet mix at the airport at +/- 3.5 percent.

3.3 HISTORICAL AVIATION ACTIVITY

3.3.1 FEDERAL AVIATION ADMINISTRATION (FAA) TERMINAL AREA FORECAST

Historical aviation activity data for an airport typically provides the baseline from which future activity can be projected. Historic aviation activity and aviation activity projections are based on FAA 5010 Master Records and available FAA Terminal Area Forecast (FAA TAF) data.

While historical trends are not always reflective of future periods, historical data does usually provide insight into how local, regional, and national demographic and aviation-related trends may be tied to the airport.

Historical aircraft operations data for Cascade Airport, based on the TAF, are summarized in **Table 3-3** and depicted on **Figure 3-2**.

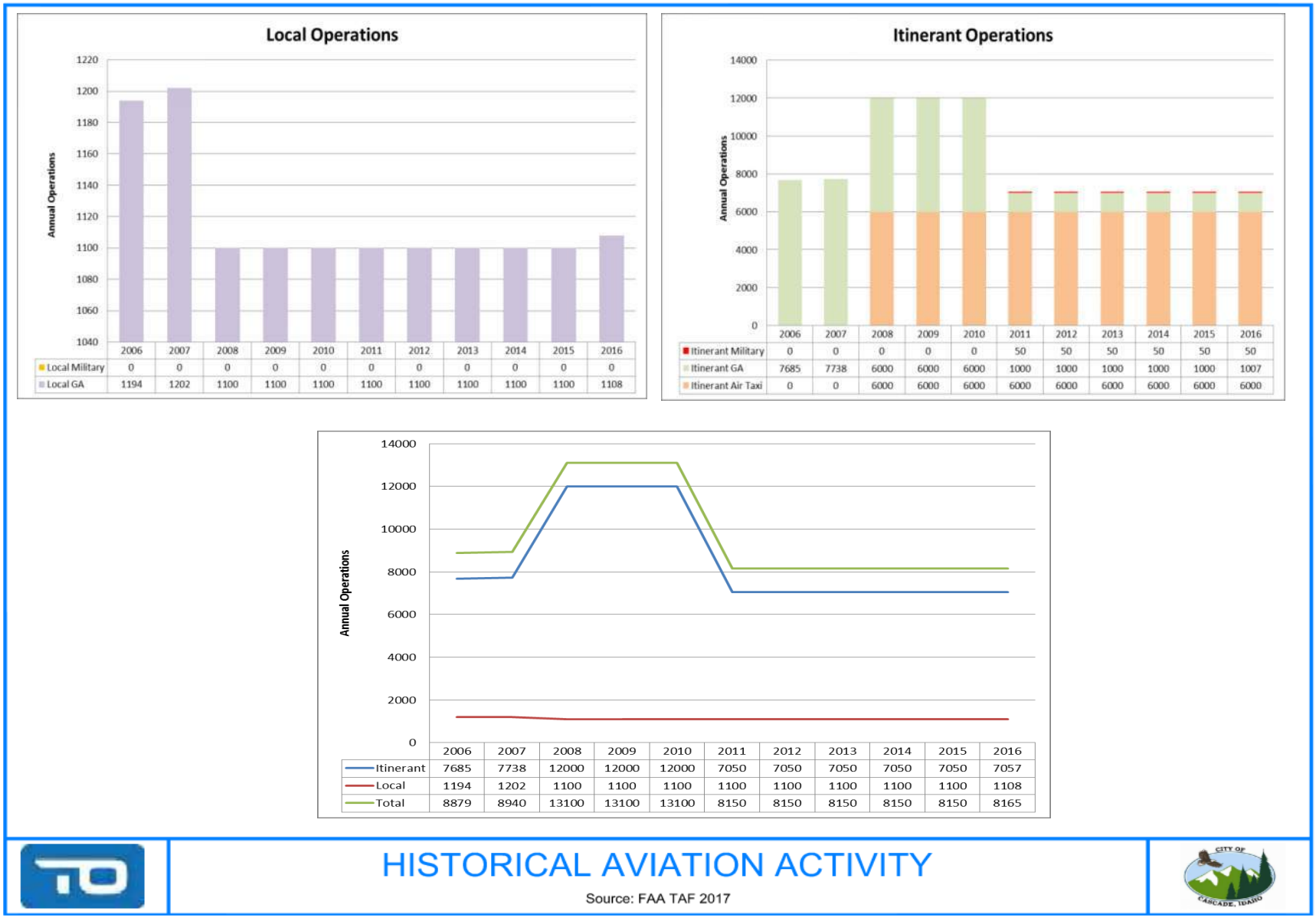
TABLE 3-3 – HISTORICAL AIRCRAFT OPERATIONS AND BASED AIRCRAFT

Year	Itinerant operations				Local Operations			Total Ops	Based Aircraft
	Air Taxi	General Aviation	Military	Total	General Aviation	Military	Total		
2006	0	7,685	0	7,685	1,194	0	1,194	**8,879**	**13**
2007	0	7,738	0	7,738	1,202	0	1,202	**8,940**	**13**
2008	6,000	6,000	0	12,000	1,100	0	1,100	**13,100**	**23**
2009	6,000	6,000	0	12,000	1,100	0	1,100	**13,100**	**23**
2010	6,000	6,000	0	12,000	1,100	0	1,100	**13,100**	**23**
2011	6,000	1,000	50	7,050	1,100	0	1,100	**8,150**	**20**
2012	6,000	1,000	50	7,050	1,100	0	1,100	**8,150**	**20**
2013	6,000	1,000	50	7,050	1,100	0	1,100	**8,150**	**20**
2014	6,000	1,000	50	7,050	1,100	0	1,100	**8,150**	**21**
2015	6,000	1,000	50	7,050	1,100	0	1,100	**8,150**	**20**
2016*	6,000	1,007	50	7,057	1,108	0	1,108	**8,165**	**20**

*Forecasted

Source: FAA Terminal Area Forecast (TAF)

FIGURE 3-2 – HISTORICAL AVIATION ACTIVITY-FAA TAF



3.3.2 VARIATION BETWEEN FAA TAF AND ACTUAL ACTIVITY

Aircraft Operations

The current FAA 5010 Master Record (2017) indicates a total of 8,150 annual operations including 6,000 air taxi, 1,100 General Aviation (GA) local, 1,000 GA itinerant, and 50 Military operations. It is consistent with the FAA TAF records presented in **Table 3-3**. The game cameras helped T-O Engineers to estimate the actual number of annual operations in 2016 at 8,408. This represents a difference of 3 percent with the predicted value by the FAA TAF.

Cascade Airport is a non-towered airport and does not have official records of operations. Therefore, it is difficult to evaluate the accuracy of the FAA TAF for the past decade. In addition, the data show a constant activity for the 2008-2010 and 2011-2015 periods, which does not appear to reflect an accurate description of the airport's activity. Based on this analysis, the FAA TAF will not be used as a reference for historical data.

The TAF value of the base year 2016 will be modified to match the estimated number of 8,408 found with the game cameras. This value will be used as the baseline for forecasts of aviation activity.

Based Aircraft

The IQ 5010 and the FAA TAF report a total of 20 aircraft based on the airfield, including 18 single-engine (SE) aircraft and 2 multi-engine (ME) aircraft. The latest report of the National Based Aircraft Inventory Program (2016) also lists 20 based aircraft (18 SE and 2 ME) but two registrations were cancelled, leaving only 18 active aircraft with 1 ME.

T-O Engineers decided to use the FAA TAF as a reference for historical trends of based aircraft at Cascade Airport. The base year 2016 will be modified to 18 based aircraft and used as the base number for forecasts. **Table 3-4** lists the existing based aircraft at Cascade Airport.

TABLE 3-4 – BASED AIRCRAFT

Aircraft	Type
Aeronca 7AC	Single Engine
Cessna TU206G (2)	Single Engine
Cessna T206H	Single Engine
Britten-Norman BN-2B	Multi Engine
American Champion 7GCBC	Single Engine
Cessna 182J	Single Engine
Cessna A185F (2)	Single Engine
Cessna 182 (2)	Single Engine
Consolidated Lake LA-4-200	Single Engine
Guest Aaron M RV-4	Single Engine
Cessna T210N	Single Engine
Cessna 172	Single Engine
Cessna 182B	Single Engine
Piper J5A	Single Engine
Cessna 182C	Single Engine

Source: National Based Aircraft Inventory Program, FAA Registry

3.3.3 EXISTING FLEET MIX

The game cameras installed at the airport provided a good representation of the type of aircraft using the airport. 41 aircraft types were identified by photographs. The most important aircraft types identified from these photographs are summarized in **Table 3-5.**

As already explained in Section 3-2, this fleet mix is a good representation of the actual fleet mix at Cascade Airport for the 6-month period during which the game cameras were installed. This period is the most active during the year and is representative of airport activity.

The traffic at Cascade Airport ranges from single-engine or multi-engine piston aircraft, such as Cessna 182, Cessna 206, or Britten-Norman BN-2B, which represent the bulk of the traffic, to small turboprop, including Socata TBM850 or Beechcraft King Air, and jets like the Cessna Citation II that occasionally use the airport. The single aircraft used most at the airport is the single-engine piston Cessna 206, based on the airport and used by Arnold Aviation.

TABLE 3-5 – FLEET MIX

Aircraft Type	Engine	AAC	ADG	TDG	MTOW** (lbs)	% Captured Operations*
Cessna 206	Single	A	I	1A	<12,500 (SMALL)	19%
Cessna 182	Single	A	I	1A	<12,500 (SMALL)	8%
Champion 8KCAB	Single	A	I	1A	<12,500 (SMALL)	6%
Britten-Norman BN2B Islander	Twin	A	I	1A	<12,500 (SMALL)	3%
Cessna 172	Single	A	I	1A	<12,500 (SMALL)	2%
Other Types of Aircraft	Socata TBM850, Beechcraft King Air and Baron , Cessna citation II, Helicopters (USFS and private)					
Summary of Aircraft Activity						
Small Single Engine Piston (MTOW < 12,500lbs)	88.2%					
Small Single Turbine (MTOW < 12,500lbs)	0.8%					
Small Twin Piston (MTOW < 12,500lbs)	5.6%					
Large Aircraft (MTOW > 12,500lbs)	1.4%					
A/B-I Small	94.6%					
A/B-II	1.4%					
Other***	4.0%					

* Captured by cameras during the monitoring period
**Maximum Take-Off Weight
***Helicopters, Experimental, Balloon, Drone
Source: T-O Engineers, Inc.

3.4 TRENDS/ISSUES INFLUENCING FUTURE AIRPORT GROWTH

There are several factors, independent of airport activity, which may influence aviation activity. It is worthwhile to review outside influences to determine how they may impact future growth of aviation. These factors include regional demographics and outlook, national aviation trends and local factors.

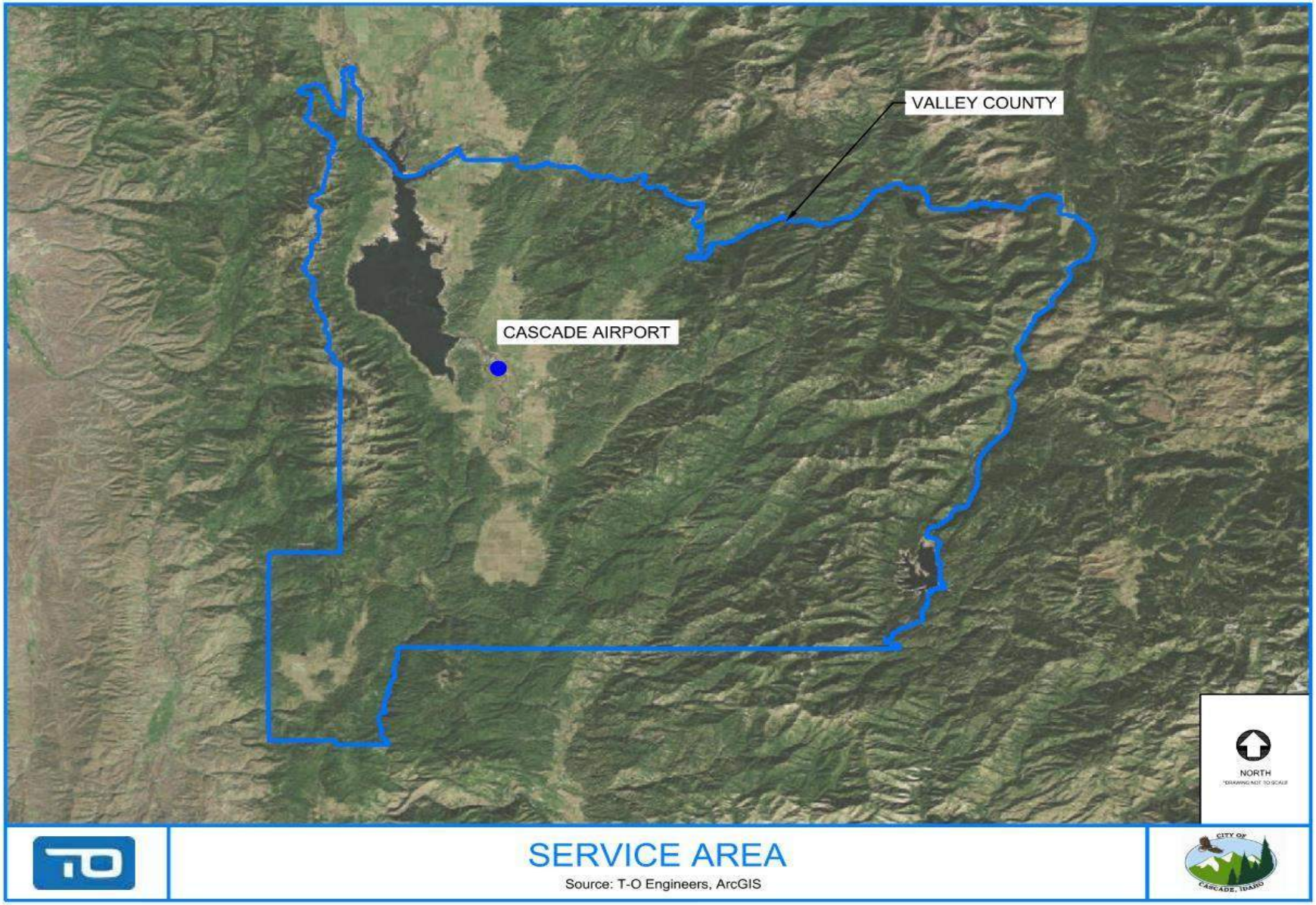
3.4.1 SERVICE AREA

The service area is defined as the geographic area that generates demand for aviation services at the airport. Cascade Airport is located in a rural environment with demand for general aviation consisting mainly of recreational, mail and freight delivery to backcountry areas, medical evacuation/air ambulance, and firefighting operations.

Cascade Airport is located less than 45 minutes from another airport located in McCall, ID and is about 100 minutes away from Boise, ID. This geographic location limits the service area of the airport due to overlap by closer airports such as McCall Municipal.

Figure 3-3 depicts the service area for Cascade Airport as determined by a drive of 20 minutes to the north and 60 minutes to the south. This area consists of the approximate southern half of Valley County, Idaho. A summary of historic and projected socioeconomic trends for the service area is presented in the next section.

FIGURE 3-3 – SERVICE AREA



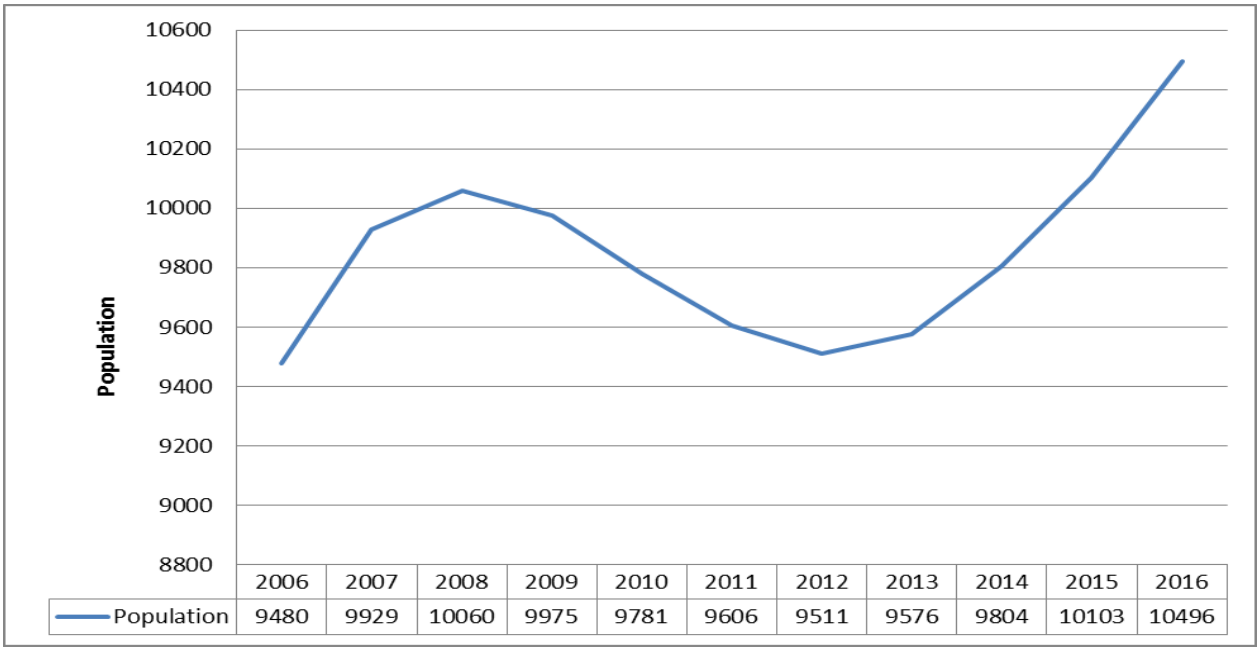
3.4.2 REGIONAL DEMOGRAPHICS

Socioeconomic characteristics are collected during the airport planning process and examined to derive an understanding of the dynamics of historic and projected growth within the geographic area served by an airport. This information is then typically used as one tool to forecast aviation demand. The types of socioeconomic data that are presented include population, employment, and per capita personal income.

Valley County's Population

As shown on **Figure 3-4**, the population of Valley County increased from 9,480 to 10,496 persons between 2006 and 2016 (CAGR of 1.0%) with fluctuations.

FIGURE 3-4 – VALLEY COUNTY POPULATION



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Population	9480	9929	10060	9975	9781	9606	9511	9576	9804	10103	10496

Source: U.S. Bureau of Economic Analysis

In one decade, the population of Valley County has been increased by approximately 11 percent. This local trend is close to the 15-percent increase of population witnessed in Idaho as a whole during the same time period (CAGR of 1.4%).

Maintaining a steady population does not seem to be a challenge for the county. This trend is most likely due to the substantial development witnessed in southwest Idaho over the past decade.

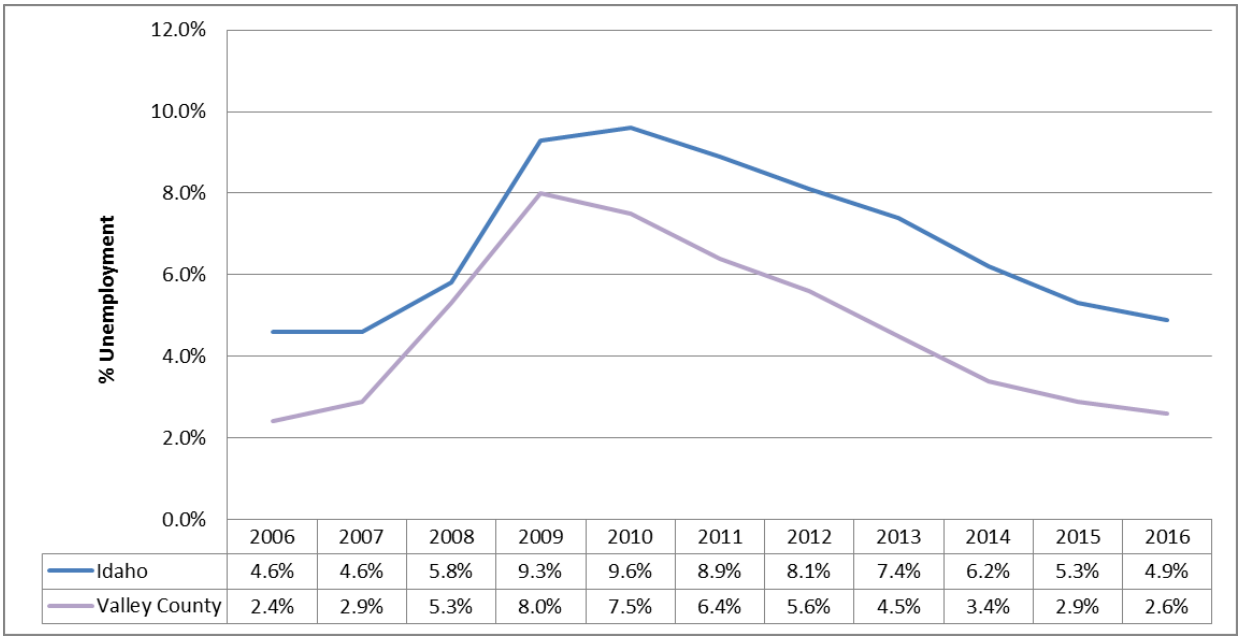
Valley County's Employment

According to the Bureau of Labor Statistics, Valley County's unemployment has been decreasing steadily since 2009. It is now at the same level as it was before the 2008 economic

crisis.
In 2006, the unemployment rate in Valley County was 2.4 percent and peaked to 8.0 percent in 2009. During the past decade, the unemployment rate in the County fluctuated with a CAGR of 0.8 percent.

The unemployment rate in Idaho followed the same trend with a minimum at 4.6 percent in 2005 and a peak at 9.6 percent in 2010. It fluctuated with a CAGR of 0.6 percent over the last 10 years. The fluctuations of unemployment in Valley County and the State of Idaho have had a very similar trend over the past decade as shown in **Figure 3-5**.

FIGURE 3-5 – UNEMPLOYMENT RATE



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Idaho	4.6%	4.6%	5.8%	9.3%	9.6%	8.9%	8.1%	7.4%	6.2%	5.3%	4.9%
Valley County	2.4%	2.9%	5.3%	8.0%	7.5%	6.4%	5.6%	4.5%	3.4%	2.9%	2.6%

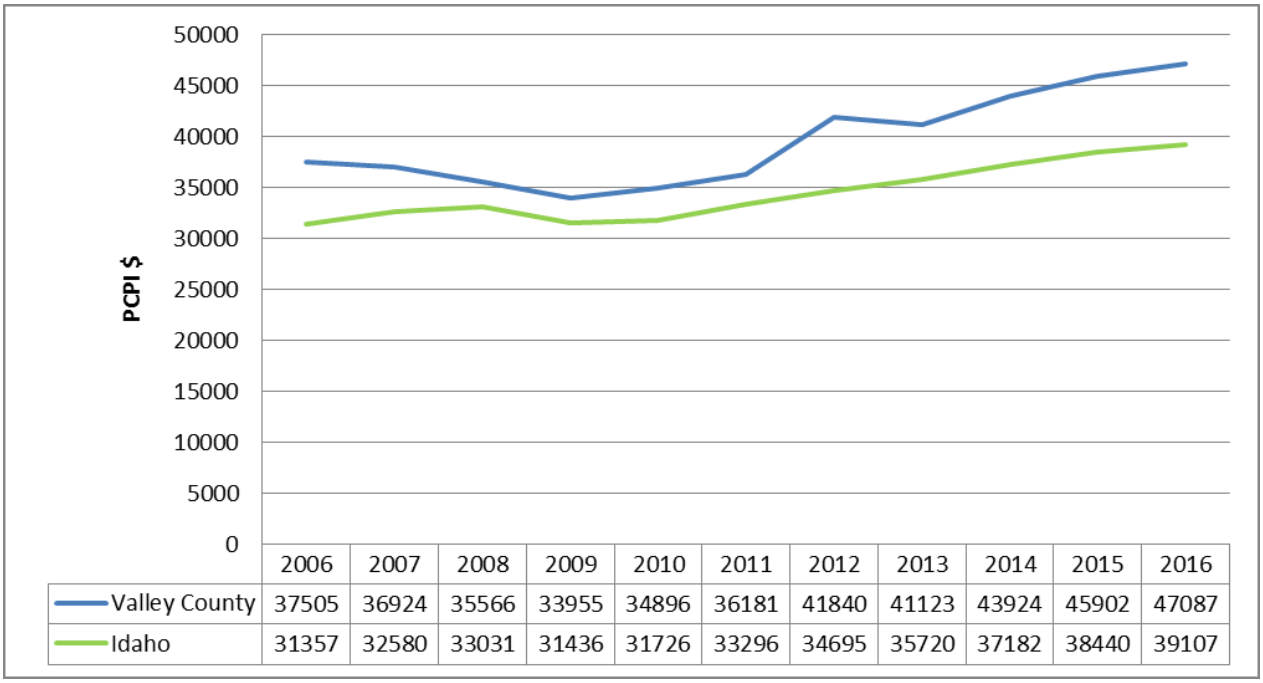
Source: Bureau of Labor Statistics

Valley County's Per Capita Income

In 2006, the per capita personal income (PCPI) of Valley County was $37,505. The PCPI has grown over the last 10 years (2006-2016) with a CAGR of 2.3 percent.

The PCPI growth for Valley County is close to that of Idaho (2.2% CAGR) for the same time period. However, the level of the PCPI in Valley County remains greater than that of Idaho as shown on **Figure 3-6**.

FIGURE 3-6 – PER CAPITA PERSONAL INCOME



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Valley County	37505	36924	35566	33955	34896	36181	41840	41123	43924	45902	47087
Idaho	31357	32580	33031	31436	31726	33296	34695	35720	37182	38440	39107

Source: Bureau of Economic Analysis

3.4.3 NATIONAL AVIATION TRENDS

Historic and anticipated trends related to general aviation will be important considerations in developing forecasts of demand for Cascade Airport. National trends can provide insight into the potential future of aviation activity and anticipated facility needs. The aviation industry has experienced significant changes over the last 10 years. This section will briefly discuss the tendencies and factors that have influenced those trends in the U.S.

National General Aviation Industry Trends

At the national level, fluctuating trends regarding general aviation usage and economic upturns/downturns resulting from the nation's business cycle have impacted general aviation demand. Slow economic recovery and economic uncertainties will continue to impact demand for general aviation at many airports throughout the U.S., including Cascade Airport for the next several years.

- General Aviation Fleet Changes: While single-engine piston aircraft still account for the majority (61 percent) of the U.S. general aviation aircraft fleet in 2016; the national historic trends indicate that multi-engine turboprop and business jet fleets grew at a faster rate than the single- and multi-engine piston fleets that have been decreasing[1]. The most active growth in the fleet size has been in turbine aircraft and rotorcraft.

  According to the *FAA General Aviation and Air Taxi Activity Survey*s, as a result of the recent recession, the total U.S. general aviation aircraft fleet has declined 12.6% from 223,370 aircraft in 2010 to 199,927 in 2013. The general aviation industry began to show signs of recovery in 2014 and the aircraft fleet increased to 210,031 in 2015, with especially strong growth in turbine aircraft (both rotorcraft and turbo jet) deliveries.

- Active Pilots: According to the *FAA U.S. Civil Airmen Statistics*, there were 426,468 active pilots in the United States at the end of 2016 (do not include airline transport pilots). An active pilot is a person with a pilot certificate and a valid medical certificate. There was a -2.1 percent CAGR in GA pilot population between 2010 and 2016. Recreational and private pilot certificates accounted for the largest declines. On the other hand, the number of sport and rotorcraft pilots has continuously increased over the last 5 years.

- General Aviation Operations: According to FAA air traffic activity, between 2010 and 2015, general aviation operations experienced a -1.5% CAGR. In 2016, there were approximately 25.5 million general aviation operations at 516 towered airports, 55 percent of which were itinerant operations. General aviation operations at combined FAA and contract towers were down 0.2 percent between 2015 and 2016 and experienced a CAGR of -0.6 percent between 2010 and 2016.

National Projections of Demand

On an annual basis, the FAA publishes aerospace forecasts that summarize anticipated trends in all components of aviation activity. Each published forecast revisits previous aerospace forecasts and updates them after examining the previous year's trends in aviation and economic activity. Many factors are considered in the FAA's development of aerospace forecasts, some of the most important of which are U.S. and international economic forecasts and anticipated trends in fuel costs. The recent projections found in *FAA Aerospace Forecast Fiscal Years 2017-2037* are summarized below.

[1] FAA 2017-2037 Aerospace Forecasts

- Between 2017 and 2021, U.S. economic growth is projected to grow at a CAGR of 2.3 percent. For the remaining years of the forecast period, real Gross Domestic Product (GDP) growth is assumed to slow to around 1.8 percent annually.

- The FAA estimates that the U.S. general aviation aircraft fleet will grow from an estimated 209,905 aircraft in 2016 to 212,670 aircraft in 2036. This is equal to a CAGR of 0.1 percent. This growth is mainly driven by the growth of the turbine-powered aircraft fleet, while the piston-powered aircraft fleet is expected to decrease at a CAGR of 0.8 percent.

- Strong growth is anticipated in the turbine-powered aircraft fleet (including rotorcraft), estimated to grow at a CAGR of 1.9 percent between 2016 and 2036.

- General aviation hours flown are anticipated to increase at a CAGR of 0.9 percent between 2016 and 2036.

- It is anticipated that general aviation aircraft operations will grow at a CAGR of 0.3 percent through 2036.

3.4.4 LOCAL FACTORS AFFECTING DEMAND

There are other factors unique to Cascade Airport that have the potential to impact the forecasts developed in this chapter.

Fuel Price and Availability
The type and price of fuel available can play an important role in the development of the aviation activity at the airport. Currently, Cascade Airport offers AVGAS 100-LL. This type of gasoline is used for piston-powered aircraft. Jet A fuel, used by turbine and jet aircraft, is also available. This fuel availability has the potential to help develop aircraft activity at the airport. Further needs in term of fuel services are discussed in **Chapter 4-Facilities Requirements**

The retail fuel price is also a factor in the level of aviation activity at the airport. The most recent fuel prices available for the airport are $4.65 per gallon for AVGAS 100LL and $4.50 per gallon for Jet A (Source: AOPA Airports – April 2017).

Variation of local fuel prices are based on average fuel prices in the US and the local supply chain**.** As of April 2017, the average prices for AVGAS 100LL and Jet A nationwide were respectively $4.72/gallon and $4.17/gallon. Fuel prices at Cascade are competitive with national averages and therefore are not foreseen to be a limiting factor to aviation activity.

Proximity to Competing Airports

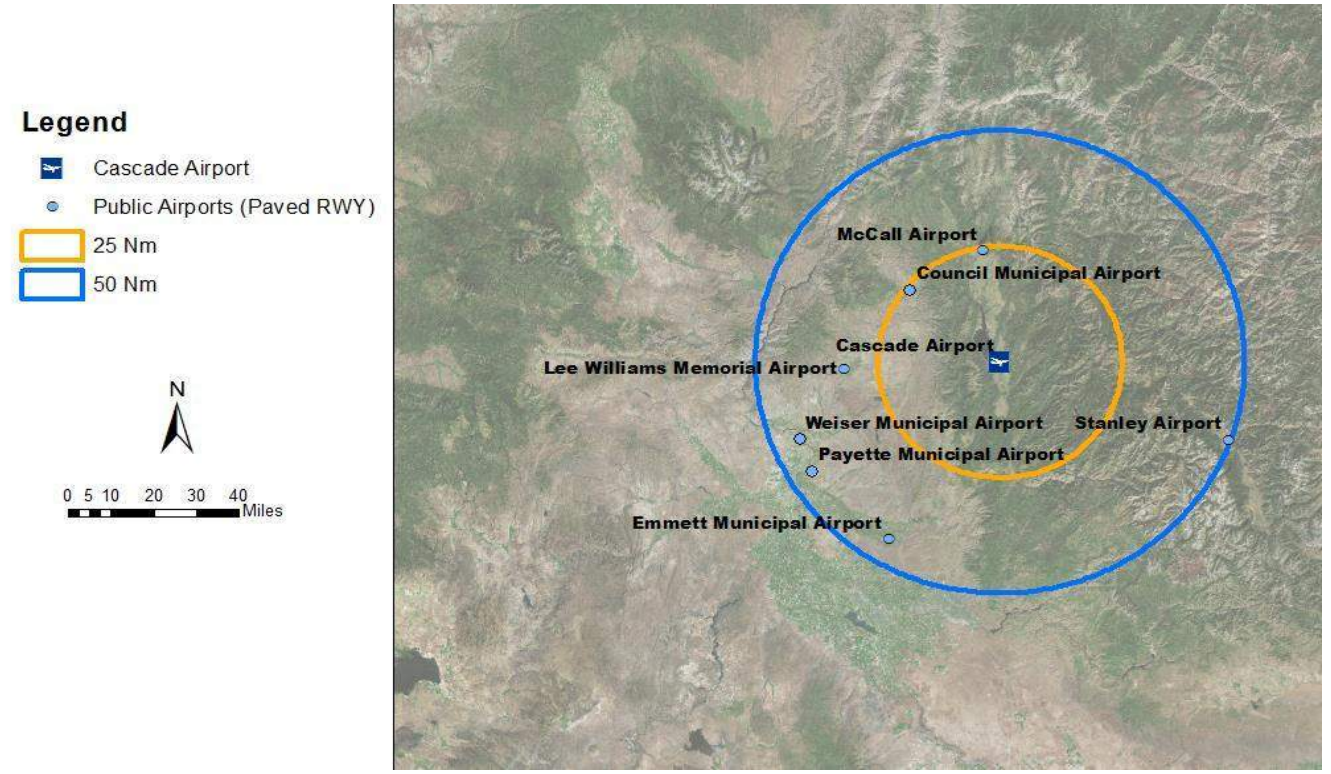
The proximity to competing airports is one of the key determinants of the demand and size of an airport's service or catchment area. For comparative purposes, only the public airports equipped with paved runways have been included. As depicted with **Figure 3-7**, there are 7 airports within a radius of 50 nautical miles (Nm) from Cascade Airport.

Within a 25-Nm radius, Cascade Airport has the second longest runway after McCall Municipal Airport. Within the 50-Nm radius from the airport, there is a total of 217 based aircraft. With 18 based aircraft in 2016, Cascade Airport represents approximately 8 percent of the based GA fleet in the area. Also, Cascade Airport is the third busiest airport in terms of annual operations, in this 50-Nm radius.

These results show that Cascade Airport has adequate airside facilities to compete with other local airports but does not generate as much traffic as it could. Other more active airports in the area are located in more populated and economically active zones. McCall Municipal Airport represents an important competitor to Cascade due to its extended facilities and proximity. Cascade Airport has historically kept fuel prices lower to remain competitive with McCall Municipal Airport.

FIGURE 3-7 – AIRPORTS IN THE VICINITY OF CASCADE

AIRPORT ID	AIRPORT NAME	RUNWAY DIMENSIONS	NPIAS CLASSIFICATION	ANNUAL OPERATIONS	BASED AIRCRAFT
U70	CASCADE	4,300' x 60'	GA	8,408	18
U82	COUNCIL MUNICIPAL	3,600' x 60'	GA	4,300	11
S78	EMMETT MUNICIPAL	3,307' x 55'	-	12,000	21
0U9	LEE WILLIAMS MEMORIAL	2,875' x 60'	-	2,000	2
MYL	MCCALL MUNICIPAL	6,108' x 75'	GA	43,600	97
S75	PAYETTE MUNICIPAL	3,000 x 50'	-	5,500	15
2U7	STANLEY AIRPORT	4,300' x 150'	-	2,700	4
S87	WEISER MUNICIPAL	4,000' x 60'	GA	5,150	49



AIRPORTS IN THE VICINITY OF CASCADE

Source: IQ5010, ESRI ARCGIS, T-O Engineers

Local Business and Tourism Usage

Cascade Airport has one Fixed Base Operator (FBO) located on the airfield: Arnold Aviation offers FBO services such as aircraft maintenance and fuel, but also offers charter services, scenic flights, and provides a courtesy car. Arnold Aviation also operates a mail route to the central Idaho backcountry under contract with the U.S. Postal Services and delivers freight to backcountry locations.

There is potential for increased use of the airport as a launch platform for tourism flights to the backcountry airstrips of Idaho for hunting, fishing, hiking, rafting and other outdoor activities. General aviation activity specifically related to tourism is unknown but it is a substantial factor driving seasonal aviation activity at the airport.

Aerial Firefighting

During the wildfire season the U.S. Forest Service (USFS) uses the airport for helicopter activity and operates a temporary air traffic control tower to coordinate firefighting operations.

In 2016, aerial firefighting represented 164 type 3 helicopter operations during the wildfire season. Type 3 helicopters are 4-8 seaters with a MTOW not greater than 6,000lbs and are contracted by USFS for firefighting activity. This activity is projected to remain on the airport and will require additional facilities especially as helicopter operations increase.

Other Activities

In addition to Arnold Aviation, other tenants of the airport include Rich Stowell's Aviation Learning Center, offering specialized flight training and G&S Aviation offering backcountry flights and freight service.

Additional services Cascade Airport provides to the community include medevac flights, disaster relief, search and rescue facilities, as well as serving as an alternate or emergency landing location for surrounding airports.

3.5 PROJECTIONS OF AVIATION DEMAND

Cascade Airport has experienced a stable number of aircraft operations over the past 10 years. It is anticipated that this pattern will, at a minimum, be maintained over the forecasted period.

Various methodologies were used to develop projections of aviation demand at Cascade Airport for the 20-year planning period. The results of these different methodologies are compared in order to select a preferred projection.

The following assumptions were made in developing the projections of aviation demand at the airport:

- The national and local economies will continue to grow through the overall forecast period.
- Economic disturbances may cause year-to-year traffic variations, but the long term projections will likely be realized.
- Aviation at Cascade Airport will generally reflect the national aviation industry. The FAA projects growth in all aspects of aviation.
- Airport facilities will keep pace with and meet the demand for aviation use and a lack of facilities will not be a limiting factor to the number of based aircraft that can be accommodated in the future.
- 2016 constitutes the base year for all forecasts of aircraft operations.

3.5.1 FORECASTING METHODOLOGIES

There are two basic approaches to forecasting: top-down or bottom-up. The top-down approach forecasts aviation demand for the nation or for a region and allocates portions of the total demand to geographic areas, based on historical shares or assumed growth rate. The bottom-up approach consists in forecasting aviation demand for an airport using data for a specific geographic area.

When forecasting aviation demand, it is assumed there is a relationship between historical events and conditions, and that this relationship will continue into the future. The following methods were used to predict future activity levels at Cascade Airport.

Market Share (Top-Down)
This method of forecasting is relatively easy to use and the required data are often available in the FAA's Terminal Area Forecast (TAF). It assumes a top-down relationship between national, regional, and local forecasts. It considers that local forecasts are a percentage (market share) of regional or national forecasts. Historical market shares are calculated for a given time period (often a 5- or 10-year period) and used as a basis for projecting future market shares.

Regression Analysis - Trend Analysis (Bottom-Up)
A regression analysis is a type of econometrics analysis, and uses mathematical and statistical tools. The value being estimated or forecasted (here aviation activity) is called the dependent variable, while the value used to prepare the forecast is called the independent variable. A simple regression analysis uses one independent variable, while multiple regression analyses use two or more independent variables.

A regression equation is computed with historical values and is used to project future values. It is possible to use socioeconomic data as independent variables, such as population, per capita income, or employment. It is also possible to use time as the independent variable to perform a Trend Analysis. This method is a basic technique, which can capture economic growth and recession.

Compound Annual Growth Rate (Bottom-Up)

The Compound Annual Growth Rate (CAGR) can be defined as the year-over-year growth rate. It is an imaginary number that describes the rate at which a data series would have grown if it had grown at a steady rate.

It is computed with the following formula:

$$CAGR = -1 + \left(\frac{Ending\ Value}{Beginning\ Value}\right)^{\left(\frac{1}{number\ of\ years}\right)}$$

It is possible to forecast future values based on the CAGR of a data series, assuming that the rate will remain the same in the future. As with every forecasting method, uncertainties remain.

Summary

These different methodologies can be used in an infinite number of ways, with several distinct variables and historical time periods considered. The choice of the historical data and variables is critical for the interpretation of the forecasts.

A 10-year historical period will capture the trends for the last 10 years, closer to the current national, regional, and local situations. A greater historical time period would probably indicate trends impacted by factors that are not relevant. Unemployment rate and PCPI are good economic variables to indicate the general health of the local economy. Thus, they are most likely relevant to evaluate aviation activity.

The following methodologies and variables were used to predict the number of based aircraft and operations at Cascade Airport:

- Linear Regression
  - With Regional Unemployment as the independent variable (Based on 10-year historical period)
  - Trend Analysis (Based on 10-year historical period)

- CAGR
  - Historic Unemployment Rate (Last 10 years)
  - Historic PCPI Growth (Last 10 years)

- Market Share
  - Northwest Mountain Region (5-year average)
  - Northwest Mountain Region (10-year average)
  - State of Idaho(5-year average)
  - State of Idaho(10-year average)

Only the most relevant and reasonable forecasts are presented in the following sections for:

- Based Aircraft
- Fleet Mix
- Air Taxi Itinerant Operations
- General Aviation Itinerant Operations
- Military Itinerant Operations
- Local General Aviation Operations
- Local Military Operations
- Critical Aircraft

Not all methodologies described can apply to each of these forecasted elements because each of them could be influenced by different parameters.

3.5.2 BASED AIRCRAFT

Based aircraft are aircraft permanently stored at the airport. Estimating the number and type of aircraft expected to be based at Cascade Airport over the next 20 years is crucial in evaluating the need for future facility and infrastructure requirements.

There are 18 aircraft currently based at the airport. This number will be used as the base year (2016) based aircraft number from which projections are developed.

Based aircraft were projected using some of the methodologies previously described. A summary of the methodologies yielding coherent and reasonable results is below:

- Scenario 1: Trend Analysis. This scenario projects based aircraft to change at a compound annual growth (CAGR) rate of 2.25 percent. Trend analysis captures the parameters that influenced the evolution of based aircraft during the last decade. It assumes that the historical trend will continue over the planning period (2016-2036).

- Scenario 2: Idaho Market Share (5 years). This scenario assumes that the market share of Cascade Airport for based aircraft in the state of Idaho will remain the same over the planning period and be equal to the 5-year historic average (2011-2016). A 5-year period captures the most recent trends. This analysis anticipates a CAGR of 1.7 percent over the planning period for based aircraft at Cascade.

- Scenario 3: Projected Population Growth in Valley County. This scenario assumes that the number of based aircraft will increase at a CAGR of 1.2 percent equal to the projected CAGR of the population in Valley County between 2016 and 2036.

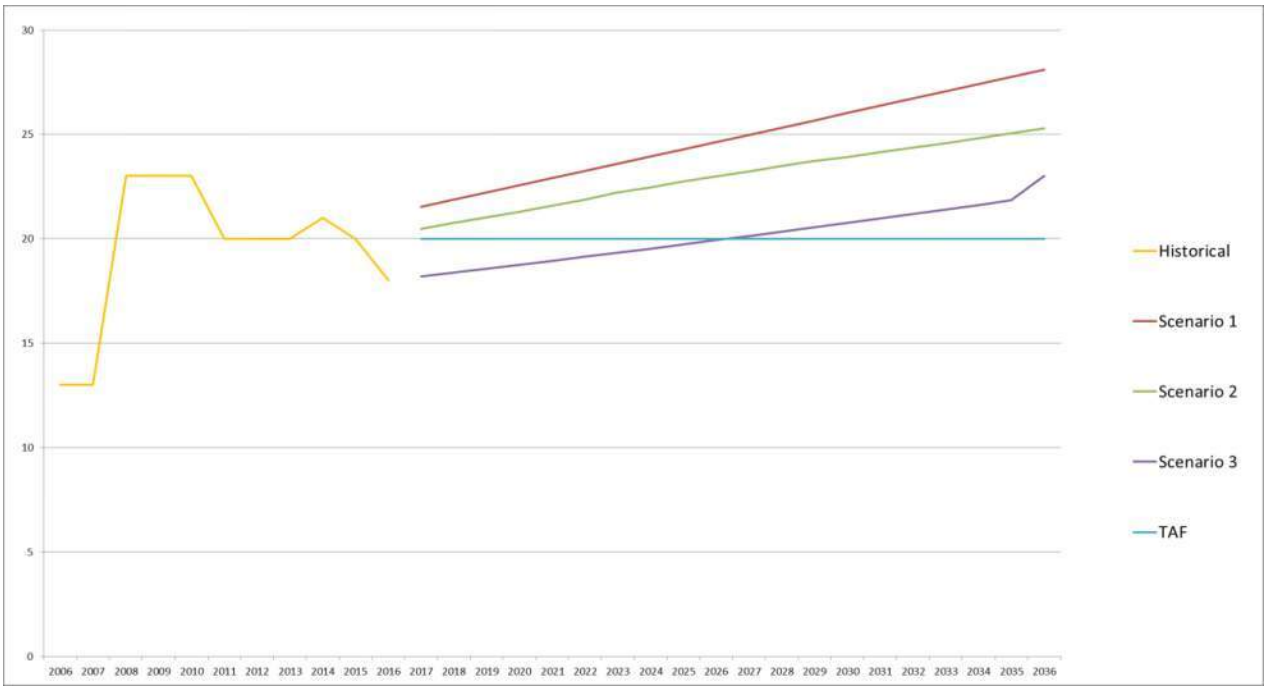
The results of these forecasting methodologies were compared and are listed and depicted in **Table 3-6** and **Figure 3-8**.

TABLE 3-6 BASED AIRCRAFT PROJECTIONS

Year	Scenario 1	Scenario 2	Scenario 3	FAA TAF
2016-Base Year	18	18	18	20
2021	23	22	19	20
2026	25	123	20	20
2036	28	25	23	20
CAGR	**2.2%**	**1.7%**	**1.2%**	**0.0%**
2021 Variation from TAF	**14.5%**	**7.8%**	**-5.3%**	**-**
2026 Variation from TAF	**23.2%**	**14.9%**	**-0.3%**	**-**
2036 Variation from TAF	**40.4%**	**26.4%**	**15.0%**	**-**

Source: T-O Engineers, Inc., FAA TAF

FIGURE 3-8 – BASED AIRCRAFT PROJECTIONS



Source: T-O Engineers, Inc., FAA TAF

The results of the three scenarios examined in this analysis were compared to the FAA's Terminal Area Forecast (TAF) for Cascade Airport. The maximum difference with the TAF

should be 5 percent at 10 years and 15 percent at 20 years. Scenario 3 is the only one in compliance with this rule.

Scenario 1 predicts the largest growth in the number of based aircraft over the planning period. Scenario 2 anticipates an intermediate growth while Scenario 3 indicates the largest growth rate.

Scenario 1 uses the historical trend of the number of based aircraft at Cascade. This method would most likely overestimate the potential for growth at the Airport. The state of Idaho is forecasted to experience a CAGR of 1.4 percent in the number of based aircraft. It is assumed that the airport would follow a similar trend but Scenario 1 almost doubles this prediction.

Scenario 2 relies on a constant market share between the airport and the state. As previously mentioned, it assumes that the airport will grow at a rate similar to that of the Idaho market share.

Scenario 3 uses local indicators of the economic condition of the service area. It assumes a correlation between the population of Valley County and the number of based aircraft at the airport. A healthy economy and growing population would most likely lead to an increase in the number of based aircraft. Both Scenarios1 and 2 seem responsible but Scenario 3 is preferred because it uses local parameters to reflect economic conditions in Valley County.

Based on this analysis, and because **Scenario 3** uses local factors, it was selected as the preferred forecast for based aircraft with a CAGR of 1.2 percent.

3.5.3 AIRCRAFT OPERATIONS

Aircraft operations are divided into two types: local and itinerant. Local operations are classified as operations by aircraft that:

- Operate in the local traffic pattern or within sight of the airport, or
- Are known to be departing for or arriving from flights in local practice areas within a 20-mile radius of the airport, or
- Execute simulated approaches or low passes at the airport.

Itinerant operations are defined as:

- Operations performed by an aircraft that lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area.

The current ratio of local to itinerant aircraft operations at Cascade is estimated to be approximately 15 percent local and 85 percent itinerant based on

data collected with the game cameras.

Different factors impact the number of operations at an airport including but not limited to: the total based aircraft, area demographics, activity and policies of neighboring airports and national trends. These factors were examined and projections were developed for local and itinerant operations as well as for the total number of operations.

Local Operations

Local operations at Cascade Airport are civil operations only. There is currently no local military activity and none is planned for the next 20 years.

A summary of the methodologies used to develop the projected civil aircraft local operations are explained below and shown in **Table 3-7** and **Figure 3-9.** Because local operations depend on the number of based aircraft, the same methodologies used for forecasting were also used here to project local operations.

- Scenario 1: Trend Analysis. This scenario projects that local operations will change at a CAGR of -0.6 percent. The correlation factor for this analysis is -0.03, which indicates a poor model.

- Scenario 2: Idaho Market Share (5 years). This scenario assumes that the market share of Cascade Airport for local operations in the state of Idaho will remain the same over the planning period and be equal to the 5-year historic average (2011-2016). This analysis anticipates a CAGR of 1.2 percent over the planning period for local operations at Cascade.

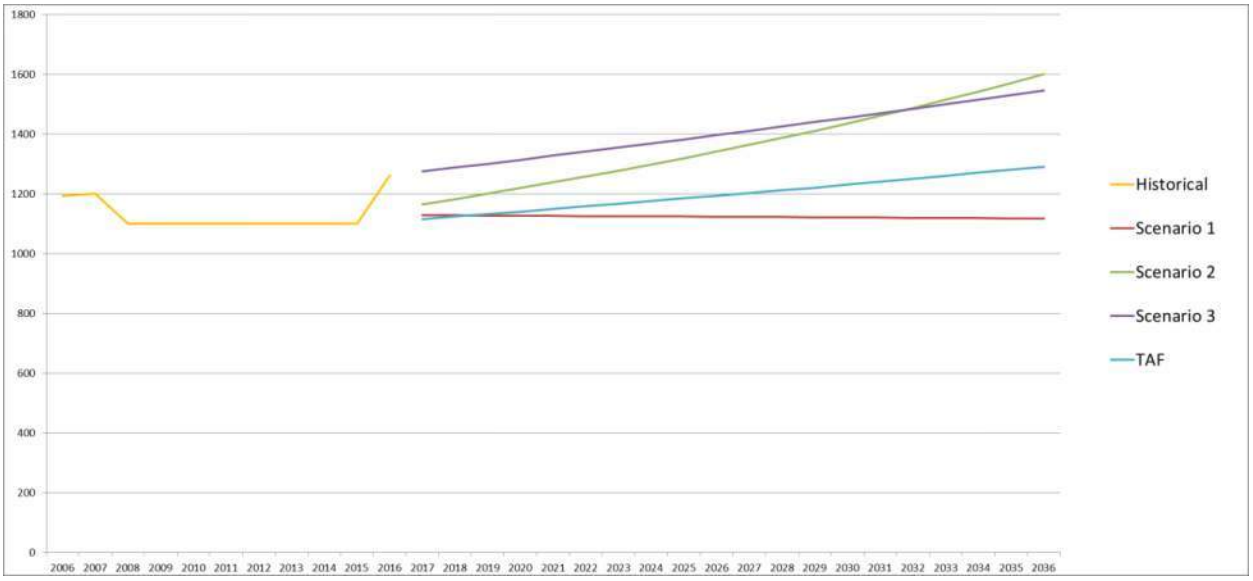
- Scenario 3: Projected Population Growth in Valley County. This scenario projects local operations to increase at a CAGR of 1.0 percent, equal to the projected CAGR of the population in Valley County for the next 20 years.

TABLE 3-7 – LOCAL OPERATIONS PROJECTIONS

Year	Scenario 1	Scenario 2	Scenario 3	FAA TAF
2016-Base Year	1,262	1,262	1,262	1,108
2021	1,126	1,239	1,328	1,150
2026	1,123	1,342	1,397	1,194
2036	1,117	1,601	1,547	1,291
CAGR	**-0.6%**	**1.2%**	**1.0%**	**0.8%**
2021 Variation from TAF	**-2.1%**	**7.7%**	**15.5%**	**-**
2026 Variation from TAF	**-5.9%**	**12.4%**	**17.0%**	**-**
2036 Variation from TAF	**-13.5%**	**24.0%**	**19.8%**	**-**

Source: T-O Engineers, Inc. FAA TAF

FIGURE 3-9 – LOCAL OPERATIONS PROJECTIONS



Source: T-O Engineers, Inc., FAA TAF

Scenario 2 and Scenario 3 exceed the tolerance for comparison to the FAA TAF. Both forecast more local operations with Scenario 2 being the most optimistic.

Local civil operations are considered to be a derived demand that will depend upon local factors and the local dynamic of the airport. The trend analysis presented in Scenario 1 forecasts a CAGR of -0.6%. This analysis captures local conditions as well as the historic activity of the airport's service area. Scenario 1 offers a poor model and does not seem reasonable because it is forecasting a decrease in local operations over the planning period.

Scenario 2 is based on a constant historic market share correlated with growth in the state of Idaho. This assumption leads to the most optimistic forecast. This scenario would most likely result in oversizing airport facilities.

Scenario 3 provides a forecast with a CAGR of 1.0 percent and is equal to the projected growth rate of the population in Valley County. Also, local aircraft activity is typically correlated to the number of based aircraft at the airport, which are forecasted to grow at a similar CAGR based on the preferred forecast presented in the based aircraft section.

Based on this analysis, as well as the consultant's professional opinion, **Scenario 3** is the preferred forecast for local civil operations with a CAGR of 1.0 percent. Even though this scenario does not meet the requirements for comparison with the TAF it ultimately stays close to the threshold and is deemed to be the more realistic. This projection would also encompass the growth of USFS helicopter activity at the airport.

Itinerant Operations

Itinerant operations at Cascade Airport mainly consist of Air Taxi/Commuter and GA operations, as well as a very limited amount of military aircraft. Because there is no reliable record of aircraft activity at the airport, the exact split between these categories is unknown.

Global forecasts were developed for all itinerant operations and are presented in three scenarios shown in **Table 3-8** and **Figure 3-10**.

- Scenario 1: Idaho Projected CAGR. This scenario assumes that the itinerant activity at Cascade Airport will follow the same growth trend as itinerant aircraft operations in the State of Idaho. This analysis foresees a CAGR of 0.5 percent over the planning period (2016-2036).

- Scenario 2: Projected Employment Growth in Valley County. This scenario ties the growth of itinerant operations at Cascade Airport with the development of employment in the service area. It assumes that itinerant operations will grow at the same CAGR of 3.2 percent.

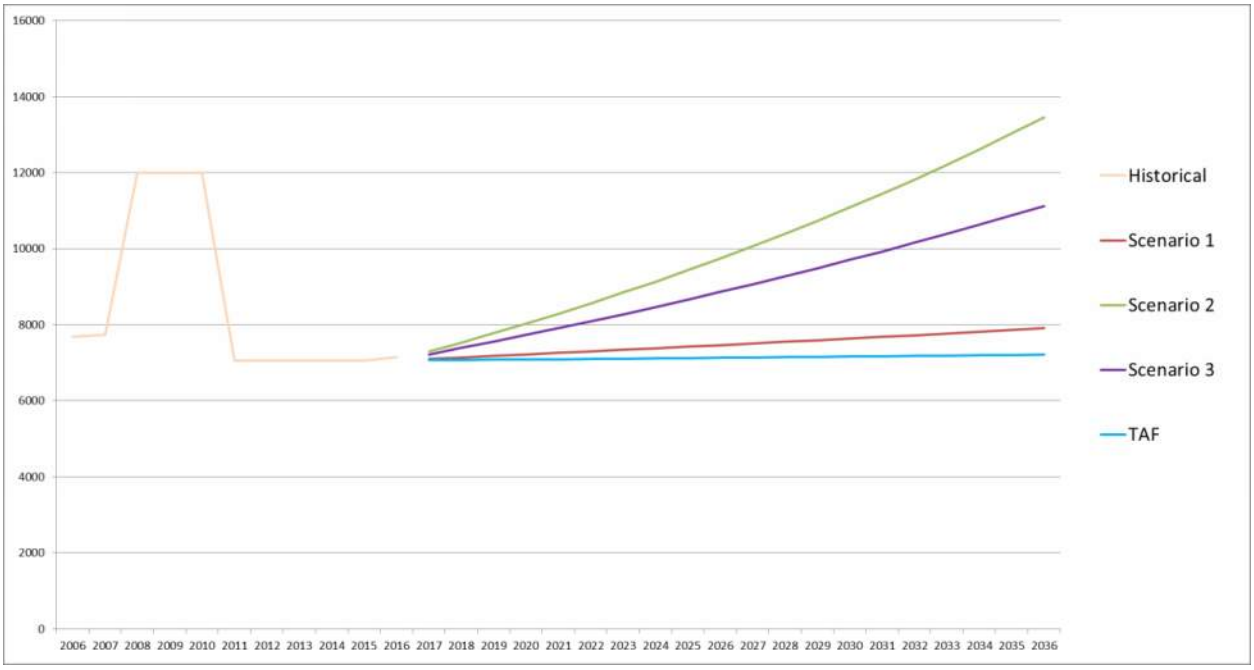
- Scenario 3: Projected PCPI Growth in Valley County. This final scenario also links the itinerant operations at Cascade Airport with the economic condition of the service area. It uses the PCPI growth as a factor to evaluate economic condition and assumes that the itinerant operations will follow the same growth with a CAGR of 2.2 percent.

TABLE 3- 8–ITINERANT OPERATIONS PROJECTIONS

Year	Scenario 1	Scenario 2	Scenario 3	FAA TAF
2015-Base Year	7,146	7,146	7,146	7,057
2021	7,256	8,292	7,907	7,092
2026	7,463	9,743	8,860	7,127
2036	7,904	13,450	11,124	7,207
CAGR	**0.5%**	**3.2%**	**2.2%**	**0.1%**
2021 Variation from TAF	**2.3**	**16.9%**	**11.5%**	**-**
2026 Variation from TAF	**4.7%**	**36.7%**	**24.3%**	**-**
2036 Variation from TAF	**9.7%**	**86.6%**	**54.3%**	**-**

Source: T-O Engineers, Inc., FAA TAF

FIGURE 3-10 –ITINERANT OPERATIONS PROJECTIONS



Source: T-O Engineers, Inc., FAA TAF

Only Scenario 1 is within the tolerance for comparison to the FAA TAF. Scenario 2 predicts the greatest growth rate while Scenario 3 shows a moderate growth of itinerant operations at the airport.

Scenario 1 assumes that the CAGR at the airport will be the same as the projected CAGR in the State of Idaho for itinerant activity. It does not account for local parameters that could impact the airport's attractiveness to pilots. This scenario is reasonable because itinerant activity at Cascade Airport is equated to aircraft coming to or leaving other airports, mainly located in Idaho.

Scenario 2 and Scenario 3 link the airport activity to the general economic condition of the service area. Scenario 2 uses employment to evaluate the local economy, while Scenario 3 uses the PCPI. Both scenarios lead to a significant increase in itinerant operations at the airport, further deviating from the FAA TAF. They could easily overestimate the airport's infrastructure needs and result in excessive maintenance costs.

Based on this analysis, **Scenario 1** is the preferred forecast for itinerant operations at Cascade Airport with a CAGR of 0.5 percent between 2016 and 2036.

Total Operations

The total aircraft operations projection was derived by combining the local and itinerant operations preferred forecasts. The total aircraft operations were also compared to the FAA TAF, as shown in **Table 3-9** and **Figure 3-11.**

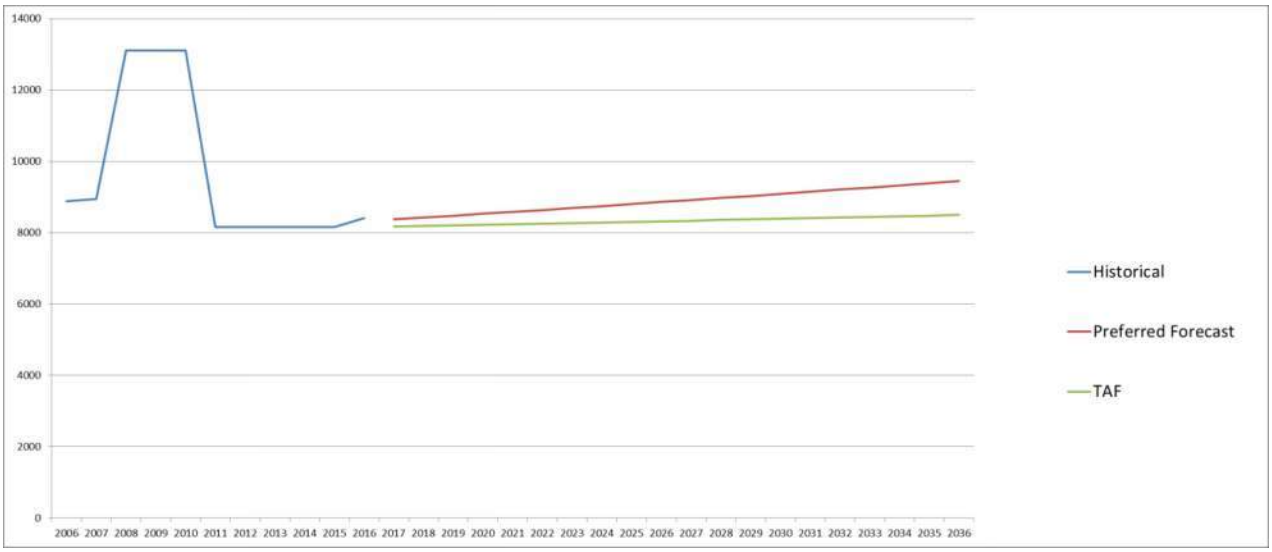
This methodology results in an annual growth rate of 0.6 percent, which is slightly greater than the FAA TAF annual growth rate of 0.2 percent for total annual aircraft operations at Cascade Airport.

TABLE 3-8 –TOTAL AIRCRAFT OPERATIONS PREFERRED PROJECTION

Year	Itinerant	Local	Total Operations	FAA TAF
2016-Base Year	7,146	1,262	8,408	8,165
2021	7,256	1,328	8,584	8,242
2026	7,463	1,397	8,860	8,321
2036	7,904	1,547	9,451	8,498
CAGR	**0.5%**	**1.0%**	**0.6%**	**0.2%**
2020 Variation from TAF			**4.1%**	**-**
2025 Variation from TAF			**6.5%**	**-**
2035 Variation from TAF			**11.2%**	**-**

Source: T-O Engineers, Inc., FAA TAF

FIGURE 3-12 – TOTAL AIRCRAFT OPERATIONS PREFERRED PROJECTION



Source: T-O Engineers, Inc.

According to these projections 9,451 aircraft operations are expected to occur at Cascade Airport by the end of the forecast period in 2036. This is 11.2 percent more than the FAA TAF projections with 8,498 total operations in 2036. These preferred aviation activity projections for Cascade Airport are carried forward in the master planning process and are used to examine future airport facility needs.

3.5.4 FLEET MIX

The aircraft fleet mix using the airfield is important in determining the facilities required and in evaluating the capacity of the airport.

Based Aircraft
Projected based aircraft were allocated to five aircraft categories – single-engine, multi-engine, jet, helicopter and other – to develop a projection of the airport's based aircraft fleet mix through the planning period.

The fleet mix projections developed for Cascade Airport were based on the preferred forecast for based aircraft and on the fleet mix percentages exhibited at the airport as well as in the *FAA Aerospace Forecast, Fiscal Years 2017-2037* projection of active general aviation aircraft.

The national trend indicates a decrease in the fleet of single-engine aircraft. It is therefore assumed that the airport will witness slight growth in based single-engine piston aircraft with an estimated total of 19 aircraft in 2036.

The evolution of the national fleet mix will most likely lead to new types of based aircraft at the airport. With the anticipated national growth of 1.8 percent in turbine aircraft through the forecast period (*FAA Aerospace Forecast 2017-2037*), turboprop and jet aircraft will likely be based at Cascade Airport. It is anticipated that one small twin turboprop and one small turbojet will be based at the airport by 2026 and 2036 respectively.

Helicopters experience a significant growth in their fleet with a CAGR of 1.0 percent *(FAA Aerospace Forecast 2017-2037*). So, it is assumed that helicopters will be based at the airport over the 20-year planning period with an estimated total of 1 based helicopter by 2036.

The preferred based aircraft fleet mix projections are shown in **Table 3-9**.

TABLE 3-9 – PROJECTED BASED AIRCRAFT FLEET MIX

Aircraft Type	2016	2021	2026	2036	CAGR
Single-Engine	17	18	18	19	0.5%
Multi-Engine	1	1	2	2	2.5%
Jet	0	0	0	1	-
Helicopter	0	0	0	1	-
Other	0	0	0	0	0%
Total	**18**	**19**	**20**	**23**	**1.0%**

Source: T-O Engineers, Inc.

Aircraft Operations

The aircraft mix using an airport is essential in determining its capacity. For the purposes of determining the projections of the aircraft mix using Cascade Airport, aircraft operations were divided into four classes:

- Class A: Small Single-Engine (Gross Weight 12,500 lbs. or less)
- Class B: Small Twin-Engine (Gross Weight 12,500 lbs. or less)
- Class C: Large Aircraft (Gross Weight 12,500 to 300,000 lbs.)
- Class D: Heavy Aircraft (Gross Weight more than 300,000 lbs.)

Based on the results presented in **Table 3-10**, Class A represents 93 percent of the aircraft operations at the airport (including helicopters and others). Class B and Class C represent 5.6 percent and 1.4 percent of the aircraft operations respectively .There are no Class D operations at the airport.

As noted previously for the based aircraft mix and according to trends in the national GA fleet presented in the *FAA Aerospace Forecasts 2017-2037*, the airport will most likely experience slow growth in single-engine piston aircraft operations and greater growth for helicopter and turbine aircraft activities. This would lead to a change in the aircraft mix with a higher percentage of helicopters (Class A), light multi-engine turboprops (Class B), turbojets (Class B or C), in comparison to single-engine piston (Class A).

Considering the preferred forecast of aviation activity at the airport, as well as the national fleet mix evolution, the projected aircraft mix for Cascade Airport is as summarized in **Table 3-10**. These results are computed assuming that the percentages of the different aircraft classes at Cascade Airport will follow the same trends as for the national fleet (*FAA Aerospace Forecast 2007-2037*).

TABLE 3-10 – PROJECTED AIRCRAFT FLEET MIX

Aircraft Type	2015	2020	2025	2035
Class A	93.0%	90.7%	88.4%	85.5%
Class B	5.6%	6.1%	6.7%	9.4%
Class C	1.4%*	2.3%	3.3%	5.1%
Class D	0%	0%	0%	0%

Source: T-O Engineers, Inc.

3.6 PEAKING ANALYSIS

Another primary consideration for facility planning at airports relates to peak hour, also referred to as design level activity. This operational characteristic is decisive because some facilities, such as the aircraft apron, should be sized to accommodate the peaks in activity. Facilities requirements for Cascade Airport are presented in the **Chapter 4 - Facilities Requirements**.

In calculating the number of aircraft operations occurring during the peak hour, it was assumed that the peak day was 20 percent higher than the average day and that the peak hour was 20 percent of the peak day operations. **Table 3-11** presents peak factors for the 20-year planning period.

TABLE 3-11 – OPERATIONS FORECASTS – PEAKING FACTORS

Year	Total Annual Operations	Average Daily Total	Peak Day	Peak Hour
2016 Base Year	8,408	23	28	6
2021	8,584	24	29	6
2026	8,860	25	30	6
2036	9,451	26	31	7

Source: T-O Engineers, Inc.

3.7 INSTRUMENT OPERATIONS

Forecasts of annual instrument approaches are used by the FAA in evaluating an airport's requirements for navigational aid facilities. The FAA defines an instrument approach as an approach to an airport with the intent to land an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

Cascade Airport is not equipped with any approach or departure instrument procedures. In these conditions, flight plans are typically cancelled or closed in coordination with the associated

Approach Route Traffic Control Centers (ARTCC) when approaching the airport. Existing records of Instrument Flight Rule (IFR) flights[2] reveal that Cascade Airport had about 20 IFR flights to or from the airport in 2016.

Due to the lack of more comprehensive information about IFR activity at the airport no forecasts for instrument approach operations were developed. However, it is clear that the airport could benefit from implementation of a GPS-based instrument procedure.

3.8 CRITICAL AIRCRAFT

3.8.1 AIRPLANE ACTIVITY

The development of airport facilities is impacted by both the demand and the type of aircraft expected to make use of those facilities. Airport infrastructure is designed to accommodate the most demanding aircraft (or combination of aircraft), which will utilize the facilities on a regular basis, also referred to as the critical or design aircraft.

The factors used to determine the design aircraft are the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the most demanding class of aircraft anticipated to perform at least 500 annual operations at the airport during the 20 year planning period[3].

The existing Airport Reference Code for Cascade Airport is B-I. As presented in **Table 3-5**, the bulk of the aircraft using the airport today include piston-driven single- and twin-engine aircraft, including the Cessna 182, Cessna 206, and Britten Norman Islander.

According to the data collected by the game cameras, and presented in **Table 3-1** and **Table 3-2**, the most demanding aircraft currently conducting operations over the significant threshold of 500 annual operations is the Cessna 206. This airport has an AAC A and an ADG I, with a Taxiway Design Group (TDG) 1A and a MTOW lower than 12,500lbs (Small) and therefore requires A-I-SMALL / TDG 1A design standards.

The airport should experience a growth in turbine-driven aircraft operations with some of these ultimately based on the airfield. Proactive planning encourages accounting for this type of traffic in the future design of the airfield to ensure safe and efficient development of the airport. Typical turbine aircraft on the airport include, but are not limited to, TBM 850, Beechcraft King Air, or Cessna Citation II. Most of these airplanes typically require airport design standards ranging from B-I-SMALL to B-II, and TDG 1A to TDG 2. However, based on the results of the forecast, there is no indication that B-II / TDG 2 aircraft will exceed the 500 annual operation threshold at the Cascade Airport within the 20-year planning period (2016-2036).

[2] *www.flightwise.com, flight history activity*
[3] *Excluding touch-and-go. An operation is either a takeoff or landing.*

According to this analysis, the **Cessna 206** was chosen as the existing and future **critical aircraft** at Cascade Airport. However, Class C aircraft (MTOW > 12,500lbs) are forecasted to reach 5.1 percent of the aircraft operations at Cascade in 2036. Also, frost requirements for pavement design at Cascade Airport will certainly lead to a pavement strength greater than 12,500lbs due to a thicker pavement section.

For proactive planning purposes, it is recommended that the airport protects its development accordingly to **A/B-I** and **TDG 1B** design standards to account for an intermediate class of aircraft, such as smaller jets and turboprops, with a pavement strength over 12,500lbs for single wheel. However, it is recommended to reevaluate the actual pavement strength and design TDG needed before any future rehabilitation/reconstruction of the runway and taxiways. **Table 3-12** summarizes the characteristics of the selected critical aircraft.

TABLE 3-12 – CHARACTERISTICS OF DESIGN AIRCRAFT

Cessna 206 – Design Aircraft	
Approach Speed	<91 kts
Wing Span	36’
Length	28.3’
Tail Height	n/a
Maximum Take Off Weight	<12,500lbs – **Use >12,500lbs***
ADG	**I**
TDG	1A – **Recommended to use 1B***
AAC	**A**

*The actual pavement strength and design TDG needed should be reevaluated at time of construction before any major rehabilitation or reconstruction of the runway and taxiways.

Source: Transoft, T-O Engineers, Inc.

Cascade Airport should plan future airfield infrastructure development for an **ARC of B-I** and remain in compliance with **A/B-I and TDG 1B design standards**. This ARC encompasses any potential airport improvements necessary to accommodate larger aircraft in compliance with prudent and proactive planning practices.

3.8.2 HELICOPTER ACTIVITY

Helicopter operations are an important part of the airport activity. Helicopter facilities, including helipads or parking pads, are designed based on the dimensions of the largest helicopter forecast to use them.

Helicopters regularly operated at Cascade Airport include Type 3 helicopters contracted by USFS for firefighting activity. They are private helicopters under contract with USFS during the wildfire season. They are typically 4-8 seaters with a MTOW not greater than 6,000lbs, such as the Airbus B-3 A-Star (AS350) which was selected as the design helicopter for future helicopter facilities at Cascade. Its characteristics are summarized in **Table 3-13**.

TABLE 3-13 – CHARACTERISTICS OF DESIGN HELICOPTER

Airbus B-3 A-Star (AS350)	
Maximum Take Off Weight	4,960 lbs. – **Recommended to Use 6,000 lbs**.
Overall Length	42.5 feet
Main Rotor Diameter	35.1 feet
Skid Length	11.3 feet
Skid Width	7.8 feet
Main Rotor Blades	3
Height	10.3 feet

Source: T-O Engineers, Inc., Transoft

3.9 FORECAST SUMMARY

Aviation activity projections were developed using 2016 as a base year. It is anticipated that Cascade Airport will see some growth in all activity areas during the 20-year planning period. By 2036, approximately 9,451 aircraft operations are projected to occur and 23 aircraft are projected to be based at the airport. It is also recommended that the airport be protected accordingly to **ARC B-I** and **TDG 1B** design standard within the 20-year planning period. Actual pavement strength and design TDG should be reevaluated at time of construction before future development projects. **Table 3-14** summarizes the projections made in this chapter.

TABLE 3-14 – SUMMARY OF AVIATION ACTIVITY FORECASTS 2015-2035

Year	Itinerant Operations	Local Operations	Total Operations	Based Aircraft
2016 – Base Year	7,147	1,262	8,408	18
2021	7,256	1,328	8,584	19
2026	7,463	1,397	8,860	20
2036	7,904	1,547	9,451	23
CAGR	**0.5%**	**1.0%**	**0.6%**	**1.0%**
2021 Variation from TAF	**2.3**	**15.5%**	**4.1%**	**-5.3%**
2026 Variation from TAF	**4.7%**	**17.0%**	**6.5%**	**-0.3%**
2036 Variation from TAF	**9.7%**	**19.8%**	**11.2%**	**15.0%**
Future Airport Reference Code			**B - I***	
Future Taxiway Design Group			**1B***	

*TDG and Pavement Strength to be reevaluated at time of construction for future developments.

Source: T-O Engineers, Inc.