

ALPINE CITY GENERAL PLAN



Public Facilities and Services Element

*DRAFT 2014 Sanitary
Sewer System Master Plan,
Impact Fee Facility Plan
&
Impact Fee Analysis*

Prepared by

HORROCKS
ENGINEERS

Table of Contents

Chapter 1 - Summary and Recommendations 5

 Introduction..... 5

 Projected Population 5

 Projected Sewer Flow 6

 Recommended Sanitary Sewer System Improvements 6

 Existing Deficiency Improvement Plan 6

 Buildout Improvement Plan..... 6

Chapter 2 - Current and Future Conditions..... 8

 Projected Population 8

 Equivalent Residential Unit (ERU) 8

 Historical Sewer Flows 10

 Projected Sewer Flows..... 11

Chapter 3 – Sanitary Sewer System Analysis..... 13

 State Design Requirements 13

 Computer Model of Sanitary Sewer System..... 14

 Existing Deficiency Improvement Plan 15

 Buildout Improvement Plan..... 15

 Table 4 10-Year Improvement Schedule 16

 Sanitary Sewer Rate Review..... 17

Chapter 4 - Impact Fee Facility Plan (IFFP)..... 18

 General Background 18

 Required Elements of an IFFP 18

 Demands on Existing Facilities 19

 Service Area..... 19

 Sanitary Sewer Design Requirements..... 19

 Existing Sewer Facilities..... 19

 Deficiencies Based on Existing Development..... 20

 Future Demand and Capital Facilities..... 20

 Future Sewer Requirements..... 20

 Future Capital Sewer Facilities..... 20

 Capital Facility Cost and Proportionate Share..... 21

 Cost of Capital Facilities..... 21

 Cost of Master Planning..... 21

 Value of Free Capacity in Sanitary Sewer System 21

Cost Associated with Existing Deficiencies	22
Developer Contributions.....	22
10 Year Improvement Schedule.....	22
Revenue Source to Finance Impacts to System Improvements	23
General Fund Revenues	23
Grants and Donations.....	23
Sewer Utility	23
Impact Fees	23
Debt Financing.....	23
IFFP Certification	24
Chapter 5 - Impact Fee Analysis (IFA).....	25
General Background	25
Impact Fee Overview	25
Service Area.....	26
Level of Service	26
Equivalent Residential Unit (ERU)	27
Capital Project Costs.....	27
Proportionate Share Analysis.....	28
Cost of Capital Facilities.....	28
Table 11 Impact Fee Improvement Projects	28
Cost of Master Planning.....	28
Value of Free Capacity in Sanitary Sewer System	29
Cost Associated with Existing Deficiencies	30
Developer Contributions.....	30
Existing Impact Fee Balance	30
Table 14 Existing Impact Fee Fund Balance Allocation	30
Impact Fee Summary	30
IFA Certification.....	31
APPENDIX.....	32

List of Tables

Table 1 Population Projections	9
Table 2 Projected Sewer Generation.....	12
Table 3 Pipe Design Standards	14
Table 4 10-Year Improvement Schedule	16
Table 5 Revenue and Expense Summary.....	17
Table 6 Existing System Deficiencies	20
Table 7 Buildout System Improvements.....	21
Table 8 10-Year Improvement Schedule	22
Table 9 ERU Summary.....	27
Table 10 Buildout Sanitary Sewer System Improvements	28
Table 11 Impact Fee Improvement Projects	28
Table 12 Master Planning Cost Share.....	29
Table 13 Existing System Free Capacity Summary	29
Table 14 Existing Impact Fee Fund Balance Allocation	30
Table 15 Total Impact Fee Summary.....	30
Table 16 Sanitary Sewer System Asset List	39
Table 17 Detailed Cost Estimates	40

List of Figures

Figure 1 Population Projections.....	10
Figure 2 Alpine Historic Sewer Generation.....	11
Figure 3 Existing Sanitary Sewer System Improvements.....	33
Figure 4 Buildout Sanitary Sewer System Improvements	34
Figure 5 Existing Zoning	35
Figure 6 Existing Landuse	36
Figure 7 Existing Sanitary Sewer System.....	37
Figure 8 Buildout Sanitary Sewer System Used Capacity.....	38

Abbreviations

AAPR	Annual Percentage Growth Rate
CCI	Construction Cost Index
ERU	Equivalent Residential Unit
DEQ	Division of Environmental Quality
fps	Feet per Second
gpd	Gallons per Day
gpdpc	Gallons per Day per Capita
IFA	Impact Fee Analysis
IFFP	Impact Fee Facility Plan
MG	Million Gallons
MGD	Million Gallons per Day
PF	Peaking Factor
TSSD	Timpanogos Special Service District

S E C T I O N 1

Chapter 1 - Summary and Recommendations

Introduction

Horrocks Engineers developed a sanitary sewer system master plan update for Alpine City in 2005 and made recommendations to provide for the capacity needed at build-out. The major reason for this current master plan update is to stay current with the needs of the City's sanitary sewer system and to revisit the impact fees and sewer rates.

In this study, Alpine City's future conditions are identified including the projected population, number of connections, developable areas, and wastewater flows. Using the projected population, design requirements, and historical wastewater flows, the flows are projected through the planning period.

A computer model was used to analyze the existing sanitary sewer system and determine its capacity. Then using the potential areas of development and the projected wastewater flows, improvements were identified to meet the needed capacities at buildout.

Measured flows from Timpanogos Special Service District (TSSD) were used to calibrate the computer model.

The feasibility of the recommended improvements were determined based upon the present wastewater rates and connection fees. Recommendations were made to provide the funding needed to implement the recommended impact related improvements.

Although residents of the county are included in the City wastewater flows, for the purposes of this study all connections are viewed as City sanitary sewer connections. Alpine Cove will also be considered because of the impact they presently have on the system. These projected flows have also been added to determine the long range pipe sizing requirements.

Projected Population

Alpine City currently has a population of 10,609 people. However, the City's population is projected to increase by 46 percent to 15,514 people by the year 2032. This growth will add an additional 1,327 equivalent residential units (ERUs) to the system.

Projected Sewer Flow

Using 74 gallons per day per capita (gpdpc) and the Alpine City average of 3.7 people per household, the average yearly flow is projected to increase from 287 million gallons (MG) to 420 MG. This increase in flow has the potential to exceed 75% of the capacity of the TSSD outfall line during peak flows.

Historical records from TSSD show the average wastewater flow in Alpine City is 53 (gpdpc). Using this value, the average yearly flow would increase from 205 MG to 300 MG. The master plan is developed using the more conservative 74 gpdpc.

Wastewater records show a negligible difference between winter and summer flows. It is therefore assumed that infiltration is minimal in Alpine City. The majority of the City is not located in high ground water areas where infiltration would be a problem.

Recommended Sanitary Sewer System Improvements

These recommendations were determined by using a computer model of Alpine City's sanitary sewer system and input from city officials. A detailed listing of the recommended improvements is given in the following paragraphs.

Existing Deficiency Improvement Plan

The following improvements represent deficiencies in the existing sanitary sewer system. These improvements are shown in Figure 3 in the appendix.

Ranch Drive sewer reconstruct at new grade. It is recommended that the 8-inch sewerline on Ranch Drive just west of Dry Creek be reconstructed at a new grade to eliminate surcharging from the existing line being installed at a reverse grade. This line would be approximately 350 feet in length.

200 North sewer reconstruct at new grade. It is recommended that the 8-inch sewerline on 200 North near Deerfield Road be reconstructed at a new grade to eliminate surcharging from the existing line being installed at a reverse grade. This line would be approximately 480 feet in length.

Alpine Highway sewer reconstruct at new grade. It is recommended that an 8-inch sewerline on Alpine Highway just west of Bateman Ln be reconstructed at a new grade to eliminate surcharging from the existing line being installed at a reverse grade. This line would be approximately 350 feet in length.

Buildout Improvement Plan

The following improvements are those necessary to provide capacity for future growth. These improvements are shown in Figure 4 in the appendix.

600 North and Main Street Extension. There is an area north of 600 North and east of Main Street that does not have access to a sewerline. This improvement is to extend sewer to this area for future service. The 8-inch segment would be about 300 feet in length.

100 West, Center Street to 120 South Sewer Upsize. This line will be undersized from Center Street to 120 South under the build-out population. This section will need to be upgraded to a 12-inch line. The segment is about 630 feet.

Towle/Pack Sewer Extension. There is an area north of the proposed Towle Subdivision that does not have access to a sewerline. This improvement is to extend sewer to this area for future service. The 8-inch segment would be about 300 feet in length.

S E C T I O N 2

Chapter 2 - Current and Future Conditions

Future conditions in Alpine City will affect the sanitary sewer flows and the improvements needed to meet these increased flows. As factors change, the projected future conditions made in this study could be affected. To help minimize the effect of the changing future conditions, the recommendations made in this study have been based upon the number of people served by Alpine City's sanitary sewer system rather than time periods.

This chapter discusses Alpine City's population projections through the planning and ultimate build-out periods. The projected number of sewer connections has been determined based upon the projected population. In addition, using the potential areas of development, historical wastewater flows, and State design requirements, the wastewater flows projected through the planning and ultimate build-out periods are discussed.

Projected Population

Population projections have been determined for Alpine City by Mountainland Association of Governments in five (5) year increments until total build-out is reached near the year 2032. Intermediate numbers were calculated by interpolation and are shown in Table 1. Alpine City's projected population is also shown on Figure 1. The projected annual percentage growth rate (AAPR) from 2014 to 2032 is approximately 2.23 percent. Figures 5 and 6 in the appendix show the current zoning and land use within Alpine City.

Equivalent Residential Unit (ERU)

Sanitary sewer flows are generated from residential, commercial, industrial, and institutional sources and it is advantageous to relate these sources in a quantifiable manner. It was determined in the sewer master plan that an average residential home in Alpine City produced 274 gallons of sanitary waste per day. The average residential home is defined as an ERU. Other sources such as churches, schools, and commercial businesses are compared to the average residential home to determine its ERU value. For example a commercial business who generates 822 gallons of sanitary waste is assigned an ERU value of 3.0 because it generates three times the sanitary waste of an average home.

ERU's are anticipated to grow at the same rate as population. Table 1 also shows the projected ERU Growth.

Table 1 Population Projections

Year	Population	Growth Rate	ERU's
2014	10,609	2.80%	2,866
2015	10,916	2.90%	2,950
2016	11,223	2.81%	3,032
2017	11,528	2.72%	3,115
2018	11,832	2.63%	3,197
2019	12,132	2.54%	3,278
2020	12,429	2.45%	3,358
2021	12,723	2.36%	3,438
2022	13,012	2.27%	3,516
2023	13,295	2.18%	3,592
2024	13,573	2.09%	3,667
2025	13,845	2.00%	3,741
2026	14,109	1.91%	3,812
2027	14,366	1.82%	3,881
2028	14,614	1.73%	3,949
2029	14,854	1.64%	4,013
2030	15,084	1.55%	4,076
2031	15,304	1.46%	4,135
2032	15,514	1.37%	4,193

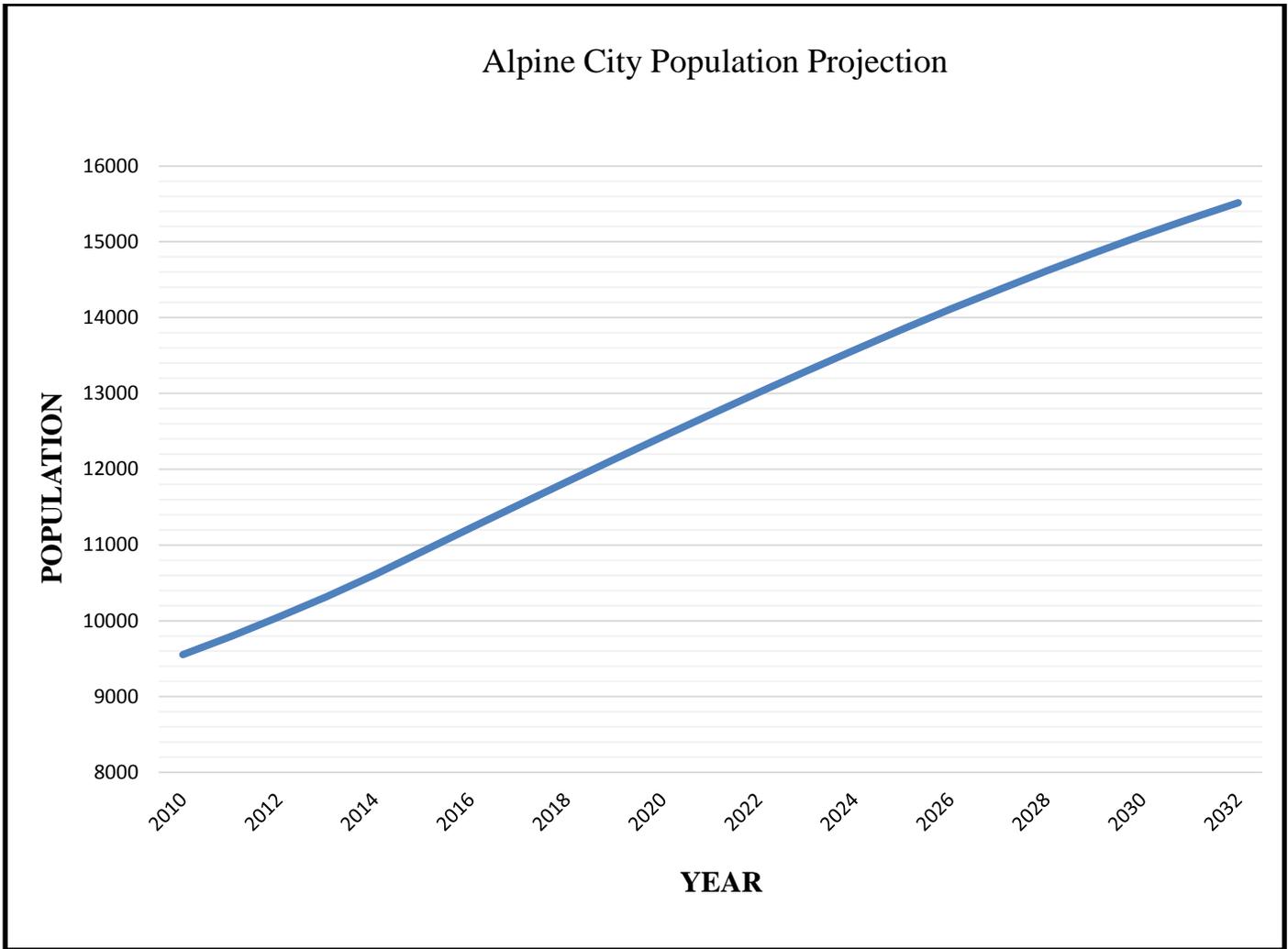


Figure 1 Population Projections

Historical Sewer Flows

Sewer flows vary depending upon the amount of culinary water used and the amount of infiltration and inflow within the system. Figure 2 shows the historical sewer generated per person for Alpine City. The current average annual flow is 53 gpdpc based on TSSD meter data. During the winter of 2012 the average flow jumped to around 70 gpdpc. At times in the past it has been even higher. The current trend in flows generated per person is downward. During 2009 and 2010 there was a problem with the TSSD meter which explains the significant jump in flows during that time.

Wastewater records show a negligible difference between winter and summer flows. It is therefore assumed that infiltration is minimal in Alpine City. The majority of the City is not located in high ground water areas where infiltration would be a problem.

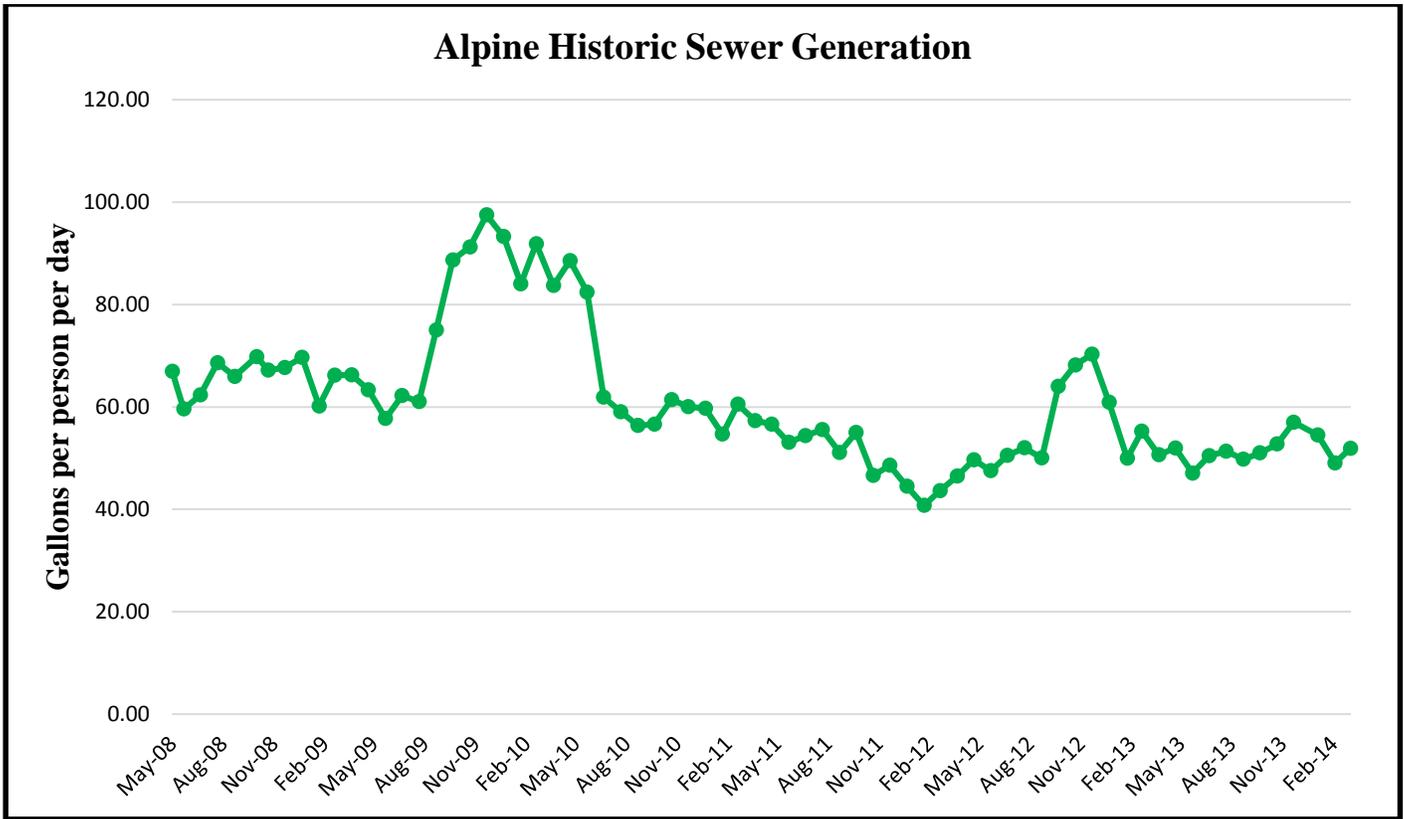


Figure 2 Alpine Historic Sewer Generation

Projected Sewer Flows

The projected population, historical sewer flows, and typical design criteria were used to project the sewer flows through the planning period. Projected sewer flows were entered into a computer program called *SewerCAD* creating a model of Alpine City's existing sanitary sewer system.

Sewer lines are required to provide capacities for peak hourly and maximum daily flows. This variation of flows is due to the hydrograph or peak that is created by the wastewater as it enters the pipes and is collected from different areas. The farther the wastewater travels in the system, the smaller the peaks become. The "peak" in the flow or hydrograph is referred to as the peaking factor (PF) and is higher for collector lines (12" and smaller) than for trunk lines (larger than 12") because the peak is reduced as the wastewater flows downstream.

PFs for the Alpine City sewer model are based upon the Department of Environmental Quality (DEQ) recommendations, historical wastewater flows, and typical design requirements. The TSSD records show that the average wastewater flow in Alpine City was 53 gallons per capita per day (gpcpd) in 2013. The *SewerCAD* model uses a variable PF of between 2.0 and 3.0 depending on how close the flow is to where it was generated. The PF's match closely with TSSD data at the meter leaving the City and individual meter location from the previous sewer master plan update. A typical PF for small municipal sanitary sewer system

is 2.5. The State of Utah DEQ recommends a PF of 2.5 for over 12 inch lines and 4.0 for 12 inch and under lines.

Using the projected ERCs and the peak daily flow, Table 2 shows the projected average yearly, average daily, and maximum daily flows through the planning period.

In summary, the number of ERCs is projected to increase by 1,327 connections by the year 2032. Using the TSSD average flow of 53 gpdpc and 3.7 people per household, the average yearly flow is projected to increase from 205 MG to 300 MG. Using the chosen design flow of 74 gpdpc and 3.7 people per household, the average yearly flow is projected to increase from 287 MG to 420 MG. However, using the State design flow of 100 gpdpc on average, the yearly design flow would increase from 387 MG to 566 MG.

The recommendations in this capital facilities plan are based on 74 gpdpc, which is high enough above the current TSSD measurements to provide a factor of safety while not being overly conservative. There is recent data of 70 gpdpc sewer generation that justify using this higher value. Using the State’s design standards of 100 gpdpc would require significant improvements beyond what is actually needed.

Table 2 Projected Sewer Generation

Year	Projected ERC	gpd/ERC	Avg Yearly (MG)	Flow Avg Daily (MGD)	Max Daily (MGD)
TSSD Flows (53 gpdpc, 3.7 people/connection, 2.0 PF)					
2014	2,866	196	205	0.56	1.12
2015	2,950	196	211	0.58	1.16
2020	3,358	196	240	0.66	1.32
2025	3,741	196	268	0.73	1.47
2030	4,076	196	292	0.80	1.60
Buildout	4,193	196	300	0.82	1.64

Sewer Model Design Flows (74 gpdpc, 3.7 people/connection, 2.0 PF)					
2014	2,866	274	287	0.79	2.36
2015	2,950	274	295	0.81	2.42
2020	3,358	274	336	0.92	2.76
2025	3,741	274	374	1.02	3.07
2030	4,076	274	408	1.12	3.35
Buildout	4,193	274	420	1.15	3.45

C H A **3** T E R

Chapter 3 – Sanitary Sewer System Analysis

Alpine City's sanitary sewer system was analyzed to find the capacity of the current system and to determine the improvements needed to meet the flows of the projected population. In this chapter, a description of the existing sanitary sewer system is given along with a discussion of the concerns and recommended improvements. State and Alpine City standard requirements were used as criteria to analyze the sanitary sewer system. Information obtained from a computer model of Alpine's sanitary sewer system is presented with the recommended improvements needed to meet the projected population wastewater flows.

Alpine City currently has approximately 54 miles of sewer lines that collect the wastewater and convey it to TSSD's 18-inch outfall line at the end of 800 South and Creek Side Pass. Figure 7 in the appendix shows the layout of the existing system. Collection lines in the City range from 8 inches to 18 inches and carry an average yearly flow of 205 MG of wastewater.

State Design Requirements

The Utah DEQ provides guidelines and regulations for new sanitary sewer system design. These guidelines are useful in new construction, but measured flows have shown that these guidelines are considerably higher than actual flows and would be unnecessary for the City to fully implement. Design guidelines from other sewer districts were reviewed to help develop local standards. It is recommended that Alpine City adopt the following criteria as the minimum level of service for the sanitary sewer system:

- New collector lines must be capable of carrying a minimum peak flow of 3 times the average flow.
- New interceptors and outfall lines must be capable of carrying a minimum peak flow of 2 times the average flow.
- The minimum size of a collection line is 8 inches.
- The minimum velocity of a line flowing full is two feet per second (2 fps).
- 8-inch thru 12-inch sewer lines are not to exceed 50 percent capacity (by depth) at peak flow.
- 15-inch and greater sewer lines are not to exceed 75 percent capacity (by depth) at peak flow.
- An ERU is equal to 274 gallons per day (gpd) average flow. This is based on each person producing 74 gallons of wastewater per day and there being 3.7 people per ERU.

The SewerCAD model uses a flow of 74 gpdpc which compares favorably with recently measured flows (2012) from both the TSSD flow meter and measured flows taken during the previous master plan update. The State guideline is 100 gpdpc which is higher than necessary for the city of Alpine. The SewerCAD

model also used a variable PF of 2.0 to 3.0. A value of 3.7 people per household was used in determining flows per ERC.

The population capacity of different sewer line sizes is shown in Table 3. The capacities are calculated as shown. PFs are used to show maximum daily peaking flows with respect to whether the pipe is a collector or trunk line. As discussed in the previous chapter, trunk lines experience smaller peaks than collector lines.

Table 3 Pipe Design Standards

Size (in)	Percent Full	Minimum Slopes @ 2 fps (ft/ft)	Capacity @		
			Minimum Slope (MGD)	Peaking Factor	ERC Capacity @ 274 gpdpc
8	50	0.00334	0.24	3.00	291.97
10	50	0.00248	0.38	3.00	462.29
12	50	0.00194	0.55	3.00	669.10
15	75	0.00144	1.56	2.00	2846.72
18	75	0.00113	2.25	2.00	4105.84
21	75	0.00092	3.07	2.00	5602.19
24	75	0.00077	4.01	2.00	7317.52

Computer Model of Sanitary Sewer System

A computer program called *SewerCAD* was used to model Alpine City's sanitary sewer system. The program uses the flows generated at each sewer connection to calculate the full flow, maximum flow, and velocity of flow for each pipe. From the output of the model, the amount of wastewater flowing in each line can be determined. Information for the existing sanitary sewer system including the pipe diameters, lengths, manhole locations, and invert elevations, were obtained from the 2005 model. Additional sections of the model were added from the developments since the last update in 2005.

The number of ERUs was estimated based on build-out conditions with the 2010 zoning and assuming 20 percent of the area was used in the development of roadways, sidewalks, parks, etc. The flows generated by the number of ERUs achieved at build-out were entered into *SewerCAD* allowing the flows to be routed into existing lines. *SewerCAD* was run to determine upgrades needed for demands on the existing sanitary sewer system and demands to be placed on the system during buildout.

The existing sanitary sewer system was modeled using PFs for both the present and future conditions. Each line that was flowing over either 50 percent of capacity for lines 12 inches and smaller or 75 percent of capacity for lines greater than 12 inches was then re-evaluated and recommendations made to provide lines with adequate capacities for the future conditions.

Existing Deficiency Improvement Plan

The following improvements represent deficiencies in the existing sanitary sewer system. These improvements are shown in Figure 3 in the appendix.

Ranch Drive sewer reconstruct at new grade. It is recommended that the 8-inch sewerline on Ranch Drive just west of Dry Creek be reconstructed at a new grade to eliminate surcharging from the existing line being installed at a reverse grade. This line would be approximately 350 feet in length.

200 North sewer reconstruct at new grade. It is recommended that the 8-inch sewerline on 200 North near Deerfield Road be reconstructed at a new grade to eliminate surcharging from the existing line being installed at a reverse grade. This line would be approximately 480 feet in length.

Alpine Highway sewer reconstruct at new grade. It is recommended that an 8-inch sewerline on Alpine Highway just west of Bateman Ln be reconstructed at a new grade to eliminate surcharging from the existing line being installed at a reverse grade. This line would be approximately 350 feet in length.

Buildout Improvement Plan

The following improvements are those necessary to provide capacity for future growth. These improvements are shown in Figure 4 in the appendix.

600 North and Main Street Extension. There is an area north of 600 North and east of Main Street that does not have access to a sewerline. This improvement is to extend sewer to this area for future service. The 8-inch segment would be about 300 feet in length.

100 West, Center Street to 120 South Sewer Upsize. This line will be undersized from Center Street to Parkway under the build-out population. This section will need to be upgraded to a 12-inch line. The segment is about 330 feet.

Towle/Pack Sewer Extension. There is an area north of the proposed Towle Subdivision that does not have access to a sewerline. This improvement is to extend sewer to this area for future service. The 8-inch segment would be about 300 feet in length.

A summary of the recommended improvements, scheduling, and estimated costs is shown in Table 4. Figures 3 and 4 in the appendix shows the recommended improvements. Figure 8 in the appendix shows the anticipated capacity utilized at buildout. With contingencies, engineering, legal, and administrative fees, the total estimated cost is \$649,378.65.

Table 4 10-Year Improvement Schedule

Fiscal Year	Description	Cost	% Benefit to Existing	Impact Expense	Operating Expense
2014-15	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
	Ranch Drive Sewer Reconstruct at New Grade	\$37,826.25	100%	\$0.00	\$37,826.25
	100 West, Center to 120 South Sewer Upsize	\$242,567.76	0%	\$242,567.76	\$0.00
	600 North and Main Sewer Extension	\$41,815.20	0%	\$41,815.20	\$0.00
2015-16	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
	200 North Sewer Reconstruct at New Grade	\$123,453.43	100%	\$0.00	\$123,453.43
	Towle/Pack Extension	\$32,874.45	0%	\$32,874.45	\$0.00
2016-17	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
	Alpine Highway Sewer Reconstruct at New Grade	\$91,716.01	100%	\$0.00	\$91,716.01
2017-18	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2017-18	5 Year Master Plan Update	\$40,000.00	78%	\$8,736.00	\$31,264.00
2018-19	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2019-20	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2020-21	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2021-22	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2022-23	5 Year Master Plan Update	\$40,000.00	78%	\$8,736.00	\$31,264.00
Total Expenditures		\$682,253.10		\$341,718.21	\$340,534.89

Sanitary Sewer Rate Review

Table 5 shows the revenue and expense summary for the past five year for the sewer fund. It appears that the current fees are adequate to cover expenses. These fees should be evaluated on a yearly basis and adjusted as needed especially as TSSD fees are increase periodically.

Table 5 Revenue and Expense Summary

Description	FY 2008-09	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
Sewer Service Charge	\$528,223.62	\$847,533.76	\$946,954.12	\$925,354.57	\$944,394.81
Interest Income	\$23,430.80	\$5,964.05	\$5,474.04	\$8,926.96	\$9,634.93
Sewer Connections	\$1,625.00	\$1,625.00	\$2,075.00	\$2,625.00	\$3,775.00
Sewer Impact Fee	\$8,550.00	\$7,315.00	\$10,640.00	\$13,965.00	\$19,950.00
Developer Contributions	\$63,693.00	\$8,400.00	\$44,406.02	\$54,867.60	\$8,067.60
Total Revenue	\$625,522.42	\$870,837.81	\$1,009,549.18	\$1,005,739.13	\$985,822.34
Operating Expenses	\$215,030.35	\$238,941.50	\$264,583.30	\$276,349.58	\$278,270.15
Depreciation	\$111,867.92	\$120,573.89	\$124,650.24	\$123,941.82	\$125,741.35
Impact Fee Related Improvements	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Debt Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TSSD Operating Expenses	\$325,400.19	\$543,385.32	\$309,596.15	\$423,149.10	\$498,406.89
Total Expenses	\$652,298.46	\$902,900.71	\$698,829.69	\$823,440.50	\$902,418.39
Net Gain/(Loss)	-\$26,776.04	-\$32,062.90	\$310,719.49	\$182,298.63	\$83,403.95
Net Excluding Impact Funds	-\$35,326.04	-\$39,377.90	\$300,079.49	\$168,333.63	\$63,453.95

S E C 4 I O N

Chapter 4 - Impact Fee Facility Plan (IFFP)

General Background

Alpine City has experienced significant growth in recent years. This growth, through the construction of homes, parks, commercial areas, and other amenities incidental to development, has added to the load on the City's sanitary sewer system. As development continues, additional sewer flows will be added to the sanitary sewer system. Alpine City's objective is to provide adequate sewer facilities to carry wastewater flows to TSSD in a safe and sanitary manner.

Alpine City adopted a sanitary sewer system component update of the General Plan in 2005 and an update in 2014 to plan sewer facilities to carry wastewater flows. This plan update proposes guidelines and suggests controls for the design and installation of sewer facilities. The plan also establishes estimated costs associated with sewer facilities.

In 2014, an update was completed on the sanitary sewer system component of the General Plan. This updated was needed to update potential changes in growth in the city, and better calibrated the model with updated sewer manhole survey data.

Required Elements of an IFFP

The purpose of this IFFP is to identify sewer demands placed on existing Sewer Facilities by new development and propose means by which Alpine City will meet these demands. Various funding possibilities for these facilities will also be discussed.

An IFFP, or its equivalent, must be in place if impact fees are to be considered as a financing source. Impact fees are one-time fees charged to new development to cover costs of increased capital facilities necessitated by new development. They are a critical financing source for Alpine City to consider, given the growth occurring in Alpine City.

According to Utah Code Title 11 Chapter 36a, known as the Impact Fee Act, local political subdivisions with a population of 5,000 or greater must prepare a separate IFFP before imposing impact fees unless the requirements of Utah Code Ann. §11-36-301 (3) (a) are included as part of the General Plan. Because the Alpine City General Plan does not satisfy these requirements, this IFFP has been prepared to meet the legal requirement.

Utah Code Ann. §11-36a-302 provides that the plan shall identify:

- (i) Demands placed upon existing public facilities by new development activity; and

- (ii) The proposed means by which the local political subdivision will meet those demands.

Demands on Existing Facilities

Service Area

Alpine City is located in the northern most portion of Utah County near the base of the Wasatch Mountains and includes an area of approximately 7.4 square miles. It is bordered on the West by Highland and Draper, on the South by Highland, and on the North and East by mountains and Uinta National Forest. Alpine Cove is unincorporated Utah County, however, sewer flows from Alpine Cove are served by the Alpine City sanitary sewer system. Existing land uses vary from pasture and farmland to high-density residential housing and commercial complexes. Therefore, the community can be classified as both rural and suburban.

Alpine City owns and operates a gravity sanitary sewer system that carries wastewater to TSSD outfall lines. With the exception of one lift station at lower Dry Creek, the remainder of the entire system operates by gravity flow.

Sanitary Sewer Design Requirements

The design requirements for the sanitary sewer system are as follows:

- New collector lines must be capable of carrying a minimum peak flow of 3 times the average flow.
- New interceptors and outfall lines must be capable of carrying a minimum peak flow of 2 times the average flow.
- The minimum size of a collection line is 8 inches.
- The minimum velocity of a line flowing full is two feet per second (2 fps).
- 8-inch thru 12-inch sewer lines are not to exceed 50 percent capacity (by depth) at peak flow.
- 15-inch and greater sewer lines are not to exceed 75 percent capacity (by depth) at peak flow.
- An ERU is equal to 274 gallons per day (gpd) average flow. This is based on each person producing 74 gallons of wastewater per day and there being 3.7 people per ERU.

As sewer lines reach the 50 percent or 75 percent capacity point, they are deemed undersized and should be upsized. The reason behind the lower capacity is to provide a buffer during abnormal peak flows. Once a pipe reaches 100 percent capacity, the system will start to surcharge which may result in flooding basements, etc.

Existing Sewer Facilities

Existing conditions at the time of this study were established using data collected from the City as well as flow data generated specifically for the Master Plan. Some of the data gathered and used includes an existing sewer model, the existing sewer master plan, existing City maps, and field flow data. Figure 7 in the appendix shows Alpine's existing sanitary sewer system and facilities.

Connections to the sanitary sewer system include residential, school, church, commercial, and City owned facility connections for a total of 2,866 ERU's.

Deficiencies Based on Existing Development

Alpine City's current sanitary sewer system collects wastewater throughout the City and transfers it to the TSSD treatment facility. There are three areas where flows are greater than the design capacity because of reverse grades in the sewer mainlines. Table 6 and Figure 3 in the appendix illustrate the existing deficiencies in the system. None of these improvements are related to future growth and thus cannot be funded through impact fees.

Table 6 Existing System Deficiencies

Item	Description	Cost
1	Ranch Drive Sewer Reconstruct at New Grade	\$37,826
2	200 North Sewer Reconstruct at New Grade	\$123,453
3	Alpine Highway Sewer Reconstruct at New Grade	\$91,716
Grand Total		\$252,996

May 2014 CCI = 9796
 Costs are in 2014 dollars

Future Demand and Capital Facilities

Future Sewer Requirements

The same design requirements for the current system will apply for future development. All new development will be required to install a minimum of an 8-inch sewer line or the appropriate size to serve their development, whichever is larger.

Future Capital Sewer Facilities

Future conditions at the time of this study were established using data collected from the City. A buildout sewer model was created with the projected sanitary sewer system using the buildout number of ERUs. Table 7 and Figure 4 in the appendix shows Alpine's buildout sanitary sewer system and facilities.

Table 7 Buildout System Improvements

Item	Description	Cost
1	100 West, Center to 120 South Sewer Upsize	\$242,568
2	600 North and Main Sewer Extension	\$41,815
3	Towle/Pack Extension	\$32,874
Grand Total		\$317,257

May 2014 CCI = 9796
 Costs are in 2014 dollars

Buildout connections to the sanitary sewer system include residential, school, church, commercial, and City owned facility connections for a total of 4,193 ERU's.

Capital Facility Cost and Proportionate Share

Cost of Capital Facilities

Detailed engineer's estimates of cost are described in the appendix. A summary of those costs are included in Table 7 above. These costs are associated with master planned improvements in order to properly handle future development demands and are thus eligible for inclusion in an impact fee. Only that portion of the capital facilities that will benefit growth in the 10 year planning period are eligible for inclusion. An appropriate inflation factor can be incorporated in the analysis to cover rising costs in the future.

Cost of Master Planning

The City expects to expend money every year to review the sanitary sewer master plan, IFFP, and IFA and every five years to fully update the same. These costs are eligible for inclusion in an impact fee. Only that portion of the master planning that will benefit growth in the 10 year planning period are eligible for inclusion. An appropriate inflation factor can be incorporated in the analysis to cover rising costs in the future.

Value of Free Capacity in Sanitary Sewer System

The existing sanitary sewer system has excess capacity or free capacity available for future growth. The original sanitary sewer system for Alpine City was constructed in 1979 through 1980 at a cost of \$1,435,257.00. The current City asset list can be seen in the appendix. It is assumed the rest of the facilities after 1981 were developer contributions and cannot be included in a free capacity analysis because they are not eligible for impact fee reimbursement. It is acceptable for future users to pay for their portion of the existing system through an impact fee to reimburse existing users. The free capacity portion of the impact fee will be utilized to repay the exiting sewer enterprise account to recoup actual costs spent on the original system improvements. Only actual costs can be utilized in this analysis and not current replacement costs or inflation adjusted costs.

Cost Associated with Existing Deficiencies

As described previously, the existing sanitary sewer system has deficiencies but these are not associated with future connections and cannot be included in an impact fee analysis (IFA).

Developer Contributions

As growth occurs throughout the City, developers are required to install minimum size sewer lines to serve the homes within their development. Sometimes lines throughout the City need to be upsized to accommodate homes outside the development. The City collects impact fees from all development to cover the cost of upsizing. The detailed cost estimates prepared in the Master Plan only include those costs related to upsizing developer provided facilities or wholly City constructed facilities. No impact fees can be collected for developer provided facilities.

10 Year Improvement Schedule

Table 8 provides the anticipated schedule for master planning and improvement construction. The costs represent present value in 2014 dollars.

Table 8 10-Year Improvement Schedule

Fiscal Year	Description	Cost	% Benefit to Existing	Impact Expense	Operating Expense
2014-15	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
	Ranch Drive Sewer Reconstruct at New Grade	\$37,826.25	100%	\$0.00	\$37,826.25
	100 West, Center to 120 South Sewer Upsize	\$242,567.76	0%	\$242,567.76	\$0.00
	600 North and Main Sewer Extension	\$41,815.20	0%	\$41,815.20	\$0.00
2015-16	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
	200 North Sewer Reconstruct at New Grade	\$123,453.43	100%	\$0.00	\$123,453.43
	Towle/Pack Extension	\$32,874.45	0%	\$32,874.45	\$0.00
2016-17	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
	Alpine Highway Sewer Reconstruct at New Grade	\$91,716.01	100%	\$0.00	\$91,716.01
2017-18	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2017-18	5 Year Master Plan Update	\$40,000.00	78%	\$8,736.00	\$31,264.00
2018-19	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2019-20	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2020-21	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2021-22	Annual Master Plan Review	\$4,000.00	78%	\$873.60	\$3,126.40
2022-23	5 Year Master Plan Update	\$40,000.00	78%	\$8,736.00	\$31,264.00
Total Expenditures		\$682,253.10		\$341,718.21	\$340,534.89

Revenue Source to Finance Impacts to System Improvements

General Fund Revenues

While general fund revenues can be used to fund capital facilities, they are generally insufficient to meet the demands of large infrastructure projects. General fund revenues are mainly drawn from property, sales, and franchise tax revenues.

Grants and Donations

Grants monies or low interest loans for capital facilities may be available through a variety of state and federal programs. Competition for these types of funds is often strong, but they should not be overlooked as a potential funding source.

Sewer Utility

Most municipalities have enacted a sewer utility to pay the cost of capital facilities. A sewer utility would charge all residents a monthly fee based on winter water usage. Monthly fees could then be used to maintain the system and/or construct capital facility improvements.

Impact Fees

Impact fees are an important means of financing future water capital facility improvements, especially given the growth Alpine City is experiencing. The fees collected can be used for infrastructure as outlined in this IFFP. Impact fees are a one-time fee charged to new development that allow development to “pay its own way” in terms of the additional costs cities experience when growth occurs. Impact fees must meet the requirements of Utah law, must demonstrate that there is a rational connection between the fees charged to correct deficiencies in an existing system, and must provide that adjustment to impact fees be made to appropriately credit any significant past payments or anticipated future payments to capital facilities. This is to insure that the new development is not “double charged” for capital facilities. Impact fees are necessary in order to achieve an equitable allocation between the costs borne in the past and the cost to be borne in the future. Existing residential and businesses are well served by the existing sanitary sewer system. However, with additional growth improvements and expansion of the sanitary sewer system will be needed to provide adequate service.

Debt Financing

Alpine City can also fund sewer facilities through bonding. Bonding is often a good approach when large sums are needed up-front because it allows the payments to be spread over a longer time period. Alpine City does have a revenue source in sewer user rates to back a debt service payment for sanitary sewer system improvements. Bonding can be obtained on the open market or through governmental agencies such as the Utah Division of Water Quality.

IFFP Certification

I certify that the attached impact fee facility plan (IFFP):

1. includes only the costs of public facilities that are:
 - a. allowed under the Impact Fees Act; and
 - b. actually incurred; or
 - c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
 - a. costs of operation and maintenance of public facilities;
 - b. costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents;
 - c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. offset costs with grants or other alternate sources of payment; and
4. complies in each and every relevant respect with the Impact Fees Act.

This certification made in accordance with Utah Code Annotated, 11-36a-306(2), with the following caveats:

1. All of the recommendations for implementation of the IFFP made in the IFFP are followed in their entirety by Alpine City staff and Council in accordance to the specific policies established for the service area.
2. If all or a portion of the IFFP are modified or amended, this certification is no longer valid.
3. All information provided to Horrocks Engineers, its contractors or suppliers is assumed to be correct, complete and accurate. This includes information provided by Alpine City and outside sources.

Date _____

John E. Schiess, P.E.
Horrocks Engineers

S E C T I O N 5

Chapter 5 - Impact Fee Analysis (IFA)

General Background

Alpine City has experienced significant growth in recent years. This growth, through the construction of homes, parks, commercial areas, and other amenities incidental to development, has added to the load on the City's sanitary sewer system. As development continues, additional sewer flows will be added to the sanitary sewer system. Alpine City's objective is to provide adequate sewer facilities to carry wastewater flows to TSSD in a safe and sanitary manner.

Alpine City adopted a sanitary sewer system component update of the General Plan in 2005 and an update in 2014 to plan sewer facilities to carry wastewater flows. This plan update proposes guidelines and suggests controls for the design and installation of sewer facilities. This plan also establishes estimated costs associated with sewer facilities.

In 2014, an update was completed on the sanitary sewer system component of the General Plan (Master Plan) and the IFFP in preparation for this IFA.

Impact Fee Overview

An impact fee is a one-time fee charged to new development to recover the City's historic and future costs of constructing sanitary sewer facilities with capacity to handle the new development. The fee is assessed at the time of building permit issuance as a condition of approval. This analysis is done following the Impact Fees Act (UCA 11-36a-101 et seq) to ensure that the fee is equitable, fair, and legally defensible.

This analysis shows that there is a fair comparison, or rational nexus, between the impact fees charged to new development and the impact that new development places on the sanitary sewer system.

This impact fee analysis is intended to fairly allocate the costs of expanding the sanitary sewer system and unused capacity in the existing system to the new growth that requires more capacity. The final impact fee is calculated by dividing the proportionate costs of existing and future projects by the demand that is estimated to occur within the next ten years. There will be projects constructed within the next ten years that will provide capacity that is in excess of the capacity required for the next ten year's development. This analysis discounts the existing and future projects to only include the portion of the cost and capacity that relates to the ten year demand therefore achieving a fair comparison of cost and demand.

Costs that can be included in an impact fee include the following:

- New Sanitary Sewer capital infrastructure needed to serve new growth or up-sized existing facilities need to serve new growth;
- Professional and planning services related to the construction of growth related facilities;
- Interest costs on bonds used for facilities constructed that will serve future growth;
- Appropriate inflation adjusted costs to reflect the year construction is planned relative to current dollars; and
- Proportion of historic costs of existing improvements than can serve future growth.

Costs that cannot be included in the impact fee include the following:

- Improvements necessary to cure deficiencies for existing users;
- Improvements that increase the level of service above that which is currently provided;
- Portions of upsizing projects that replace capacity that already exists;
- Operation and maintenance costs;
- Costs for facilities funded by grants or other funds that the City does not have to repay; and
- Costs to reconstruct facilities that do not have capacity for future growth.

Service Area

Alpine City is located in the northern most portion of Utah County near the base of the Wasatch Mountains and includes an area of approximately 7.4 square miles. It is bordered on the West by Highland and Draper, on the South by Highland, and on the North and East by mountains and Uinta National Forest. Alpine Cove is unincorporated Utah County, however, sewer flows from Alpine Cove are served by the Alpine City sanitary sewer system. Existing land uses vary from pasture and farmland to high-density residential housing and commercial complexes. Therefore, the community can be classified as both rural and suburban.

Alpine City owns and operates a gravity sanitary sewer system that carries wastewater to TSSD outfall lines. With the exception of one lift station at lower Dry Creek, the remainder of the entire system operates by gravity flow.

Level of Service

Impact fees cannot be utilized to raise the level of service for existing users. Both existing users and future growth need to pay for their respective portion of any required improvements.

The design requirements for the sanitary sewer system are as follows:

- New collector lines must be capable of carrying a minimum peak flow of 3 times the average flow.

- New interceptors and outfall lines must be capable of carrying a minimum peak flow of 2 times the average flow.
- The minimum size of a collection line is 8 inches.
- The minimum velocity of a line flowing full is two feet per second (2 fps).
- 8-inch thru 12-inch sewer lines are not to exceed 50 percent capacity (by depth) at peak flow.
- 15-inch and greater sewer lines are not to exceed 75 percent capacity (by depth) at peak flow.
- An ERU is equal to 274 gallons per day (gpd) average flow. This is based on each person producing 74 gallons of wastewater per day and there being 3.7 people per ERU.

As sewer lines reach the 50 percent or 75 percent capacity point, they are deemed undersized and should be upsized. The reason behind the lower capacity is to provide a buffer during abnormal peak flows.

The Alpine City sanitary sewer master plan, IFFP, and this IFA are based on the same level of service for both existing and future users.

Equivalent Residential Unit (ERU)

Sanitary sewer flows are generated from residential, commercial, industrial, and institutional sources and it is advantageous to relate these sources in a quantifiable manner. It was determined in the sewer master plan that an average residential home in Alpine City produced 274 gallons of sanitary waste per day. The average residential home is defined as an ERU. Other sources such as churches, schools, and commercial businesses are compared to the average residential home to determine its ERU value. For example a commercial business who generates 822 gallons of sanitary waste is assigned an ERU value of 3.0 because it generates three times the sanitary waste of an average home.

Population growth has been projected for Alpine City (see Table 1 and Figure 1) and subsequently ERC’s. Table 9 shows the ERU’s utilized to determine needed improvements and calculate the impact fees.

Table 9 ERU Summary

ERU	
Current ERU's	2,866
Buildout ERU's	4,193
Undeveloped ERU's	1,327
ERU's in 10 Year CIP	801

Capital Project Costs

Future conditions at the time of this study were established using data collected from the City. A buildout sewer model was created with the projected sanitary sewer system using the buildout number of ERUs. Buildout connections to the sanitary sewer system include residential, school, church, commercial, and City owned facility connections for a total of 4,193 ERU’s. Figure 4 in the appendix shows the necessary

buildout improvements to the sanitary sewer system. These improvements are necessary to meet the needs of future growth. The following costs are present value in 2014 dollars.

Table 10 Buildout Sanitary Sewer System Improvements

Item	Description	Cost
1	100 West, Center to 120 South Sewer Upsize	\$242,568
2	600 North and Main Sewer Extension	\$41,815
3	Towle/Pack Extension	\$32,874
Grand Total		\$317,257
May 2014 CCI = 9796		
Costs are in 2014 dollars		

Proportionate Share Analysis

Cost of Capital Facilities

Detailed engineer’s estimates of cost are described in the appendix. A summary of those costs are included in Table 10 above. These costs are associated with master planned improvements in order to properly handle future development demands and are thus eligible for inclusion in an impact fee. Only that portion of the capital facilities that will benefit growth in the 10 year planning period are eligible for inclusion. An appropriate inflation factor can be incorporated in the analysis to cover rising costs in the future. An inflation rate of 3 percent per year was applied to the buildout system improvement costs according to the year the improvements are scheduled to be constructed. Table 11 shows the proportional share of the capital projects associated with the growth expected in the next 10 years.

Table 11 Impact Fee Improvement Projects

Component	Result
Current ERU's	2,866
Buildout ERU's	4,193
Undeveloped ERU's	1,327
ERU's in 10 Year CIP	801
10 Year ERU Percentage	60.37%
Total Impact Fee Improvements	\$332,898
Cost per ERU	\$250.94

Cost of Master Planning

The City expects to expend money every year to review sanitary sewer master plan, IFFP, and IFA and every five years to fully update the same. These costs are eligible for inclusion in an impact fee. Only that portion of the master planning that will benefit growth in the 10 year planning period are eligible for

inclusion. An appropriate inflation factor can be incorporated in the analysis to cover rising costs in the future. An inflation rate of 3 percent per year was applied to the master planning costs according to the year the costs are scheduled. Table 12 shows the proportional share of the mater planning associated with the growth expected in the next 10 years.

Table 12 Master Planning Cost Share

Component	Result
Current ERU's	2,866
Buildout ERU's	4,193
Undeveloped ERU's	1,327
ERU's in 10 Year CIP	801
10 Year Contribution Percentage	21.84%
Total Master Plan Update Costs	\$137,349
Cost per ERU	\$37.45

Value of Free Capacity in Sanitary Sewer System

The existing sanitary sewer system has excess capacity or free capacity available. The original sanitary sewer system for Alpine City was constructed in 1979 through 1980 at a cost of \$1,435,257.00. The current City asset list can be seen in the appendix. It is assumed the rest of the facilities after 1981 were contributed to the City as developer contributions and are not included in the free capacity analysis. Table 13 shows the free capacity summary which shows the cost of the original system that could be re-couped from future connections. The sewer model shows the original system has an average of 11.6 percent utilization while the buildout population would utilize 19.0 percent. This translates to 38.8 percent of the value of the existing system is utilized by future connections. The free capacity portion of the impact fee will be utilized to repay the exiting sewer enterprise account to recoup actual costs spent on the original system improvements.

Table 13 Existing System Free Capacity Summary

Item	Result
Total Cost of Original Sanitary Sewer System	\$1,435,257.00
Current Average Percent Utilized	11.6%
Buildout Average Percent Utilized	19.0%
Percent Cost Associated with Growth	38.8%
Total Free Capacity Costs	\$556,266.01
Free Capacity Cost per ERC	\$419.31

Cost Associated with Existing Deficiencies

As described previously, the existing sanitary sewer system has deficiencies but these are not associated with future connections and cannot be included in an IFA.

Developer Contributions

As growth occurs throughout the City, developers are required to install minimum size sewer lines to serve the homes within their development. Sometimes lines throughout the City need to be upsized to accommodate homes outside the development. The City collects impact fees from all development to cover the cost of upsizing. The detailed cost estimates prepared in the Master Plan only include those costs related to upsizing developer provided facilities or wholly City constructed facilities. No impact fees can be collected for developer provided facilities.

Existing Impact Fee Balance

The City has an existing impact fee balance collected as part of a previous IFA. Those fees were collected for projects identified as future growth related at the time of adoption. This balance will be utilized to offset the cost of capital facilities and free capacity costs for connections within the last six years. Table 14 shows the distribution of the existing impact fee balance.

Table 14 Existing Impact Fee Fund Balance Allocation

Component	Result
Existing Impact Fee Fund Balance	\$349,049.13
Previous 6 years ERC Growth	152
Buy-in Portion	\$63,769.86
Buildout Improvements Portion	\$285,279.27

Impact Fee Summary

Table 15 shows the total impact fee for Alpine City sanitary sewer system. It includes the cost to future connections of their buy-in to the existing system, their portion of master planned costs, their portion of their buildout improvements, and a discount based on the existing impact fee fund balance.

Table 15 Total Impact Fee Summary

Component	Cost
Free Capacity Component	\$419.31
Master Plan Updates Component	\$37.45
Buildout Improvements Component	\$250.94
Existing Impact Fee Balance Discount	-\$215.04
Total Impact Fee	\$492.66

IFA Certification

I certify that the attached impact fee analysis (IFA):

1. includes only the costs of public facilities that are:
 - a. allowed under the Impact Fees Act; and
 - b. actually incurred; or
 - c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
 - a. costs of operation and maintenance of public facilities;
 - b. costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents;
 - c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. offset costs with grants or other alternate sources of payment; and
4. complies in each and every relevant respect with the Impact Fees Act.

This certification made in accordance with Utah Code Annotated, 11-36a-306(2), with the following caveats:

1. All of the recommendations for implementation of the IFFP made in the IFFP or in the IFA are followed in their entirety by Alpine City staff and Council in accordance to the specific policies established for the service area.
2. If all or a portion of the IFFP or IFA are modified or amended, this certification is no longer valid.
3. All information provided to Horrocks Engineers, its contractors or suppliers is assumed to be correct, complete and accurate. This includes information provided by Alpine City and outside sources.

Date _____

John E. Schiess, P.E.
Horrocks Engineers

APPENDIX

Legend

○ Manholes

— Gravity Pipes

Improvements

— Re-Lay Pipe

CITY

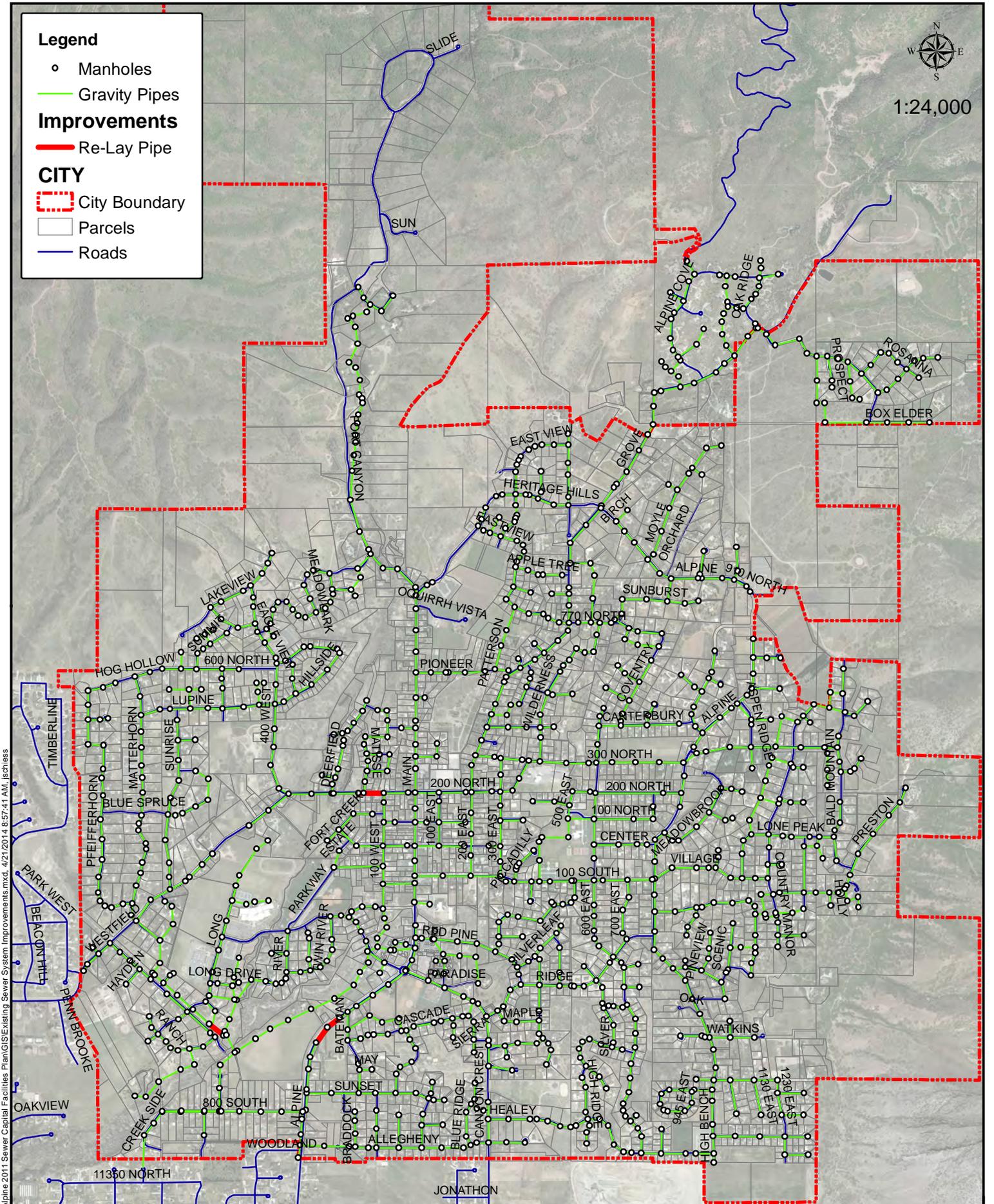
▭ City Boundary

▭ Parcels

— Roads



1:24,000



O:\2011PG-028-1107 Alpine 2011 Sewer Capital Facilities Plan\GIS\Existing Sewer System Improvements.mxd, 4/21/2014 8:57:41 AM, jschless



2162 West Grove Parkway
Suite #400
Pleasant Grove, UT
(801) 763-5100

Alpine City Existing System Improvements

DATE	4/21/2014
DRAWN	JES
Figure	



1:24,000

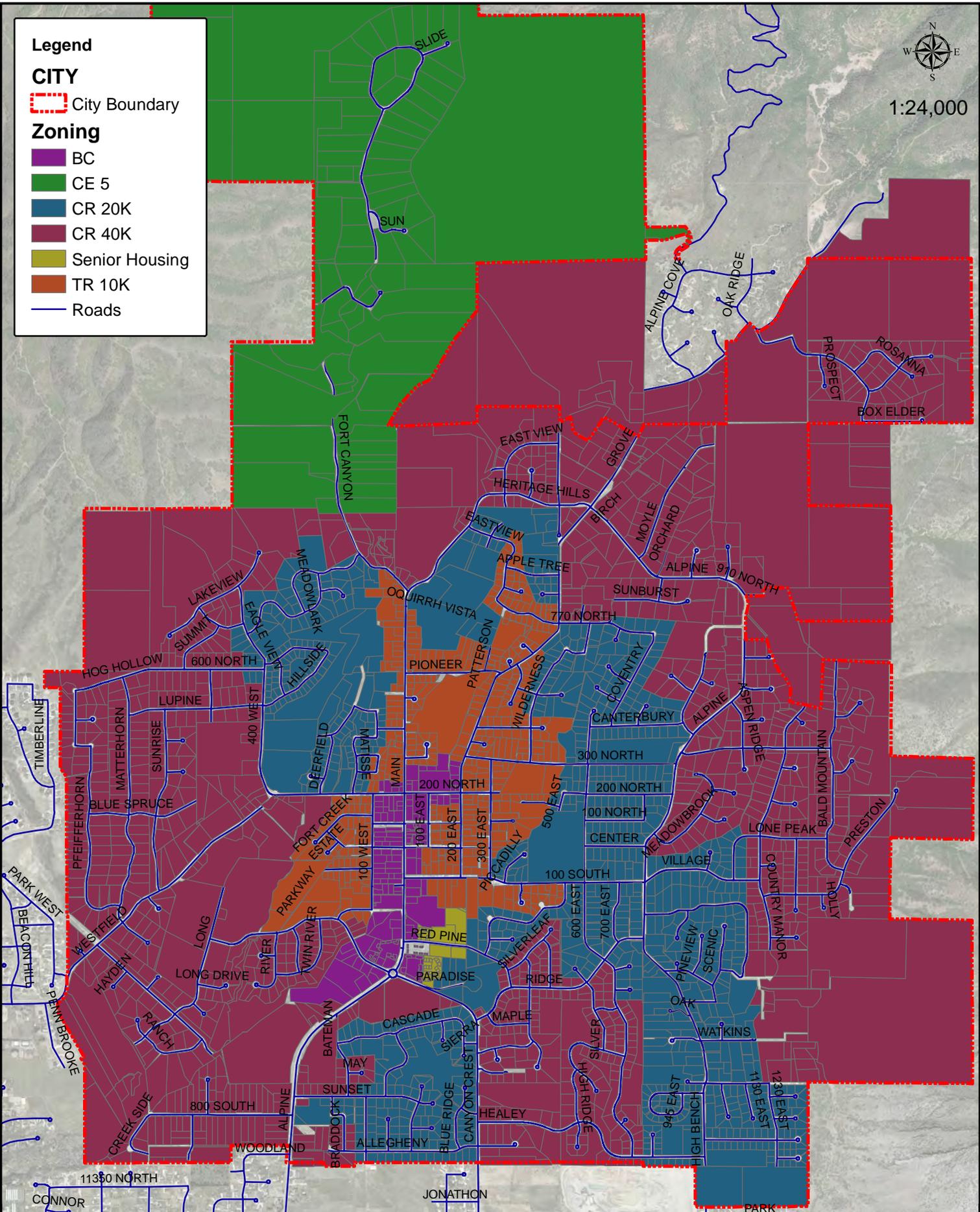
Legend

CITY

- City Boundary

Zoning

- BC
- CE 5
- CR 20K
- CR 40K
- Senior Housing
- TR 10K
- Roads



O:\12011PG-028-1107 Alpine 2011 Sewer Capital Facilities Plan\GIS\Existing Zoning.mxd, 4/21/2014, 9:36:23 AM, jschless

HORROCKS
ENGINEERS

2162 West Grove Parkway
Suite #400
Pleasant Grove, UT
(801) 763-5100

Alpine City Existing Zoning

DATE	4/21/2014
DRAWN	JES
Figure	



1:36,000

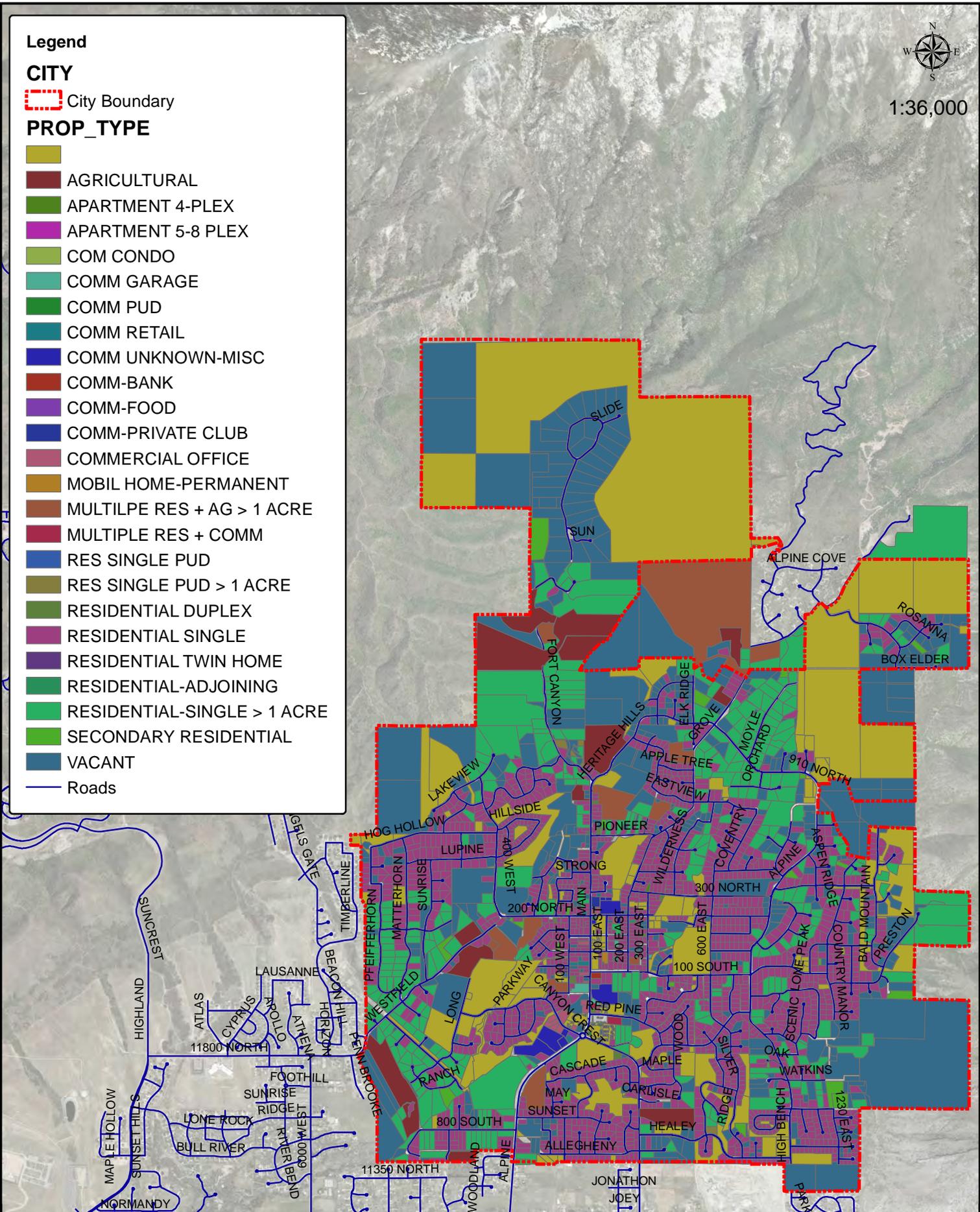
Legend

CITY

City Boundary

PROP_TYPE

-
- AGRICULTURAL
- APARTMENT 4-PLEX
- APARTMENT 5-8 PLEX
- COM CONDO
- COMM GARAGE
- COMM PUD
- COMM RETAIL
- COMM UNKNOWN-MISC
- COMM-BANK
- COMM-FOOD
- COMM-PRIVATE CLUB
- COMMERCIAL OFFICE
- MOBIL HOME-PERMANENT
- MULTIPLE RES + AG > 1 ACRE
- MULTIPLE RES + COMM
- RES SINGLE PUD
- RES SINGLE PUD > 1 ACRE
- RESIDENTIAL DUPLEX
- RESIDENTIAL SINGLE
- RESIDENTIAL TWIN HOME
- RESIDENTIAL-ADJOINING
- RESIDENTIAL-SINGLE > 1 ACRE
- SECONDARY RESIDENTIAL
- VACANT
- Roads



O:\1107\Alpine 2011 Sewer Capital Facilities Plan\GIS\Existing Landuse.mxd, 4/21/2014 9:35:40 AM, jschiss



2162 West Grove Parkway
Suite #400
Pleasant Grove, UT
(801) 763-5100

Alpine City Existing Land Use

DATE	4/21/2014
DRAWN	JES
Figure	



1:24,000

Legend

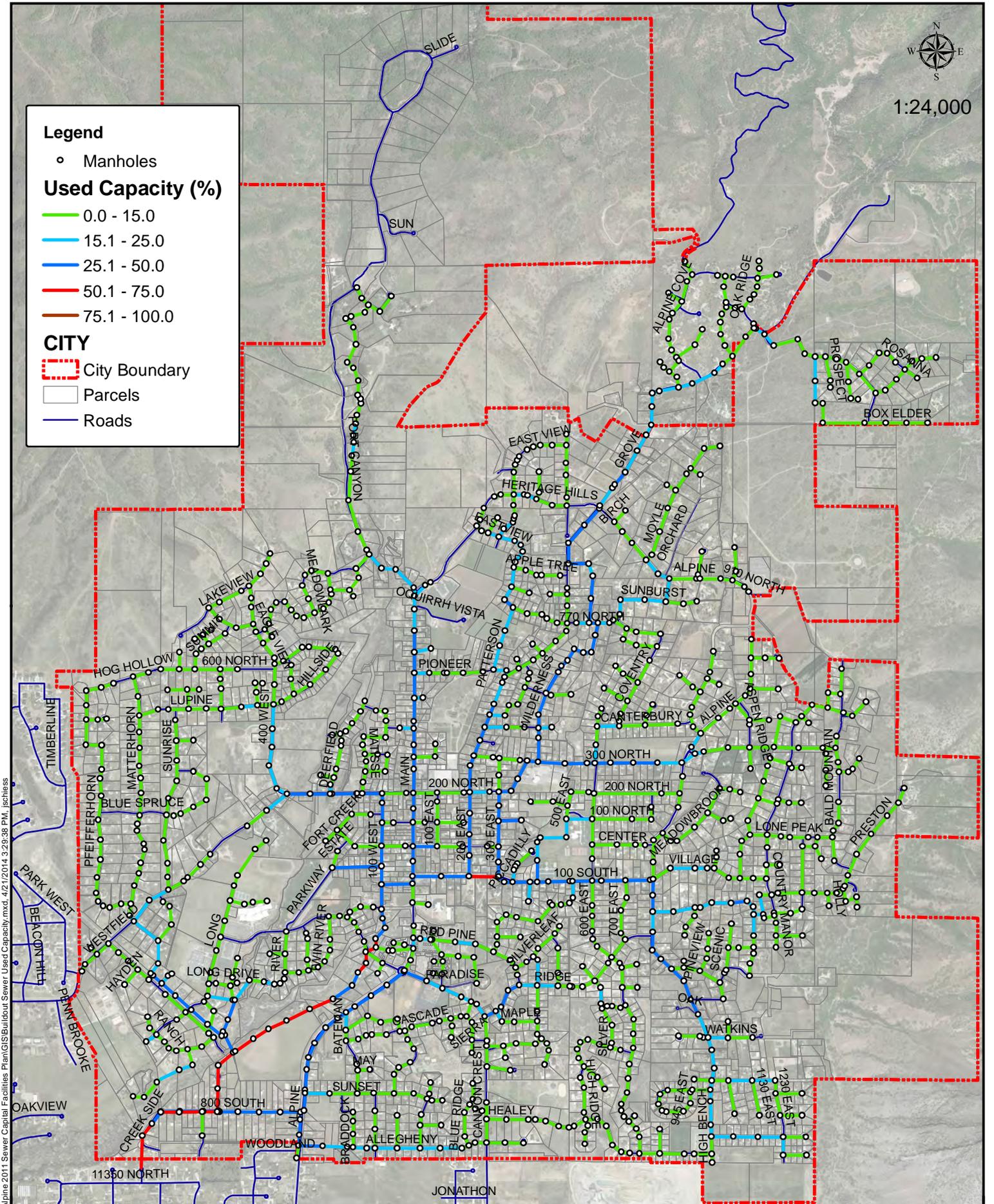
- Manholes

Used Capacity (%)

- 0.0 - 15.0
- 15.1 - 25.0
- 25.1 - 50.0
- 50.1 - 75.0
- 75.1 - 100.0

CITY

- City Boundary
- Parcels
- Roads



O:\2011PG-028-1107 Alpine 2011 Sewer Capital Facilities Plan\GIS\Buildout Sewer Used Capacity.mxd, 4/21/2014 3:29:38 PM, jcschies

HORROCKS
ENGINEERS

2162 West Grove Parkway
Suite #400
Pleasant Grove, UT
(801) 763-5100

Alpine City Buildout Sewer Used Capacity

DATE	4/21/2014
DRAWN	JES
Figure	

ASSET DEPRECIATION SHORT REPORT
SEWER - Jun. 30, 2013

Assets: 136 of 136 Included
 Include: All Assets

Sorted by: Asset A/C#
 Method: BOOK - Std Conv Applied

Date Acq	Description	Meth/Life	Cost	Salvage Value	Depr Basis	Includes Section 179		
						Beg A/Depr	Curr Depr	End A/Depr
Asset A/C#: 10000 - LAND								
01/23/1996	Sewer Easement - Whitby	NONE / 99	8,000.00	0.00	0.00	0.00	0.00	0.00
06/30/2013 A	Whitby Easements	NONE / 99	8,000.00	0.00	8,000.00	0.00	0.00	0.00
Totals: 10000 - LAND (2 assets)			16,000.00	0.00	8,000.00	0.00	0.00	0.00
Asset A/C#: 20000 - BUILDINGS								
06/30/1993	City Shop	SLP / 31.5	45,971.00	0.00	45,971.00	27,850.22	1,459.40	29,309.62
Totals: 20000 - BUILDINGS (1 asset)			45,971.00	0.00	45,971.00	27,850.22	1,459.40	29,309.62
Asset A/C#: 50000 - IMPROVEMENTS								
01/01/1979	Sewer	SLP / 50	1,349,786.00	0.00	1,349,786.00	904,356.62	26,995.72	931,352.34
01/01/1980	Sewer Additions	SLP / 50	10,988.00	0.00	10,988.00	7,142.20	219.76	7,361.96
01/01/1981	Sewer Additions	SLP / 50	63,519.00	0.00	63,519.00	40,016.97	1,270.38	41,287.35
12/04/1981	Arbitration Sewer Const	SLP / 50	10,964.00	0.00	10,964.00	6,706.31	219.28	6,925.59
06/20/1985	Park Sewer Line	SLP / 50	5,340.00	0.00	5,340.00	2,892.50	106.80	2,999.30
07/01/1985	Park Sewer Line	SLP / 50	4,811.10	0.00	4,811.10	2,597.94	96.22	2,694.16
05/01/1991	New Castle Est A	SLP / 50	19,260.00	0.00	19,260.00	8,153.40	385.20	8,538.60
09/20/1991	Frot Creek	SLP / 50	9,490.00	0.00	9,490.00	3,954.17	189.80	4,143.97
05/10/1992	High Mountain Oaks A	SLP / 50	57,460.00	0.00	57,460.00	23,175.53	1,149.20	24,324.73
05/10/1992	High Mountain Oaks A	SLP / 50	43,647.00	0.00	43,647.00	17,604.29	872.94	18,477.23
05/15/1992	Alpine Hills	SLP / 50	15,400.00	0.00	15,400.00	6,211.33	308.00	6,519.33
07/14/1992	Alpine Hills	SLP / 50	2,804.00	0.00	2,804.00	1,121.60	56.08	1,177.68
08/01/1992	East Mountain Est C	SLP / 50	7,300.00	0.00	7,300.00	2,907.83	146.00	3,053.83
08/01/1992	New Castle Est B	SLP / 50	1,300.00	0.00	1,300.00	517.83	26.00	543.83
10/12/1992	High Mountain Oaks D	SLP / 50	22,500.00	0.00	22,500.00	8,887.50	450.00	9,337.50
10/12/1992	High Mountain Oaks C	SLP / 50	13,500.00	0.00	13,500.00	5,332.50	270.00	5,602.50
11/01/1992	Hunt Club	SLP / 50	39,580.00	0.00	39,580.00	15,568.13	791.60	16,359.73
11/01/1992	Hunt Club B	SLP / 50	23,680.00	0.00	23,680.00	9,314.13	473.60	9,787.73
05/01/1993	Westfield Meadows	SLP / 50	17,070.00	0.00	17,070.00	6,543.50	341.40	6,884.90
05/01/1993	Westfield Meadows	SLP / 50	14,450.00	0.00	14,450.00	5,539.17	289.00	5,828.17
06/10/1993	High Mountain Oaks E	SLP / 50	12,010.00	0.00	12,010.00	4,583.82	240.20	4,824.02
09/30/1993	Alpine Ridge	SLP / 50	31,100.00	0.00	31,100.00	11,714.33	622.00	12,336.33
09/30/1993	Arnold Court	SLP / 50	17,100.00	0.00	17,100.00	6,441.00	342.00	6,783.00
09/30/1993	Box Elder A	SLP / 50	4,546.00	0.00	4,546.00	1,712.33	90.92	1,803.25
09/30/1993	Box Elder B	SLP / 50	35,500.00	0.00	35,500.00	13,371.67	710.00	14,081.67
09/30/1993	Box Elder C	SLP / 50	38,100.00	0.00	38,100.00	14,351.00	762.00	15,113.00
09/30/1993	Box Elder D	SLP / 50	36,200.00	0.00	36,200.00	13,635.33	724.00	14,359.33
09/30/1993	Lone Peak	SLP / 50	76,850.00	0.00	76,850.00	28,946.83	1,537.00	30,483.83
09/30/1993	Taylor Homes	SLP / 50	1,200.00	0.00	1,200.00	452.00	24.00	476.00
09/30/1993	New Castle C	SLP / 50	4,698.00	0.00	4,698.00	1,769.58	93.96	1,863.54
09/30/1993	Strong Subdivision	SLP / 50	10,900.00	0.00	10,900.00	4,105.67	218.00	4,323.67
03/31/1994	Fort Canyon	SLP / 50	69,726.00	0.00	69,726.00	25,566.20	1,394.52	26,960.72
06/30/1995	Westfield Oaks A	SLP / 50	68,600.00	0.00	68,600.00	23,438.33	1,372.00	24,810.33
06/30/1995	Oak Knoll A&B	SLP / 50	98,300.00	0.00	98,300.00	33,585.83	1,966.00	35,551.83
06/30/1995	River Meadows A	SLP / 50	11,050.00	0.00	11,050.00	3,775.42	221.00	3,996.42
06/30/1995	River Meadows B	SLP / 50	13,800.00	0.00	13,800.00	4,715.00	276.00	4,991.00
06/30/1995	River Meadows Offsite	SLP / 50	18,300.00	0.00	18,300.00	6,252.50	366.00	6,618.50
06/30/1995	River Meadows C	SLP / 50	14,800.00	0.00	14,800.00	5,056.67	296.00	5,352.67
06/30/1995	River Meadows D	SLP / 50	28,650.00	0.00	28,650.00	9,788.75	573.00	10,361.75
06/30/1995	International Estates B	SLP / 50	76,265.00	0.00	76,265.00	26,057.21	1,525.30	27,582.51
07/27/1995	Lynn Miller Improvements	SLP / 50	750.00	0.00	750.00	255.00	15.00	270.00
12/14/1995	Box Elder D	SLP / 50	36,200.00	0.00	36,200.00	12,006.33	724.00	12,730.33
04/11/1996	Westfield Oaks III	SLP / 50	39,290.00	0.00	39,290.00	12,769.25	785.80	13,555.05
06/18/1996	Ranch @ Westfield Park	SLP / 50	180,500.00	0.00	180,500.00	58,060.83	3,610.00	61,670.83
06/30/1998	Develpoer Contributions	SLP / 50	626,816.00	0.00	626,816.00	176,553.17	12,536.32	189,089.49
06/30/2002	System Improvements	SLP / 50	45,544.56	0.00	45,544.56	9,184.81	910.89	10,095.70
09/01/2002	Healey Blvd Sewer Line	SLP / 50	28,711.60	0.00	28,711.60	5,646.60	574.23	6,220.83
06/30/2003	Develpoer Contributions	SLP / 50	345,491.68	0.00	345,491.68	62,764.29	6,909.83	69,674.12
08/01/2003	Alpine Jr High	SLP / 50	26,800.00	0.00	26,800.00	4,779.33	536.00	5,315.33
09/04/2003	Swiss One Plat A	SLP / 50	45,748.80	0.00	45,748.80	8,082.32	914.98	8,997.30
09/30/2003	Smooth Canyon C	SLP / 50	6,554.00	0.00	6,554.00	1,157.87	131.08	1,288.95
12/11/2003	Creek Side Pass	SLP / 50	12,204.00	0.00	12,204.00	2,095.02	244.08	2,339.10
04/16/2004	Fort Canyon Extention	SLP / 50	101,590.47	0.00	101,590.47	16,762.43	2,031.81	18,794.24
05/24/2004	Sequoia Circle	SLP / 50	6,750.00	0.00	6,750.00	1,102.50	135.00	1,237.50
06/30/2004	Minor Subdivisions 2003-2004	SLP / 50	6,600.00	0.00	6,600.00	1,067.00	132.00	1,199.00
07/01/2004	DC - Alpine Auto Wash	SLP / 50	5,400.00	0.00	5,400.00	864.00	108.00	972.00
09/03/2004	DC - Deerfield Plat A	SLP / 50	32,148.00	0.00	32,148.00	5,036.52	642.96	5,679.48
09/15/2004	DC - Pheasant Ridge	SLP / 50	54,666.00	0.00	54,666.00	8,564.34	1,093.32	9,657.66

ASSET DEPRECIATION SHORT REPORT
SEWER - Jun. 30, 2013

Assets: 136 of 136 Included
 Include: All Assets

Sorted by: Asset A/C#
 Method: BOOK - Std Conv Applied

Date Acq	Description	Meth/Life	Cost	Salvage Value	Depr Basis	Includes Section 179		
						Beg A/Depr	Curr Depr	End A/Depr
Asset A/C#: 50000 - IMPROVEMENTS								
09/28/2004	DC - Main Street Village	SLP / 50	3,822.60	0.00	3,822.60	598.86	76.45	675.31
10/11/2004	Healey Heights Plat K	SLP / 50	13,080.00	0.00	13,080.00	2,027.40	261.60	2,289.00
12/14/2004	DC - Paradise Cove SR	SLP / 50	29,772.00	0.00	29,772.00	4,515.42	595.44	5,110.86
12/15/2004	DC - Quincy Court	SLP / 50	9,732.00	0.00	9,732.00	1,476.02	194.64	1,670.66
05/18/2005	DC - Long Drive	SLP / 50	47,352.00	0.00	47,352.00	6,787.12	947.04	7,734.16
06/30/2005	DC - Minor Subdivisions	SLP / 50	4,200.00	0.00	4,200.00	595.00	84.00	679.00
06/30/2005	DC - Swiss One III	SLP / 50	34,119.00	0.00	34,119.00	4,833.53	682.38	5,515.91
06/30/2005	Red Pine Drive	SLP / 50	2,000.00	0.00	2,000.00	283.33	40.00	323.33
06/30/2005	Healey Dvelopment	SLP / 50	17,072.72	0.00	17,072.72	2,418.60	341.45	2,760.05
09/27/2005	DC - Dry Creek Orchards A	SLP / 50	28,170.00	0.00	28,170.00	3,849.90	563.40	4,413.30
09/27/2005	DC - Lye Subdivision	SLP / 50	375.00	0.00	375.00	51.25	7.50	58.75
09/28/2005	DC - Dry Creek Orchads B	SLP / 50	20,340.00	0.00	20,340.00	2,779.80	406.80	3,186.60
11/11/2005	DC - Falcon Ridge	SLP / 50	14,200.00	0.00	14,200.00	1,893.33	284.00	2,177.33
12/22/2005	DC - Wayne Court	SLP / 50	9,720.00	0.00	9,720.00	1,279.80	194.40	1,474.20
01/05/2006	DC - Larson Alpine Plat A	SLP / 50	1,920.00	0.00	1,920.00	249.60	38.40	288.00
01/06/2006	DC - Alpine Commons PRD	SLP / 50	19,530.00	0.00	19,530.00	2,538.90	390.60	2,929.50
01/06/2006	DC - Pasket Court	SLP / 50	9,316.80	0.00	9,316.80	1,211.21	186.34	1,397.55
02/24/2006	DC - Eadt Mountain D	SLP / 50	19,434.00	0.00	19,434.00	2,494.03	388.68	2,882.71
05/02/2006	DC - Moon Subdivision	SLP / 50	10,624.80	0.00	10,624.80	1,310.42	212.50	1,522.92
05/26/2006	DC - Kieffer Annexation	SLP / 50	4,800.00	0.00	4,800.00	592.00	96.00	688.00
09/15/2006	DC - Hunters Ridge Circle	SLP / 50	34,560.00	0.00	34,560.00	4,032.00	691.20	4,723.20
10/18/2006	DC - Tadjie Acres	SLP / 50	6,535.20	0.00	6,535.20	751.53	130.70	882.23
11/30/2006	DC - Burgess Place	SLP / 50	4,200.00	0.00	4,200.00	476.00	84.00	560.00
02/01/2007	DC - Whitby Woodlands B	SLP / 50	28,017.60	0.00	28,017.60	3,035.23	560.35	3,595.58
02/15/2007	DC - McNeil Plat B	SLP / 50	44,160.00	0.00	44,160.00	4,784.00	883.20	5,667.20
06/30/2007	Fort Canyon Sewer	SLP / 50	11,881.40	0.00	11,881.40	1,207.95	237.63	1,445.58
06/30/2007	DC - Jackson Heights	SLP / 50	24,720.00	0.00	24,720.00	2,513.20	494.40	3,007.60
06/30/2007	DC - Taylor Meadows	SLP / 50	42,230.40	0.00	42,230.40	4,293.43	844.61	5,138.04
10/04/2007	DC - Adams Subdivision	SLP / 50	8,400.00	0.00	8,400.00	798.00	168.00	966.00
11/21/2007	DC - Whitby Woodlands C	SLP / 50	58,068.00	0.00	58,068.00	5,419.68	1,161.36	6,581.04
11/24/2007	DC - Heritage Hills B	SLP / 50	88,771.20	0.00	88,771.20	8,285.30	1,775.42	10,060.72
11/27/2007	DC - Heritage Hills A	SLP / 50	141,160.80	0.00	141,160.80	13,175.02	2,823.22	15,998.24
01/31/2008	DC - Snyder Court	SLP / 50	1,920.00	0.00	1,920.00	172.80	38.40	211.20
04/22/2008	DC - Alpine Canyon Crest	SLP / 50	38,469.42	0.00	38,469.42	3,269.91	769.39	4,039.30
05/06/2008	DC - High Bench Ridge D	SLP / 50	2,400.00	0.00	2,400.00	200.00	48.00	248.00
05/08/2008	DC - Spring Creek A	SLP / 50	23,592.00	0.00	23,592.00	1,966.00	471.84	2,437.84
05/14/2008	DC - Larson Alpine A	SLP / 50	1,920.00	0.00	1,920.00	160.00	38.40	198.40
06/30/2008	Fort Canyon Sewer Easements	SLP / 99	255,002.76	0.00	255,002.76	10,303.16	2,575.79	12,878.95
06/30/2008	Moyle Park Sewer	SLP / 50	10,515.83	0.00	10,515.83	858.81	210.32	1,069.13
08/25/2008	DC - Alpine Olde Towne Ctr	SLP / 50	18,072.00	0.00	18,072.00	1,415.64	361.44	1,777.08
10/14/2008	DC - Conrads Landing A	SLP / 50	17,256.00	0.00	17,256.00	1,294.20	345.12	1,639.32
10/14/2008	DC - Conrads Landing B	SLP / 50	15,765.00	0.00	15,765.00	1,182.38	315.30	1,497.68
04/29/2009	DC - North Grove A	SLP / 50	4,200.00	0.00	4,200.00	273.00	84.00	357.00
06/30/2009	DC - Minor Subdivisions	SLP / 50	8,400.00	0.00	8,400.00	518.00	168.00	686.00
06/30/2009	Fort Canyon Sewer	SLP / 50	295,010.46	0.00	295,010.46	18,192.31	5,900.21	24,092.52
06/30/2009	800 South Sewer	SLP / 50	198,379.70	0.00	198,379.70	12,233.40	3,967.59	16,200.99
12/03/2009	DC - North Grove B	SLP / 50	8,400.00	0.00	8,400.00	434.00	168.00	602.00
06/30/2010	100 South Park	SLP / 50	4,053.64	0.00	4,053.64	168.90	81.07	249.97
06/30/2010	800 South Sewer Line	SLP / 50	3,749.94	0.00	3,749.94	156.25	75.00	231.25
09/09/2010	DC - Alpine Apple Creek	SLP / 50	34,206.02	0.00	34,206.02	1,375.23	684.12	2,059.35
09/09/2010	DC - June Beck Subdivision	SLP / 50	4,200.00	0.00	4,200.00	168.86	84.00	252.86
09/23/2010	DC - Alpine Acres B	SLP / 50	6,000.00	0.00	6,000.00	235.46	120.00	355.46
06/30/2011	100 South Park - 2011	SLP / 50	197.56	0.00	197.56	3.96	3.95	7.91
06/30/2011	2010 Waterline Improvements	SLP / 50	2,375.00	0.00	2,375.00	47.63	47.50	95.13
06/30/2011	800 South Sewer - 2011	SLP / 50	98,029.21	0.00	98,029.21	1,965.95	1,960.58	3,926.53
10/11/2011	DC - Dry Creek Square	SLP / 50	28,353.60	0.00	28,353.60	425.30	567.07	992.37
12/13/2011	DC - McNeil/Alpine Blvd	SLP / 50	12,870.00	0.00	12,870.00	150.15	257.40	407.55
12/13/2011	DC - McNeil Plat E	SLP / 50	9,444.00	0.00	9,444.00	110.18	188.88	299.06
06/05/2012	DC - Filmore	SLP / 50	4,200.00	0.00	4,200.00	7.00	84.00	91.00
06/30/2012	800 South Sewer	SLP / 50	3,637.68	0.00	3,637.68	6.06	72.75	78.81
06/30/2012	Sewer Master Plan	SLP / 50	21,802.64	0.00	21,802.64	36.34	436.05	472.39
08/03/2012 A	DC - McNeil Plat F	SLP / 50	8,067.60	0.00	8,067.60	0.00	147.91	147.91
06/30/2013 A	Wash Bay	SLP / 25	2,040.15	0.00	2,040.15	0.00	6.80	6.80
06/30/2013 A	Sewer Master Plan	SLP / 50	5,956.00	0.00	5,956.00	0.00	9.93	9.93
06/30/2013 A	Sewer Dips	SLP / 50	21,294.00	0.00	21,294.00	0.00	35.49	35.49

ASSET DEPRECIATION SHORT REPORT
SEWER - Jun. 30, 2013

Assets: 136 of 136 Included
 Include: All Assets

Sorted by: Asset A/C#
 Method: BOOK - Std Conv Applied

Date Acq	Description	Meth/Life	Cost	Salvage Value	Depr Basis	Includes Section 179		
						Beg A/Depr	Curr Depr	End A/Depr
Totals: 50000 - IMPROVEMENTS (123 assets)			5,964,374.94	0.00	5,964,374.94	1,852,502.27	116,216.19	1,968,718.46
Asset A/C#: 70000 - EQUIPMENT								
09/19/2000	Chev Pick-up	SLP / 5	20,075.00	0.00	20,075.00	20,075.00	0.00	20,075.00
08/01/2001	Loader (1/2 w/ water)	SLP / 5	41,768.50	0.00	41,768.50	41,768.50	0.00	41,768.50
05/30/2003	Dump Truck (1/3 w/ Water & Pl)	SLP / 10	30,793.66	0.00	30,793.66	28,227.56	2,566.10	30,793.66
01/05/2004	GMC Pick-Up - Shane (1/3 w/ Water & Pl)	SLP / 5	8,627.50	0.00	8,627.50	8,627.50	0.00	8,627.50
12/06/2006	Dump Truck	SLP / 10	11,383.60	0.00	11,383.60	6,355.84	1,138.36	7,494.20
06/20/2007	GPS System	SLP / 10	8,000.00	0.00	8,000.00	4,066.67	800.00	4,866.67
01/31/2008	2008 GMC Utility Truck	SLP / 5	14,000.30	0.00	14,000.30	12,600.27	1,400.03	14,000.30
12/08/2010	Kubota Tractor	SLP / 10	6,318.06	0.00	6,318.06	986.31	631.81	1,618.12
06/02/2011	2011 Ford F-150	SLP / 5	6,946.70	0.00	6,946.70	1,499.73	1,389.34	2,889.07
06/30/2013 A	2012 Ford F-150	SLP / 5	8,407.23	0.00	8,407.23	0.00	140.12	140.12
Totals: 70000 - EQUIPMENT (10 assets)			156,320.55	0.00	156,320.55	124,207.38	8,065.76	132,273.14
Grand totals for all accounts: (136 assets)			6,182,666.49	0.00	6,174,666.49	2,004,559.87	125,741.35	2,130,301.22

Codes that may appear next to the date acquired include: A - Addition, D - Disposal, T - Traded, MQ - Mid Quarter Applied

Additional Summary Statistics:	Cost	Curr Yr Salv	Prior Yr Salv	Depr Basis	Beg A/Depr	Curr A/Depr	End A/Depr	Net Book Val
Grand Totals for All Assets	6,182,666.49	0.00	0.00	6,174,666.49	2,004,559.87	125,741.35	2,130,301.22	4,052,365.27
Inactive Assets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Less: Disposed Assets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Less: Traded Assets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Totals (Active & Inactive Assets)	6,182,666.49	0.00	0.00	6,174,666.49	2,004,559.87	125,741.35	2,130,301.22	4,052,365.27

Ranch Drive Sewer Reconstruct at New Grade

Item	Description	Quantity	Units	Unit Cost	Cost
1	Mobilization	1	LS	----	\$1,375
2	8 inch PVC Sewer	350	LF	\$50.00	\$17,500
3	Manholes	2	EA	\$5,000.00	\$10,000
4	Lateral Connections	0	EA	\$1,750.00	\$0
5	Class "A" Road Repair	0	SF	\$6.00	\$0
6	Imported Backfill	0	TON	\$15.00	\$0
7	Traffic Control	0	LS	\$350.00	\$0
Sub Total (Construction)					\$28,875
Contingencies		15%			\$4,331
Total (Construction)					\$33,206
Design and Construction Engineering		15%			\$4,331
Administration, Legal, and Bond Counsel		1%			\$289
Total (Professional Services)					\$4,620
Grand Total					\$37,826

May 2014 CCI = 9796

Costs are in 2014 dollars

200 North Sewer Reconstruct at New Grade

Item	Description	Quantity	Units	Unit Cost	Cost
1	Mobilization	1	LS	----	\$4,488
2	8 inch PVC Sewer	480	LF	\$55.00	\$26,400
3	Manholes	2	EA	\$5,000.00	\$10,000
4	Lateral Connections	5	EA	\$1,750.00	\$8,750
5	Class "A" Road Repair	4,800	SF	\$6.00	\$28,800
6	Imported Backfill	953	TON	\$15.00	\$14,302
7	Traffic Control	1	LS	\$1,500.00	\$1,500
Sub Total (Construction)					\$94,239
Contingencies		15%			\$14,136
Total (Construction)					\$108,375
Design and Construction Engineering		15%			\$14,136
Administration, Legal, and Bond Counsel		1%			\$942
Total (Professional Services)					\$15,078
Grand Total					\$123,453

May 2014 CCI = 9796

Costs are in 2014 dollars

Alpine Highway Sewer Reconstruct at New Grade

Item	Description	Quantity	Units	Unit Cost	Cost
1	Mobilization	1	LS	----	\$3,334
2	8 inch PVC Sewer	350	LF	\$60.00	\$21,000
3	Manholes	2	EA	\$5,000.00	\$10,000
4	Lateral Connections	1	EA	\$1,750.00	\$1,750
5	Class "A" Road Repair	3,500	SF	\$6.00	\$21,000
6	Imported Backfill	695	TON	\$15.00	\$10,428
7	Traffic Control	1	LS	\$2,500.00	\$2,500
Sub Total (Construction)					\$70,012
Contingencies		15%			\$10,502
Total (Construction)					\$80,514
Design and Construction Engineering		15%			\$10,502
Administration, Legal, and Bond Counsel		1%			\$700
Total (Professional Services)					\$11,202
Grand Total					\$91,716

May 2014 CCI = 9796

Costs are in 2014 dollars

100 West, Center to 120 South Sewer Upsize

Item	Description	Quantity	Units	Unit Cost	Cost
1	Mobilization	1	LS	----	\$8,817
2	14 inch HDPE Sewer Pipe Burst (12" ID)	630	LF	\$130.00	\$81,900
3	Manholes	3	EA	\$5,000.00	\$15,000
4	Lateral Connections	10	EA	\$1,750.00	\$17,500
5	Class "A" Road Repair	2,000	SF	\$6.00	\$12,000
6	Imported Backfill	497	TON	\$15.00	\$7,449
7	Bypass Pumping	1	LS	\$25,000.00	\$25,000
8	Traffic Control	1	LS	\$12,000.00	\$12,000
9	Testing (Compaction and Video)	1	LS	\$5,500.00	\$5,500
Sub Total (Construction)					\$185,166
	Contingencies	15%			\$27,775
Total (Construction)					\$212,941
Design and Construction Engineering		15%			\$27,775
Administration, Legal, and Bond Counsel		1%			\$1,852
Total (Professional Services)					\$29,627
Grand Total					\$242,568

May 2014 CCI = 9796

Costs are in 2014 dollars

600 North and Main Sewer Extension

Item	Description	Quantity	Units	Unit Cost	Cost
1	Mobilization	1	LS	----	\$1,520
2	8 inch PVC Sewer	300	LF	\$50.00	\$15,000
3	Manholes	2	EA	\$5,000.00	\$10,000
4	Lateral Connections	0	EA	\$1,750.00	\$0
5	Class "A" Road Repair	500	SF	\$6.00	\$3,000
6	Imported Backfill	60	TON	\$15.00	\$900
7	Traffic Control	1	LS	\$1,500.00	\$1,500
Sub Total (Construction)					\$31,920
Contingencies		15%			\$4,788
Total (Construction)					\$36,708
Design and Construction Engineering		15%			\$4,788
Administration, Legal, and Bond Counsel		1%			\$319
Total (Professional Services)					\$5,107
Grand Total					\$41,815

May 2014 CCI = 9796

Costs are in 2014 dollars

Towle/Pack Extension

Item	Description	Quantity	Units	Unit Cost	Cost
1	Mobilization	1	LS	----	\$1,195
2	8 inch PVC Sewer	230	LF	\$50.00	\$11,500
3	Manholes	2	EA	\$5,000.00	\$10,000
4	Lateral Connections	0	EA	\$1,750.00	\$0
5	Class "A" Road Repair	0	SF	\$6.00	\$0
6	Imported Backfill	60	TON	\$15.00	\$900
7	Traffic Control	1	LS	\$1,500.00	\$1,500
Sub Total (Construction)					\$25,095
Contingencies		15%			\$3,764
Total (Construction)					\$28,859
Design and Construction Engineering		15%			\$3,764
Administration, Legal, and Bond Counsel		1%			\$251
Total (Professional Services)					\$4,015
Grand Total					\$32,874

May 2014 CCI = 9796

Costs are in 2014 dollars