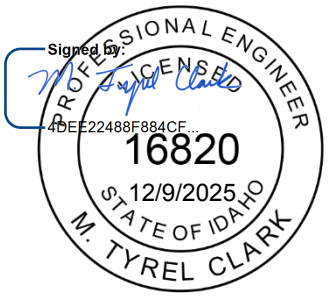
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Wastewater Collection Facility Planning Study

City of Driggs

December 2025 | Project No. 224056-000



APPROVED

By: Tyler Ayers, PE

State of Idaho
Department of Environmental Quality

Date: Apr 17, 2026

PREPARED BY

KELLER ASSOCIATES

[address redacted]
[address redacted]
[phone redacted]

PREPARED FOR

CITY OF DRIGGS IDAHO - ESTABLISHED 1910

[address redacted]
Post Office Box 48
[address redacted]
[phone redacted]

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EXECUTIVE SUMMARY

This wastewater collection facility planning study (WWCPS) provides an update to the previous study, which was completed in 2007. The WWCPS presents the findings and recommendations for the City's collection system based on recent trends and forecasts of future flows. It also documents the current condition of the facilities, identifies deficiencies, and evaluates the benefits and costs of improvement alternatives to address the deficiencies. The goal of the master plan is to create a financial strategy to guide the City's wastewater collection infrastructure decisions for the next 20 years.

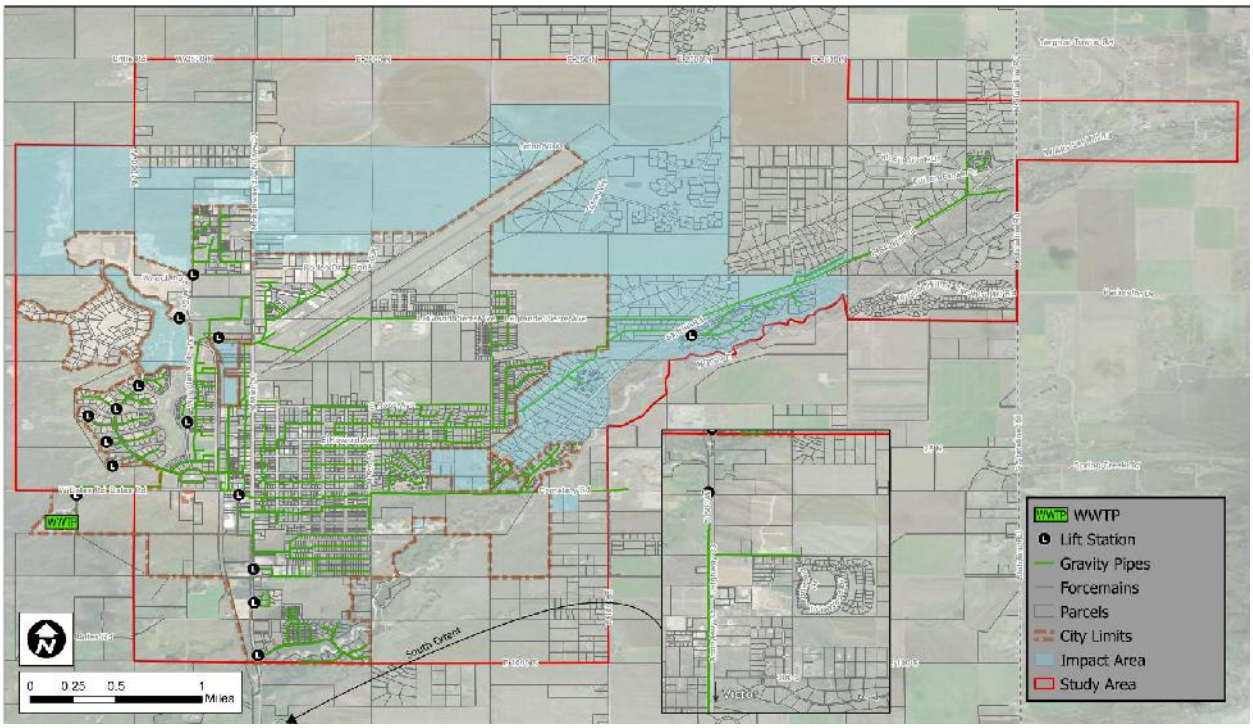
ES.1 PLANNING CRITERIA

City-defined goals, objectives, regulatory requirements, and engineering best practices formed the basis for the evaluation in this master plan. This planning study evaluates the existing system and future collection system based on a 20-year planning period. A 20-year planning period is typical for evaluating wastewater collection facilities. Chapter 3 provides an in-depth discussion of the planning criteria.

Study Area and Land Use

The existing City limits, city-adjusted area of impact, and five county subdivisions that discharge to the City's system are defined as the study area in this facility plan. The city limits consist of approximately 2,200 acres, the impact area consists of 6,300 acres including City limits, and the total study area is approximately 7,000 acres. The study area is illustrated in **Figure ES-1**.

FIGURE ES-1: STUDY AREA



Population

The City of Driggs is projected to experience significant population growth over the next 20 years, with an assumed average annual growth rate of 3.1% from 2025 to 2045. This growth rate aligns with the projections established in the City's 2023 Water Facility Planning Study and meets USDA RD funding requirements. The historical and projected population values are presented in **Table ES-1** and **Figure ES-1**.

This study also incorporates population projections from surrounding areas outside city limits that discharge into the City's wastewater collection system. These projections are based on sewer connection data provided by the City and assume an average household size of 2.06 persons (based on 2020 Census population and number of households). The growth rate for these areas is assumed to match the City of Driggs' average annual growth rate (AAGR).

Additionally, the City of Victor currently conveys all wastewater to Driggs' South Lift Station until its own wastewater treatment plant (WWTP) is constructed. Flow projections for Victor are based on its 2025 Wastewater Facilities Planning Study (WWFPS).

TABLE ES-1: POPULATION PROJECTIONS

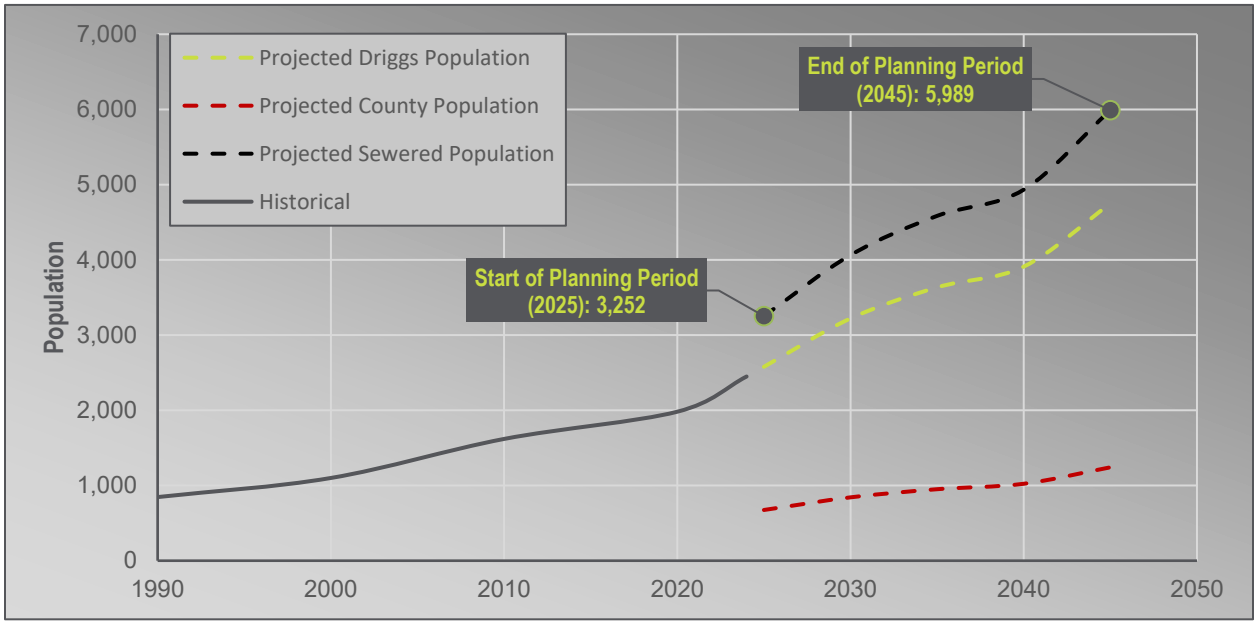
	Year	City Driggs Population[1]	County Population[2]	Driggs Sewered Population[3]	AAGR (calculated)	Data Source & Comments
Historical	1990	846	-	-	-	U.S. Census
	2000	1,100	-	-	2.7%	U.S. Census
	2010	1,619	-	-	3.9%	U.S. Census
	2020	1,981	542	2,523	2.0%	U.S. Census
	2024	2,449	640	3,089	5.4%	TischlerBise estimate from 2022 study
				10-Year AAGR	*2.0%*	*2020 to 2010 average*
				20-Year AAGR	*3.1%*	*2021 to 2001 average (from WFPS)*
Projected	2025	2,578	674	3,252	5.4%	TischlerBise estimate from 2022 study
	2030	3,221	843	4,064	4.6%	TischlerBise estimate from 2022 study
	2035	3,634	951	4,585	2.4%	Estimated using 20-year AAGR
	2040	3,911	1,023	4,934	1.5%	Estimated using 20-year AAGR
	2045	4,747	1,242	5,989	4.0%	Estimated using 20-year AAGR
				20-Year AAGR Projection	3.1%	2025 to 2045 average

1) Includes areas within Driggs City limits only

2) Includes connections outside of the City limits but connected to the sewer system. Calculated based on historical service connections multiplied by 2.06 people per household. Assumes county grows at same rate as City of Driggs.

3) Equal to the Driggs sewered population. Does not include City of Victor populations.

FIGURE ES-2: POPULATION PROJECTIONS



Wastewater Flows

The Average Daily Flow (ADF) has been steadily increasing with the population growth. The system experiences higher wastewater flows in the early summer than during the winter season with the lowest flow typically occurring during the shoulder seasons (October-November and March-April). This is likely due to the influx of seasonal visitors in the summer and winter months and the reduced groundwater levels in the spring and fall. The planning criteria shown in Table ES-2 are used as the basis for projecting future wastewater flows in Driggs. The flows are expressed in total volume (million gallons per day (MGD)) and as a flow per ERU (gallons per ERU per day (gped)). Figure ES-3 presents the daily flow data recorded from the Main, Creekside, and Huntsman Lagoon lift stations for the years 2020–2024. These three lift stations collectively account for all wastewater flows within the City of Driggs, excluding flows from Victor and the Ironwood Subdivision. Flows from Victor and Ironwood are recorded separately via the South Lift Station.

FIGURE ES-3: 2020 - 2024 DAILY RECORDED FLOWS

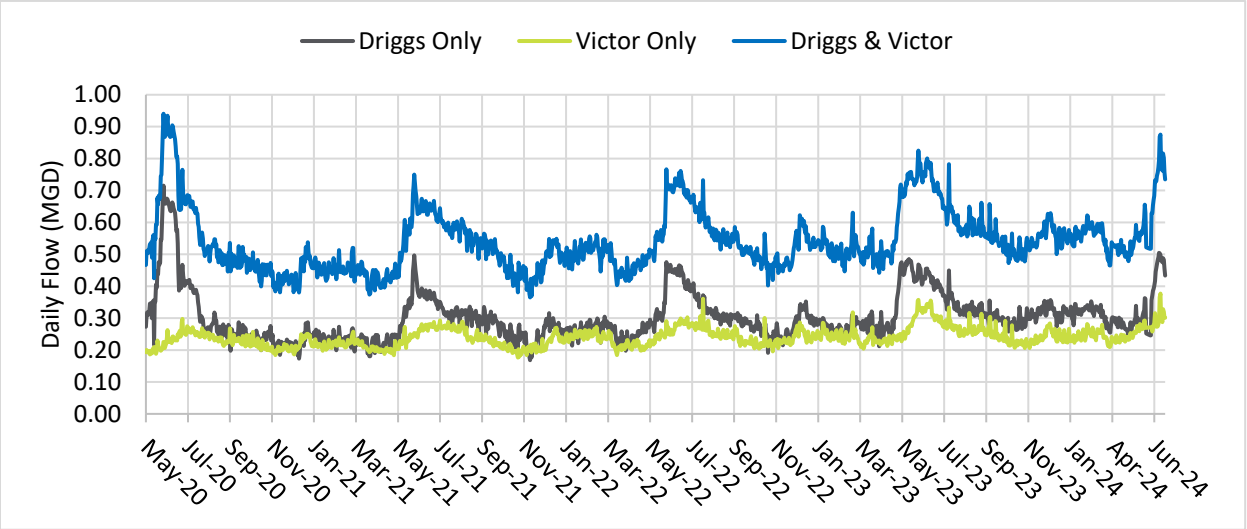


TABLE ES-2: HISTORICAL WASTEWATER FLOWS

Year[3]	ERUs[1]	ADF[6]		AHF[7]		ALF[8]		MMF[9]		MDF[10]		Peaking Factor MDF/ADF
		MGD	gpd/ ERU	MGD	gpd/ ERU	MGD	gpd/ ERU	MGD	gpd/ ERU	MGD	gpd/ ERU	
2020	1,628	-	-	-	-	-	-	0.58	358	0.72	439	-
2021	1,701	0.27	161	0.32	189	0.24	142	0.39	230	0.50	292	1.82
2022	1,786	0.29	165	0.34	191	0.27	149	0.40	226	0.48	266	1.62
2023	1,889	0.32	171	0.37	196	0.29	153	0.45	236	0.49	257	1.51
2024	1,992	-	-	-	-	-	-	0.46	233	0.50	253	-
Historical Average	-	0.30	165	0.34	192	0.27	148	0.46	257	0.54	301	1.51
Historical Max	-	0.32	171	0.37	196	0.29	153	0.58	358	0.72	439	1.82
Planning Criteria[2,4]	**2,053**	**0.34**	**165**	**0.40**	**196**	**0.30**	**148**	**0.49**	**236**	**0.60**	**292**	**1.77**
Including Victor[5]	**-**	**0.59**	**-**	**0.70**	**-**	**0.54**	**-**	**0.85**	**-**	**1.06**	**-**	**-**

1) Equal to total number of ERUs based on the City's billing system. Includes ERUs for residential, commercial, and mixed use connections.

2) Equal to 2025 ERU estimate. Planning criteria equal to average for ADF and ALF and equal to the historical max for AHF, MMF, and MDF

3) January 2020-May 2020 and July 2024-December 2024 flow data not provided so ADF, AHF, and ALF is not calculated for those years.

4) 2020 MMF and MDF was not selected for planning criteria because the City has completed some I/I reduction efforts which reduced the max day flows.

5) Total system flows including City of Victor.

6) ADF = Average Day Flow

7) AHF = Average High Flow

8) ALF = Average Low Flow

9) MMF = Max Month Flow

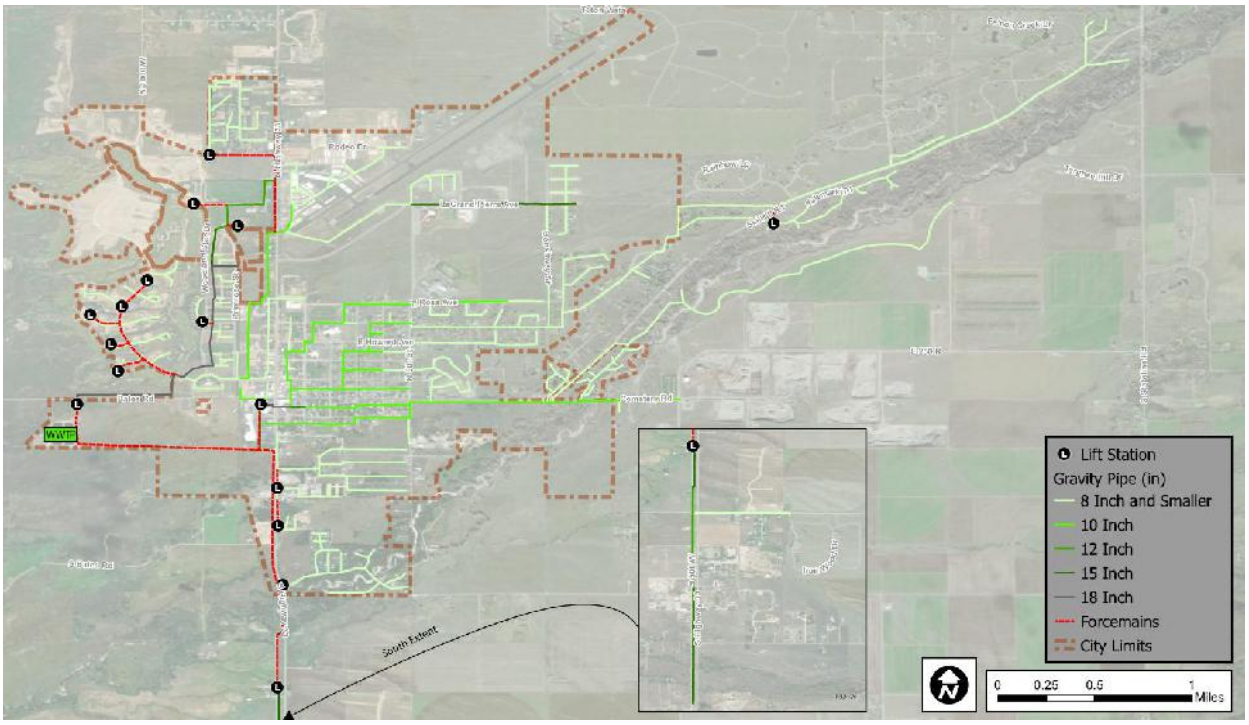
10) MDF = Max Day Flow

ES.2 COLLECTION SYSTEM EVALUATION

The City of Driggs owns and operates a sanitary sewer collection system and wastewater treatment plant (WWTP) which serves approximately 3,089 people within its collection system service area. The City of Victor to the south also sends flows to Driggs' WWTP through a part of Driggs' collection system; however,

Victor will stop sending flow upon completion of their WWTP. The City's collection system consists of a total of 16 lift stations (LS) - of which 9 collect flows from less than 50 connections, 4.5 miles of pressure sewer pipe, and 36 miles of gravity sewer pipe. **Figure ES-4** below illustrates the existing collection system.

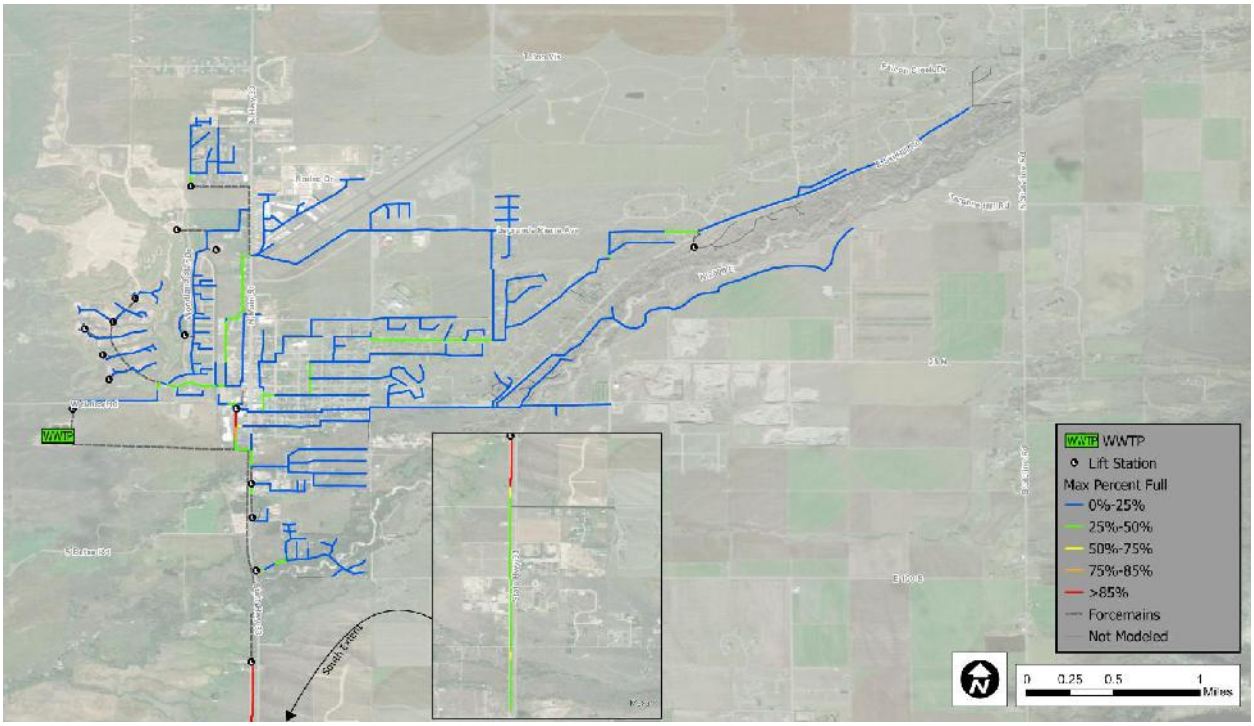
FIGURE ES-4: EXISTING COLLECTION SYSTEM



Existing System Capacity Evaluation

The capacity of the collection system was assessed by reviewing how full the gravity pipes are during peak hour flows during the max day flow scenario. **Figure ES-5** illustrates the maximum depth divided by full depth (d/D) under the existing MDF scenario for the collection system pipes. The planning criteria established in Chapter 3 recommend gravity pipes 12 inches and under to be less than 75% full and gravity pipes larger than 12 inches to be less than 85% full. As shown in **Figure ES-5**, most of the system is currently under 50% of pipe capacity, indicating very few capacity bottlenecks.

FIGURE ES-5: EXISTING COLLECTION SYSTEM CAPACITY EVALUATION



The areas above 75% capacity are summarized below.

- The section of pipeline directly south of Main Lift Station is surcharged. From field observations this is likely because of the submerged invert into Main Lift Station. While deepening the wet well could address the issue, decommissioning the lift station and converting to a gravity sewer is feasible and would resolve the surcharge. After evaluating both options, the gravity sewer alternative was selected.
- The section of pipeline directly upstream of South Lift Station is surcharged, but this is a result of the lift station being over capacity, not a lack of capacity in the pipeline. Upsizing the lift station's capacity mitigates the issue; therefore, it is not recommended to upsize the section of pipe. The lift station will have more capacity in the future when the City of Victor's flows are no longer contributing to the system.

Existing Lift Station Capacity Evaluation

The lift stations capacity was evaluated based on peak modeled inflow. Lift station maximum capacity was assumed to be 85% of firm capacity. This provides the City with additional time to implement improvements before the lift station is over capacity.

Table ES-3 summarizes the modeled peak inflows and reported pump information. The model indicates South Lift Station is at capacity.

- The peak inflows to South Lift Station exceed 85% of the firm capacity. If peak inflows exceed the pumping capacity, there is a higher likelihood of sanitary sewer overflows (SSOs) due to the pumps not being able to convey peak flows. Flow will substantially decrease once Victor's WWTP is brought online, but an exact timeline is not yet known. It is recommended to closely monitor flows at the lift station and upsize the existing pumps if/when capacity is exceeded.

- Increasing the pumping capacity of South Lift Station could cause capacity issues of the force main and possible pumping issues with other lift stations pumping to the shared main. However, because flows will substantially decrease after Victor's flows are no longer conveyed, improvements to the force main are not recommended.

TABLE ES-3: EXISTING MODELED & REPORTED PUMPING RATES

Lift Station	Firm Capacity (gpm)	Peak Hour Inflow (gpm)	85% of Firm Capacity > Peak Inflow	Percent of Firm Capacity	Capacity Remaining (gpm)	ERU's Remaining
Main Lift Station	600	480	Yes	80%	120	381
South Lift Station	600	590	No	98%	10	32
Huntsman Lagoon Lift Station	550	250	Yes	45%	300	954
Forest Service Lift Station[2]	125	55	Yes	44%	70	223
Clubmoss Lift Station	90	11	Yes	12%	79	251
Red Tail Lift Station	110	1	Yes	1%	109	346
Creekside Lift Station	330	66	Yes	20%	264	839
Cottongrass Lift Station	110	4	Yes	4%	106	337
Valley Center Lift Station	250	63	Yes	25%	187	594
Huntsman Bitterroot Lift Station	250	4	Yes	2%	246	782
Huntsman Comfort Station Lift Station	200	2	Yes	1%	198	629
Huntsman Star Flower Lift Station	395	5	Yes	1%	390	1,240
Huntsman Shasta Daisy Lift Station	355	7	Yes	2%	348	1,106
Huntsman Indian Paintbrush	250	6	Yes	2%	244	776
Huntsman O&M	100	2	Yes	2%	98	312
Huntsman Spa	45	2	Yes	4%	43	137

1) Based on PHF of 0.31 gpm per ERU

2) Rolling hourly average used as peak inflow occurs when Clubmoss runs for a very short time

ES.3 CAPITAL IMPROVEMENTS PLAN

The Capital Improvement Plan (CIP) consists of a list of the recommended projects to be completed within the next 20 years; however, an updated WWCPS should be completed every 5-7 years to update priorities and recommendations. The projects were grouped into three priorities and were categorized as maintenance improvements for existing deficiencies (Priority 1M), improvement projects for existing deficiencies (Priority 1P), and improvement projects for 20-year deficiencies (Priority 2). The CIP is shown in **Table ES-4**, and the projects are illustrated in **Figure ES-6**. The costs shown in the CIP are planning-level estimates (Class 5 cost opinion by the Association for Advancement of Cost Engineering). Priority 1M and 1P items consist of existing deficiencies and are recommended to be implemented within the next five years. Priority 2 improvements are development-driven and should be implemented as the City grows.

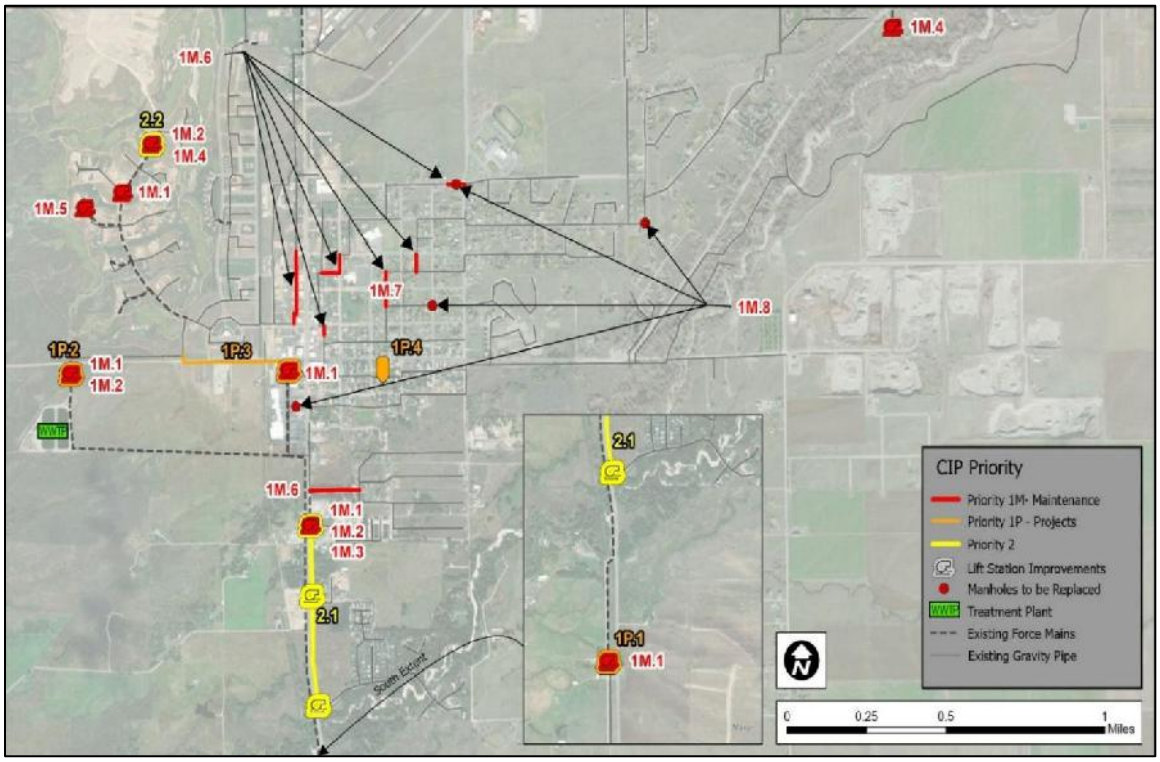
TABLE ES-4: CAPITAL IMPROVEMENT PLAN

ID#	Project Name	Project Trigger	Total Estimated Cost (2025 Dollars)
Priority 1M Improvements (2025-2030)			
1M.1	Valve Vault Filled with Water	Existing issue to address	$ 85,000
1M.2	Faulty Check Valve	Existing issue to address	$ 19,000
1M.3	Faulty Wet Well Hatch	Existing issue to address	$ 10,000
1M.4	Improperly Seated Pumps	Existing issue to address	$ 10,000
1M.5	Clogged Valve Vault Drain	Existing issue to address	$ -
1M.6	CCTV of Problem Areas	Existing issue to address	$ 3,000
1M.7	Replace Problem Pipe	Existing issue to address	$ 189,000
1M.8	Replace Problem Manhole	Existing issue to address	$ 145,000
1M.9	Install Safety Nets on Lift Stations	Existing issue to address	$ 66,000
		Total Priority 1M Improvements (rounded)	**$ 527,000**
Priority 1P Improvements (2025-2030)			
1P.1	South Lift Station Improvements	Existing PHF exceeds capacity trigger	$ 406,000
1P .2	Hunstman Lagoon Lift Station Improvements	Upstream improvements	$ 305,000
1P.3	Abandonment of Main Lift Station	Existing issue to address	$ 1,564,000
1P.4	Install Individual services	Existing issue to address	$ 89,000
1P.5	SCADA Integration at Remaining Lift Stations	Existing issue to address	$ 349,000
1P.6	Lift Station Generators	Existing issue to address	$ 239,000
		Total Priority 1P Improvements (rounded)	**$ 2,952,000**
Priority 2 Improvements (2030 - 2045)			
2.1	Reduction of Lift Stations	Effort to reduce lift stations	$ 1,200,000
2.2	Huntsman Star Flower Lift Station Improvements	20-Year PHD exceeds capacity trigger	$ 248,000
2.3	Standard Block of Sewer Main	Effort to address areas without sewer mains	$ 389,000
2.4	Wastewater Collection Facility Planning Study Update	5-7 year WWCPS Update	$ 125,000
2.5	Standard and Detail Review and Updates	Effort for more uniformity in system	$ 13,000
		Total Priority 2 Improvements (rounded)	**$ 1,962,000**
		TOTAL SYSTEM IMPROVEMENTS COSTS (rounded)	**$ 5,441,000**

Notes

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in **2025** dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates

FIGURE ES-6: CIP MAP



ES.4 SUMMARY AND CONCLUSION

The City's wastewater collection system has existing deficiencies, it is recommend these deficiencies be addressed within the next five years. Most of these deficiencies can be addressed through maintenance of the system and won't require extensive improvement projects. However, Main Lift Station, Huntsman Lagoon Lift Station, South Lift Station, and installing individual services will require more extensive improvements to address existing deficiencies. As with any collection system, as the City continues to grow, additional improvements to increase the capacity of the gravity collection system and lift stations will be required. Alternatives for reducing lift stations for cheaper Operation and Maintenance costs are also included in the CIP.

The planning elements used as the basis for the recommendations and CIP projects in this plan may evolve over time. It is recommended that the City continue to maintain current system models and review each improvement in more detail a year or two ahead of implementing individual capital improvements. Reviewing upcoming improvements ahead of time will provide the City with an opportunity to refine project scopes and budgets. An update of the master plan is recommended every 5-7 years to allow the City to re-assess needs and priorities and properly allocate budgets to address system deficiencies.

CHAPTER 1 - INTRODUCTION

The City of Driggs (City) contracted with Keller Associates, Inc. (Keller) to update their wastewater collection system planning study (WWCPS) for future needs. This study will provide an update to the previous study which was completed in 2007. This study is limited to the collection system which includes gravity pipes, manholes, force mains, and lift stations. The City recently completed a separate facility planning study for their wastewater treatment plant (WWTP) which was completed in 2023. Improvements proposed at the WWTP were currently being designed at the time of this study.

1.1. PURPOSE AND NEED

This report was commissioned by the City in an effort to assess the current state of the wastewater collection system and plan for future needs. Master planning is an important task for a public wastewater system as it assists in reassessing needs and priorities, properly allocating budgets to address system deficiencies, and plan for future growth. It is generally recommended to update a wastewater collection plan every 5-7 years depending on the growth rate of the system. This study is funded by the City.

1.2. REPORT ORGANIZATION

This study was developed to meet the requirements of both Idaho Department of Environmental Quality (DEQ) wastewater facility planning checklist and Idaho interagency facility plan general outline. The report organization consists of the following:

- Chapter 1 – Introduction
- Chapter 2 – Study Area: Identifies the location of the project planning area and environmental resources present that may be impacted by recommended improvements.
- Chapter 3 – Project Planning: Establishes planning time periods, historical and projected population growth and equivalent dwelling units (EDUs), historical wastewater flows, influence of inflow and infiltration (I/I), projected wastewater flows and loading, and regulatory criteria.
- Chapter 4 – Collection System Evaluation: Evaluation of the existing collection system including a conditions assessment and evaluation of the existing and future system using a hydraulic model.
- Chapter 5 – Need for System Improvements: Chapter summarizing the need for improvements based on the existing and future system evaluation.
- Chapter 6 – Collection System Alternatives: An analysis of collection system alternatives to correct identified deficiencies. Includes considerations such as environmental impacts, land requirements, potential construction problems, sustainability considerations, cost estimates, lifecycle cost analysis, and non-monetary factors.
- Chapter 7 – Proposed Projects: A summary of the recommended projects in the capital improvement plan, a preliminary project schedule, summary of the financial status of the existing system and anticipated annual costs, and financing options.

1.3. PROJECT DESCRIPTION

This planning study evaluates the existing system and future collection system based on a 20-year planning period. It consists of an inventory of the existing system, establishes planning/evaluation criteria, includes an existing and future system evaluation, a wastewater quality evaluation, an alternatives analysis, and a capital improvement plan. These components prepare the City for the next 20 years as they continue to maintain, grow, and improve their system.

1.4. EXISTING WASTEWATER SYSTEM

The City's collection system consists of approximately 37 miles of gravity sewer pipe, 19,000 feet of force main, and 16 lift stations. Flows are conveyed to a WWTP located southwest of the City. Some parts of the City's collection system and their WWTP also convey and treat wastewater from the City of Victor located approximately 8 miles south of Driggs; however, the City of Victor has recently decided to construct it's own WWTP. For the purpose of this study, it is assumed that the City of Victor will no longer send wastewater to Driggs in the future. Additional information regarding the collection system is provided in Chapter 4.

1.5. OPERATOR LICENSING

Both the WWTP and Driggs' collection system are currently classified as Class I by DEQ. However, a new WWTP is under design, which will result in a higher classification. The City employs one full-time staff member with a Level II collection license and two with Level I licenses. Treatment operations are contracted to Mountain West Waterworks.

1.6. WATER/ENERGY/WASTE AUDITS

No energy audits have been conducted on the existing collection system to date. However, integrating variable frequency drives (VFDs) into the motor control system presents a relatively straightforward opportunity to enhance energy efficiency. It is important to recognize that VFDs may not be suitable for lift stations with steady, consistent flow rates. Additionally, some lift stations are already equipped with VFDs. Therefore, each lift station should be evaluated individually to determine the potential effectiveness and cost-benefit of implementing VFD technology.

1.7. FINANCIAL STATUS OF EXISTING FACILITIES

Appendix F contains detailed financial data for the City of Driggs. In fiscal year 2024, the City generated approximately $2,647,739 in sewer revenue from both collection services and the wastewater treatment plant (WWTP). Total expenditures from the sewer fund, including debt service obligations, amounted to approximately $1,577,129—resulting in a net surplus of about $1,070,610.

1.8. COMMUNITY ENVOLVEMENT

A 20-day public commenting period was open from February 11 to March 3, followed by a city council public hearing on March 3rd. Notice for the meeting was given when the public commenting period was opened and the meeting was public. The public hearing provided an overview of project objectives, existing wastewater collection facilities, planning criteria, the capital improvement plan, potential alternatives, and a summary of the wastewater collection facility planning study. The presentation used for the meeting can be referred to in Appendix G. No comments were received during the public commenting period or meeting.

CHAPTER 2 - STUDY AREA

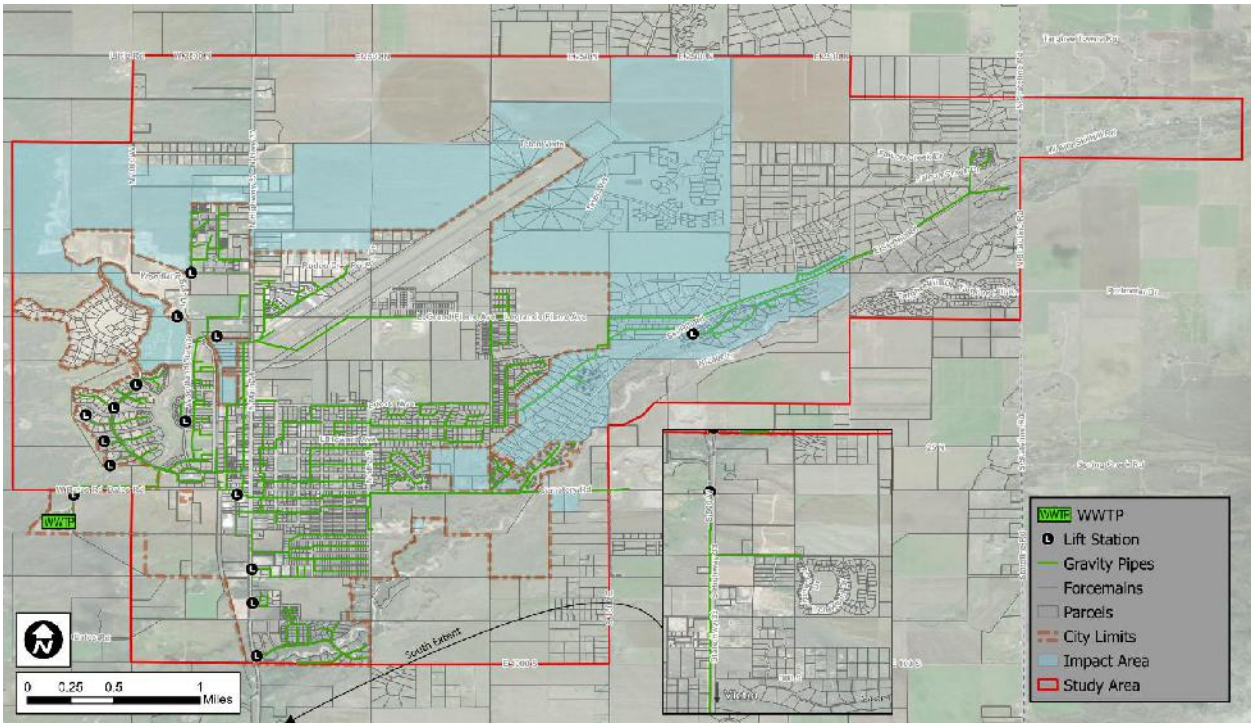
This chapter provides the location of the project and defines the project study area. Planning efforts will focus within the study area. This chapter also provides a summary of environmental resources present within the study area.

2.1. LOCATION & STUDY AREA

The City of Driggs is part of Teton County, Idaho, situated within the Teton Valley between the Teton Mountains and Big Hole Mountains. Driggs is bounded on the east by the Idaho-Wyoming state border. Idaho Highway 33 runs through Driggs in a north-south direction. Driggs does not share an immediate border with any surrounding cities, and its closest neighbor is the City of Victor located 8 miles to the south. The City limits consist of approximately 2,200 acres and the impact area is a total of 6,300 acres. The existing collection system serves additional users outside of the City limits to the east. The study area was extended to the east of the impact area due to anticipated future growth, consistent with the City's 2023 Water Facility Planning Study (WFPS). The study area is shown in Figure 2-1 below and in Figure 2 in Appendix A and consists of a total of approximately 7,000 acres.

In addition to the study area shown below, the impact of flows from outside of the study area were considered in the evaluation. This included flows from the City of Victor and county subdivisions located south of Driggs. However, the City of Victor has recently decided to construct its own WWTP. For the purpose of this study, it is assumed that the City of Victor will no longer send wastewater to Driggs in the near future. Some county subdivisions will still send flows north to the Driggs WWTP.

FIGURE 2-1: STUDY AREA



2.2. ENVIRONMENTAL RESOURCES PRESENT

This Wastewater Collection System Facility Study is a planning effort with no physical construction of infrastructure or change of operation and maintenance procedures. The environmental impact of the recommended improvements is briefly discussed throughout this report but does not represent a full environmental analysis for any of the recommended projects. A majority of the recommended projects are located within existing roadways, previously developed land, or City owned land. This section presents a summary of the environmental features within the study area.

2.2.1. Physiography, Topography, Geology, & Soils

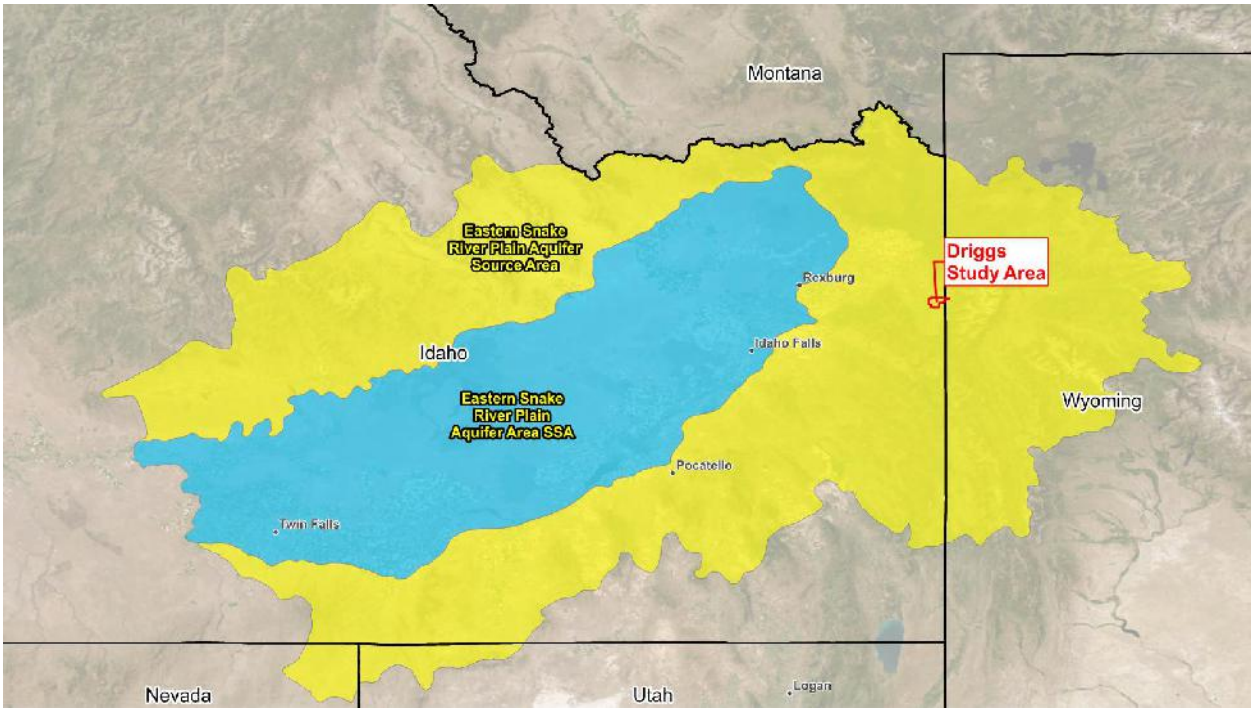
The planning area has varying elevations ranging from approximately 6,000 to 6,500 feet. Elevations within the study areas slope from east to west with the highest elevations in the northeast corner of the study area. Elevation slopes towards the Teton River located west of the planning area. Figure 3 in Appendix A shows the topography of the planning area.

The major soil types in the planning area are Alpine-Driggs complex, Alpine-St. Anthony Complex, Redfish-Foxcreek complex, Alpine gravelly loam, and Altaby-Arimo complex (See the Appendix B for the full NRCS soil report). Alpine-Driggs complex is the most common soil type, occupying about 34% of the study area.

2.2.2. Surface & Groundwater Hydrology

The City of Driggs is located within the Eastern Snake River Plain Aquifer Source Area which contributes to a sole source aquifer. The extent of the aquifer and source area is illustrated in Figure 2-2. The Teton River is the largest surface water source in Teton Valley, west of the city, where it runs north through the valley. Irrigation water is primarily provided by groundwater sources.

FIGURE 2-2: SOLE SOURCE AQUIFER



2.2.3. Fauna, Flora, & Natural Communities

U.S Fish and Wildlife Service (USFWS) lists three threatened or endangered species within the study area and include the Canada Lynx, Grizzly Bear, and North American Wolverine. Threatened plant species which may be present in the study area include Ute Ladies'-tresses and Whitebark Pine. A comprehensive report of endangered species within the study area is found in Appendix B.

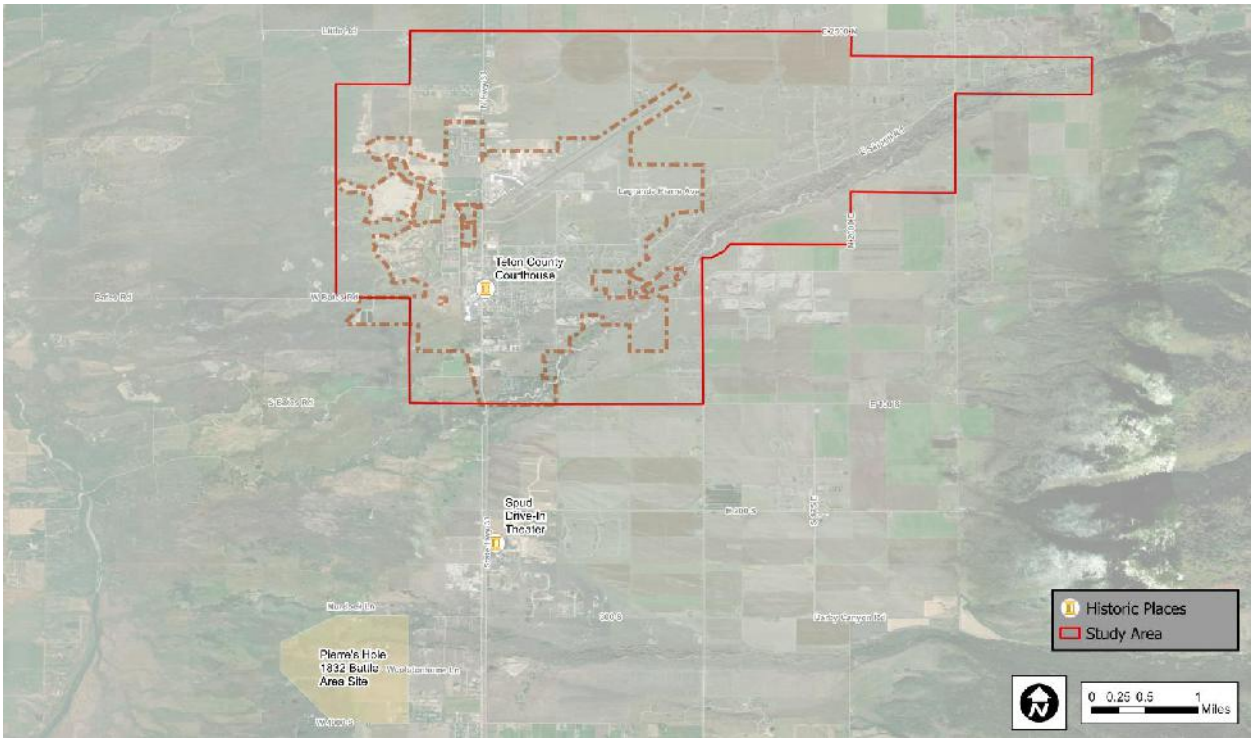
2.2.4. Land Use and Development

The City has witnessed significant growth and development in the housing, industrial, and commercial sectors. The town's housing sector has seen the construction of numerous residential projects, catering to the increasing demand for homes. New neighborhoods and housing complexes have been established, offering a wider range of housing options to accommodate the needs of the community. Likewise, the industrial sector has experienced progress, attracting businesses from various industries. The commercial development in Driggs has thrived with the emergence of new businesses, retail outlets, restaurants, and entertainment venues. The City's zoning is depicted in Figure 4 in Appendix A.

2.2.5. Cultural Resources (Historical & Archaeological)

The National Register of Historic Places lists several historic buildings within and near the planning area and include Pierre's Hole 1832 Battle Area Site, Spud Drive-In Theater, and the Teton County Courthouse. The location of these historic places is illustrated in Figure 2-3 . No archaeological sites have been recorded in the area.

FIGURE 2-3: CULTURAL RESOURCES



2.2.6. Utility Use

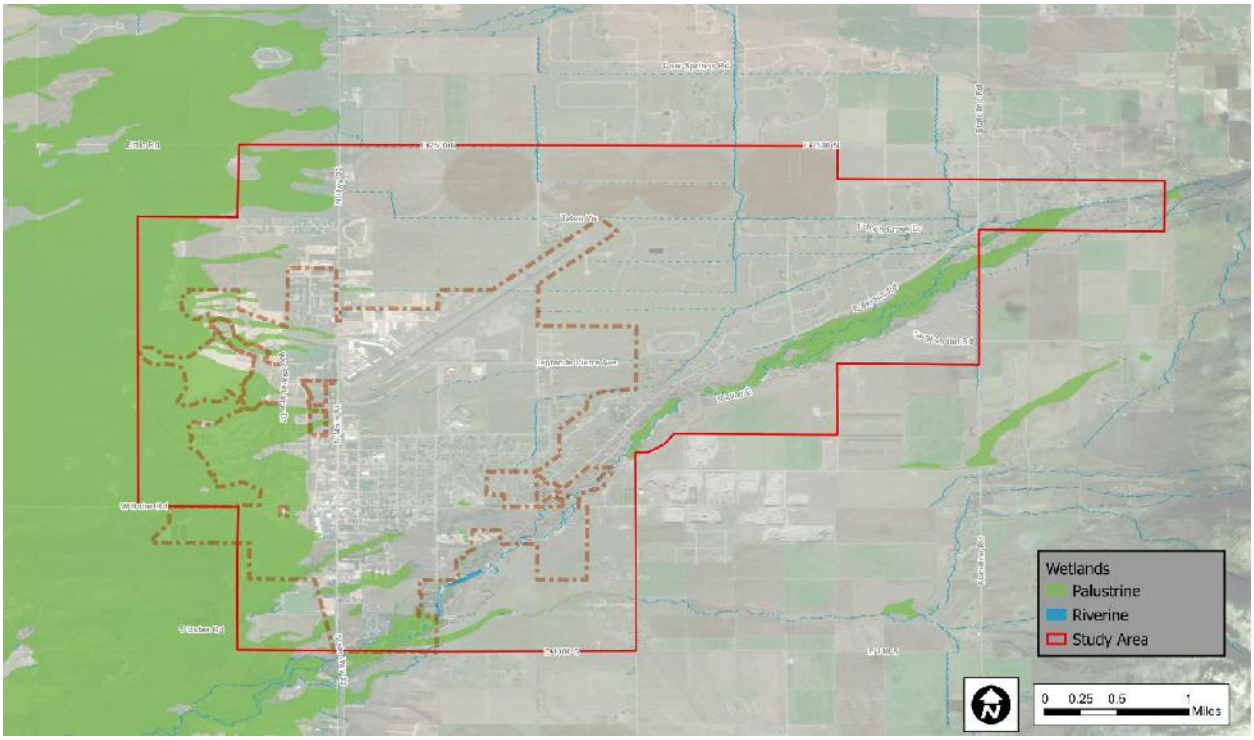
The City of Driggs owns and operates a public water system. The system has seven wells and a spring source. The public water system serves 1,117 customers. Fall River Electric Cooperative is the electric utility in Driggs.

2.2.7. Floodplains & Wetlands

Portions of the study area are located within the 100-year and 500-year floodplain including the existing WWTP. Floodplain mapping was obtained from the Idaho Department of Water Resources (IDWR) Idaho Flood Hazard Map and is shown in Figure 5 in Appendix A. Recommended projects from this plan will consider floodplains during site selection and the project's intended use.

The USFWS maintains a National Wetlands Inventory. This inventory shows several mapped wetlands within the study area. Most of the wetlands are near the western border with the Teton River. Figure 2-4 shows the mapped wetlands within the study area. Again, the recommended projects of this study will be on previously disturbed land, within existing roadways, or City-owned land. Impacts to existing wetlands will be little to none.

FIGURE 2-4: WETLANDS



2.2.8. Wild & Scenic Rivers

According to the Wild & Scenic Rivers Council, there are no wild and scenic rivers in the planning area.

2.2.9. Public Health & Water Quality

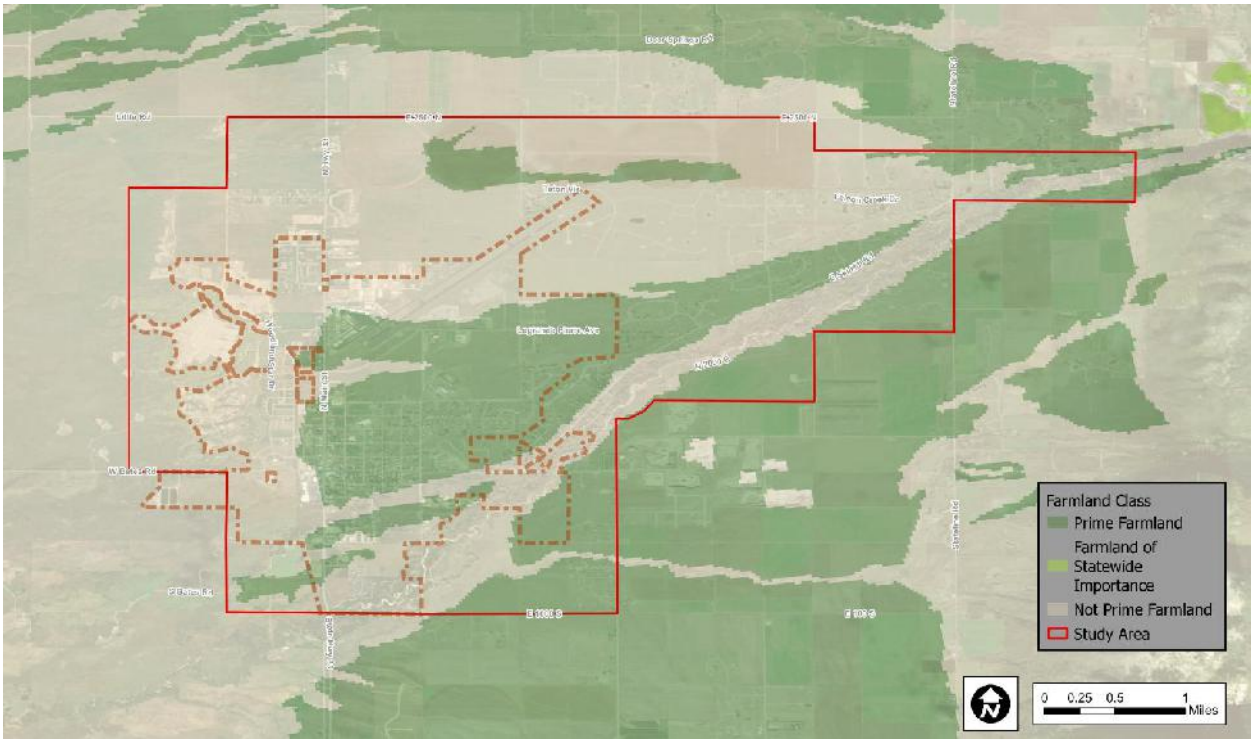
The City has a public drinking water system that provides potable water to the residents and businesses in Driggs. The City's water is treated on site before being pumped throughout the distribution system or to storage tanks. The proposed improvements should not pose a threat to the existing groundwater quality. Best management practices should be employed during construction activities, which should also protect surface water quality in the Teton River and other surface water bodies.

2.2.10. Prime Agricultural Farmlands

A portion of City limits and the study area include land designated by the NRCS as Prime Farmland (Figure 2-5). These sections are mostly in areas that have been developed.

Most improvements would likely be located within areas previously disturbed by development. In some cases, future pipelines may be constructed within easements through unimproved or agricultural lands.

FIGURE 2-5: PRIME AGRICULTURAL FARMLANDS



2.2.11. Precipitation, Temperature, and Prevailing Winds

The climatological data for Driggs was retrieved from the Western Regional Climate Center. A comprehensive summary of the data which was collected from August 1904 to June 2016 is presented in Table 2-1. The weather station in Driggs has recorded a monthly minimum average temperature ranging from 6.1°F to 46°F, and an average maximum temperature ranging from 29.3°F to 80.6°F. The total annual precipitation averaged 16.01 inches, with an average annual snowfall of 65.2 inches. Typically, the coldest month of the year is January, and the hottest month is July. Prevailing winds in Driggs typically blow from the southwest, bringing with them cool air from the mountains and contributing to the area's unique weather patterns.

TABLE 2-1: CLIMATE SUMMARY FOR DRIGGS

Month	Average Max. Temperature (F)	Average Min. Temperature (F)	Average Total Precipitation (in.)	Average Total SnowFall (in.)	Average Snow Depth (in.)
Jan	29.3	6.1	1.43	15.1	12
Feb	33.7	9.1	1.08	8.6	14
Mar	40.2	16.4	1.11	8.7	7
Apr	51.5	25.5	1.28	4.5	1
May	61.9	33.4	1.91	1.7	0
Jun	70.9	39.9	1.86	0.3	0
Jul	80.6	46.0	1.11	0.0	0
Aug	79.2	43.8	1.19	0.0	0
Sep	70.0	36.2	1.29	0.6	0
Oct	57.8	27.8	1.25	2.0	0
Nov	41.1	17.7	1.11	8.7	1
Dec	31.2	8.5	1.39	15.0	6
Annual	**54.0**	**25.9**	**16.01**	**65.2**	**3**

2.2.12. Air Quality & Noise

Idaho is among the states that have been granted delegated authority by the EPA to issue air quality permits and enforce air quality regulations. The primary aim of DEQ's air protection efforts is to ensure that federal and state health-based air quality regulations are adhered to. The Clean Air Act of 1970 identified six common air pollutants, known as "criteria pollutants," which include carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. In addition, fugitive dust is closely regulated as it contributes to particulate matter. DEQ meticulously monitors air quality and disseminates air quality information. It is noteworthy that Driggs is situated outside areas of concern, Class I area or non-attainment area, and no noise issues have been identified for the region. A map depicting the nearest Class I area is shown in Figure 6 in Appendix A.

2.2.13. Energy Production and Consumption

The existing wastewater collection system utilizes electrical energy for pumping water. The city operates 16 lift stations and the WWTP that consume electricity. These pumps, SCADA systems, security systems, lights, and other miscellaneous devices constitute the energy consumption for the wastewater system. The wastewater system does not generate any energy. Energy is provided by Fall River Electric Cooperative.

2.2.14. Socioeconomic Profile

Driggs, Idaho, is a thriving community with a distinct socioeconomic profile. The city enjoys a mix of families, professionals, and retirees. The median age in Driggs is around 38.9 years. The median household income in 2023 was approximately $82,434. The median property value in 2023 stands at around $457,800. Driggs is a popular place to launch recreation activities and is a stopping point for many people going to Grand Teton or Yellowstone National Parks. The housing sector has seen a large increase in the past four years with more and more people being drawn to the unique setting of the City and proximity to popular recreation areas.

CHAPTER 3 - PROJECT PLANNING

This chapter discusses the population projections for the study period and anticipated growth areas within the study area. It also establishes flow-based planning criteria based on historical wastewater flows of the system, which are used to project wastewater flows in the future based on anticipated growth. The projections take into consideration land-use, seasonal fluctuations, and anticipated growth. This section also includes an analysis of inflow and infiltration (I/I).

3.1. POPULATION PROJECTIONS

Developing population projections is a key part of the planning process and is one of the primary inputs to evaluating the future system. While actual population growth may vary due to a multitude of factors, this study aimed to depict a 20-year population which corresponds to a year of 2045. The projected population results in an average annual growth rate (AAGR) of 3.1% from 2025 to 2045 which corresponds to the same growth rate established in the City's 2023 Water Facility Planning Study. Population projections for the next 20 years are shown below in Table 3-1 and illustrated in Figure 3-1.

The 2023 Water Facility Planning Study utilized population projections from a study completed by TischlerBiseGalena Consulting which evaluated anticipated population growth in the City. The document is included in Appendix B. In summary, the document provides population projections for the City of Driggs through the year 2032. The populations from 2032 to 2045 were calculated so that the 20-year average annual growth rate equals 3.1%. Note that the United States Department of Agriculture (USDA) Rural Development (RD) requires that the projected populations in a planning study do not exceed the historical 20-year AAGR to meeting funding eligibility.

In addition to the City of Driggs population, this study also considered the populations outside of city limits that discharge into the collection system owned and maintained by Driggs (shown in Figure 2 in Appendix A). The population projections presented in the table include both the city population as well as the county population. Population estimates for the counties were calculated utilizing the City provided total sewer connections and assuming 2.06 people per household, based on 2020 Census population and number of households. These population projections assume the total connections will grow at the same AAGR as the City of Driggs.

It should also be noted that the City of Victor will convey all of its wastewater to the City of Driggs South Lift Station until its WWTP is constructed. The City of Victor completed WWFPS in 2025 and the flow projections established in that study are used for the Victor portion of the flows.

TABLE 3-1: POPULATION PROJECTIONS

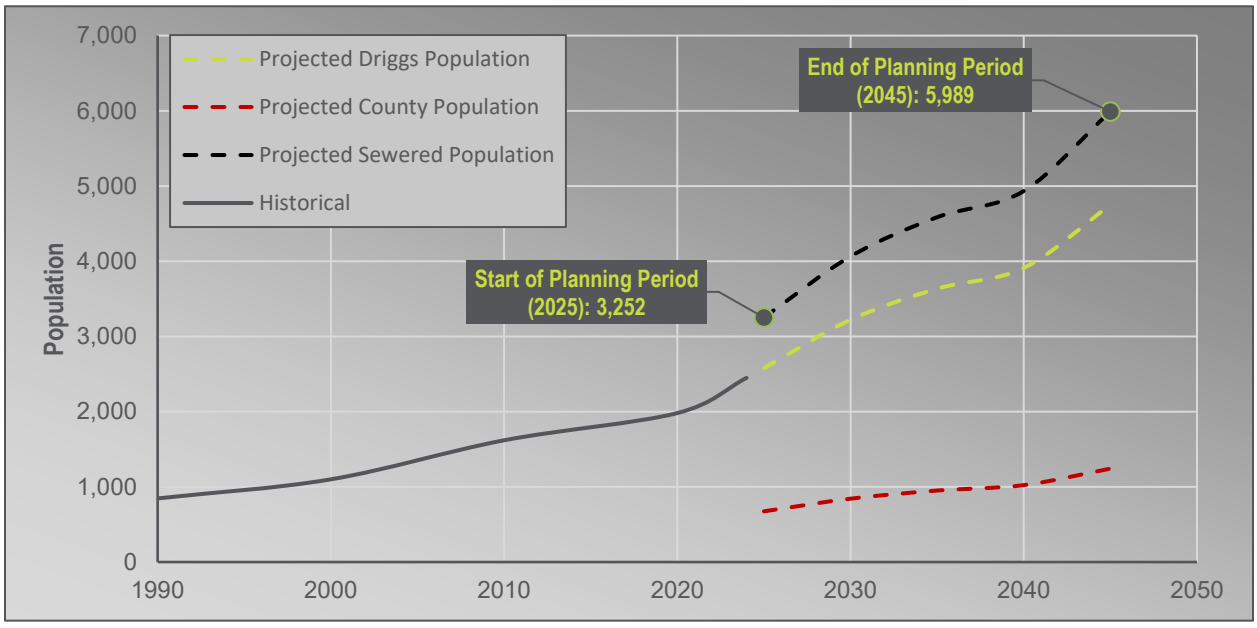
	Year	City Driggs Population[1]	County Population[2]	Driggs Sewered Population[3]	AAGR (calculated)	Data Source & Comments
Historical	**1990**	846	-	-	-	U.S. Census
	2000	1,100	-	-	2.7%	U.S. Census
	2010	1,619	-	-	3.9%	U.S. Census
	2020	1,981	542	2,523	2.0%	U.S. Census
	2024	2,449	640	3,089	5.4%	TischlerBise estimate from 2022 study
				10-Year AAGR	*2.0%*	*2020 to 2010 average*
				20-Year AAGR	*3.1%*	*2021 to 2001 average (from WFPS)*
Projected	**2025**	2,578	674	3,252	5.4%	TischlerBise estimate from 2022 study
	2030	3,221	843	4,064	4.6%	TischlerBise estimate from 2022 study
	2035	3,634	951	4,585	2.4%	Estimated using 20-year AAGR
	2040	3,911	1,023	4,934	1.5%	Estimated using 20-year AAGR
	2045	4,747	1,242	5,989	4.0%	Estimated using 20-year AAGR
				20-Year AAGR Projection	3.1%	2025 to 2045 average

1) Includes areas within Driggs City limits only

2) Includes connections outside of the City limits but connected to the sewer system. Calculated based on historical service connections multiplied by 2.06 people per household. Assumes county grows at same rate as City of Driggs.

3) Equal to the Driggs sewered population. Does not include City of Victor populations.

FIGURE 3-1 POPULATION PROJECTIONS



3.1.1. 20-Year Growth Locations

Identifying where growth is expected to occur is necessary to properly allocate future wastewater flows to the collection system model and size future infrastructure. The growth locations were assigned based on input from City staff. Locations were identified by the City staff where there are pending developments and where future growth will likely occur during the 20-year planning period. Figure 7 in Appendix A depicts the anticipated growth areas and Table 3-2 includes details including the number of equivalent residential units (ERUs) associated with each growth area. Note that a corresponding population was calculated using the same average of 2.06 people per household was used as described in the population projections. The sum of the populations within the growth areas equals the growth projected from 2025 to 2045.

TABLE 3-2: GROWTH AREAS DETAILS

Description	Growth Area ID	Growth Type	Acres	ERUs[1]	Population[2]
Future Growth Area A	**1**	Residential	30	64	132
Miller Ranch	**2**	Residential	19	4	8
Future Shoshone Plains	**3**	Residential	120	342	705
Redtail	**4**	Residential	106	41	85
Targhee Estates	**5**	Residential	101	55	114
Aspen Point	**6**	Residential	23	52	107
Future Growth Area B	**7**	Residential	8	48	99
Gemstone	**8**	Residential	51	85	175
West Creekside Meadows I A	**9**	Residential	3	15	31
West Creekside Meadows I B	**10**	Residential	2	10	21
West Creekside Meadows I C	**11**	Residential	4	22	45
West Creekside Meadows I D	**12**	Residential	3	14	29
Commercial Mixed Use/Hotel	**13**	Commercial[3]	14	87	0
Huntsman Springs City Phase II	**14**	Residential	4	12	25
Huntsman Springs City Phase I	**15**	Residential	14	8	16
Tributary Phase II	**16**	Residential	86	53	109
Huntsman Springs County Phase 3A	**17**	Residential	42	34	70
Huntsman Springs County Phase I	**18**	Residential	90	49	101
Iron Wood	**19**	Residential	160	55	114
Flats at Teton Peaks	**20**	Residential	12	184	379
Highland Heights	**21**	Residential	12	54	111
Tributary Cottage Court #2	**22**	Residential	1	14	29
North Beacon Mixed Use	**23**	Mixed Use	2	48	99
Edge Subdivision	**24**	Residential	8	64	132
Victor Mountain Resort	**25**	Commercial[3]	3	15	0
		Total	**878**	**1,429**	**2,737**

1) ERUs assigned based on City reported value, remaining lots based on aerial imagery, or preliminary plats.

2) Assumes 2.06 people per ERU.

3) Commercial ERU equivalent based on use of 1,000 gallons per day per acre. Converted to ERUs based on flow planning criteria.

3.2. HISTORICAL FLOWS

Historical flow data from the lift stations was utilized to summarize historical flows within the system under multiple flow scenarios. Specifically, the sum of flows from the Huntsman Lagoon Lift Station, Main Lift Station, and Creekside Lift Station were used as the basis for the system flows because the combination of all three of these lift stations equates to the total Driggs system flows. Note that data from the South Lift Station was separated because it conveys the entirety of flows from the City of Victor and county

subdivisions which are pumped directly to the Driggs WWTP. The historical data was used to develop planning criteria for assigning existing and future flow conditions. The flow scenarios assessed in this planning study include the following:

- **Average Day Flow (ADF):** The average annual daily flow for an entire year.
- **Average High Flow (AHF):** Average daily flow for periods when there are higher flows and more I/I. Assumed to be from May through September for this study. See Section 3.3 for additional discussion regarding seasonal fluctuations.
- **Average Low Flow (ALF):** Average daily flow for periods when there is lower flows and less I/I. Assumed to be from December through March for this study. See Section 3.3 for additional discussion regarding seasonal fluctuations.
- **Maximum Month Flow (MMF):** The average daily flow from the month with the largest flows during a calendar year.
- **Maximum Day Flow (MDF):** The total daily flow from the maximum day during a year.
- **Peak Hour Flow (PHF):** The maximum hourly flow rate the system may experience.

3.2.1. Existing ADF, ALF, AHF, MMF, & MDF

The planning criteria for ADF, AHF, ALF, MMF, and MDF are presented in Table 3-3, and a summary of the total daily flows with and without Victor's flows is included in Appendix B. The daily flows from the previous five years are presented in Figure 3-2.

The ADF has steadily increased with population growth. The system experiences higher wastewater flows in the early summer than during the winter season with the lowest flow typically occurring during the shoulder seasons (October-November and March-April). This is likely due to the influx of seasonal visitors in the summer and winter months and the reduced groundwater levels in the spring and fall. The MMF for the past five years occurred during the month of June as shown in Table 3-4. Additional discussion regarding seasonal fluctuations is included in Section 3.3.

The planning criteria shown in Table 3-3 are used as the basis for projecting future wastewater flows in Driggs. The flows are expressed in total volume (million gallons per day (MGD)) and as a flow per ERU (gallons per ERU per day (gped)).

FIGURE 3-2: 2020 - 2024 DAILY RECORDED FLOWS

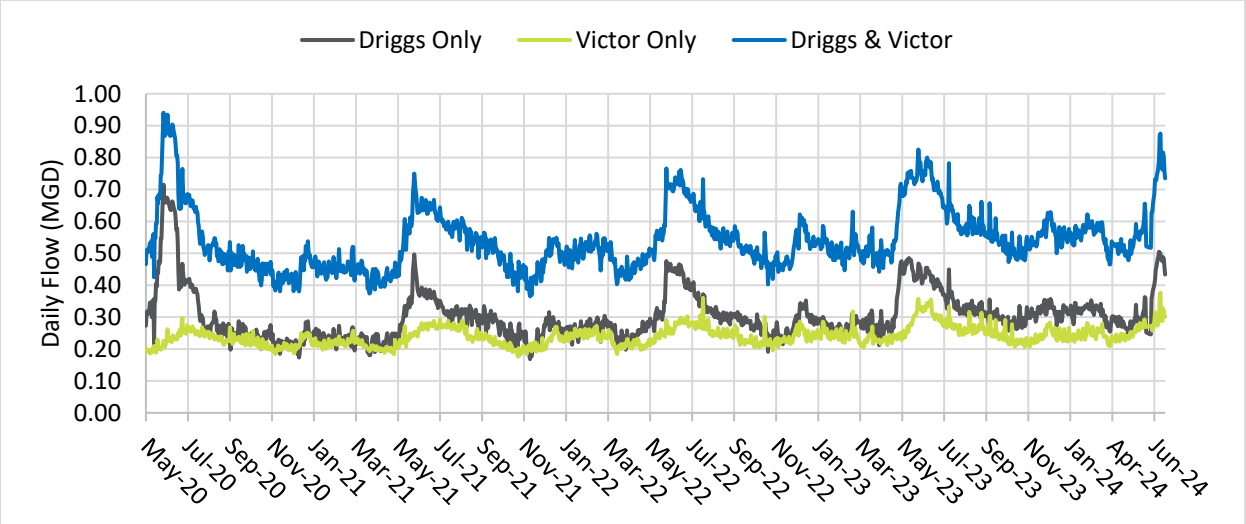


TABLE 3-3: HISTORICAL WASTEWATER FLOWS

Year[3]	ERUs[1]	ADF		AHF		ALF		MMF		MDF		Peaking Factor MDF/ADF
		MGD	gpd/ ERU	MGD	gpd/ ERU	MGD	gpd/ ERU	MGD	gpd/ ERU	MGD	gpd/ ERU	
2020	1,628	-	-	-	-	-	-	0.58	358	0.72	439	-
2021	1,701	0.27	161	0.32	189	0.24	142	0.39	230	0.50	292	1.82
2022	1,786	0.29	165	0.34	191	0.27	149	0.40	226	0.48	266	1.62
2023	1,889	0.32	171	0.37	196	0.29	153	0.45	236	0.49	257	1.51
2024	1,992	-	-	-	-	-	-	0.46	233	0.50	253	-
Historical Average	-	0.30	165	0.34	192	0.27	148	0.46	257	0.54	301	1.51
Historical Max	-	0.32	171	0.37	196	0.29	153	0.58	358	0.72	439	1.82
Planning Criteria[2,4]	**2,053**	**0.34**	**165**	**0.40**	**196**	**0.30**	**148**	**0.49**	**236**	**0.60**	**292**	**1.77**
Including Victor[5]	**-**	**0.59**	**-**	**0.70**	**-**	**0.54**	**-**	**0.85**	**-**	**1.06**	**-**	**-**

1) Equal to total number of ERUs based on the City's billing system. Includes ERUs for residential, commercial, and mixed use connections.

2) Equal to 2025 ERU estimate. Planning criteria equal to average for ADF and ALF and equal to the historical max for AHF, MMF, and MDF

3) January 2020-May 2020 and July 2024-December 2024 flow data not provided so ADF, AHF, and ALF is not calculated for those years.

4) 2020 MMF and MDF was not selected for planning criteria because the City has completed I/I reduction efforts which reduced the max day flows.

5) Total system flows including City of Victor.

The top ten maximum flow days were examined to see if the daily flow value was representative of actual system flows or if there were other factors such as abnormal discharges, flow meter errors, or other anomalies which may have resulted in excessively high flows. All ten of the top flow days within the last four years occurred in late May or early June 2020, with the largest being 0.67 MGD on June 1, 2020. The flows from 2020 are significantly higher than the subsequent years. Excluding the high flows from 2020, the next highest max day flow was 0.45 MGD on June 6, 2021.

The City reported I/I reduction efforts were completed after the 2020 peak days are the reason for reduced flows in subsequent years. The City maintains an active I/I reduction program and therefore the max days from 2020 were not deemed representative of future system flows. For this reason, the planning criteria were based on the max flows observed in Driggs from 2021 through 2024. These top ten flow days are summarized in Table 3-4.

The daily precipitation total is also provided in the table to show if the high flows were a result of inflow. Only one of the top ten flow days had precipitation over 0.1 inches and therefore it can be concluded that the wastewater system does not have significant inflow from precipitation.

TABLE 3-4: TOP 10 MAXIMUM FLOW DAYS

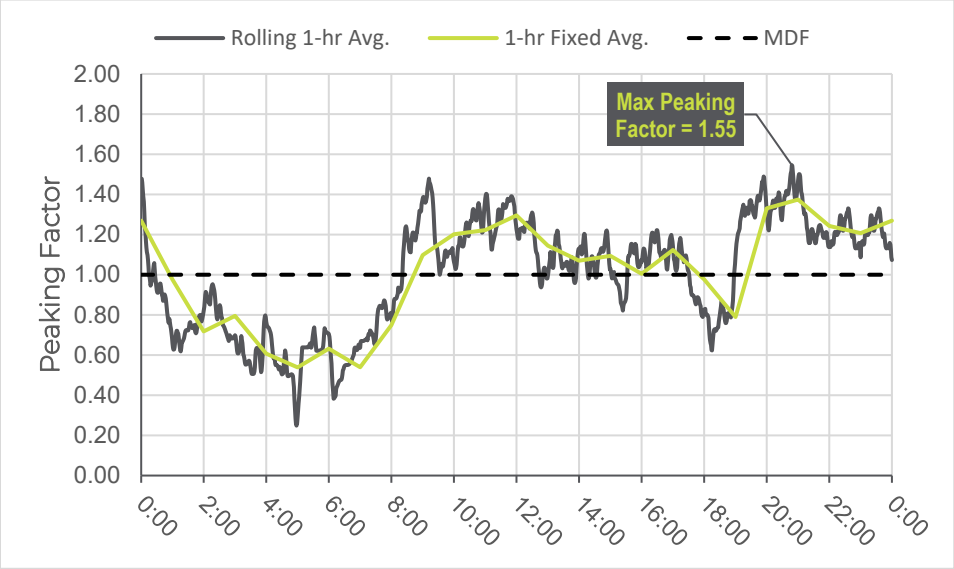
Top 10 Highest Flow Occurences[2]				
Rank	Date	Influent (MGD)	Flow per ERU (gped)[1]	Precipitation (in)
1	Sunday, June 9, 2024	0.46	231	0.00
2	**Sunday, June 6, 2021**	**0.46**	**270**	**0.00**
3	Monday, June 10, 2024	0.45	228	0.31
4	Tuesday, June 11, 2024	0.45	226	0.00
5	Saturday, June 15, 2024	0.45	225	0.01
6	Saturday, June 8, 2024	0.45	223	0.05
7	Tuesday, June 6, 2023	0.44	235	0.00
8	Friday, June 7, 2024	0.44	223	0.00
9	Sunday, June 16, 2024	0.44	222	0.00
10	Monday, June 5, 2023	0.44	234	0.00

1) Based on number of ERUs for the year the max flow day occurred.
2) Max day flows exclude 2020 flows because I/I reduction efforts were completed by the City

3.2.2. Peak Hour Flows

Flow to the Driggs WWTP is measured by an influent flow meter, but can also be calculated through four separate lift station flow meters which all pump directly to the WWTP. These lift stations are the South Lift Station (LS), Main LS, Huntsman Lagoon LS, and Creekside LS. Supervisory control and data acquisition (SCADA) data for each lift station in 1-minute intervals from May 2024 was used to develop a diurnal curve for the Driggs WWTP. Note, this diurnal curve is representative of the entire system flows, including Victor. Individual diurnal curves were also developed for each lift station basin and are discussed in later sections. The systemwide diurnal curve was calculating by taking a 1-hour rolling average of the combined flow from the four lift stations that pump to the WWTP. The curve shows some high peaks and valleys as a result of the lift station pumps turning on and off, but the rolling 1-hour average was assumed to be representative of peak flows. A 1-hour fixed average (i.e., average flow between set hours) is also plotted for comparison, but the peaking factor of 1.55 from the rolling average was used for the planning criteria. Using the planning Maximum Daily Flow (MDF) of 0.60 MGD and the calculated peaking factor, the resulting systemwide Peak Hourly Flow (PHF) was 0.93 MGD.

FIGURE 3-3: WWTP DIURNAL PATTERN



3.3. FUTURE FLOW PROJECTIONS

The planning criteria in the previous section were used in conjunction with the population projections to calculate the future flows for the planning period. The flow per ERU per day values from Table 3-3 were multiplied by the projected populations. Flow from Victor's collection system was input as reported in their most recent WWFPS. Table 3-5 provides a summary table showing populations, ERUs, and system flows for each planning period. These flows will be used to evaluate the existing system and alternatives to address system deficiencies.

Note, the table specifies flow projections for the collection system with and without Victor's additional flows. This is because the majority of Driggs collection system is not impacted by the additional flows from Victor, but the combined flow between Driggs and Victor is representative of the total flow expected at the Driggs WWTP before Victor's WWTP comes online.

TABLE 3-5: FUTURE FLOW PROJECTIONS

Scenario	Population	ERUs	ADF (MGD)	AHF (MGD)	ALF (MGD)	MMF (MGD)	MDF (MGD)	PHF (MGD)[4]
Flow Projections Without Victor Flows[1]								
2025	3,252	2,053	0.34	0.40	0.30	0.49	0.60	0.93
2030	4,064	2,447	0.40	0.48	0.36	0.58	0.71	1.11
2035	4,585	2,799	0.46	0.55	0.41	0.66	0.82	1.27
2040	4,934	2,968	0.49	0.58	0.44	0.70	0.87	1.34
2045	5,989	3,480	0.58	0.68	0.52	0.82	1.02	1.57
Flow Projections With Victor Flows[2,3,5,6]								
2025	7,430	-	0.59	0.70	0.54	0.85	1.06	1.65
2030	9,026	-	0.71	0.84	0.64	1.01	1.27	1.96
2035	10,438	-	0.82	0.97	0.74	1.17	1.47	2.28
2040	11,738	-	0.91	1.07	0.82	1.30	1.62	2.52
2045	13,914	-	1.06	1.25	0.96	1.52	1.90	2.94

1) Includes populations inside and outside of Driggs City limits.

2) Entire sewered population which flows to Driggs WWTP. Includes Driggs, Victor, and county populations.

3) ERU counts for Victor not available.

4) Calculated based on PHF / MDD peaking factor of 1.55.

5) Does not reflect construction of Victor WWTP.

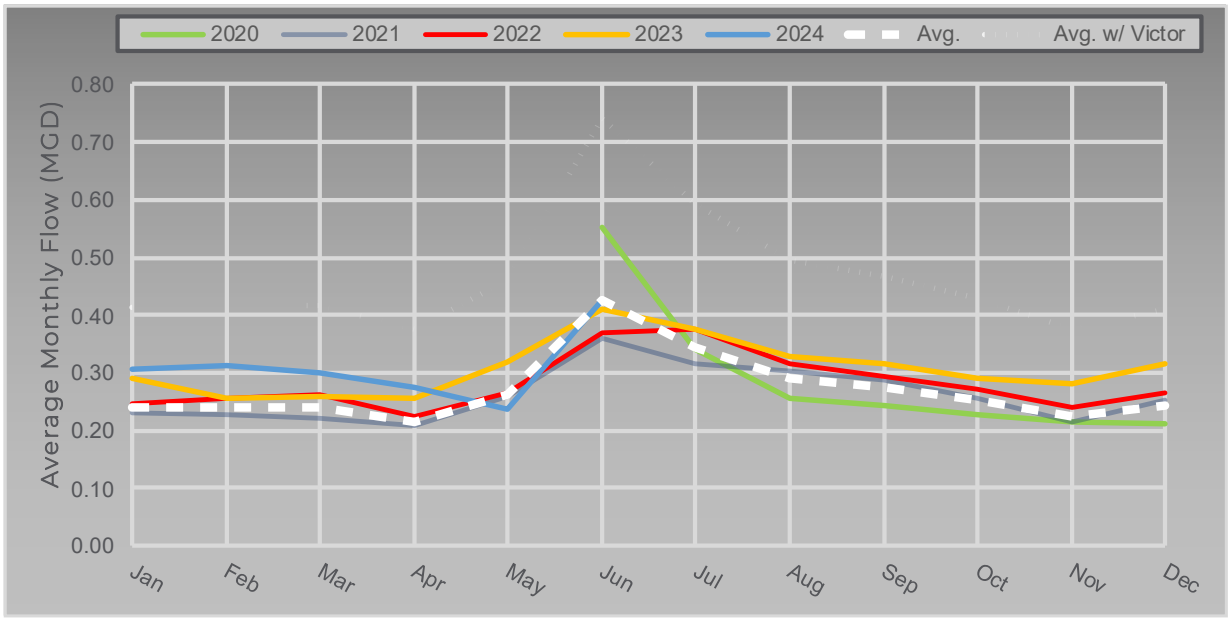
6.) Driggs will no longer receive flows from Victor after completion of Victor WWTP.

3.4. INFILTRATION AND INFLOW (I/I) ANALYSIS

Infiltration and inflow (I/I) is stormwater or groundwater that enters the sanitary sewer system and can come from a variety of sources, such as storm sewers connected to the sanitary sewer, storm inflow through manhole lids, and groundwater infiltration into cracked/broken pipelines, services, or manholes. I/I impacts in Idaho are often minimal due to its dry climate; however, there are instances where significant I/I may exist due to other reasons such as high groundwater, surface water irrigation influences, or nearby rivers or streams.

As seen in Figure 3-4, The wastewater system typically sees the highest flows in the summer months and the lowest flows in early spring and late fall. The five-year average flows in June are almost two times higher than the flows in April and November, indicating the presence of seasonal I/I.

FIGURE 3-4: AVERAGE DAILY FLOW BY MONTH



Precipitation data was plotted against corresponding flow data from the combination of Main LS, Huntsman Lagoon LS, and Creekside LS which account for most of Driggs WWTP flows excluding Victor's flows. This helped identify correlation between large precipitation and flow increases in the wastewater system. Figure 3-5 plots the daily flow without Victor's flows over the last four years. The figure indicates occasional spikes in influent flow corresponding to precipitation events. However, most rainfall appears to have a minimal effect on daily flow rates.

FIGURE 3-5: WWTP INFLUENT W/O VICTOR FLOWS VS. DAILY PRECIPITATION

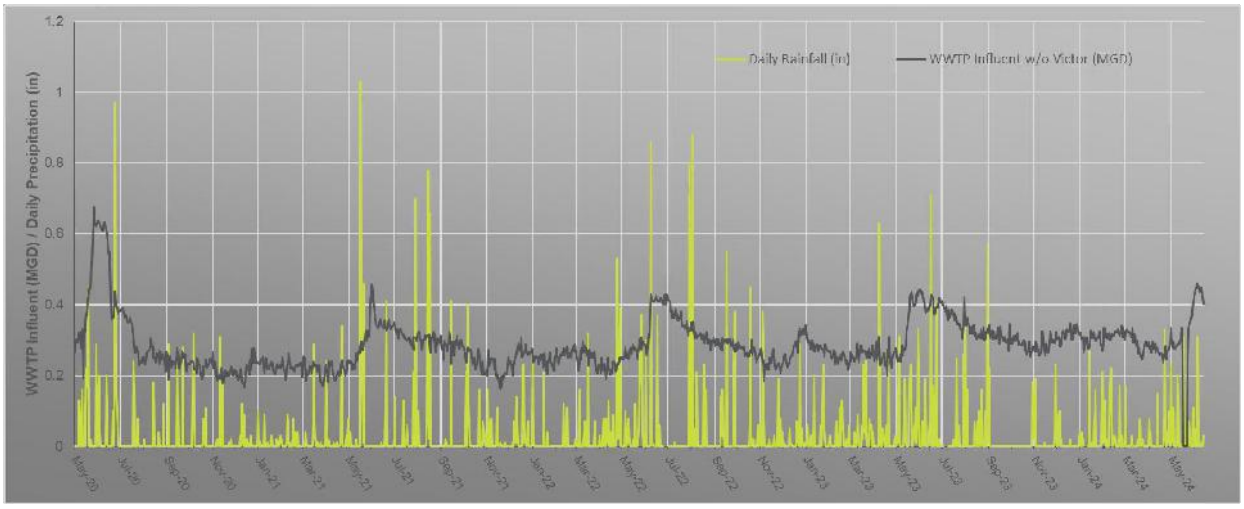
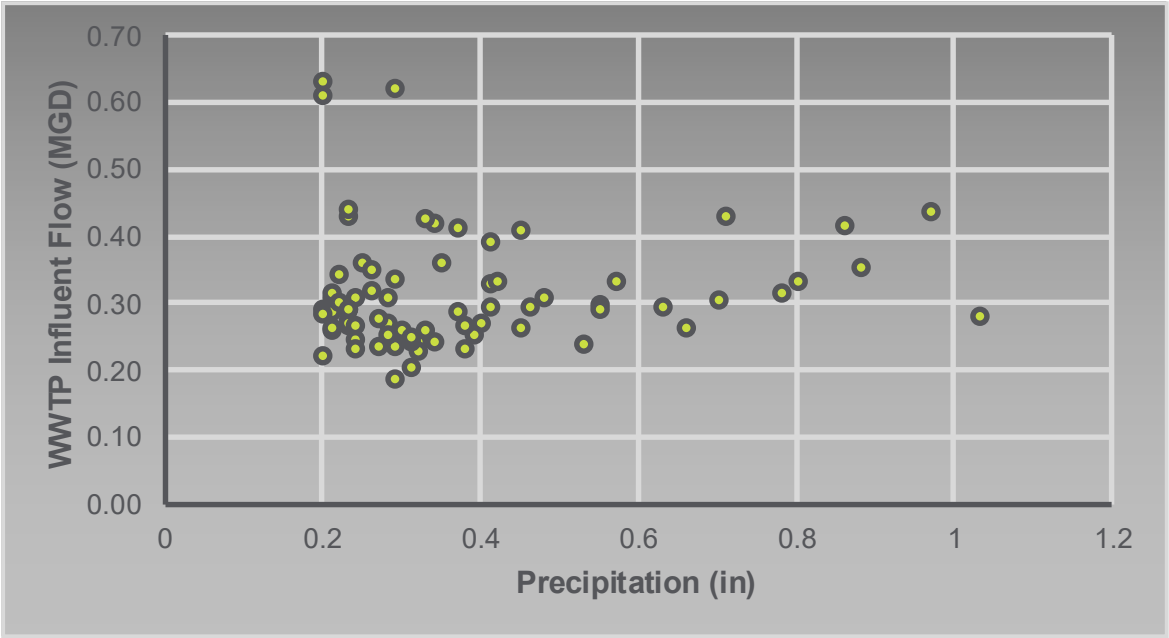


Figure 3-6 illustrates a plot of precipitation events exceeding 0.2 inches on the horizontal axis and the corresponding daily influent on the vertical axis. Typically, a system experiencing significant inflow will show a linear correlation between precipitation and flowrate with increasing flows corresponding to increasing precipitation events. However, the data points presented in Figure 3-6 do not follow a linear pattern, indicating that precipitation has an insignificant effect on wastewater flow. Therefore, the stormwater inflow

does not appear to contribute significantly to the City's flows, and the increase in flows during the summer is more likely due to high groundwater infiltrating into the collection system.

FIGURE 3-6: CORRELATION BETWEEN PRECIPITATION AND WWTP FLOWS



As observed in the total system flows illustrated and summarized above, the wastewater system experiences higher seasonal flows in the spring and lowest flows in the fall. The City reported in general that more infiltration is observed in the southern part of the collection system near Teton Creek.

Temporary flow monitors were utilized to in an attempt to identify which basins have higher I/I. Flow monitoring was first conducted in the spring during high ground water, and then in the fall when groundwater was lower. The flow monitors were installed for approximately one month during each of the seasons. The same five locations were used during each monitoring period so that a direct comparison could be made.

Four of the five sites experienced lower flows during the fall, which was expected; however, Site 1 experienced higher flows. Site 1 collects flows from both Driggs Elementary and Teton Middle School which were not in session during the spring flow monitor period, but were in session during the fall period. The additional flows from the schools likely contributed to the higher fall flows. The remaining four sites ranged from 146% to 186% increase in average flows on a daily basis. The basins associated with the four sites are depicted in is illustrated in Figure 11 in Appendix A.

Daily flows from the City's lift stations were utilized as additional flow monitor locations to identify locations with high I/I. Table 3-6 summarizes the flow comparison of the lift stations and flow monitoring sites.

TABLE 3-6: AVERAGE SEASONAL FLOWS

Lift Station[1,2]	Spring Average Flows[3] (GPD)	Fall Average Flows[4] (GPD)	Additional Spring Flows (GPD)	Spring Percent Increase
Clubmoss	4320	4320	-	-
Creekside	50400	14400	36000	350%
Forest Service	44640	21600	23040	207%
Huntsman O&M	20160	12960	7200	156%
South	378720	342720	36000	111%
Valley Center	44640	41760	2880	107%
Site 1	20160	51840	-	-
Site 2	27360	15840	11520	173%
Site 3	109440	74880	34560	146%
Site 4	133920	72000	61920	186%
Site 5	51840	30240	21600	171%

1) No data available for Cottongrass and Redtail Lift Stations

2) Main and Huntsman Lagoon Lift Stations are combinations of other Lift Stations and not included

3) May 20 - June 30

4) September 1 - October 31

5) Site 1 includes Teton Middle School and Driggs Elementary School

Table 3-7 summarizes the City's lift stations and corresponding gal/ERU produced. It should be noted the table only includes lift stations with over 50 connections. Comparing the lift stations can provide a measure of areas with higher infiltration. From Table 3-6 and Table 3-7 it is noted all lift stations appear to experience some degree of seasonal infiltration. Notably, the Forest Service Lift Station shows an increase of over 20,000 gallons per day, while Creekside and South Lift Stations each experience an additional 36,000 gallons per day during the spring season. The basins upstream of these lift stations should be targeted as higher priority for CCTV to identify problem areas associated with I/I. Figure 3-7 and Figure 3-8 show the daily flows at each of the lift stations with SCADA and further depict the seasonal fluctuations at each lift station. Recommendations to address I/I will be discussed in chapter 7.

TABLE 3-7: LIFT STATION FLOW SUMMARIES

Lift Station Name[1]	ERUs[2]	ADF (4-yr average)		MMF (4-year max month)		PDF (4-year peak day)		Peaking Factor
		GPD	gal/ERU/day	GPD	gal/ERU/day	GPD	gal/ERU/day	AADF/PDF
Clubmoss	58	2,165	37	4,190	72	10,200	176	4.71
Creekside	108	15,841	147	36,380	337	46,500	431	2.94
Forest Service	86	15,839	184	30,406	354	43,100	501	2.72
Huntsman Lagoon	784	77,910	99	112,506	143	204,500	261	2.62
Main	1020	201,201	197	326,461	320	379,400	372	1.89
South	1462	231,602	158	307,519	210	360,500	247	1.56
Valley Center	234	26,647	114	38,052	163	46,700	200	1.75
Systemwide (rounded)	**1,956**	**340,000**	**134**	**490,000**	**228**	**600,000**	**312**	**1.76**

1) 2020 flow data not included as I/I improvements occurred and is no longer representative

2) South Lift Station assume 2.93 People/ERU and Victor Collection population of 4178

3) Outliers were removed from daily lift station data.

4) Several lift stations feed into one another therfore systemwide numbers don't reflect sum of values in table

FIGURE 3-7: LIFT STATION DAILY FLOWS (1)

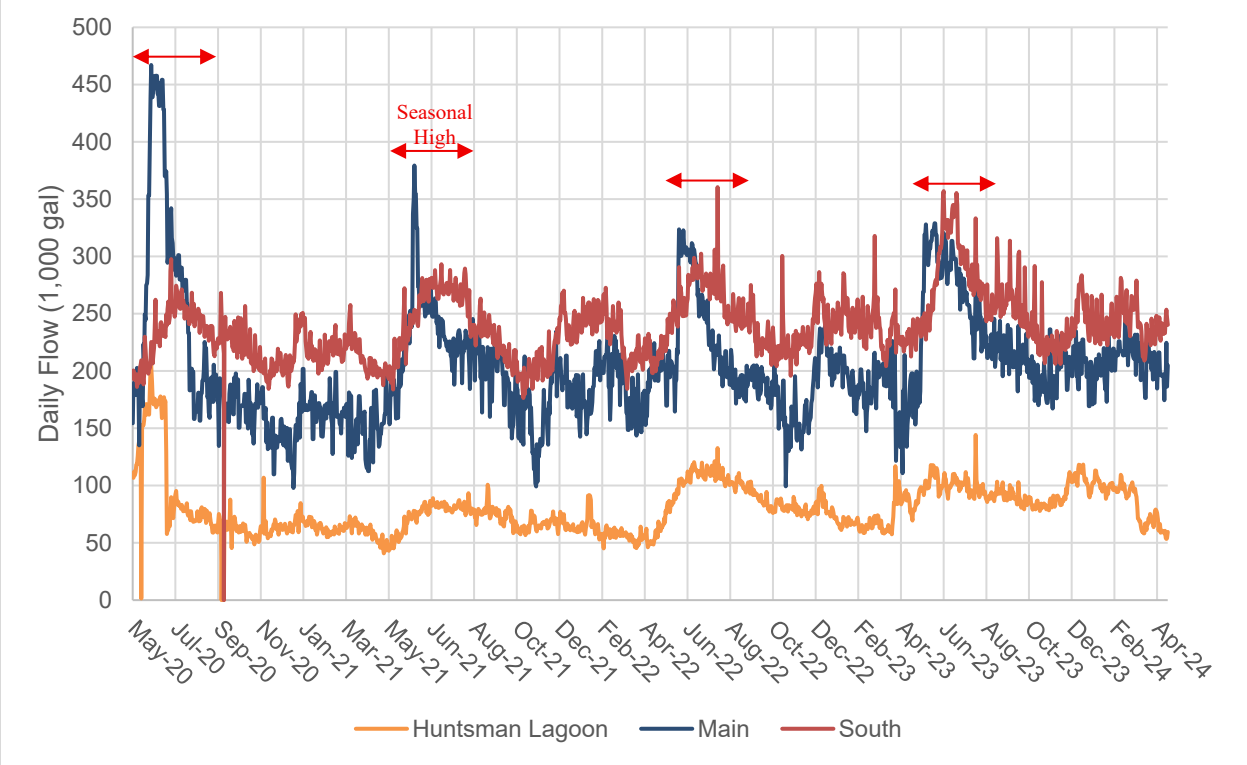
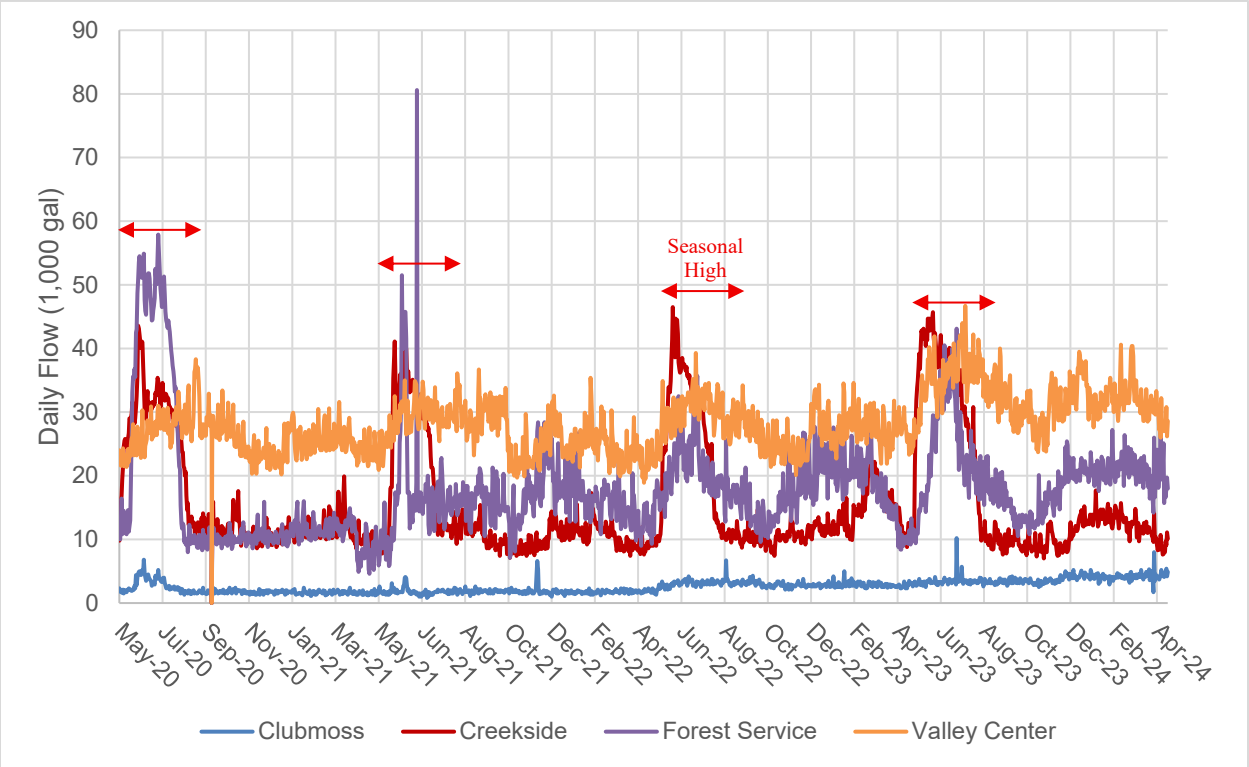


FIGURE 3-8: LIFT STATION DAILY FLOWS (2)



3.5. REGULATORY REQUIREMENTS

In addition to the planning criteria, this study also considers regulatory requirements which may influence capital improvement projects. A summary of the regulatory requirements and recommended industry standards which were used as evaluation criteria in this study are summarized below.

3.5.1. Current Regulatory Requirements

- Minimum Pipes Slopes (IDAPA 58.420.02.d): Ten State Standards are a widely used guidance document for wastewater systems and recommend a minimum velocity of 2.0 feet per second (fps) in gravity pipes when flowing full to reduce the likelihood of build-up in the pipeline (Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environment Managers, 2014). The minimum slopes for pipes 8-inch to 42-inch diameter pipes are summarized in Table 3-8.

TABLE 3-8: MINIMUM PIPE SLOPES

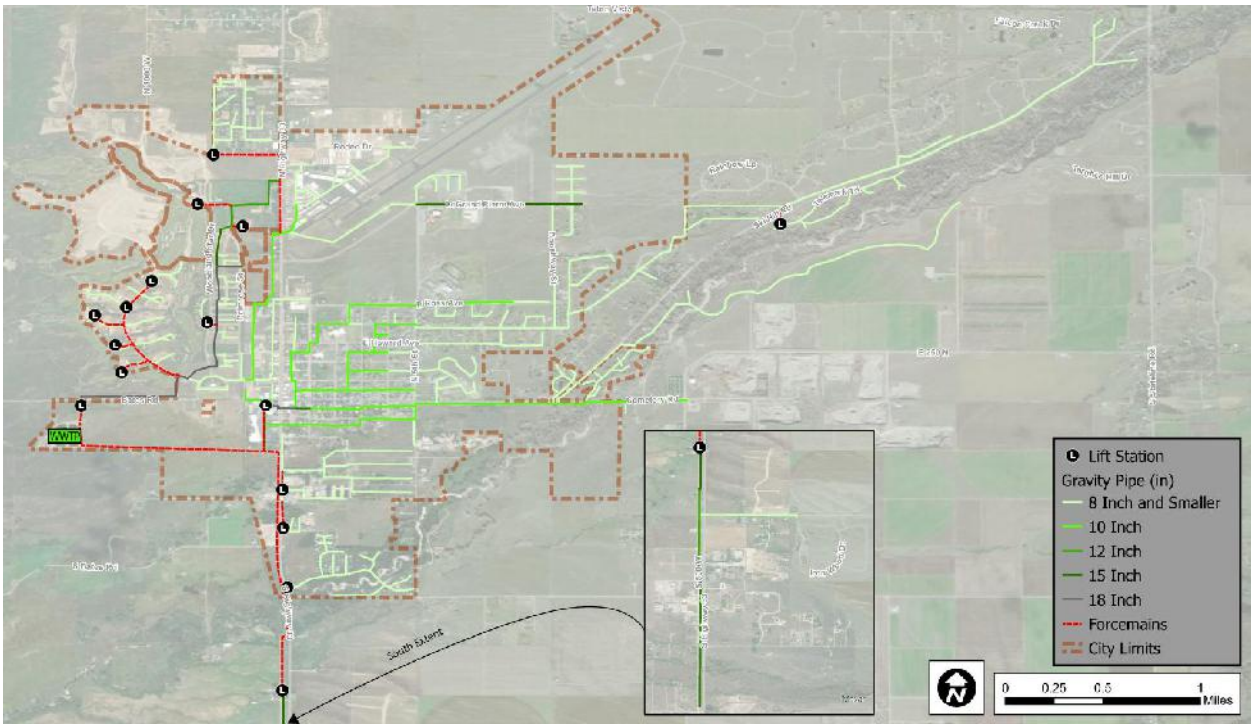
Pipe Diameter (in)	10 State Standards Minimum Slope (%)
8	0.4
10	0.28
12	0.22
15	0.15
18	0.12
21	0.1
24	0.08
30	0.058
36	0.046
42	0.037

- Minimum mainline diameter of 8-inches (IDAPA 58.430.02.a)
- Lift station electrical and mechanical equipment should remain protected from physical damage from the 100-year flood (IDAPA 58.440.01.a)
- Back-up power or emergency storage at lift stations (IDAPA 58.440.07.b)
- Lift stations should have pumping capacity to meet the peak hour flows with one unit out of service (IDAPA 58.440.02.c.i)
    - While not required by IDAPA it is additionally recommended that peak hour inflow should be no more than 85% of firm pumping capacity. If it exceeds 85% of the firm pumping capacity, this will trigger improvements.
- Force main velocities should not be lower than 2 fps at their design flow rate (IDAPA 58.440.10.a)
- Gravity collection pipes 12-inches and smaller should have maximum flow depth divided by full flow depth (d/D) of less than 75% during peak hour demand. Gravity pipes larger than 12-inches should have a maximum d/D of less than 85%.

CHAPTER 4 - COLLECTION SYSTEM EVALUATION

The City of Driggs owns and operates a sanitary sewer collection system and wastewater treatment plant (WWTP) which serves approximately 3,089 people within its collection system service area. The City of Victor to the south also sends flows to Driggs' WWTP which are conveyed through a part of Driggs' collection system; however, Victor will stop sending flow upon completion of their WWTP. The City's collection system consists of a total of 16 lift stations (LS) of which 9 collect flows from less than 50 connections, 4.5 miles of pressure sewer pipe, and 36 miles of gravity sewer pipe. Figure 4-1 illustrates the existing collection system and a larger version is shown in Figure 1 in Appendix A.

FIGURE 4-1: EXISTING COLLECTION SYSTEM



4.1. LIFT STATION CONDITIONS

In May 2024, Keller Associates visited each lift station with City staff to provide visual observations of equipment condition and to document any known issues, as well as perform pump drawn down tests. All of the wet wells are circular, ranging in diameter from 6 to 10 feet. Each of the pump stations is equipped with a pressure transducer to monitor the water level depth within the wet well. Ten of the sixteen lift stations are connected to the City's SCADA system. It is generally recommended to clean the entire system every 5-6 years. To meet this schedule, it is recommended that 3-4 lift stations are cleaned annually.

A brief summary of noted deficiencies has been compiled below. More extensive observation from the facility tours, conditions assessment forms, information from City staff, record drawings, and other available information has been compiled in Appendix D. An inventory of each pump station's major equipment is presented on the following page.

All lift stations currently lack fall protection at the wet wells. Installing appropriate fall protection systems such as safety grates would significantly enhance operator safety. Additionally, the existing lift stations do not have hatch locks. Installation of hatch locks improves site security and should be added when possible.

Main Lift Station

- The valve vault was found to be filled with water. It is recommended that the vault be made watertight while still allowing for drainage in the event of flooding.
- A siphon of up to 200 gpm is occurring out of the wet well.

South Lift Station

- The valve vault was found to be filled with water. It is recommended that the vault be made watertight while still allowing for drainage in the event of flooding.

Huntsman Lagoon Lift Station

- The valve vault was found to be filled with water. It is recommended that the vault be made watertight while still allowing for drainage in the event of flooding.
- The check valve produces a clanking noise and likely needs to be replaced.

Forest Service Lift Station

- The valve vault was found to be filled with water. It is recommended that the vault be made watertight while still allowing for drainage in the event of flooding.
- The check valve produces a clanking noise and likely needs to be replaced.
- The wet well lid is hard to open and may need to be replaced or fixed.

Clubmoss Lift Station

- No observed or reported issues

Redtail Lift Station

- The east outlet leaks during pumping; it is recommended to reseal connection

Creekside Lift Station

- No observed or reported issues

Cotton Grass Lift Station

- No observed or reported issues

Valley Center Lift Station

- No observed or reported issues

Huntsman Bitterroot Lift Station

- No observed or reported issues

Huntsman Comfort Station Lift Station

- No observed or reported issues

Huntsman Starflower Lift Station

- The west pump is not properly seated and leaks, it is recommended to reseat pump
- The check valve produces a clanking noise and likely needs to be replaced.

Huntsman Shasta Daisy Lift Station

- The valve vault was found to be filled with water. It is recommended that the vault be made watertight while still allowing for drainage in the event of flooding.

Huntsman Indian Paintbrush Lift Station

- The valve vault drain is plugged, it is recommended to clear drain of debris.

Huntsman O&M Lift Station

- Ownership to transfer from the City to Tributary subdivision

Huntsman Spa Lift Station

- Ownership to transfer from the City to the Tributary subdivision

As noted previously, part of the study area is located within the 100-year and 500-year floodplain. There are some components of the collection system that are within both flood plains, including some segments of gravity pipe and manholes. During a flood event, excess inflow may enter the collection system. To mitigate this, it is recommended that manholes located at or near the 100-year floodplain be sealed to minimize the potential for infiltration. Sealing methods may include internal linings or coatings. As illustrated in Figure 4-2 Huntsman Lagoon Lift Station is located inside the 100-year floodplain. During a flood event, this lift station should be examined for excess inflow or damage. The remaining lift stations are outside of the mapped 100-year and 500-year flood plains.

FIGURE 4-2: LIFT STATIONS IN FLOOD PLAINS

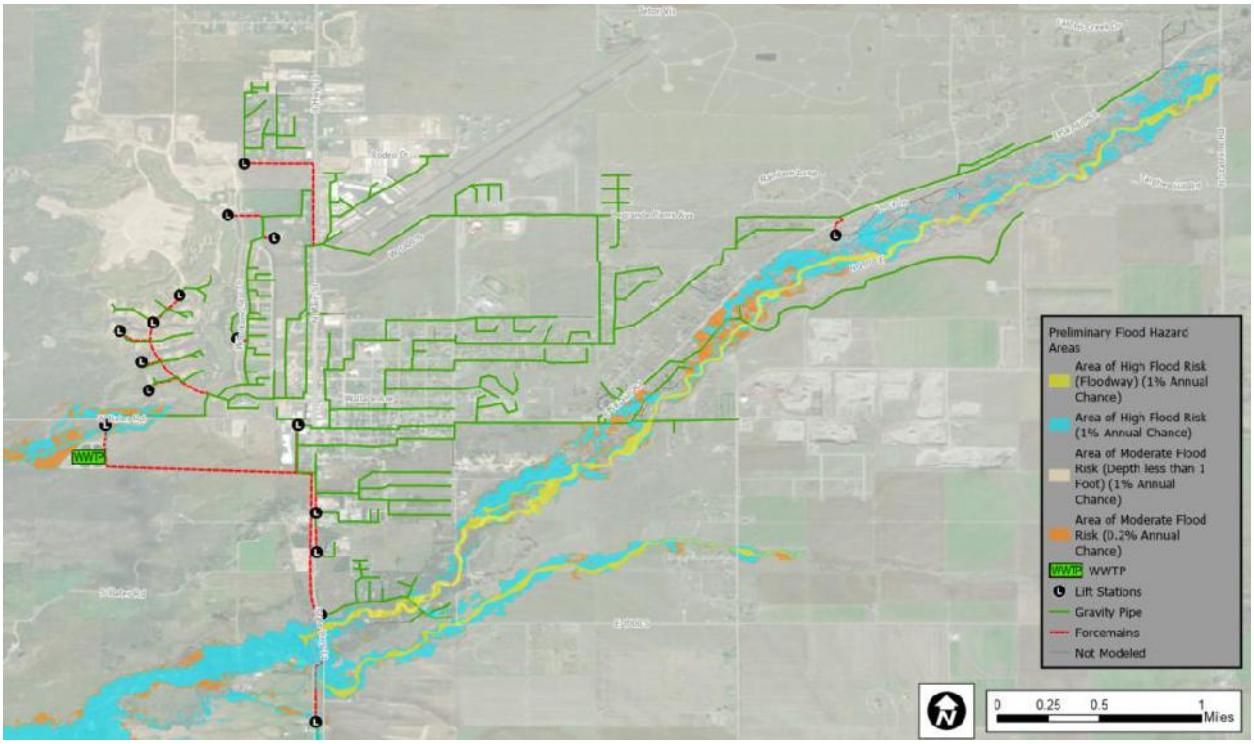


TABLE 4-1 LIFT STATION SUMMARY

Attribute	Main Lift Station	South Lift Station	Huntsman Lagoon Lift Station	Forest Service Lift Station	Clubmoss Lift Station	Red Tail Lift Station	Creekside Lift Station	Cottongrass Lift Station	Valley Center Lift Station	Huntsman Bitterroot Lift Station	Huntsman Comfort Station Lift Station	Huntsman Star Flower Lift Station	Huntsman Shasta Daisy Lift Station	Huntsman Indian Paintbrush Lift Station	Huntsman O&M Lift Station [2]	Huntsman Spa Lift Station [2]
Pump Type	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible	Submersible
Number of Pumps	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Motor Size (HP)	20.00	20.00	7.50	1.50	3.00	3.00	20.00	1.50	10.00	5.00	5.00	15.00	7.50	7.50	3.00	2.00
Firm Capacity (gpm)[1]	359.00	592.00	601.00	141.00	93.00	88.00	237.00	72.00	170.00	250.00	204.00	395.00	357.00	250.00	101.00	48.00
Wetwell Diameter (ft)	8.00	10.00	8.00	6.00	6.00	6.00	8.00	6.00	8.00	6.00	6.00	8.00	6.00	6.00	6.00	6.00
Wetwell Depth (ft)	20.33	11.25	11.33	12.5	12	14.67	12.5	18.33	12.33	17.33	18	19	12.5	23	12	12
Depth to Inlet Pipe Invert (ft)	17.43 & 13.55	4.67	5.2	9.19 & 7.83	7.24	8.32	7.62	13.65	8	12.65	12.94 & 12.57	13.42 & 13.28	8.37 & 8.00	18.5 & 18.48	6.86	7.86
Level Indicator Type	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer
Flow Meter (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	No
Pressure Gauge (Y/N)	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Back-up Power	Yes	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No
Transfer Switch	Automatic	None	None	None	Portable	None	None	None	None	None	None	None	None	None	None	None
Odor/H2S Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Room for Expansion (Y/N)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Force Main Diameter (in)	8	8	8	4	4	4	4	4	6	4	4	8	4	4	3	3
Force Main Length (ft)	4,580	6,840	420	540	720	570	100	225	3,410	385	660	15	15	605	235	660

1) Capacities calculated from draw down testing completed for each lift station

2) Ownership to transfer from the City to the Tributary subdivision

4.2. PIPELINE CONDITIONS

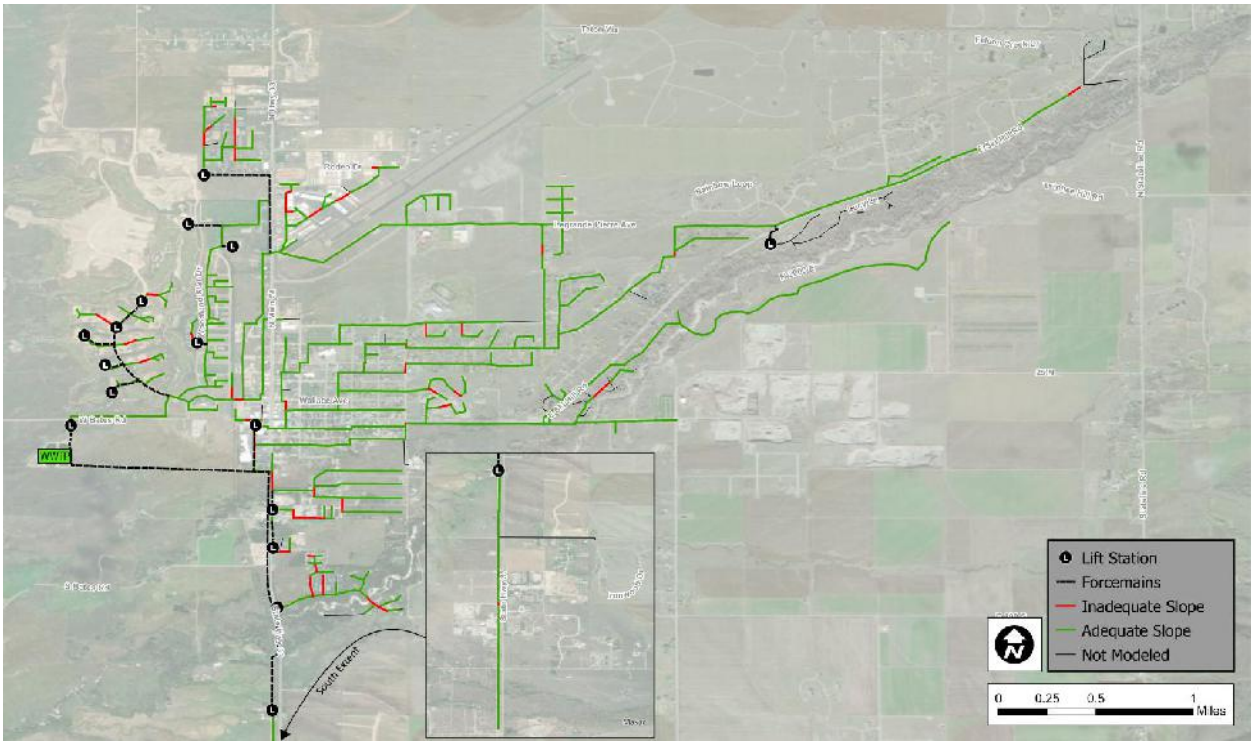
The City's gravity pipelines mostly consist of 8-inch pipe accounting for about 46% of the system. 8-inch pipe is the minimum recommended pipe size for gravity sewer collection pipes. The length of pipeline by diameters is shown in Table 4-2. As previously discussed the system should be cleaned every 5 to 6 years. To meet this schedule, it is recommended to clean approximately 32,000 to 38,000 feet of pipe annually, including the connected manholes.

TABLE 4-2: GRAVITY PIPE INVENTORY

Diameter	Length (ft)	% of System
8-inch	87,200	46%
10-inch	24,900	13%
12-inch	5,600	3%
15-inch	11,300	6%
18-inch	6,800	4%
Unknown	53,600	28%
Total	**189,400**	**100%**

Figure 4-3 shows pipes within the existing system that do not meet the recommended minimum slopes established in Chapter 3. A larger version is shown in Figure 8 in Appendix A. The slopes are based on the length calculated from GIS and the reported pipeline invert elevations. For this reason, the calculated slope may vary slightly from the reported slopes due to discrepancies in the GIS length compared to the installed lengths. The pipes shown do not require replacement for this reason alone, however they indicate areas which may have more sediment buildup because scour velocity may not be achieved.

FIGURE 4-3: GRAVITY PIPES BELOW MINIMUM SLOPES



The lift station force mains vary in size from 3-inches to 8-inches. An inventory of the force mains size, length, and velocity at their firm pumping capacity is summarized in Table 4-3. It is recommended that velocities at the firm capacity be a minimum of 2 fps to minimize sediment build-up in the pipe. Also, the maximum recommended velocity is 8 fps to avoid excessive head loss and potential water hammer. It should be noted that the table shows both the observed pumping rates from the lift station drawdown tests and the pumping rates recorded in the SCADA system. The two values were compared and reviewed with the City to identify which value is more representative. The variance between the two data sources could be a result of multiple lift stations pumping into a shared force main at the same time, human error in drawdown testing, or flow meter issues at the lift stations.

The Creekside LS force main is just over 8 fps at its firm capacity; however, it is a short length before it combines with the South LS force main. If improvements are completed at this lift station, it is recommended that the Creekside LS force main be upsized to at least 6-inches.

The Huntsman Shasta Daisy LS force main is over 8 fps at its firm capacity; however, it is only 15 feet in length, so head loss is not an issue. It is recommended, however, if future improvements are made to the lift station the force main should be upsized to at least 6-inches.

Force mains should be reevaluated any time improvements are being made at the lift station to ensure the force main still has adequate capacity.

TABLE 4-3: FORCE MAIN INVENTORY

Lift Station	Force Main Size (in)	Force Main Length (ft)	SCADA Observed[1] Capacities (gpm)	Calculated[2] Capacity (gpm)	Planning[3] Capacity (gpm)	Pipe Velocity (fps)	Pipe Capacity (gpm)
Main Lift Station	8	4,580	600	359	600	4	1,250
South Lift Station	8	6,840	600	592	600	4	1,250
Huntsman Lagoon Lift Station	8	420	550	601	550	4	1,250
Forest Service Lift Station	4	540	300	141	125	3	310
Clubmoss Lift Station	4	720	70	93	90	2	310
Red Tail Lift Station	4	570	75	88	110	3	310
Creekside Lift Station	4	100	340	237	330	8	310
Cottongrass Lift Station	4	225	110	72	110	3	310
Valley Center Lift Station	6	3,410	250	170	250	3	700
Huntsman Bitterroot Lift Station	4	385	-	250	250	6	310
Huntsman Comfort Station Lift Station	4	660	-	204	200	5	310
Huntsman Star Flower Lift Station	8	15	-	395	395	3	1,250
Huntsman Shasta Daisy Lift Station	4	15	-	357	355	9	310
Huntsman Indian Paintbrush Lift Station	4	605	-	250	250	6	310
Huntsman O&M Lift Station2	3	235	-	101	100	5	170
Huntsman Spa Lift Station2	3	660	-	48	45	2	170

1) No SCADA data available for County Lift Stations

2) Capacities calculated from draw down testing completed for each lift station

3) Capacity used for evaluation

4.3. CITY REPORTED ISSUES

A list of city-reported areas of concern within the collection system is provided in Table 4-4 and a map of associated areas is found in Appendix A. This list is not exhaustive and only represents reported issues the City is currently aware of; it is recommended that the City update it as additional issues are identified. There may be more weak points in the system that will need to be found and addressed through regular inspection and maintenance of the system. The City also explained there are some areas in the system lacking sewer mains resulting in unserved areas or services crossing through other properties. It was also noted that the system has a grease issue and some connections should be equipped with grease traps. Recommendations for improvements will be addressed in chapter 7.

TABLE 4-4: CITY-REPORTED AREAS OF CONCERN

ID	Location	Notes
1	North south line north of Depot Street between Main Street and Front Street up to Buxton Avenue	Grease buildup in line (Recommend installation of grease traps)
2	East West line in alley between Howard Avenue and Ashley Avenue and North South line up to Howard Avenue along N 1st Street	Manhole in 1st Street requires regular inspection to identify issues in lines
3	Line in alley East of American Legion between N Main Street and North First Street South of Wallace Avenue	Recent backups in line (Recommend CCTV)
4	Manhole North of U.S. Bank in line with Short Street	Replace Manhole
5	Corner of S 2nd Street and Fremont Avenue	3 houses on shared service
6	Alley between 2nd Street and 3rd Street and crosses Ashley Avenue	Clay tile or Asbestos Concrete pipe needs replaced
7	Alley between 3rd Street and 4th Street South of Howard Avenue	Needs CCTV potential tree roots in lines
8	Ross Avenue between 4th Street and 5th Street	One of the manholes in the area needs to be replaced with a drop manhole
9	4th Street manhole between Ashley Avenue and Wallace Avenue	Replace Manhole
10	Johnson Trailer Court	Line runs under trailer homes and is 800 feet in length without a manhole (Recommned relocating line and adding manhole)
11	Corner of Palisade Trail and Easy Street	Camera could not exit into manhole during CCTV

4.4. MODEL DEVELOPMENT

An accurate computer model of the wastewater system serves as an important planning tool and provides the basis for identifying existing and future collection system deficiencies. PCSWMM Version 7.5 was selected as the modeling software for this project. PCSWMM is a fully dynamic model and is commonly used for evaluation of complex hydraulic flow patterns. The City did not have an existing hydraulic model; therefore, this model was developed using a variety of inputs as described below. The modeled collection system is illustrated in Figure 10 in Appendix A.

- Pipes and Manholes: The City's GIS data was used as the basis for updating the pipeline characteristics in the model. The GIS data primarily consisted of the pipeline locations and alignment, however there was a lack of elevation data associated with the pipes and manholes. A survey of approximately 81 manholes was completed and additional areas were input with data from record drawings. The pipelines were then imported to the model and reviewed for suspicious attributes such as adverse slopes, connectivity, smaller downstream pipes, and more. Minor adjustments were made such as lowering the manhole inverts to match the outgoing pipe, connecting pipes to their respective downstream pipe, or obvious typos in elevations. More significant adjustments such as vertical datum discrepancies, adverse grades, and questionable diameters were also made to match survey data. It should be noted that several manholes have been buried making them inaccessible for survey. Elevations for these manholes was estimated by linear interpolating from upstream and downstream manhole elevations.

- Lift Stations: The lift station attributes including wet well dimensions, pumping rates, and operational settings were based on record drawings, pump curves, the previous wastewater facility plan, and field observations. Curves were not available for Clubmoss and Cottongrass, therefore, they were modeled as a design set point at their observed flow rate. Pump on and off set points were only available for South, Huntsman Lagoon, Forest Service, Creekside, and Valley Center Lift Stations. The remaining lift stations were set so that they had 2 feet of operational volume as this is a common operational range.
- Flow Distribution: Wastewater flows must be distributed to the hydraulic model. In this hydraulic model, the City billing records were used to identify connections billed with more than 1 ERU assigned to its address. All connections over 4 ERUs were manually matched to the corresponding address and all other connections were assumed to be 1 ERU. Each connection was then assigned a flow rate based on the number of corresponding ERUs and the planning criteria established in Chapter 3. The flows were then assigned to the nearest manhole. Each manhole's assigned flow was the cumulative flow from the meters assigned to it. Figure 9 in Appendix A documents how flows were assigned to the trunkline model.

It is important to note that one of the basic assumptions of the hydraulic model is that all pipelines are free from physical obstructions such as roots and accumulated debris. Such maintenance issues, which certainly exist, must be discovered, and addressed through consistent maintenance efforts. The modeled capacities discussed in this chapter represent the capacities assuming the wastewater collection lines are in good working order.

4.4.1. FLOW MONITORING SUMMARY

Flow monitoring for this study was conducted for approximately six weeks in the spring and fall of 2024. Flow monitors were installed in the spring from May 29 – June 18, 2024, and in the fall from September 3 – September 25, 2024. Flow monitors were installed at five locations throughout the collection system. The flow monitoring plan and processed data is included in Appendix C.

For the purpose of this study, flow monitoring refers to the temporary installation of a sensor in a sewer pipe to measure wastewater flows. Specifically, the sensors measure the depth of water in the pipe and the velocity of the wastewater flows for use in calculating the flow going through the pipe. The flow monitors were programmed to record data points every 5 minutes to capture fluctuations in system flows. It should be noted, while flow monitoring is an effective way of measuring sewer flows, there is the potential for errors in the output data. Malfunctioning equipment and debris accumulation on the sensor are some of the most common errors encountered as a part of the flow monitoring process. The flow data was checked at a minimum once per week in an attempt to identify poor data quality and address issues if possible.

The flow monitoring data was processed, and the data quality was reviewed. Scatter graphs were developed by plotting velocity on the x-axis and depth on the y-axis. This is a common way to evaluate the data quality and identify potential issues. The theoretical Manning Equation was also plotted on the scatter graph to indicate if the observed data matches the theoretical values. Tightly clustered data points along the Manning curve indicate good quality data. A brief description of the flow monitoring results is provided below:

- **Site 1** was installed approximately 90 feet east of the intersection of Primrose St and Depot St. The data quality at this site was good with tightly clustered data points in the scatter graph for the second half of the first period and the entire second monitoring period. The average flows were around 14 gpm in the spring and 36 gpm in the fall and flows show a clear diurnal pattern which is relatively consistent excluding the first several days of the first period. All data was used, except for the first six days of the spring period, which were excluded due to poor data quality and deviation from theoretical expectations.
- **Site 2** was installed north of the east intersection of Easy St and Farmers Trail. The data quality at this site was good for the first half of the spring monitoring period and the entirety

of the fall monitoring period. The level increased and flow decreased in the second half of the spring period, this was likely because debris build-up on the sensor. Because of this the data from the second half of the spring period was discarded and not utilized. The site experienced average flows of around 21 gpm in the spring and 11 gpm in the fall. With the exception of the second half of the first period, the majority of the data showed a clear diurnal pattern.

- **Site 3** was installed approximately 300 feet east of the intersection of N Main St and Cedron St. Site 3 collected flows from site 2 and additional flow downstream of site 2. The data quality at this site was particularly good with tightly clustered data points in the scatter graph for both monitoring periods. The average daily flows were around 76 gpm in the spring and 52 gpm in the fall. A diurnal pattern was clear and there were no major concerns with the data gathered from this site.
- **Site 4** was installed approximately 245 feet south of the intersection of N Main St and Cedron St. Site 4 collected flows from both sites 2 and 3 as well as some additional flows. The scatter graph indicated poor data for the spring monitoring period; however, the data improved for the fall period. The average daily flows were around 94 gpm in the spring and 50 gpm in the fall. The diurnal curve from the fall period was clear and there were no major concerns with data collected during the fall period.
- **Site 5** was installed approximately 344 feet west of the intersection of South Main Street and East Short Street. The flow monitor was previously installed 300 feet north of this intersection, but the data indicated backflow from the Main Lift Station. Despite the move the lift station appeared to still be influenced by the nearby lift station. To stay consistent the site was still used for the second monitoring period and experienced comparable results. The data for both periods was poor. The average daily flows were around 36 gpm in the spring and 21 gpm in the fall. While the flow monitor data quality was poor, the results did identify that backwater from the Main Lift Station frequently fills and empties this pipe according to the pump on and off setpoints.

4.4.2. MODEL CALIBRATION

The model calibration results are summarized below in Table 4-5 and additional details are included in Appendix C. The green values represent flows calibrating within +10% or -5% while the red values indicate flows outside of this range. In summary, the model calibrated very well, and the majority of the peak flows were matched within the targeted ranges.

TABLE 4-5: MODEL CALIBRATION SUMMARY

Location	Observed Daily Flow Volume (gal)	Modeled Daily Flow Volume (gal)	Percent Difference[1]	Observed Peak Flow (gpm)	Modeled Peak Flow (gpm)	Percent Difference[1]
Flow Monitor Site 1	46,416	47,587	2.5%	72	73	2.2%
Flow Monitor Site 2	34,688	37,741	8.8%	48	52	8.5%
Flow Monitor Site 3	107,914	115,099	6.7%	117	124	5.5%
Flow Monitor Site 4	158,887	180,392	13.5%	160	180	12.4%

1) Green values indicate they are within +10% or -5%.

Calibrating the hydraulic model is a critical step to build confidence in the output model results. The goal of the calibration process is to adjust the model inputs to match the observed data points from the flow monitoring and lift station SCADA. The peak day from the flow monitoring period with the highest quality data was observed to be June 2, 2024, and therefore this day was used as the

calibration day. City provided lift station total daily flows for June 2, 2024 were also utilized to confirm model flows matched SCADA observed flows.

Diurnal curves were developed for four of the five flow monitor sites based on the observed flows. Site 5 was not utilized as data quality was poor for both monitoring periods. The diurnal curves were assigned to the junctions in their respective basins to simulate the changes in flows throughout the day. The base flows were adjusted globally up or down from the initial flow allocation based on the water meters, so the average flows matched the system flows observed on the calibration day. The model was then exercised, and the output results were compared to the observed data from the monitoring period. The base flows, diurnal patterns and other model inputs were adjusted with each model run until the outputs matched the observed data. The model flows were targeted to be within -5% or +10% of the observed flows to be considered calibrated. Flow monitor site 4 is slightly outside of the target range but this was necessary to better match observed daily total at the Main Lift Station. It should be noted that matching the peak flows was given more weight than the daily volume because the peak flows are the primary evaluation criteria to determine if there are capacity deficiencies. An example of the original model results compared to the calibrated model results are illustrated in Figure 4-4 and Figure 4-5. Model results are shown in red and observed flow monitoring in blue.

FIGURE 4-4: ORIGINAL MODEL RESULTS COMPARED TO OBSERVED DATA

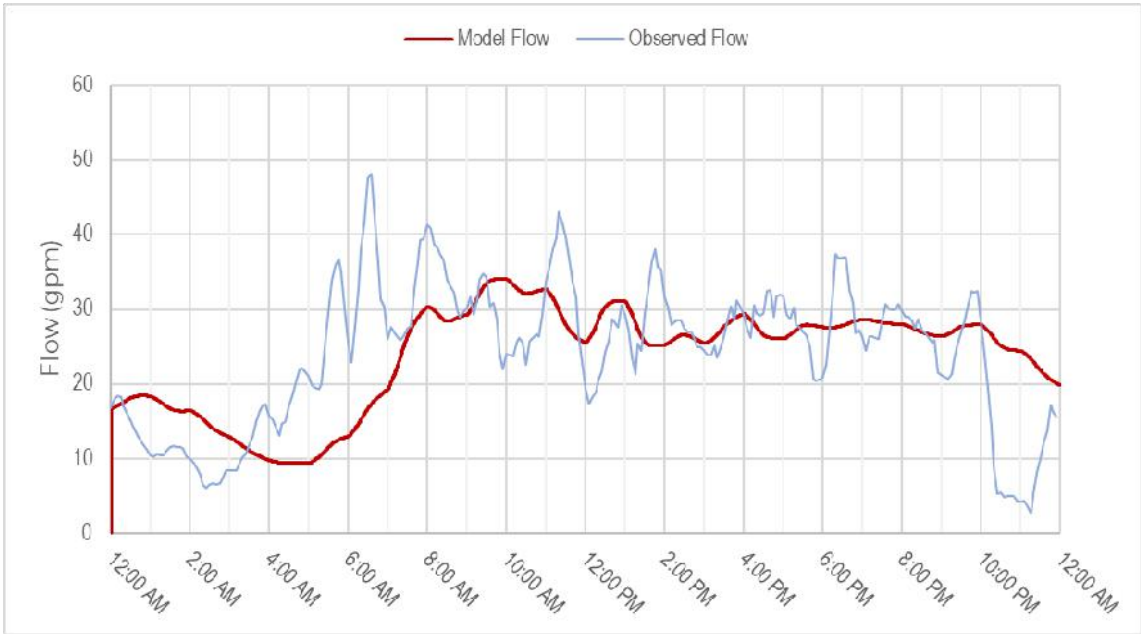
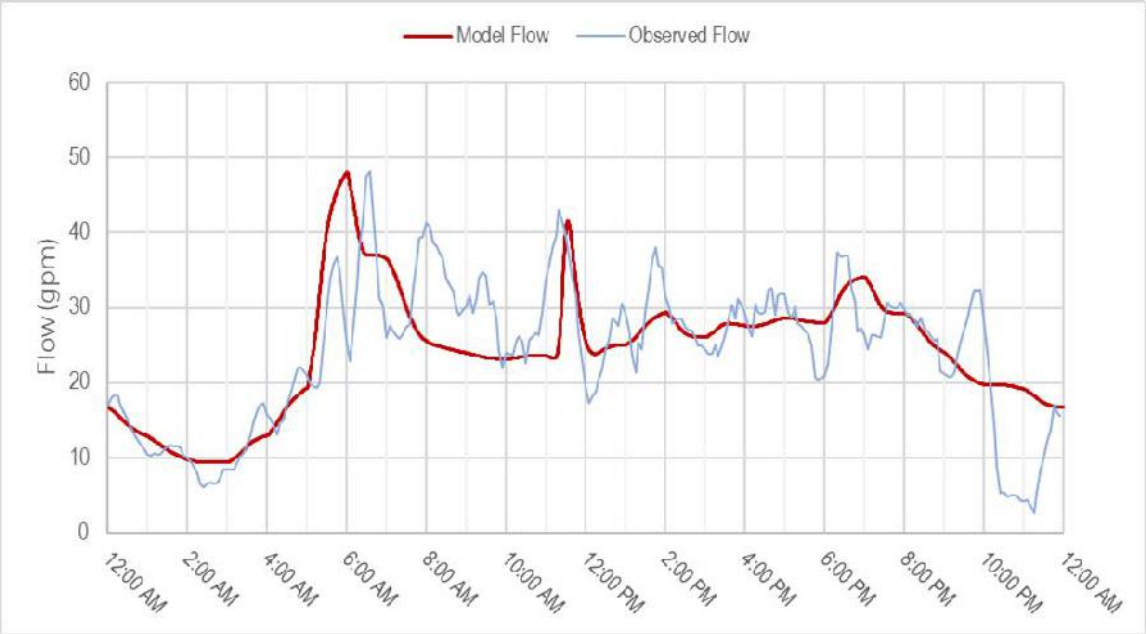


FIGURE 4-5: CALIBRATED MODEL RESULTS COMPARED TO OBSERVED DATA

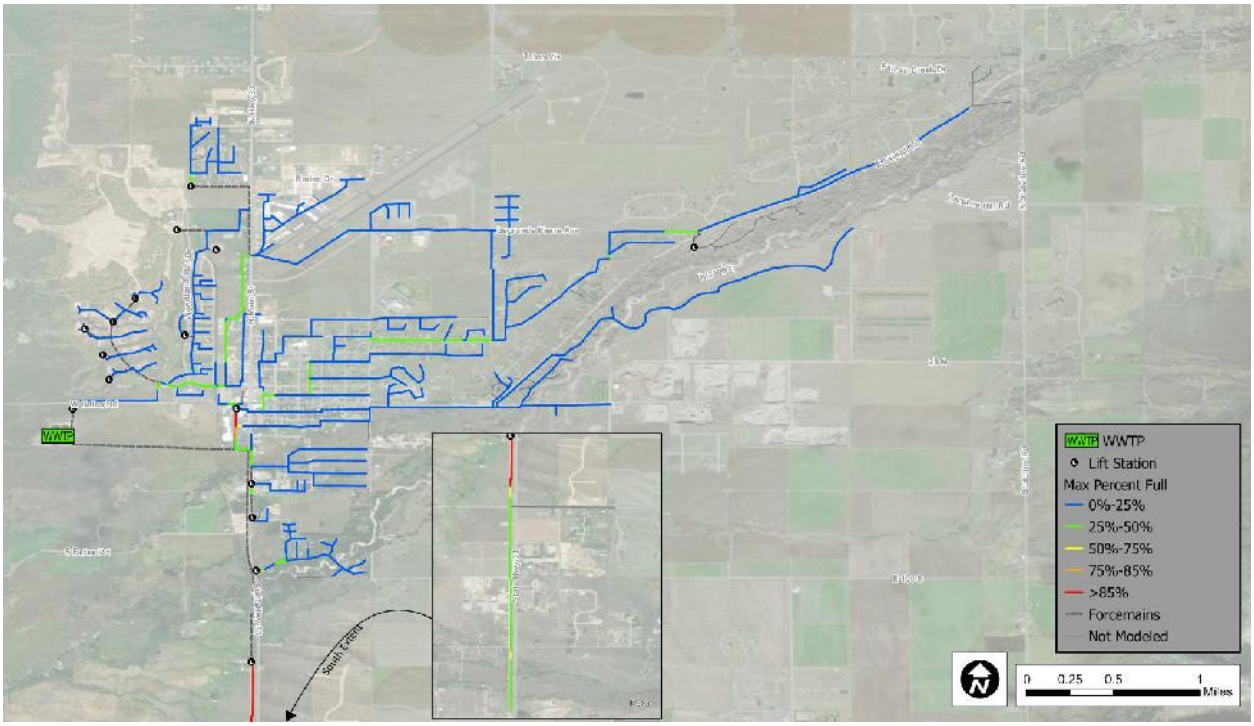


4.5. EXISTING SYSTEM CAPACITY EVALUATION

The capacity of the collection system was assessed by reviewing how full the gravity pipes are during peak hour flows. Figure 4-6 illustrates the maximum depth divided by full depth (d/D) under the existing MDF scenario for the collection system pipes. A larger version of the figure is provided in Appendix A. The planning criteria established in Chapter 3 recommend gravity pipes 12 inches and under to be less than 75% full and gravity pipes larger than 12 inches to be less than 85% full. As shown in Figure 4-6, the majority of the system is currently under 50% of pipe capacity, indicating very few capacity bottlenecks. The areas above 75% are summarized below.

- The section of pipeline directly south of Main Lift Station is surcharged. From field observations this is likely because of the submerged invert into Main Lift Station. Deepening the wet well would mitigate this issue. It is recommended to deepen the wet well in conjunction with other future upgrades. Alternatives considered to address this issue are discussed in Chapter 7.
- The section of pipeline directly upstream of South Lift Station is surcharged, but this is a result of the lift station being over capacity, not a lack of capacity in the pipeline. Upsizing the lift station's capacity mitigates the issue; therefore, it is not recommended to upsize this section of pipe.

FIGURE 4-6: EXISTING MDF MAX DEPTH/FULL DEPTH



4.5.1. Existing Lift Stations

The lift stations were checked for capacity deficiencies by comparing the firm capacity to their peak modeled inflow. As established in Chapter 3, lift station improvements were triggered if the peak inflows exceeded 85% of firm capacity. This provides the City with additional time to implement improvements before the lift station is over capacity.

Table 4-6 summarizes the peak inflows and reported pump information. The model indicates Driggs' lift stations have sufficient capacity, with the exception of South Lift Station. Additional discussion regarding the model results is provided below.

- The peak inflows to South Lift Station exceed 85% of the firm capacity. If peak inflows exceed the pumping capacity, there is a higher likelihood of sanitary sewer overflows (SSOs) due to the pumps not being able to convey peak flows. It should be noted that flow will substantially decrease once Victor's WWTP is brought online and the current total pumping capacity of the lift station, with both pumps running, is greater than firm capacity. Because negotiations are ongoing, the timeline of when Victor will stop sending flows is uncertain, it is recommended to closely monitor flows at the lift station and upsize the existing pumps if/when pumping capacity is exceeded.
    - Increasing the pumping capacity of South Lift Station to meet the peak anticipated peak hour flow projections will cause issues with other lift stations pumping to the shared main. However, because flows will substantially decrease after Victor's flows are no longer conveyed, improvements to the force main are not recommended.
- While the remaining lift stations have sufficient capacity under existing flows, and no immediate improvements are required, the City would like to consolidate the number of lift stations. Alternatives considered to minimize number of lift stations are discussed in Chapter 6. It is also recommended that the remaining five lift stations currently not integrated with the SCADA system be added in addition to the installation of flow meters to improve monitoring and operational efficiency.

- Minimizing the number of lift stations within a collection system is often considered best practice to reduce long-term operation and maintenance (O&M) demands and to improve overall system reliability. As such, if new developments propose the installation of a new lift station, there should be sufficient justification illustrating that a connection via gravity flow is not feasible.
- New Lift Stations should be designed and constructed to meets City standards. Specifically, the controls should be designed for integration with the City's existing SCADA system. In addition the City standard lift station detail should be revaluated every 2-5 years and updated as needed to ensure uniformity across City and development funded lift stations.

TABLE 4-6: EXISTING MODELED & REPORTED PUMPING RATES

Lift Station	Firm Capacity (gpm)	Peak Hour Inflow (gpm)	85% of Firm Capacity > Peak Inflow	Percent of Firm Capacity	Capacity Remaining (gpm)	ERU's Remaining
Main Lift Station	600	480	Yes	80%	120	381
South Lift Station	600	590	No	98%	10	32
Huntsman Lagoon Lift Station	550	250	Yes	45%	300	954
Forest Service Lift Station[2]	125	55	Yes	44%	70	223
Clubmoss Lift Station	90	11	Yes	12%	79	251
Red Tail Lift Station	110	1	Yes	1%	109	346
Creekside Lift Station	330	66	Yes	20%	264	839
Cottongrass Lift Station	110	4	Yes	4%	106	337
Valley Center Lift Station	250	63	Yes	25%	187	594
Huntsman Bitterroot Lift Station	250	4	Yes	2%	246	782
Huntsman Comfort Station Lift Station	200	2	Yes	1%	198	629
Huntsman Star Flower Lift Station	395	5	Yes	1%	390	1,240
Huntsman Shasta Daisy Lift Station	355	7	Yes	2%	348	1,106
Huntsman Indian Paintbrush	250	6	Yes	2%	244	776
Huntsman O&M	100	2	Yes	2%	98	312
Huntsman Spa	45	2	Yes	4%	43	137

1) Based on PHF of 0.31 gpm per ERU

2) Rolling hourly average used as peak inflow occurs when Clubmoss runs for a very short time

It is important to note that Main, South, and Creekside lift stations share a force main. The model was utilized to see how each lift station is impacted by others pumping at the same time. If all three are running simultaneously, Main Lift Station's capacity drops to 550 gpm, South Lift Station's capacity drops to 250 gpm, and Creekside Lift Station's drops to 100 gpm. The existing Creekside Lift Station pumps are likely unable to turn on at times when both Main and South Lift Stations are running due to the high head conditions in the force main. It should also be noted that surcharging south of South Lift Station could be fixed if the South Lift Station had a dedicated force main, independent of the Main Lift Station force main, because there would not be a reduction in pumped flows when the lift stations are both on. Alternatives considered to increase the conveyance capacity and Creekside's pumping deficiency are discussed in Chapter 6.

The lift station emergency storage was also evaluated to document available storage compared to required storage. IDAPA requires either provisions for a generator or emergency storage in case of a power outage. Adequate emergency storage is considered to be twice the estimated emergency response time multiplied by peak hour flow. The City's average response time is 1-hour and was used for the analysis. The available storage was calculated based on the wetwell storage volume until the water depth reaches the top of the incoming pipe. In reality, there will be some additional storage in the pipes as flows back-up, however, to be conservative, this volume was not included.This evaluation helps prioritize which lift stations should have onsite back-up power added. Table 4-7 below summarizes the fill times compared to the available storage. The City's three largest lift stations, Huntsman Lagoon, Main and South lift stations fill in under 20 minutes during peak hours flows and Forest Service, Clubmoss, Creekside, and Valley Center also have

inadequate emergency storage. Main Lift Station currently has a backup generator, but it is recommended that an onsite generator is added at Huntsman Lagoon, Creekside, and Valley Center. It is not recommended to add a generator at South Lift Station because emergency storage will increase once Victor's WWTP comes online. It is also not recommended to add onsite generators at Clubmoss and Forest Service because these lift stations could be decommissioned and gravity fed to Creekside Lift Station. As required by IDAPA, new lift stations should be installed with provisions for portable generators connections or onsite generators, depending on expected flows.

TABLE 4-7: WET WELL FILL TIMES

	Wet Well Volume (gal)	Required Volume (min)	Time to Fill PHF (min)	Generator
Main	4,343	57,600	9	Existing
South	1,569	70,800	2	None
Huntsman Lagoon	1,203	30,000	4	Recommended
Forest Service	1,233	6,600	22	None
Clubmoss	1,108	1,320	100	None
Red Tail	1,337	120	1,336	None
Creekside	2,113	7,920	32	Recommended
Cottongrass	2,464	480	616	None
Valley Center	2,256	7,560	35	Recommended
Huntsman Bitterroot	2,253	480	563	None
Huntsman Comfort Station	2,236	240	1,117	None
Huntsman Star Flower	4,241	600	848	None
Huntsman Shasta Daisy	1,269	840	181	None
Huntsman Indian Paintbrush	3,486	720	580	None
Huntsman O&M	1,028	240	513	None
Huntsman Spa	1,239	240	619	None
1) ADF to PHF peaking factor of 2.66				

4.6. FUTURE MODEL DEVELOPMENT

The model was expanded to evaluate the collection system under the 2045 planning period with additional flows from growth areas established in Section 3.1.1. The estimated additional ERUs for each growth area was used in conjunction with the planning criteria (gallons per ERU per day) to calculate the total flow for each growth area. These flows were assigned to manholes within the existing collection system based on topography and where the future connections will likely drain. Extensions of existing trunklines and lift stations to serve future developments were considered and added as necessary to reach the proposed growth areas. In general, most of the projected growth was located within or directly adjacent to City limits, and the existing sewer infrastructure was located nearby. Appendix E provides detailed growth areas, including land uses, estimated population increases, and where the growth area flows were assigned in the model.

4.7. 2045 FLOWS CAPACITY EVALUATION

Similar to the evaluation of the existing system, the pipelines and lift stations were assessed under Peak Hourly Flow (PHF) conditions during the Maximum Daily Flow (MDF) scenario for projected 2045 flows. It is assumed that Victor's WWTP will be online before 2045. Therefore, Victor's flows are not included in the 2045 model, but flows from the county subdivision to the south are included. This model scenario was used to identify future capacity issues as a result of growth.

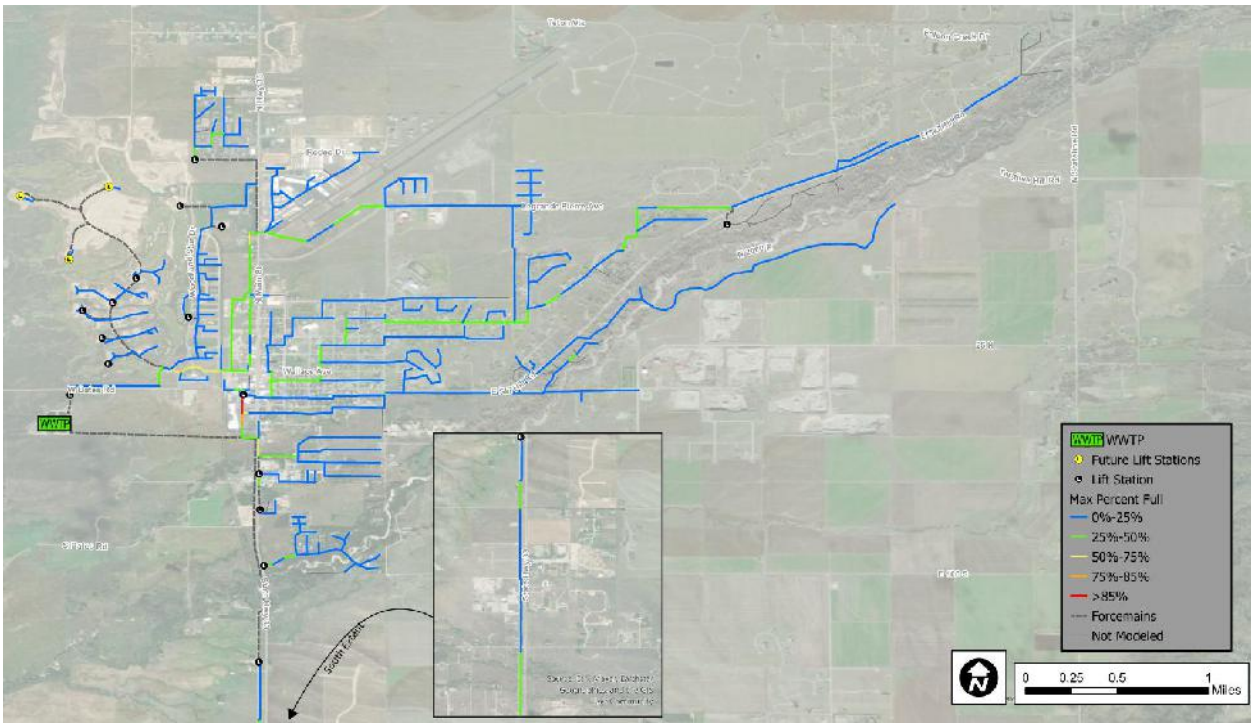
4.7.1. 2045 PIPELINES

The future capacity of the collection system was assessed by reviewing how full the gravity pipes are during peak hour flows. Figure 4-7 illustrates the d/D under the 2045 MDF scenario for the collection system pipes. A larger version of the figure is provided in Appendix A.

As shown in the figure, the majority of the system is under 75% of pipe capacity, but the section of pipeline directly south of Main Lift Station is still surcharged as a result of the lift station operating levels and is not due to the pipelines being over capacity. This surcharging may be resolved with the alternatives discussed in Chapter 6.

The gravity pipelines flowing into the South Lift Station will no longer be over 85% full because the flows from Victor were not included in this model scenario. As a result, no capacity issues are identified and the pipes flow less than 50% full. It should be noted if the Victor WWTP is not constructed, sections of pipeline upstream of South Lift Station would be over 85% d/D with some sections surcharged. Pipeline improvements would be required if the Victor flows are not removed by 2045.

FIGURE 4-7: 2045 MDF MAX DEPTH/FULL DEPTH



4.7.2. 2045 LIFT STATIONS

The 2045 peak inflow into the lift stations was compared to the firm capacity, and the results are presented in Table 4-8. There are several new deficiencies during the 20-year planning period.

- The Main Lift Station is approaching capacity during the 20-year planning period. The peak inflows do not exceed the capacity; however, the trigger to begin planning upgrades is exceeded and, therefore, will be included in the recommended improvements. Alternatives considered to address the lift station's capacity are discussed in Chapter 6.
    - Upsizing the existing lift station capacity would result in additional issues with the shared force main. If the capacity of the lift station is increased an additional force main will be needed or the force main will need to be upsized.
- The Huntsman Lagoon Lift Station is projected to exceed its capacity by 2045. The exact timing will depend on the actual growth rate and completion of projects within the lift station's basin. It is recommended that the City plan to upsize the pumps to accommodate peak hour flows once influent rates approach 550 gallons per minute (gpm).
    - These increased flows would not exceed the force main capacity, therefore no upgrade to the force main is recommended.
- Huntsman Star Flower Lift Station is projected to exceed its capacity by 2045. The exact timing will depend on the pace of development within the lift station's basin. It is recommended that the City plan to upsize the pumps to accommodate peak hour flows once influent rates approach 395 gallons per minute (gpm).
    - These increased flows would not exceed the force main capacity, therefor no upgrade to the force main is recommended.
- It is recommended to track additional ERUs as they are added to each lift station's service area. Combined with the data in Table 4-8, this will support identifying when lift station improvements may be necessary.

TABLE 4-8: 2045 MODELED & REPORTED PUMPING RATES

Lift Station	Firm Capacity (gpm)	Peak Hour Inflow (gpm)	85% of Firm Capacity > Peak Inflow	Percent of Firm Capacity	Capacity Remaining (gpm)	ERU's Remaining
Main Lift Station	600	570	No	95%	30	95
South Lift Station	600	170	Yes	28%	430	1,367
Huntsman Lagoon Lift Station	550	1000	No	182%	-	-
Forest Service Lift Station[2]	125	55	Yes	44%	70	223
Clubmoss Lift Station	90	11	Yes	12%	79	251
Red Tail Lift Station	110	22	Yes	20%	88	280
Creekside Lift Station	330	77	Yes	23%	253	804
Cottongrass Lift Station	70	4	Yes	6%	66	210
Valley Center Lift Station	250	81	Yes	32%	169	537
Huntsman Bitterroot Lift Station	250	8	Yes	3%	242	769
Huntsman Comfort Station Lift Station	200	8	Yes	4%	192	610
Huntsman Star Flower Lift Station	395	380	No	96%	15	48
Huntsman Shasta Daisy Lift Station	355	14	Yes	4%	341	1,084
Huntsman Indian Paintbrush	250	12	Yes	5%	238	757
Huntsman O&M	100	2	Yes	2%	98	312
Huntsman Spa	45	2	Yes	4%	43	137

1) Based on PHF of 0.31 gpm per ERU

2) Rolling hourly average used as peak inflow occurs when Clubmoss runs for a very short time

CHAPTER 5 - NEED FOR SYSTEM IMPROVEMENTS

This chapter summarizes the deficiencies discussed in previous chapters. It also provides a general discussion of the need for improvements, such as compliance with regulations, replacing aging infrastructure, and/or providing capacity for future growth.

5.1. HEALTH, SANITATION, AND SECURITY

Idaho's Wastewater Rules (IDAPA 58.01.16) provide primary procedures and requirements for those planning, designing, constructing, and operating wastewater facilities, including sanitary sewer gravity pipelines, force mains, and lift stations. Relevant regulations from IDAPA that apply to this study include:

- **58.01.16.430 - Design and Construction of Wastewater Pipelines**
  - Gravity wastewater pipelines shall be designed to have sufficient slope and velocity to "self-clean" or transport constituent solids to the treatment facility.
    - As previously discussed in Chapter 4, there are several pipelines in the City's existing collection system that do not meet minimum recommended slope requirements. Pipelines that do not meet minimum recommended slope are susceptible to deposition of solids, which limits the pipe's capacity and creates hydrogen sulfide gas and odors. Insufficient slope also leads to potential surcharging and degradation of infrastructure.
  - Pipe diameters shall be based on cleansing capability and hydraulic capacity.
    - Pipelines that do not have sufficient hydraulic capacity are subject to surcharging, causing potential health and safety issues to the public. As previously discussed in Chapters 3 and 4, pipeline upsizing considerations are recommended when the 75% d/D (ratio of depth of flow in pipe during peak flow events divided by diameter of pipe) threshold is reached for pipes 12-inches and under. No areas of pipeline show major capacity issues through the 20-Year planning period except for the line coming from Victor. Because flows will decrease with the addition of Victor's WWTP, this pipeline is not a major concern.
- **58.01.16.440 - Wastewater Pumping Stations**
  - Safety provisions shall be made to consider the protection of maintenance personnel and visitors from typical and foreseeable hazards.
    - Fall protection in vaults/wet wells are not present at any lift stations.
  - Multiple pumps shall be provided, and units shall have capacity such that, with any unit out of service, the remaining units will have capacity to handle the design peak hourly flow.
    - Currently all lift stations meet firm capacity, but South Lift Station is nearing capacity. This is of little concern because flows will decrease once Victor's WWTP comes online.
  - Force main diameters should be sized to ensure a cleansing velocity of at least 2 fps and no more than 8 fps to avoid excessive head loss and water hammer.
    - The Creekside LS force main is over 8 fps at its firm capacity; however, it is a short length before it combines with the South LS force main. If improvements are completed at this lift station, it is recommended that it be upsized to at least 6 inches.
    - The Huntsman Shasta Daisy LS force main is over 8 fps at its firm capacity; however, it is a very short length so excessive head loss it not an issue.

5.2. AGING INFRASTRUCTURE

Aging and corroding infrastructure leads to higher levels of I/I within the collection system. While the material of pipelines can be used to estimate age, most of the system's pipeline material is unknown. In addition, installation date information is also not available. Inventory of pipeline materials and a corresponding replacement program are needed to systematically replace aging infrastructure. As an inventory is created it can be utilized with Table 5-1 and Table 5-2 below to assess approximate pipe age and need for replacement.

TABLE 5-1: MATERIAL LIFE SPAN TABLE

Material	Approximate Age	Approximate Installation
Vitrified Clay	75-125	1800s-1950s
Cast Iron	75-125	1800s-1950s
Asbestos-Cement	50-100	1940s-1960s
PVC	0-40	1970s-Now
HDPE	0-30	1990s-Now
Ductile Iron	0-40	1970s-Now

TABLE 5-2: USEFUL LIFE

Component	Useful Life
Pipe	75
Manhole	50
Cleanout	50
Lift Station	
Wet Well	50
Electrical and Controls	15
Pump	20
Valves/Meters	30

5.3. SYSTEM DEFICIENCIES

The majority of the collection system pipes are under 75% capacity both at current and 2045 peak flows, but several sections will reach capacity during the planning period. Some of the lift stations in the collection system are also expected to experience pump capacity issues as population increases the planning period.

5.3.1. Existing Deficiencies

- The section of pipeline directly south of Main Lift Station is surcharged. From field observations, this is likely because of the submerged invert into Main Lift Station. Alternatives considered to increase the line's capacity are discussed in Chapter 6.
- The current peak inflows to South Lift Station exceed 85% of firm capacity. If peak inflows exceed the pumping capacity, there is a higher likelihood of sanitary sewer overflows (SSOs) due to the pumps not being able to convey peak flows. It should be noted that flow will

substantially decrease once Victor's WWTP is brought online. It is recommended to closely monitor flows at the lift station until Victor's WWTP is brought online.

5.3.2. 20-Year Deficiencies

- The Main Lift Station is approaching capacity during the 20-year planning period. The peak inflows do not exceed the capacity; however, the trigger (85% of firm capacity) to begin planning upgrades has been met. Alternatives considered to address the lift station's capacity are discussed in Chapter 7.
- Huntsman Lagoon Lift Station will be over capacity by 2045, and it is recommended to upsize the pumps to convey peak hour flows.
- Huntsman Star Flower Lift Station will be over capacity by 2045, and it is recommended to upsize the pumps to convey peak hour flows.

Proposed capital improvements, a recommended priority order, and project triggers are included in the Capital Improvement Plan in Table 7-1.

5.4. REASONABLE GROWTH

Wastewater facility improvements are needed to stay ahead of potential increases in the population and new construction. Chapter 3 of this report discusses population growth projections, including customers served and the wastewater flows associated with this growth. This plan develops a 20-year capital improvement plan for the collection system.

CHAPTER 6 - COLLECTION SYSTEM ALTERNATIVES

Several deficiencies were identified within the collection system and are primarily a result of the projected increase in wastewater flows from a growing community. In addition, it is generally recommended to reduce the number of lift stations, which would lower operations and maintenance (O&M) requirements and enhance system reliability. Several improvement alternatives were considered to correct the identified deficiencies and to explore consolidation opportunities. These alternatives included factors such as feasibility, environmental impacts, operational impacts, constructability, and capital and annual costs. An evaluation of the alternatives and their impacts assists the City in identifying preferred alternatives to correct deficiencies. The preferred alternatives selected in this chapter are included in the capital improvement plan in Chapter 7.

6.1. IDENTIFIED ALTERNATIVES

If a deficiency discussed in the previous chapters had a clear, preferred solution—such as replacing the lift station pumps or adding a generator—that solution is addressed in the Capital Improvement Plan and not discussed here.

The Main Lift Station was the only deficiency with multiple feasible solutions. Peak flows are approaching 85% of it's firm capacity, has a submerged invert, and its operation interferes with the Creekside Lift Station's ability to pump flows effectively. These deficiencies could be addressed either by upsizing the existing pump and force main or by bypassing the lift station entirely. These alternatives are discussed in more detail in the following sections.

Additionally, the City's lift stations were evaluated for potential consolidation or abandonment. The Forest Service, Clubmoss, and Creekside Lift Stations were identified as operating in an area that could potentially be served by a single, consolidated lift station.

6.2. MAIN LIFT STATION – ALTERNATIVES ANALYSIS

Peak inflows into Main Lift Station exceed 85% of its firm capacity by 2045 and deepening the wet well is recommended to eliminate backflow into the west incoming pipe. This section documents the potential improvements which could be implemented to address the issues. The design criteria for this alternatives analysis were for the firm capacity of the lift station to convey the 2045 peak hour flows (PHF) and to construct a dedicated force main to the WWTP. The improvements required consist of three parts: increased pumping capacity, install a new force main, and deepening of the wet well.

Sometimes, increasing pumping capacity can be as simple as increasing the size of the force main, which reduces head loss for the pump. However, it is important to evaluate pump efficiency and cavitation risk if this option is selected. In this case, upsizing the force main does not provide enough capacity to meet the design criteria and does not address the submerged pipe inlet. While upsizing the pumps is needed to convey 20-year flows, this option also does not address the submerged pipe inlet. For these reasons, alternatives were considered to address the issues at the lift station and are summarized in the bullets below and Figure 6-1.

- No Action Alternative – This alternative is not a feasible alternative because if no action was taken, the lift station would be undersized which may lead to sanitary sewer overflows (SSOs). The submerged inlet may also lead to solids buildup in the gravity sewer and potential clogging. For this reason, additional consideration of this alternative is not provided.
- Alternative 1 – This alternative consists of constructing 4,600 feet of new 10-inch force main. It was assumed the force main will be constructed adjacent to the existing alignment, and therefore, the potential for utility conflicts is low. The project would also include upsizing the existing pumps to

convey 20-year flows and deepening the existing wet well. The drawback to this alternative is construction challenges associated with deepening the wet well. The existing lift station has a building constructed on top, which would cause challenges for construction. The City has also reported high groundwater within this area and therefore dewatering would be required.

- Alternative 2 – This alternative consists of abandoning the Main Lift Station and installation of 2,000 feet of new 18-inch gravity sewer. Of the 2,000 feet, approximately 500 feet would be replacing existing 8-inch pipe and re-grading it to drain the opposite direction. Existing service connections would need to be reconnected to the new pipeline. Abandoning the Main Lift Station resolves the surcharged pipe conditions and wastewater flows by gravity through the Main Lift Station site, toward the Huntsman Lagoon Lift Station. For this reason, the Huntsman Lagoon Lift flows would be increased and will require additional capacity. However, as discussed in chapter 4, increasing the capacity of the Huntsman Lagoon Lift Station is already recommended as a result of the 20-year flows. The Huntsman Lagoon Lift Station would need to be upsized at the same time of this project because re-routing the Main Lift Station flows will increase the flows by approximately 600 gpm under existing conditions. The main drawback to this alternative is the new gravity sewer pipeline would be approximately 15-20 feet deep from the Main Lift Station site to the intersection of Courthouse Drive and Bates Road.

Alternative 2 is recommended. The City would like to reduce the number of lift stations in their system, and this alternative would eliminate Main Lift Station. It would also address issues with the Main Lift Station and the surrounding collection system. The alternatives analysis provided below summarizes the pros and cons, costs, and other related impacts that led to this recommendation.

Table 6-1 summarizes the pros and cons of each alternative and Table 6-2 summarizes comparative costs for each alternative. Life cycle costs, while not included in the table, would also be lower for alternative 2 as there would no longer be O&M costs associated with Main Lift Station.

FIGURE 6-1: DEFICIENCY #1 ALTERNATIVES

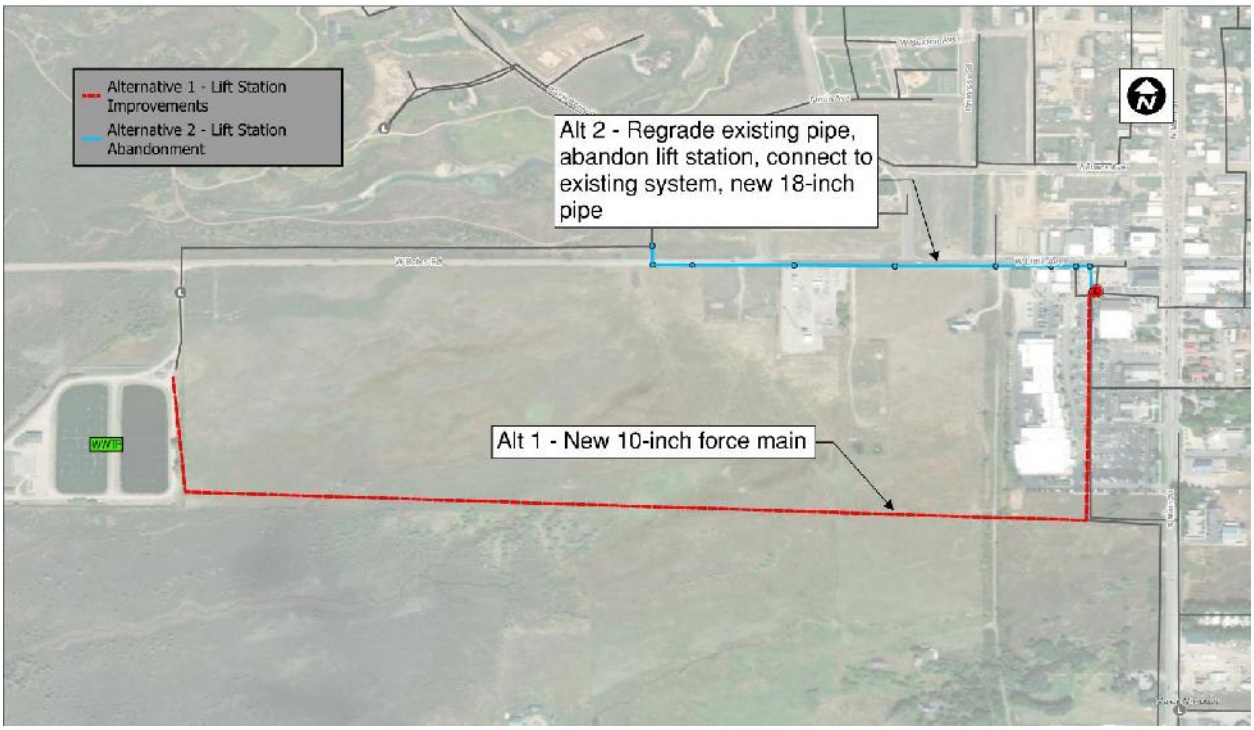


TABLE 6-1: ALTERNATIVES PROS AND CONS

Alternative	Pros	Cons
Alternative 1 – Lift Station Improvements	- Work within existing footprint - Low likelihood of utility conflicts	- Longer length of pipe to be constructed than Alternative 2. - Difficult construction under existing building - Bypass pumping required during construction. - Higher construction cost -Higher O&M costs and efforts.
Alternative 2 – Abandonment of Lift Station	- Removes of a lift station from the collection system - Reduces capacity issues on shared force main - Lower O&M costs and efforts	- Requires improvements at Huntsman Lagoon Lift Station at an earlier time than Alternative 1 - Construction outside of existing footprint -Deep (15-20 ft) gravity sewer construction

TABLE 6-2: ALTERNATIVES COST COMPARISON

Item	Alt 1: Lift Station Improvements	Alt 2: Abandonment of Lift Station
Replace Lift Station (>=25 hp pumps)	$1,306,000	-
Asphalt Repair	$108,000	$170,000
Native Surface Repair	$22,000	-
Pressure Sewer Pipe - 12" PVC	$727,000	-
Traffic Control - Without Flagging	$9,000	$14,000
18-inch Pipe - Excavation, Backfill	-	$400,000
Manholes (48")	-	$95,000
Gravel Repair	-	$3,000
Abandonment of existing lift station	-	$29,000
Bypass Pumping	$50,000	$50,000
Huntsman Lagoon - Pump Upsize	-	$98,000
Huntsman Lagoon - Electrical Upgrades	-	$25,000
Generator and Automatic Transfer Switch	-	$60,000
Construction Subtotal	$2,222,000	$944,000
General Conditions (10%)	$223,000	$95,000
Subtotal	$2,445,000	$1,039,000
Contractor OH&P (15%)	$367,000	$156,000
Subtotal	$2,812,000	$1,195,000
Contingency (30%)	$844,000	$359,000
Total Construction Cost	**$3,656,000**	**$1,554,000**
Design, Legal, and Construction Services (25%)	$914,000	$389,000
Total Project Cost	**$4,570,000**	**$1,943,000**

Additional factors such as environmental impacts, construction challenges, and sustainability impacts were also considered for both alternatives. Table 6-3 summarizes additional impacts considered for each alternative.

TABLE 6-3: ALTERNATIVES ENVIRONMENTAL IMPACTS

Category	Alternative 1 – Lift Station Improvements	Alternative 2 – Abandonment of Lift Station
Land Use / Land Requirements	- Constructed within existing footprint	- Constructed in new alignment (Should remain mostly within ROW)
Floodplains	- Construction would pass through mapped 100-year floodplain	- Construction would pass through mapped 100-year floodplain

Wetlands	- Construction through mapped Palustrine areas	- Construction through mapped Palustrine areas, but primarily within an existing roadway.
Endangered Species	- No impact anticipated	- No impact anticipated
Cultural Resources	- No impact anticipated	- No impact anticipated
Surface or Groundwater Quality	- Groundwater likely to be encountered during construction and dewatering will be required.	- Groundwater likely to be encountered during construction and dewatering will be required.
Potential Construction Problems	- Existing lift station under existing building, bypass pumping required, deep wetwell installation,	- Requires several deep manholes - Outside of existing collection system footprint
System Classification	- No change	- No change
Other Considerations	- Redundant force main improves resiliency of Main Lift Station	- Less mechanical equipment which pose risk of failure. - Reduces O&M needs for the system. -Lower power consumption and costs.

6.3. REDUCTION OF LIFT STATIONS – ALTERNATIVES ANALYSIS

The City currently owns and operates numerous lift stations which require significant maintenance efforts and operation costs. The City would like to consolidate lift stations to reduce O&M efforts and costs. This section documents the feasibility of reducing lift stations.

The system was reviewed to find areas where elevations may allow for the use of gravity sewers in place of lift stations. Excluding Main Lift Station, which is discussed above, three lift stations were identified that have elevations which would allow for reduction to one single lift station: Forest Service, Clubmoss, and Creekside Lift Station. Consolidating the three lift stations would require installation of new gravity sewer and may increase flow into a shared force main. For these reasons, life-cycle costs for the two alternatives were considered are summarized in the bullets below and Figure 6-2**.**

- No Action Alternative – This alternative would continue operation of the three lift stations and the system would continue to operate as it does now. While this alternative would not require any capital improvements, it would continue to have associated life-cycle costs.
- Alternative 1 – This alternative consists of abandoning the Forest Service and Clubmoss Lift Stations and installation of 2,650 feet of 8-inch gravity sewer. The new gravity sewer would capture flows from the Forest Service and Clubmoss basins and convey the flows to Creekside Lift Station. The flows to Creekside Lift Station would only slightly increase and would not lead to any capacity issues for the lift station or force main.

Alternative 1 is recommended because it would reduce O&M needs and costs only slightly more when comparing life-cycle costs as shown in Table 6-5. The City also expressed interest in reducing the number of lift stations, and this alternative would result in the reduction of two lift stations. The alternatives analysis provided below summarizes the pros and cons, costs, and other related impacts that led to this recommendation.

Table 6-4 summarizes the pros and cons of each alternative and Table 6-5 summarizes comparative costs for each alternative.

FIGURE 6-2: LIFT STATION REDUCTION ALTERNATIVES

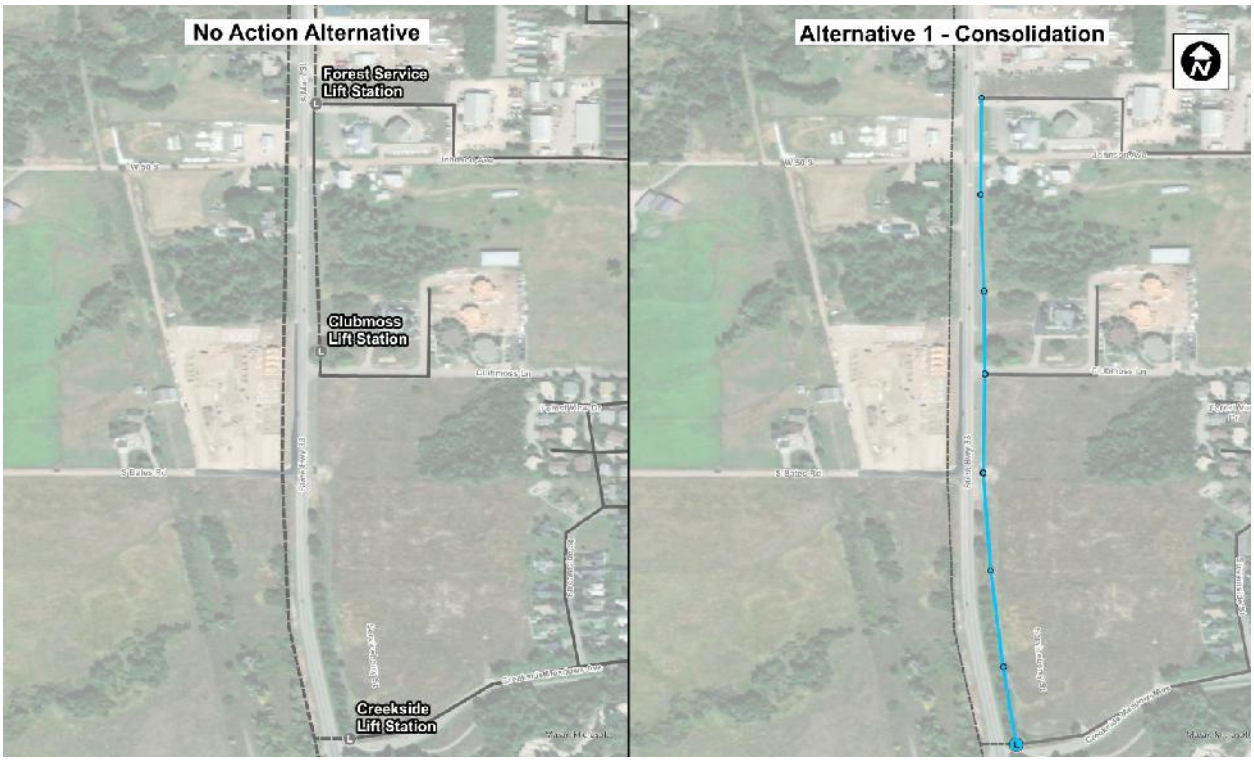


TABLE 6-4: ALTERNATIVES PROS AND CONS

Alternative	Pros	Cons
Alternative 1 – No Action	- No capital costs - No required project	- No reduction in O&M - Continued maintenance at additional lift stations
Alternative 2 – Consolidation of Lift Stations	- Reduction of two lift stations	- Construction outside of existing footprint

TABLE 6-5: ALTERNATIVES COST COMPARISON

Item	Alternative 1 - No Consolidation	Alternative 2 - Consolidation
Annual Power Cost Present Worth (20-year)[1]	$41,000	$103,000
Annual Replacement Cost Present Worth (20-year)[1]	$984,000	$374,000
Traffic Control - Without Flagging	-	$2,000
8-inch Pipe - Excavation, Backfill	-	$398,000
Manholes (48")	-	$67,000
Full Lane Pavement Repair	-	$15,000
Native Surface Repair	-	$13,000
Abandonment of Existing Lift Station	-	$58,000
Bypass Pumping	-	$25,000
Connect To Existing Lift Station	-	$6,000
Net Present Value	$1,025,000	$1,061,000
1) Based on geometric gradient series present worth value.		

Additional factors such as environmental impacts, construction challenges, and sustainability impacts were also considered for both alternatives. Table 6-6 summarizes additional impacts considered for each alternative.

TABLE 6-6: ALTERNATIVES ENVIRONMENTAL IMPACTS

Category	Alternative 1 – No Action	Alternative 2 – Consolidation of Lift Stations
Land Use / Land Requirements	- No change	- Constructed in new alignment - new easement would likely be needed or coordination with ITD
Floodplains	- No change	- No impact anticipated
Wetlands	- No change	- Construction through mapped Palustrine areas
Endangered Species	- No change	- No impact anticipated
Cultural Resources	- No change	- No impact anticipated
Surface or Groundwater Quality	- No change	- Groundwater will likely be encountered during construction.
Potential Construction Problems	- No change	- Outside of existing collection system footprint
System Classification	- No change	- No change

Sustainability Considerations	- No change	- Improves overall resiliency of the system by eliminating mechanical equipment. - Reduces O&M needs for the system

CHAPTER 7 - CAPITAL IMPROVEMENT PLAN

The alternatives evaluated in Chapter 6 helped the City select the improvements to correct collection system bottlenecks, undersized lift stations, and a reduction of lift stations within the system. There are several other recommended improvements that are straightforward and do not require an alternative evaluation. This chapter summarizes all recommended improvements, provides cost estimates for each improvement, provides an approximate timeline for their implementation, and establishes annual replacement budgets for existing infrastructure in the wastewater system. The complete list of improvement projects and accompanying schedule is called the Capital Improvement Plan (CIP). Information on financing options and rate implications are also discussed.

7.1. PRIORITIZATION CRITERIA

As discussed in the previous chapters, the recommended improvements to the wastewater system include minor lift station improvements, general condition and operating improvements based on City feedback, re-routing flows and decommissioning lift stations, and replacing pumps. The improvements have been prioritized, with City input, as outlined in Table 7-1. Priorities are from highest (1M and 1P) to lowest (2). Additional sewer mains to collect new connections were assumed to be constructed by development as new areas are incorporated into the system and are not reflected as capital improvement projects.

TABLE 7-1: PRIORITIZATION CRITERIA

Priority	Description
1M	- Address existing operations and maintenance issues and concerns
1P	- Address capacity deficiencies under existing flows (Capital Projects)
2	- Address capacity deficiencies under 20-year flows - Address non capacity related issues

7.2. BASIS FOR COST ESTIMATES

Capital costs developed for the recommended improvements are Class 4/5 estimates as defined by the Association for the Advancement of Cost Engineering (AACE). Actual construction costs may differ from the estimates presented, depending on specific design requirements and the economic climate when a project is bid. The cost estimates presented are planning level estimates and reflect typical accuracy levels for planning work. The range of accuracy for a class 5 cost estimate is broad, with a range of -20% to -50% on the low end and +30% to +100% on the high end, but these are typical accuracies for planning work. As a result, the final project costs will likely vary from the estimates presented in this document

The total estimated probable project costs include construction costs, contractor markups, 30% contingency (which is typical of a planning-level estimate), and design/administration costs. Cost estimates should be refined during the preliminary and final design phases of each project.

7.3. CAPITAL IMPROVEMENT PLAN

The summary of recommended CIP improvements, their estimated costs, and triggers are provided in Table 7-2. Individual cost sheets with additional details are included in Appendix F. Figure 7-1 shows the locations of the CIP projects and a full-size figure can be found in Appendix A. Some of the additional details include a description of need for the project, project objectives, and design considerations.

TABLE 7-2: CAPITAL IMPROVEMENT PLAN

ID#	Project Name	Project Trigger	Total Estimated Cost (2025 Dollars)
Priority 1M Improvements (2025-2030)			
1M.1	Valve Vault Filled with Water	Existing issue to address	$ 85,000
1M.2	Faulty Check Valve	Existing issue to address	$ 19,000
1M.3	Faulty Wet Well Hatch	Existing issue to address	$ 10,000
1M.4	Improperly Seated Pumps	Existing issue to address	$ 10,000
1M.5	Clogged Valve Vault Drain	Existing issue to address	$ -
1M.6	CCTV of Problem Areas	Existing issue to address	$ 3,000
1M.7	Replace Problem Pipe	Existing issue to address	$ 189,000
1M.8	Replace Problem Manhole	Existing issue to address	$ 145,000
1M.9	Install Safety Nets on Lift Stations	Existing issue to address	$ 66,000
		Total Priority 1M Improvements (rounded)	**$ 527,000**
Priority 1P Improvements (2025-2030)			
1P.1	South Lift Station Improvements	Existing PHF exceeds capacity trigger	$ 406,000
1P .2	Hunstman Lagoon Lift Station Improvements	Upstream improvements	$ 305,000
1P.3	Abandonment of Main Lift Station	Existing issue to address	$ 1,564,000
1P.4	Install Individual services	Existing issue to address	$ 89,000
1P.5	SCADA Integration at Remaining Lift Stations	Existing issue to address	$ 349,000
1P.6	Lift Station Generators	Existing issue to address	$ 239,000
		Total Priority 1P Improvements (rounded)	**$ 2,952,000**
Priority 2 Improvements (2030 - 2045)			
2.1	Reduction of Lift Stations	Effort to reduce lift stations	$ 1,200,000
2.2	Huntsman Star Flower Lift Station Improvements	20-Year PHD exceeds capacity trigger	$ 248,000
2.3	Standard Block of Sewer Main	Effort to address areas without sewer mains	$ 389,000
2.4	Wastewater Collection Facility Planning Study Update	5-7 year WWCPS Update	$ 125,000
2.5	Standard and Detail Review and Updates	Effort for more uniformity in system	$ 13,000
		Total Priority 2 Improvements (rounded)	**$ 1,962,000**
		TOTAL SYSTEM IMPROVEMENTS COSTS (rounded)	**$ 5,441,000**

Notes

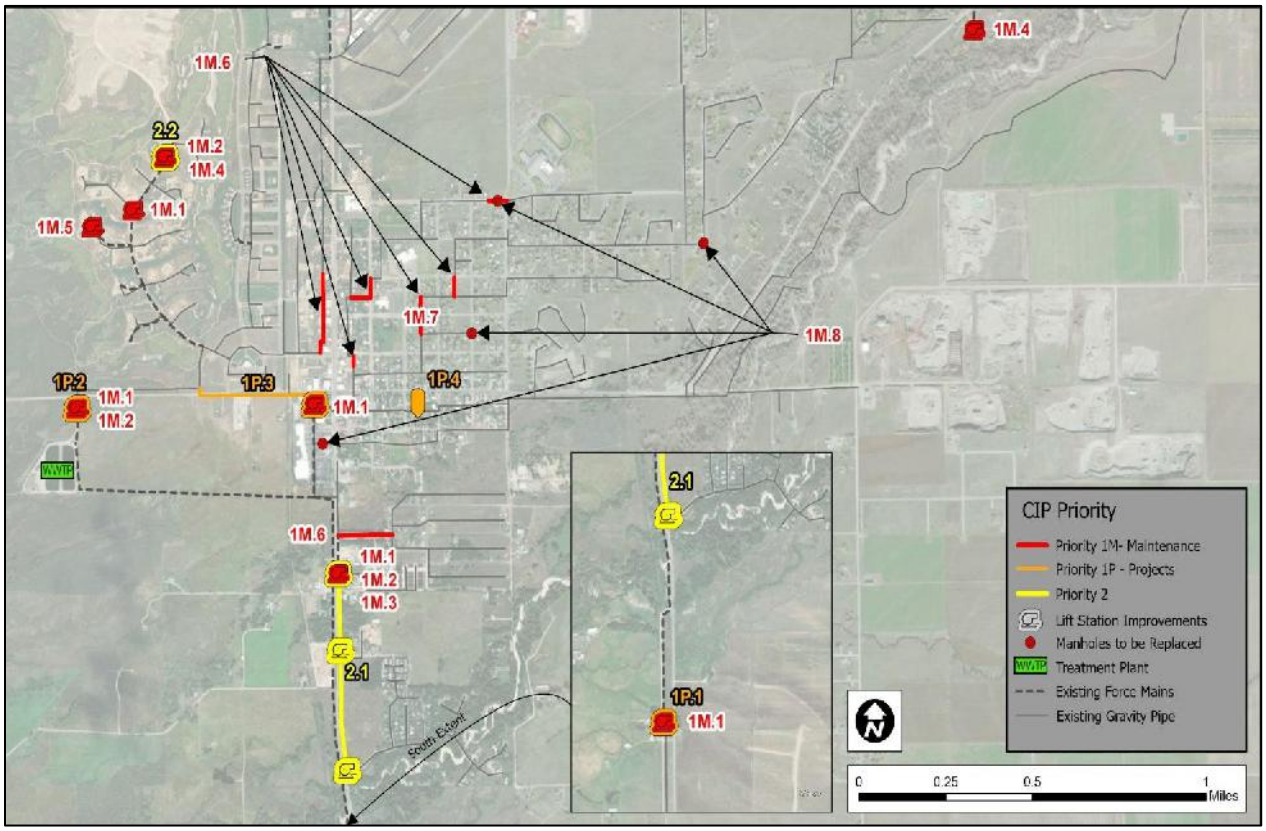
The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in **2025** dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates

Operation and maintenance implications for applicable priority 1 projects are provided below in Table 7-3. The table does not reflect overall system O&M or priority 2 O&M implications. The table is solely to reflect how O&M may change by implementing priority 1 projects.

TABLE 7-3: PRIORITY 1 O&M CHANGES

Project	Aprroximate O&M Cost	Aprroximate Future O&M Cost	Annual O&M Change
South Lift Station Improvements	$7,700	$9,700	$2,000
Hunstman Lagoon Lift Station Improvements	$700	$3,100	$2,400
Abandonment of Main Lift Station	$8,400	$0	-$8,400
Install Individual services	-	-	-
SCADA Integration at Remaining Lift Stations	-	-	-
Lift Station Generators	$1,000	$4,000	$3,000

FIGURE 7-1: CIP MAP



7.4. PRIORITY 1 PROJECTS

Priority 1M (maintenance) and 1P (projects) CIP projects are planned to be completed within the next 0-5 years. These projects address maintenance issues as well as immediate capacity concerns within the system. The Priority 1M and 1P projects are summarized as follows. See Appendix F for details regarding the remaining priority 2 projects.

- **1M.1 – Valve Vault Drainage:** Main, South, Huntsman Lagoon, Forest Service, and Huntsman Shasta Daisy valve vaults are filled with water. Improvements to make the valve vault water tight and still drain if the vault is flooded.
- **1M.2 – Faulty Check Valve:** Huntsman Lagoon, Forest Service, and Huntsman Star Flower valve vaults each have a faulty check valve. The maintenance project will replace these faulty check valves.
- **1M.3 – Faulty Wet Well Hatch**: The Forest Service Lift Station's wet well lid is difficult to open. It will be replaced or fixed to provide better access to the pumps.
- **1M.4 – Improperly Seated Pumps** – Redtail and Huntsman Star Flower Lift Stations have improperly seated pumps, resulting in leaky connections. The pumps will be reseated.
- **1M.5 – Clogged Valve Vault Drain** – The valve vault drain in the Huntsman Indian Paintbrush Lift Station is clogged with debris and will need to be cleaned out. This maintenance project will clear debris from the valve vault.
- **1M.6 – CCTV of Problem Areas** – Various areas throughout the collection system have unidentified problems. This maintenance project will identify existing issues with lines using CCTV.
- **1M.7 – Replace Problem Pipe** – The gravity line intersecting Ashley Avenue between 2nd St and 3rd St is clay tile or asbestos concrete and will need to be replaced.

- **1M.8 – Replace Problem Manhole** – The city has identified four manholes needing replaced. This maintenance project will replace those manholes.
- **1P.1 – South lift Station Improvements** – The peak inflows to South Lift Station are approaching 85% of firm capacity. If peak inflows exceed the pumping capacity, there is a higher likelihood of sanitary sewer overflows (SSOs) due to the pumps not being able to convey peak flows. This project will upsize the pumps to 700 gpm to convey peak inflows. It should be noted that flow will substantially decrease once Victor's WWTP is brought online.
- **1P.2 – Huntsman Lagoon Lift Station Improvements –** With Main Lift Station Abandonment, Huntsman Lagoon Lift Station will experience a significant increase in flows. This project will increase the lift station's capacity by upsizing the pumps to 1,000 gpm.
- **1P.3 – Abandonment of Main Lift Station** – The Main Lift Station is approaching capacity and has a submerged invert. This project includes abandoning the lift station and replacing it with a gravity line that will feed into the Huntsman Lagoon Lift Station. This project will require deep manholes and drop manholes. Huntsman Lagoon Improvements will need to happen at the same time as this project to ensure the lift station can convey the increased flows associated with this project.
- **1P.4 – Install Individual Services** – Three homes on the corner of Fremont Avenue and 2nd Street currently share one service line. This project will remove the existing service line and install separate service lines for each house.

7.5. PROJECT SCHEDULE

A 5-year CIP schedule was developed for implementing Priority 1 projects and is provided in Table 7-4 and in Appendix F. The schedule was developed with input from the City staff. Timing for the projects are driven by numerous factors such as need for project and project cost.

TABLE 7-4: 5-YEAR CIP SCHEDULE

ID#	Project Name	Cost	Opinion of Probable Costs (2025 Dollars)				
			2026	2027	2028	2029	2030
Priority 1 Improvements							
1M.1	Valve Vault Filled with Water	$ 85,000	$ 85,000				
1M.2	Faulty Check Valve	$ 19,000	$ 19,000				
1M.3	Faulty Wet Well Hatch	$ 10,000	$ 10,000				
1M.4	Improperly Seated Pumps	$ 10,000	$ 10,000				
1M.5	Clogged Valve Vault Drain	$ -	$ -				
1M.6	CCTV of Problem Areas	$ 3,000	$ 3,000				
1M.7	Replace Problem Pipe	$ 189,000		$ 189,000			
1M.8	Replace Problem Manhole	$ 145,000		$ 145,000			
1P.1	South Lift Station Improvements	$ 406,000	$ 406,000				
1P .2	Hunstman Lagoon Lift Station Improvements	$ 305,000			$ 305,000		
1P.3	Abandonment of Main Lift Station	$ 1,564,000			$ 391,000	$ 1,173,000	
1P.4	Install Individual services	$ 89,000					$ 89,000
Total (rounded)		**$ 2,825,000**	**$ 533,000**	**$ 334,000**	**$ 696,000**	**$ 1,173,000**	**$ 89,000**

The cost estimate herein is concept level information only based on our perception of current conditions at the project location and its accuracy is subject to significant variation depending upon project definition and other factors. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. This cost opinion is in **2025** dollars and does not include escalation to time of actual construction. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.

7.6. FUTURE CAPACITY CONSIDERATIONS

While the existing and future system models indicate there is sufficient capacity within the collection system pipes, the City should continue to monitor growth and document locations where surcharging or full flowing pipes are observed. To assist the City with tracking existing system capacity, Figure 17 in Appendix A shows the approximate remaining ERUs that can be added to each segment before it reaches a d/D of 85%. It should be noted the reported capacity is based on the theoretical capacity of each individual pipe segment and does not replace the need for regular facility plan updates or additional hydraulic modeling. It was developed to provide a rough order of magnitude of the number of EDUs that could be assigned without exceeding the capacity of the system.

The system was divided into 17 service areas, each of which was assessed for its remaining theoretical capacity. Evaluations focused on the downstream bottlenecks that limit capacity within each area. It is important to note that some service areas possess greater capacity than their downstream counterparts. In such cases, the maximum number of remaining ERUs must be constrained by the capacity of the downstream service area. Table 7-5 shows the remaining capacity in each service area and Figure 18 in Appendix A depicts the service areas.

TABLE 7-5: SERVICE AREA CAPACITY

Service Area	Existing Peak Flow (gpm)	Maximum Peak Flow at Capacity (gpm)	Total Upstream ERUs to Capacity[1]
1	32	686	2,100
2	87	446	1,150
3	47	404	1,150
4	85	598	1,650
5	289	3,576	10,600
6	7	658	2,090
7	52	2,932	9,280
8	15	1,035	3,280
9	16	1,137	3,610
10	108	627	1,670
11	112	499	1,240
12	39	438	1,280
13	21	350	1,060
14	66	459	1,260
15	262	3,563	10,640
16	12	1,107	3,530
17	7	354	1,110

1) Total ERUs includes other service areas upstream, some service areas have more capacity then downstream service areas therefore lowest downstream capacity must be used

7.7. I/I REDUCTION

Beyond the recommended projects, annual evaluations of the collection system are advised to identify and address areas with elevated inflow and infiltration (I/I). These evaluations may utilize methods such as

CCTV inspection and smoke testing. Furthermore, it is recommended that the City allocate funding for ongoing improvements until I/I levels are effectively mitigated. Table 7-6 below highlights a recommend I/I reduction program.

TABLE 7-6: I/I REDUCTION PROGRAM OUTLINE

	Frequency	Target Quantity	Cost
CCTV	Every Year	20,000 LF / Year (10% annually)	$60,000
Smoke Testing	Every Year	40 manholes / Year (5% annually)	$4,000
Flow Monitoring	As needed; After completion of CIPS	After major I/I improvement projects	$4,000
Cured-in-Place Pipe Lining or Replace	As needed based on CCTV inspection	1000 LF / Year	$100,000
Manhole Lining	As needed based on CCTV inspection	5 manholes per year	$25,000
Spot Repairs	As needed based on CCTV inspection	As needed	-
		Target Annual I/I Program Funding	**$193,000**

7.8. PERMIT REQUIREMENTS

Approval for facilities that are not simple sewer line extensions will require Department of Environmental Quality (DEQ) approvals for the preliminary engineering report (PER) and final plans and specifications. Simple sewer line projects could be submitted to DEQ for approval or be approved by a Qualified Licensed Professional Engineer (QLPE). Priority 1P and 2 both include expansion of new gravity sewer which may require new easements and coordination with ITD and Teton County.

7.9. FUNDING OPTIONS

Many of the CIP projects will be funded by development as growth occurs and new facilities are needed to meet increasing demands. Methods of funding are available should the City choose to investigate, including the following:

7.9.1. Cash Funding

The City could consider raising rates to cash fund the improvements. This would require the least total cash outlay; however, the rates would be higher than if they were spread out over a long-term loan, which could be a significant hardship.

7.9.2. Idaho Department of Environmental Quality (State Revolving Fund)

The State Revolving Fund (SRF) program is funded by a combination of repayment of loans previously made by DEQ and grant money supplied by the Environmental Protection Agency (EPA). Owners of public wastewater systems can apply for SRF funds annually through a competitive application process. Applications are ranked by state officials based on need, sustainability, water

quality improvements, and other criteria. Davis-Bacon Wage Act and American Iron and Steel Requirements apply. Applicants may qualify for principal forgiveness or other subsidy programs. DEQ is required to commit a significant percentage of available loan funds to sustainable, energy efficient, and "green" infrastructure improvements. Consequently, elements that meet the "green" infrastructure qualifications may receive priority for funding. Authorization to indebt the City is required through either a judicial confirmation or voter approval.

7.9.3. United States Army Corps of Engineers (USACE) (Section 595)

The USACE can sometimes offer funding for wastewater-related infrastructure projects to supplement funding from DEQ or USDA-RD. Funding availability depends on an appropriation from Congress and varies from year to year. Costs are typically shared with a 25 percent local match required.

7.9.4. Idaho Bond Bank

The Idaho Bond Bank is a state level entity that lends money to local governments within the state, with the goal of providing funds for their infrastructure needs and access to the capital markets at competitive interest rates. Under the Idaho Bond Bank program (IBBA), a municipality obtains a loan from the Bond Bank secured by either the municipality's bond or a loan agreement with the Bond Bank. The Bond Bank pools several loans to municipalities into one bond issue. The municipalities then repay the loan, and those repayments are used to repay the revenue bonds. The Bond Bank can obtain better credit ratings, more attractive interest rates, and lower underwriting costs than municipalities could achieve individually within the municipal bond market. The Bond Bank is able to pledge certain state funds as additional security for its bonds, further reducing interest costs. Additionally, the Idaho Bond Bank Authority can open doors to municipalities that were previously barred from the capital markets due to the prohibitive costs of financing or challenging credit situations.

7.9.5. Local and Private

In addition to federal and state funding programs, there are local and private funding sources available to communities for funding infrastructure projects. Some of these include a local improvement district (LID), the municipal bond market with voter approval or judicial confirmation, a business improvement district (BID), urban renewal district, connection fees, development agreements with developers, and others.

7.10. ANNUAL BUDGET CONSIDERATIONS

This section documents recommended annual replacement budgets for the existing system infrastructure as it ages as well as user rate impacts for fully funding the Priority 1 projects and fully funding all projects.

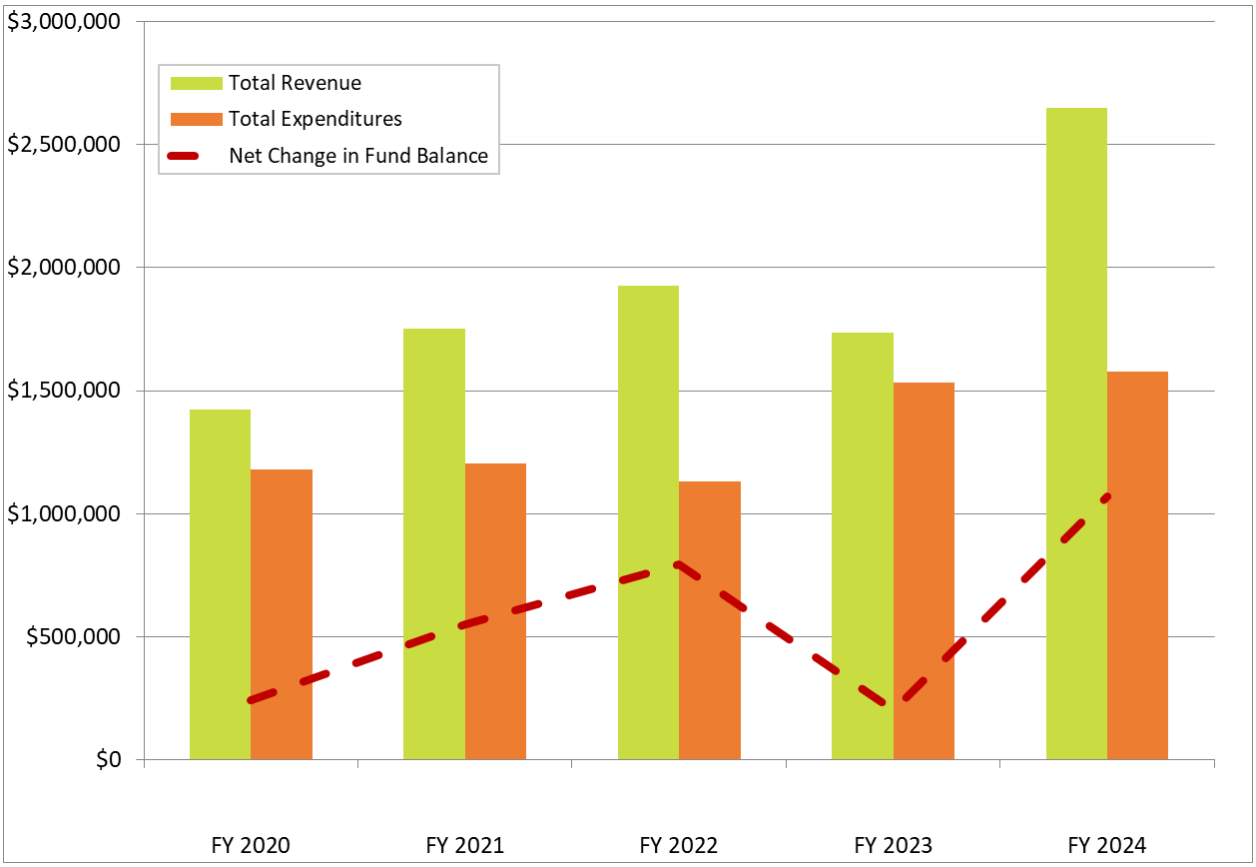
7.10.1. Operating Revenues/Expenses and User Rate Impacts

The City provided financial audits for the 2020 through 2024 fiscal years. Through the provided financial information, existing annual operating expenses and revenues were calculated, leading to the determination of the change in fund balance and net reserve for each fiscal year. As can be seen in Table 7-7, the City has experienced a positive change in fund balance (total revenues minus total expenditures) in recent years. The positive net reserve indicates that the City is currently in sound financial standing. See Figure 7-2 for a visual representation of the financial information.

TABLE 7-7: HISTORICAL REVENUE & EXPENDITURES

	Historic	Historic	Historic	Historic	Baseline
Fiscal Year	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**
Typical Monthly User Rate (Residential)	**$41.20**	**$42.85**	**$47.14**	**$65.05**	**$67.65**
Revenues					
Charges for Services	$ 1,397,853	$ 1,734,033	$ 1,923,955	$ 1,695,461	$ 2,556,588
Miscellaneous	$ 5,750	$ 15,103	$ -	$ 1,451	$ 5,147
Investment Return	$ 20,126	$ 3,746	$ 1,749	$ 40,296	$ 86,004
Total Revenues	**$ 1,423,729**	**$ 1,752,882**	**$ 1,925,704**	**$ 1,737,208**	**$ 2,647,739**
Expenditures					
Personnel	$ 338,726	$ 366,319	$ 329,563	$ 420,137	$ 420,857
Goods and Services	$ 274,753	$ 211,910	$ 240,818	$ 852,669	$ 534,555
Maintenance and Repairs	$ 152,699	$ 207,305	$ 147,515	$ 174,860	$ 207,840
Debt Services	$ 413,877	$ 416,946	$ 413,877	$ 86,065	$ 413,877
Total Expenditures	**$ 1,180,055**	**$ 1,202,480**	**$ 1,131,773**	**$ 1,533,730**	**$ 1,577,129**
Change in Fund Balance	**$ 243,674**	**$ 550,402**	**$ 793,931**	**$ 203,478**	**$ 1,070,610**
Ending Fund Balance					**$ 1,070,610**

FIGURE 7-2: HISTORICAL REVENUE & EXPENDITURES



The City could choose to debt finance the existing system Priority 1 improvements identified previously in Table 7-2. Based on typical DEQ SRF loan terms, Table 7-8 details the impact on wastewater utility user rates which results in a base user rate increase of about $5.44 to offset the annual loan payment. This increase equates to a total monthly rate of $73.09. This is about 8% user

rate base increase. The Priority 1 CIP projects improve existing facilities and will result in lower O&M costs with the removal of Lift Stations within the system.

The City should complete a more detailed rate study and model to assess future rate increases. The rate study at a minimum should evaluate fully funding short-lived assets replacement needs, long-term infrastructure replacement, more clearly define operating revenues and expenses, and integrate planned CIP projects. Following the rate study and model, the City may need to make an additional adjustment to this proposed raise and planned raises.

TABLE 7-8: USER RATE ANALYSIS

Sewer Rate Evaluation	Existing System Priority 1 Improvements
Loan Evaluation	
Existing Sewer Bill (per month)	$67.65
Priority 1 Project Costs	$2,952,000
Grants	$0.00
Funding Source/s	DEQ
Loan Principle	$2,952,000
Interest Rate	2%
Term (yrs)	30
Annual Payment	$134,083
Monthly User Rate Increase	$5.44
Additional O&M	
Total Annual O&M	$0.00
Monthly User Rate for O&M	$0.00
Total New Monthly Sewer Bill	**$73.09**
1. Additional O&M is negligible as the Priority 1 improvement projects are improvements to existing facilities.	

7.11. PLANNING RECOMMENDATION

The planning elements used as the basis for the recommendations and CIP projects in this plan may evolve over time and it is recommended that the City continue to maintain current models of the system and review each improvement in more detail a year or two ahead of implementing individual capital improvements. By reviewing upcoming improvements ahead of time, it will provide the City an opportunity to refine project scopes and budget. A more comprehensive update of the master plan is recommended every 5 years to allow for the City to re-assess needs, priorities, and properly allocate budgets to address system deficiencies. The GIS mapping and hydraulic model should continuously be updated to reflect new development and improvements which occur to the system.