



Helena Wastewater Collection System Master Plan

CHAPTER 7 SUMMARY OF RECOMMENDATIONS AND CAPITAL IMPROVEMENTS

7.1. INTRODUCTION

This chapter summarizes the capital improvements recommended for the existing collection system as well as projects for the expansion of the collection system projected during the planning period as the Helena area continues to grow. Costs were developed on a lineal foot basis to provide a general budgetary amount for each project.

The recommendations are based on the results of the hydraulic model of the collection system that is described in Chapter 5. The level of accuracy of the model is a function of the data that was used to develop the model including the City's Hansen database, three months of wastewater flow monitoring at four locations, actual and historic rainfall data, and a field survey of manhole rim elevations on pipes with diameters equal to or greater than 10 inches. As described in Chapter 4, the City's existing data lacked up and downstream pipe elevation and slope data for over 2,300 pipes in the collection system. Field survey of manhole rim elevations coupled with invert depth data was used to develop the hydraulic model. As the accuracy of GIS geodatabase is improved, model accuracy will also improve. Recommendations for future wastewater collection system data management are described in Chapter 4.

7.2. RECOMMENDED EXISTING COLLECTION SYSTEM IMPROVEMENTS

Based on the evaluation of the near-term and planning period flows, recommendations for major replacement projects were developed and prioritized. The recommended projects are shown in Figure 7-1. Prioritization of the projects identified was based on the following criteria:

Priority 1: Existing and near-term capacity is at or above 75 percent.

Priority 2: No capacity issues are identified at existing and near-term flows, but 2025 capacity is at or above 75 percent.

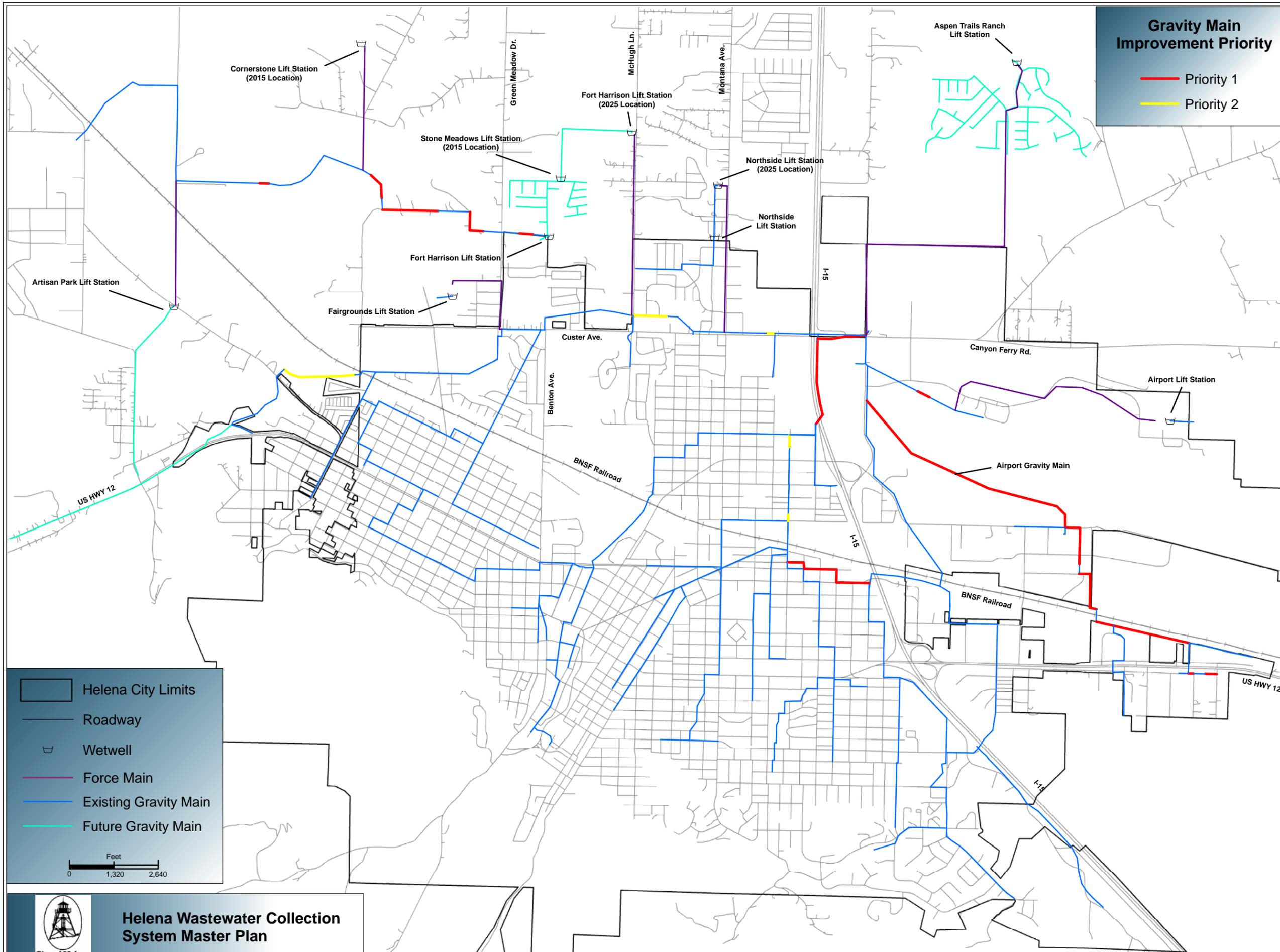


Figure 7-1
Recommended Collection System
Improvements By Priority
 Helena Wastewater Collection System Master Plan

Helena City Limits
 Roadway
 Wetwell
 Force Main
 Existing Gravity Main
 Future Gravity Main

Feet
 0 1,320 2,640

Helena Wastewater Collection System Master Plan

Priority 3: Small sections of pipe (collectors or mains) where capacity issues have been identified. These are areas where isolated problems may occur at future flows.

7.2.1. **Priority 1 Projects**

The following projects have been identified as Priority 1 projects. They are based on the model results as well as information provided by City personnel and deficiencies in the existing collection system described in Chapter 5. Table 7-1 summarizes these projects and includes “trigger flows” that can be used by the City as an indicator of when the project should be initiated. In general, these are the pipes at or above 75 percent capacity and assuming a steady rate of increase in flow, will allow the City adequate time to complete the improvements before significant capacity problems occur. Further discussion of selected Priority 1 projects follows the table.

Table 7-1 Priority 1 Projects					
Project Name	Current Diameter (in)	Future Diameter (in)	Trigger Flow (gpm)¹	Replace (R) or Parallel (P)	Estimated Length of Pipe (LF)
Airport Gravity Main	N/A	24	N/A	R (New) ⁵	7,150
Fort Harrison Gravity Main	12	15/18	503	R	4,838
South Railroad / B Street / Tricia Street / Airport Road	10	15/18	303 ²	R	6,175
Boulder / Lyndale / Lewis	8/10	12/15/18	260 ³	R	2,890
Home Depot – 12” Line	12	18/24	570 ⁴	R	3,868
Skyway Drive	10	12	185	R	400
TOTAL					25,321
¹ Trigger Flow is 75 percent of pipe capacity. Trigger flows reported are for the limiting pipe section in each of the sewer lines discussed. ² The trigger flow is measured in Tricia Street, which is the limiting pipe section. 75 percent of total capacity in the S. Railroad St. line is 354 gpm. ³ The trigger flow for the Boulder/Lyndale/Lewis project is measured in the 8-inch line on Lewis between Harris and Oakes. ⁴ Trigger flow reported is for pipe section P-1803 on Custer Avenue. With the exception of the 400-ft section P-1803, the Home Depot 12-inch line capacity ranges from 1,485 gpm to 2,660 gpm. ⁵ New gravity line to replace existing South Airport Lift Station and forcemain.					

Airport Gravity Main. This new gravity main is currently being planned by the City in order to eliminate the need for the South Airport Lift Station. The proposed airport gravity main begins at manhole SI293-7A, located on Airport Road and runs approximately 7,150 feet on a northwest alignment across the Helena Regional Airport Authority property to manhole 75-7-24, located along North Washington Street. This

project is considered in the Priority 1 projects due to the ongoing development in the Padbury Ranch and Mountain View Meadows developments.

Fort Harrison Gravity Main. This project consists of replacing approximately 4,838 lineal feet of pipe. Only two segments of the Fort Harrison gravity main were identified under existing, wet weather conditions to be undersized and this is due to the segments being at an adverse slope. However, there are several conditions which will contribute to capacity issues in this line. There is a total reserve capacity for the Fort Harrison facility of 415 gpm in the gravity line. Currently, only approximately 71 gpm of the reserved 415 gpm is being used under wet weather conditions. When this total reserve flow is modeled, the existing pipe capacity remaining is 20 percent, disregarding the two pipe segments with adverse slopes. Additionally, under near-term future loading conditions, the flow contribution from Corner Stone and Artisan Park (at full build-out) causes portions of the Fort Harrison gravity main to be over 75 percent of capacity, without consideration of the Fort Harrison reserve flow.

The recommended length of the existing Fort Harrison gravity main requiring upsizing under near term future loading conditions is greater than the full build-out 2025 loading conditions. This is primarily due to the fact that the Cornerstone sewer loading was assumed to flow into the Fort Harrison gravity main under the near term loading conditions, and to be diverted to the proposed Regional Lift Station under the full build-out 2025 loading conditions. It is recommended that the City schedule regular flow monitoring activities in the existing Fort Harrison gravity main as connections are added so that planning for the most cost effective flow routing scenario of the Cornerstone development can be addressed as development occurs. If the flows generated by the Cornerstone development are to be routed through the Fort Harrison gravity main under the full build-out 2025 loading conditions, additional capacity issues not identified in this report may occur.

South Railroad/B Street/Tricia Street/Airport Road. This project consists of a total of 6,175 lineal feet of sewer main replacement and was identified to complete the collection system improvements needed to accommodate flows from the Padbury Ranch and Mountain View Meadows developments. Based on the model results and flow monitoring performed as part of this project, the existing sewer lines do not currently experience capacity problems.

Boulder/Lyndale/Lewis. Under existing wet weather loading conditions, the model shows full flow gravity mains and surcharging manholes in the area of Boulder Avenue and East Lyndale Avenue. This problem has been verified by the City of Helena and is attributable to the relatively shallow grade of the gravity mains in this area.

Home Depot-12" Line. The model simulated the full flow gravity mains and surcharging manholes in the Home Depot 12-inch (HD-12) trunk main located between Interstate 15 and Home Depot that have been reported by City of Helena maintenance staff. The model also shows similar conditions occurring in the pipe further downstream on the Custer Avenue portion of the line.

It should be noted that an alternative to replacement of the HD-12 Line was identified and verified using the model. Flow could be diverted from the 12-inch line into the

parallel 24-inch line at adjacent manholes MH375-1A and MH375-1 located at the intersection of Cole Avenue and N. Harris Street where the lines come together on the west side of Interstate 15. The model results indicated that the 24-inch line has adequate capacity for the 12-inch line flows. It is recommended that City maintenance staff make the connection using a weir splitter device to reduce the flows in the 12-inch line and the incidence of surcharging. This may be a cost effective, long term alternative to replacement of the 12-inch Home Depot sewer main.

Skyway Drive. This project is required to accommodate the future Airport development and flows from the existing Airport lift station. The project includes approximately 440 lineal feet of main which is installed at minimum slope and limits the capacity of the gravity main.

7.2.2. **Priority 2 Projects**

Based on model analyses, the following projects have been identified as Priority 2 projects. They are also based on information provided by City personnel and deficiencies described in Chapter 5. Table 7-2 summarizes these projects and includes “trigger flows” which are the flows at which the pipe is at 75 percent capacity. The Priority 2 projects are not anticipated in the near-term, but will be required as the City expands its collection system to accommodate the 2025 growth scenario. Further discussion on selected Priority 2 projects follows the table.

Table 7-2 Priority 2 Projects					
Project Name	Current Diameter (in)	Future Diameter (in)	Trigger Flow (gpm)	Replace or Parallel	Estimated Length of Pipe (LF)
Custer Trunk	24	30/36 or 24	1,812	R or P	1,246
East Country Club Avenue	8	12	206	R	2,097
Harris (Phoenix to Walnut & Cedar to Cole)	18	24	2,294	R	540
TOTAL					3,883

Custer Trunk. Approximately 1,250 feet of 24-inch sewer located east of McHugh Lane will exceed 2025 build out capacity if growth on the west side and areas north of Custer Avenue occurs. This line was installed in 1960, and the limiting pipe segments have a capacity of approximately 3.48 mgd, while build out peak hour flows in these portions of the line are projected to exceed 4.49 mgd. An alternative to replacing the line with 30- and 36-inch diameter pipe is installation of a parallel 24-inch diameter line.

East Country Club Avenue. This project consists of approximately 2,100 feet of 8-inch gravity sewer east of Country Club Avenue and west of Joslyn Street. The used

capacity of this portion of sewer will exceed 75 percent with the addition of the west side sewer improvements and the 2025 build out. As modeled, all west side sewer loading generated south of Highway 12 will flow through this portion of existing main. This line was installed in 1970 and has a maximum capacity of approximately 277 gpm.

Harris Street. This portion of Harris Street already experiences surcharging resulting from rainfall events and appears to be related to infiltration and inflow problems. Continued sewer lining projects may reduce the infiltration in this line and the City should continue to evaluate the severity of this problem prior to implementing the sewer replacement project.

7.2.3. Priority 3 Projects

Based on model analyses, there are small sections of pipe (collectors or mains) within the existing collection system where capacity issues have been identified. These are areas where isolated problems may occur at future flows. Most of these sections are included in Priority 1 and 2 projects already discussed since there are overall pipe capacity issues in the same lines. At this time, there are no other Priority 3 projects.

7.3. RECOMMENDED LIFT STATION IMPROVEMENTS

Based on the evaluation of the future 2025 planning period flows, the following lift station upgrade and/or replacement projects are anticipated. Much of the proposed infrastructure associated with development currently occurring in and adjacent to the City limits is being installed as part of the construction of the residential and commercial development. However, as growth continues, several of these new and existing lift stations may experience capacity deficiencies, depending on how growth occurs. These projects were discussed in more detail in Chapter 6.

It is anticipated that the lift station improvement projects will be driven by the piecemeal location of new development, therefore, the exact location and capacity of the projects is difficult to predict. Additionally, the rate of growth in different areas of the City's service area and the annexation of new development will dictate the priority of the projects. Therefore, the lift station improvement projects are based on one scenario of growth and are presented to provide a basis of planning for the City. Continued evaluation of new development and annexation using the collection system model will be required to update and reassess these projects. The lift station projects are summarized in Table 7-3.

**Table 7-3
Lift Station Improvements**

Lift Station	Ownership	Force Main Size (in)	New Force Main Length (ft)	Approx. Maximum Capacity Required (gpm)	Notes
Fort Harrison	City	6"/10"	5,018	2,430	Relocation of Stone Meadows Lift Station to increase service area and west side and central valley growth
Northside	City	8"	4,400	180	Relocates existing Northside Lift Station to increase service area to include portions of central valley
Artisan Park	City	n/a	none	900	Increase pump capacity to accommodate growth on west side. Near-term force main capacity will accommodate future requirements
Aspen Trails Ranch	City	n/a	none	1,360	Increase pump capacity to accommodate growth in east side and central valley service areas. Requires upgrade of lift station and booster station. Force main capacity adequate.
Eastside	City	10"	13,100	300	New lift station to serve area south of Canyon Ferry Road and north of Highway 12
Regional	Unknown	12"/16" /16" ¹	22,000	5,200	New lift station located in NE corner of central valley service area. Will accommodate growth in North Valley and Central Valley service areas not including Aspen Trails Ranch LS service area.

¹ The model shows that a force main with an equivalent diameter of 30-inches is required. One possible combination is two 16-inch and one 12-inch diameter parallel lines. As growth extend north into the valley, reevaluation of the sizing will be required.

7.3.1. Lift Station Design Considerations

Consideration of phased upgrades and long-term needs should be incorporated into any lift station upgrade project the City contemplates. The following design considerations are recommended:

- **Pumps:** Multiple pumps and pump sizes in a lift station can address increasing flows. Pumps should be replaced and/or upsized when the pumps' runtimes exceed 12 hours per day.
- **Wet Wells:** Initially, wet wells should be sized for reasonable pump run times, but should not be too large or excessive odors and corrosion may occur. Plan for multiple wet wells or large wet wells with removable walls or closed connection piping to accommodate increased flows. The walls can be removed or the piping can be opened when added capacity is needed.

- Force Mains: Force mains sized for full build out may result in a long residence time of wastewater in the pipe, causing operation and maintenance concerns such as odors and corrosion. Design and installation of two different sized parallel force mains to accommodate both near-term and future flows should be considered.

7.4. COST ESTIMATES

This section provides estimates of probable cost for the prioritized improvements of the collection system. The cost estimates for new and replacement pipes have been based on a general cost per lineal foot basis for each pipe diameter, which is summarized in Table 7-4. The costs are 2008 costs and allow for all typical construction costs such as mobilization, sitework, overhead and profit, and have been based on recent, similar projects in the region. The costs do not include engineering services for design, bidding, or construction oversight. Specifically, the costs include the following:

- Pipe prices with contractor overhead & profit;
- 48-inch, 8-ft deep manholes with cover;
- Removal and replacement of 8-ft wide asphalt and aggregate base course;
- Trench excavation, backfill and compaction;
- Pipe installation and pipe bedding;
- General requirements, taxes, bonds, insurance, and mobilization.

Diameter (in)	Approximate Bid Cost for New and/or Replacement Pipe (in 2008 Dollars) (cost/LF)
8	\$85.00
10	\$95.00
12	\$100.00
15	\$110.00
18	\$145.00
21	\$175.00
24	\$200.00
27	\$247.00
30	\$275.00
36	\$310.00

Recommended projects are for new pipe and do not include the City's ongoing rehabilitation projects for replacement and/or lining of aging pipe. Lining costs will vary depending on the project and the number of services, size of main, and bypass pumping required. The costs can vary from \$75 to \$150 per lineal foot of lining. No lining projects were included in the recommended improvements, although the City may choose to line or pipe burst some of the existing collection system piping identified as needing improvement.

The cost estimates for the projects identified in Tables 7-1 through 7-3 as well as the proposed future extensions described in Chapter 6 are presented in the following tables. Table 7-5 includes the cost estimates for the Priority 1 and Priority 2 projects associated with improvement of the existing collection system. Table 7-6 includes the cost estimates for proposed collection system extensions for future (2025) conditions. Table 7-7 includes cost estimates for lift station improvements required to meet future (2025) conditions.

**Table 7-5
Estimated Construction Costs of Proposed Existing Collection System Improvements**

Project Name	Total Length	Length by Diameter								Estimated Project Cost
		10"	12"	15"	18"	21"	24"	30"	36"	
Airport Gravity Main	7,150						\$1,430,000			\$1,430,000
Fort Harrison Gravity Main	4,838			\$532,180						\$532,180
South Railroad / B Street / Tricia Street / Airport Road	6,175			\$273,130	\$36,975					\$310,105
Boulder / Lyndale / Lewis	2,890		\$82,700	\$174,570	\$69,020					\$326,290
Home Depot – 12" Line	3,868				\$502,860	\$80,000				\$582,860
Skyway Drive	400		\$40,000							\$40,000
SUBTOTAL PRIORITY 1	24,921		\$122,700	\$979,880	\$608,855	\$80,000	\$1,430,000			\$3,221,435
Custer Trunk	1,246							\$317,075	\$35,172	\$352,246
East Country Club Avenue	2,097		\$207,700							\$207,700
Harris (Phoenix to Walnut & Cedar to Cole)	540						\$108,000			\$108,000
SUBTOTAL PRIORITY 2	3,883	209,700				108,000		317,075	35,172	\$669,946

**Table 7-6
Estimated Construction Costs of Proposed Collection System Extensions for Future (2025) Conditions**

Sewer Line	Total Length	Length by Diameter								Estimated Project Cost	
		8"	10"	12"	15"	18"	21"	24"	36"		
West Side SA Highway 12 Extension	7,250	\$616,250									\$616,250
West Side SA Williams St. Extension	5,235	\$444,975									\$444,975
West Side SA Fort Harrison Extension	3,175	\$269,875									\$269,875
East Side Lift Station Extension	17,280	\$1,468,800									\$1,468,800
East Side SA Extensions South of Highway 12	42,230	\$2,737,000	\$96,900		\$991,100						\$3,825,000
Fort Harrison SA Barrett Road Extension	2,495	\$212,075									\$212,075
Fort Harrison SA Birdseye Road Extension	4,490	\$381,650									\$381,650
Central Valley SA Northside No. 1 LS Extension	3,515				\$386,650						\$386,650
Central Valley SA Northside No. 2 LS Extension	1,685			\$168,500							\$168,500
East Side SA Aspen Trails Ranch Extensions	22,180	\$1,754,825	\$145,825								\$1,900,650
Central Valley SA Aspen Trails Ranch Extensions	5,145	\$437,325									\$437,325
Central Valley and North Valley SA's Regional LS Extensions	298,585	\$16,124,925	\$2,527,475	\$2,059,000	\$2,814,350	\$2,043,050	\$1,730,750	\$539,000	\$3,564,454		\$31,403,004
TOTAL	413,265	\$24,447,700	\$2,770,200	\$2,227,500	\$4,192,100	\$2,043,050	\$1,730,750	\$539,000	\$3,564,454		\$41,514,754

**Table 7-7
Estimated Construction Costs of Lift Station Improvements**

Lift Station Name	Cost for Lift Station	Length by Diameter					Estimated Project Cost
		6"	8"	10"	12"	16"	
Fort Harrison	\$875,500	\$204,500		\$311,500			\$1,391,500
Northside	\$64,800		\$221,000				\$285,800
Artisan Park	\$233,000 ¹						\$233,000
Aspen Trails Ranch ²	\$550,000 ¹						\$550,000
Eastside	\$108,000			\$816,000			\$924,000
Regional ²	\$3,750,000				\$1,655,000	\$3,980,000	\$9,385,000
TOTAL	\$5,581,300	\$204,500	\$221,000	\$1,127,500	\$1,655,000	\$3,980,000	\$12,769,300

¹ Lift station costs include only new pumps, wet well upsizing, piping and valves to increase lift station capacity. Assumes no new force mains required.

² The preliminary design calculations for the Aspen Trails Ranch lift station performed by Morrison-Maierle, Inc. showed that the hydraulic lift required between the lift station and the City's wastewater treatment plant necessitated an interim booster station located halfway between the lift station the WWTP. Therefore, the proposed lift station improvements above assume that both the Aspen Trails Ranch lift station and the Regional lift station include a booster pump station.

7.5. SUMMARY OF RECOMMENDATIONS

Based on the work performed with the City's existing geodatabase and the evaluation of the existing collection system, numerous recommendations were developed and discussed throughout the report. Those recommendations are summarized as follows:

7.5.1. *Recommendations For Existing Infrastructure Rehabilitation*

The improvements identified and described in this chapter do not include the projects already identified by the City as part of their ongoing rehabilitation program. Recommendations for existing infrastructure rehabilitation are as follows:

- As discussed in Chapter 5, a total of 49,635 lineal feet of pipe in the collection system has been identified for slip lining or replacement due to age, condition or capacity of the pipe. A total of 32,400 lineal feet or 65 percent of that pipe is scheduled for slip lining due to aging clay and cement pipe. Based on the positive impact of past projects, these rehabilitation projects should remain a priority for the City.
- In general, it is recommended that slip lining projects in the Central basin be given a higher priority, given the significant response to rainfall measured in this area.
- The City's current program of CCTV inspection and documentation has been very effective in identifying specific problems in the collection system. Currently, there is no qualitative scoring system in place, although the Hansen software allows for a scoring system for structural and root defect problems. Scoring should be associated with each manhole and segment of pipe so that projects can more easily be prioritized by City staff.

7.5.2. *Geodatabase Recommendations*

Based on observations made during the process of developing the geodatabase for the Collection System Master Plan, several recommendations were made for future wastewater collection system data management with an emphasis on assisting the City in developing a system that is flexible and will allow adjustments to be easily made as new initiatives and needs arise:

- Expand Wastewater Collection System Geodatabase Design to Allow Added Functionality. This includes adding a geometric network, which is a data structure that is used within the geodatabase and allows a user to trace upstream and downstream within a pipe and manhole system. This type of data structure is highly useful in a gravity based system such as a wastewater collection system.
- Institute Additional Design Submittal Standards. It is recommended that design submittal standards that allow the City to receive a digital CAD file of all new wastewater collection system features be instituted. A CAD file that has feature and attribute standards can be easily imported into the City's geodatabase and automatically update the wastewater collection system.

- Adopt Data Accuracy Standards. It is recommended that the City refine their pipe invert and manhole depth collection methods to ensure that tenth of a foot or better accuracy is attained on these measurements.
- Increase GPS Accuracy Capability. The City should consider purchasing a survey grade GPS unit to use during the field data collection of manhole locations. The sub-meter GPS unit that is currently being used by City staff attains horizontal coordinate accuracies that are adequate for the manholes but does not provide the accuracy recommended for the rim elevations.
- Implement Standard Datum for all City Departments. It was observed that the City's Engineering Department maintains a "City Datum" which is believed to have originated from the NGVD29 (aka Mean Sea Level) Datum. This is inconsistent with the datum used in the City-County GIS geodatabase and is inconsistent with currently accepted surveying standards. The conversion of this data is felt to be of inadequate accuracy.
- Integrate Hansen Data with City's GIS Data. It is recommended that the City continue their program for the integration of the GIS data with the Hansen data because they will realize efficiencies and data quality improvements by removing duplicate data creation and maintenance processes.

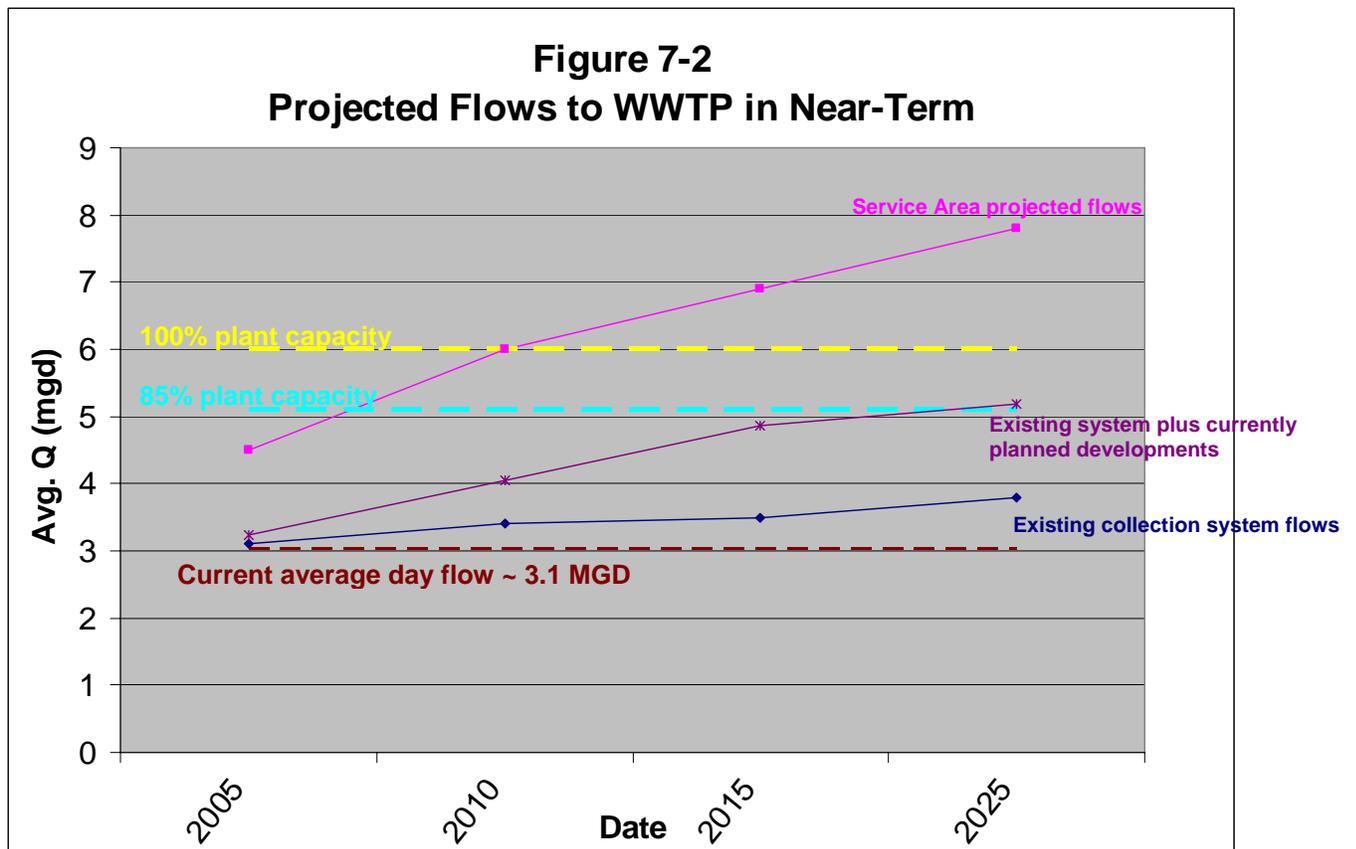
7.5.3. Data Collection Recommendations

- It is recommended that the City engage in a renewed program of systematic measurement of all manhole invert depths to within one tenth foot accuracy. City staff should gather these measurements in a consistent way and using similar measurement devices so that accuracy is achieved.
- Continued survey of manhole rim elevations of the remaining 8-inch diameter pipe is recommended. As the data is improved, it should be added to the Hansen system so that it can be incorporated into the collection system model. As these efforts proceed, the accuracy of the model will be improved resulting in more reliable output.
- Continued flow monitoring to further define and quantify collection system inflow and infiltration is also recommended.
- It is recommended that the pipe slopes and pipe condition be verified and that additional flow monitoring be performed on Harris Street prior to making any improvements.

7.5.4. Future Facility Planning

As the collection system is improved and expanded, flows to the City's wastewater facility (WWTF) will increase, which will have capacity impacts on the plant. In the last four years, the daily flow to the WWTF averages approximately 3.1 mgd with a peak day of approximately 4.1 mgd. The average daily capacity of the plant, reported in the City's MPDES discharge permit is 6.0 mgd. Planning for expansion of the plant to increase the hydraulic capacity is recommended. Figure 7.2 presents the projected increase in

flows to the plant under three scenarios: no expansion of the current collection system, expansion of the collection system to include currently planned developments used in the model, and projected flows generated from the entire service area. The figure also shows the plant's hydraulic capacity and 85 percent of the current capacity.



As flows to the plant approach 80 to 85 percent of the hydraulic capacity, it is recommended that the City begin facility planning so that improvements can be funded, designed and constructed before plant capacity exceeded. The projected flows shown in Figure 7-2 are estimated based on population projections as described in Chapter 3. Actual increase in flows to the plant will depend on the rate of expansion of the collection system through annexation and in-fill within the City limits. The model will serve as a valuable planning tool for the City to continually evaluate the effects of expansion of the collection system on the wastewater treatment plant.

With the implementation by the Montana Department of Environmental Quality of total maximum daily loads within a watershed, the treatment capacity of the plant may prove to be more limiting to growth. Stricter effluent discharge limits of nutrients such as nitrogen and phosphorus into Prickly Pear Creek may compel the City to implement improvements at the plant to enhance nutrient removal before capacity issues become the driver for WWTF improvements.

7.6. CONCLUSIONS

The City's future system improvements include few capacity related improvements within the existing collection system. Continued focus on rehabilitation to address aging pipe is already a priority for the City. The major infrastructure improvements identified are those required to extend the collection system to accommodate projected growth within the service area. They include extensions, lift stations and force main installation.

Our findings show that a total of \$3.25 million in capacity-related improvements within the existing collection system is required to accommodate near-term growth. Full build out and expansion of the City collection system within the entire service area is estimated to be approximately \$41.5 million in 2008 dollars. The total cost of upgrading existing and proposed lift stations to accommodate the full build out scenario is estimated to be approximately \$12.8 million in 2008 dollars.

Much of this infrastructure will likely be installed by developers as part of construction of new residential and commercial developments, although as the City annexes portions of the service area, some new sewer will likely be required to connect previously constructed sewers.