

5. COLLECTION SYSTEM IMPROVEMENTS

The collection system improvements recommended in this section are covered in two phases. Phase 1 covers the period from 2017 through 2025, and Phase 2 covers the period from 2025 through 2040. Estimated overall capital costs are provided for each project. A detailed estimate of overall cost and description of work items that make up the recommended improvements is included in Appendix D.

5.1 GRAVITY SEWER CAPACITY UPGRADES

The following improvements are needed to address capacity deficiencies identified by collection system modeling. Figure 5-1 shows the locations of the proposed collection system improvement projects.

5.1.1 Cascade Avenue Sewer—Phase 1 (Project S-01)

The existing 8-inch sewer in Cascade Avenue, east of Russell Avenue between MH CI-13 and CI-15 is undersized for existing and future peak flows. This line should be upsized prior to any capacity upgrades to the Kanaka Pump Station. The project consists of replacing 920 feet of 8-inch sewer pipe with new 12-inch pipe. The estimated capital project cost is \$441,000.

5.1.2 Cascade Interceptor—Phase 1 (Project S-02) Currently under construction

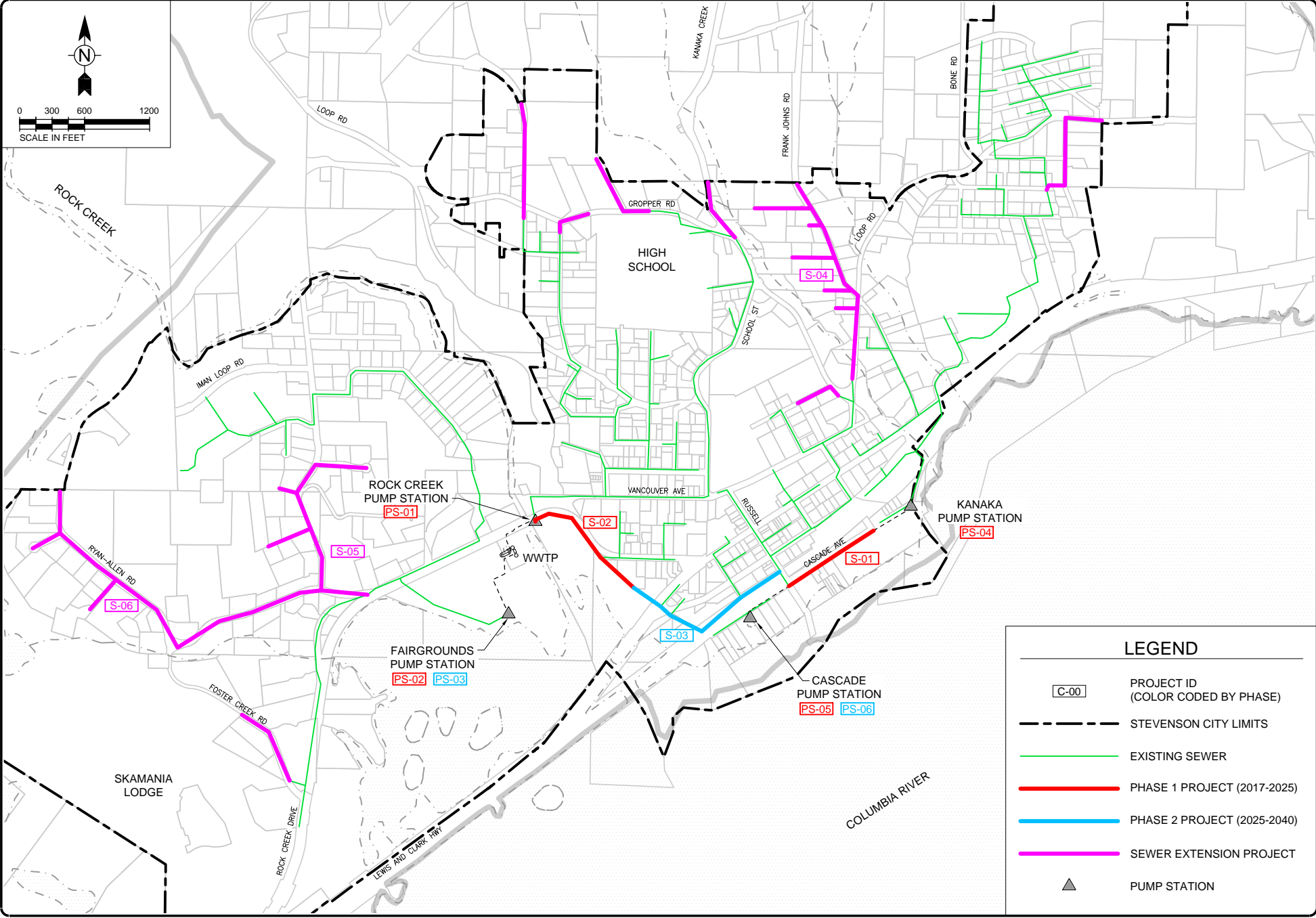
This portion of the existing 12-inch Cascade Interceptor is undersized for both existing and future peak flows, located in Rock Creek Drive starting at the Rock Creek Pump Station and continuing upstream to MH CI-4. The project consists of replacing 1,250 feet of 12-inch sewer pipe with new 18-inch pipe. The estimated capital project cost is \$682,000.

5.1.3 Cascade Interceptor—Phase 2 (Project S-03)

This portion of the existing 12-inch Cascade Interceptor is undersized for year 2040 peak flows. It starts at MH CI-4 and continues upstream to MH CI-12 at the intersection of Russell Avenue and Railroad Street. The project consists of replacing 1,650 feet of 12-inch sewer pipe with new 18-inch pipe. The estimated capital project cost is \$1,050,000.

5.2 EXTENSIONS TO UNSEWERED AREAS

It is expected that the collection system eventually will be extended to provide service to all currently unsewered development within the city limits. The system also will be extended into any parts of the Urban Area that become annexed to the city in response to requests associated with proposed development. The following projects will facilitate conversions of existing septic systems as well as allow future extensions to potential development. These projects can be constructed in Phase 1 or Phase 2, depending on availability and type of funding, rates of septic failures, and development trends within the City and adjoining Urban Area. Costs assume installation of service laterals to the property line. Installation of sewer laterals on private property and septic system conversions are not included in the costs. These projects are not included in the CIP plan as it is assumed they will be primarily private funded.



7/13/2017 12:04 PM - P:\48600135-48600-16001\CAD\SHEET\FIGURE-1.DWG

5.2.1 Main D Extension (Project S-04)

Section from Kanaka intersection to up a block on Frank Johns completed.

This project will extend Sewer Main D north along East Loop Road and Frank Johns Road to provide an available sewer to connect to for properties currently on septic. Spur lines will be provided to serve properties on Thomas Street, Jordan Street, Carrick Road, and Gale Street. It would also allow for future extension north on Frank Johns Road beyond current city limits to serve new development. The project consists of installing 3,500 feet of 8-inch sewer pipe. It will provide possible sewer connection for 31 properties currently on septic as well as future service to undeveloped properties located near the line. The estimated capital project cost is \$1,330,000.

5.2.2 Iman Cemetery Road (Project S-05)

This project will extend sewer closer to properties within city limits that are currently on septic to allow conversion to the sewer system. The new sanitary sewer will start at Rock Creek Drive and Ryan Allen Road, continuing north on Iman Cemetery Road. Spur lines will be provided to serve properties on SW Briggs Road, NW Kaspar Road, and Nicklaus Court. The project consists of installing 2,800 feet of 8-inch sewer pipe. It will provide a possible sewer connection to 20 properties currently on septic as well as future service to undeveloped properties located near the line. The estimated capital project cost is \$1,045,000.

5.2.3 Foster Creek Road (Project S-06)

This project will extend sewer closer to properties within city limits that are currently on septic to allow conversion to the sewer system. The new sanitary sewer will start from the intersection of Ryan Allen Road and Iman Cemetery Road, continue east to Foster Creek Road, and then continue north to the intersection of Foster Creek Road and Hollstrom Road. Spur lines will be provided to serve properties on Lakeview Road and SW Jayden Lane. The project consists of installing 4,000 feet of 8-inch sewer pipe. It will provide a possible sewer connection to 24 properties currently on septic as well as future service to undeveloped properties located near the line. The estimated capital project cost is \$1,525,000.

5.2.4 Other Extension Projects

Additional extension projects are shown on Figure 5-1, but not assigned a project ID. These projects would likely be privately funded as part of future development. All of these proposed pipes will likely only need to be 8" diameter given the steep terrain and relatively small service areas. Pipe sizing should be verified by the developer during the design review process.

5.3 PUMP STATION UPGRADES

All pump stations need to be outfitted to allow bypass pumping systems to be installed in case of extended power outage or failure of the pump or control systems. Needed modifications would include suction connection, appropriate pump selection, and a discharge connection to the force main.

5.3.1 Rock Creek Pump Station—Phase 1 (Project PS-01)

Currently under construction

Modeling indicates that the Rock Creek Pump Station is undersized for both existing and future flows. Pump run-time data and staff observations corroborate the model results. Therefore, full pump station replacement is recommended. This project consists of constructing a new 1,500-gpm firm capacity duplex or triplex submersible pump station with new control panel, auxiliary standby power, and new 12-inch force main to the WWTP. The estimated capital project cost is \$1,226,000.

5.3.2 Fairgrounds Pump Station—Phase 1 (Project PS-02) In Design Phase

Modeling indicates that this pump station is adequately sized for current flows, but might be slightly undersized for 2040 flows. It is recommended that flows to this pump station be monitored to verify modeling assumptions and allow for more accurate predictions of existing and future peak-hour flows. In the interim, the following improvements are recommended:

- Provide provision for bypass pumping.
- Install new flow meter on the force main discharge piping.
- Integrate new flow recorder into existing controls.
- Relocate portion of force main if necessary for WWTP expansion.

The estimated capital project cost is \$111,000.

5.3.3 Fairgrounds Pump Station—Phase 2 (Project PS-03) In Design Phase

The following Phase 2 work items are recommended at the Fairgrounds Pump Station:

- Replace pump station with new submersible pumps in new wet well.
- Provide a new control panel and instrumentation.
- Provide new electrical equipment, including standby generator and automatic transfer switch.

The estimated capital project cost is \$917,000.

5.3.4 Kanaka Pump Station—Phase 1 (Project PS-04) In Design Phase

Modeling indicates that this pump station is undersized for both existing and future flows. Average weekly pump run-times of 14.5 hours per day were observed in December 2015, which is high for systems with large peaking factors, as is suggested by WWTP flow records.

At a minimum, a flow meter should be installed at the pump station to verify modeling assumptions and allow for more accurate predictions of existing and future peak-hour flows. However, full pump station replacement is recommended, given the potential near-term additional flows from development of the Chinidere Mountain subdivision as well as the station deficiencies listed in Section 4.1.2.

Pump station replacement will consist of constructing a new 500-gpm firm capacity duplex submersible pump station with new control panel and auxiliary standby power. The existing 6-inch force main installed in 2015 will not need replacement as it is adequately sized for projected flows. The estimated capital project cost is \$770,000.

5.3.5 Cascade Pump Station—Phase 1 (Project PS-05) In Design Phase

The Cascade Pump Station is adequately sized for existing and future flows. The following improvements are recommended:

- Provide provision for bypass pumping.
- Upgrade controls to include an auto-dialer or remote telemetry unit to notify operations staff of high wet well level or equipment malfunction.

The estimated capital project cost is \$37,000.

5.3.6 Cascade Pump Station—Phase 2 (Project PS-06) In Design Phase

The following Phase 2 work items are recommended at the Cascade pump station:

- Replace pump station with new submersible pumps in new wet well.
- Provide a new control panel and instrumentation.

The estimated capital project cost is \$509,000.

5.4 IMPROVED OPERATION AND MAINTENANCE

5.4.1 Sewers

Sewer Inspection and Cleaning

In annual budget

It is recommended that all City sewers be systematically inspected by CCTV, with the oldest sewers to be inspected in the first two years and the remaining sewers over 10 years. The inspection should be done to the standards of the Pipeline Assessment Certification Program, with the video and subsequent reports archived. This inspection should identify system defects and help identify sewers that need significant maintenance, rehabilitation and replacement. A system of preventive maintenance should be implemented that includes cleaning and removal of tree roots. For sewers of greater significance or with likelihood of recurring issues, a schedule for preventative maintenance should be set.

It is recommended that the City budget \$5,000 per year for CCTV work.

Pipe and Manhole Rehabilitation

In annual budget

It is recommended that the City begin a yearly program of pipe and manhole rehabilitation in specific areas, including older parts of the collection system and known areas of high I/I, such as School Street and the downtown areas. Pipe rehabilitation can include new pipe, pipe bursting or cured-in-place pipe lining.

It is recommended that the City budget \$80,000 per year for upgrades. Based on results of past I/I repairs, significant reductions in flow are not anticipated. Rather, the control program will likely maintain the collection system's current I/I rate as it ages.

Geotechnical Considerations

It is recommended that a geotechnical engineer be consulted before making I/I repairs in areas of known or suspected slope instability (such as the northeast area of the collection system), because I/I repairs could change subsurface drainage patterns and increase the risk of a landslide.

5.4.2 Flow Monitoring and Data Collection

Collection of flow monitoring data will enable measurement of base flow and I/I in City sewers. It is recommended that the gravity sewer system be visually checked at key locations to estimate dry-weather and wet-weather flows. Combining velocity readings from a portable velocity sensor with estimates of water depth would enable estimates of flow at each location.

Periodic installation of temporary flow monitors at key locations in the network is also recommended. These flow monitors should record both water depth and water velocity, so that total flow can be derived. Installation of the meters should be at locations that have been screened to ensure that poor site hydraulics do not limit the accuracy of the data collection. A typical flow monitor installation would occur during the wet-weather season between September and April. This period may be extended if specific dry-weather flow information is desired.

5.4.3 CMOM Program

It is recommended that the City implement a Capacity, Management, Operation, and Maintenance (CMOM) program following EPA guidance. A CMOM program should incorporate the following elements:

- Level of service
- Performance measurements
- Information systems
- Asset identification and capitalization
- Failure impact evaluation and risk management
- Condition assessment
- Rehabilitation and replacement planning
- Capacity assurance planning
- Maintenance analysis and planning
- Financial management
- Continuous improvement.

5.5 PRELIMINARY COLLECTION SYSTEM CAPITAL COST ESTIMATE

Planning level capital cost estimates for the recommended collection system improvements are presented in Table 5-1. A detailed cost estimate by work item is included in Appendix D. This is a Class 4 cost estimate as defined by the Association for the Advancement of Cost Engineering International. These costs represent planning level cost estimates in 2017 dollars and should be considered accurate in the range of +50 to -30 percent.

Table 5-1. Planning Level WWTP Capital Cost Estimates

| Component | Estimated Capital Cost |
|--|--|
| Phase 1 Projects 2017-2025 | |
| S-01—Cascade Avenue Sewer | \$441,000 |
| S-02—Cascade Interceptor - Rock Cr PS to MH CI-4 | Under Construction \$682,000 |
| PS-01—Rock Creek Pump Station | Under Construction \$1,226,000 |
| PS-02—Fairgrounds Pump Station - Phase 1 | In Design Phase \$111,000 |
| PS-04—Kanaka Pump Station | In Design Phase \$770,000 |
| PS-05—Cascade Pump Station - Phase 1 | In Design Phase \$37,000 |
| Total | \$3,267,000 |
| Phase 2 Projects 2025-2040 | |
| S-03—Cascade Interceptor - MH CI-4 to CI-12 | \$1,050,000 |
| PS-03—Fairgrounds Pump Station - Phase 2 | In Design Phase \$917,000 |
| PS-06—Cascade Pump Station - Phase 2 | In Design Phase \$509,000 |
| Total | \$2,476,000 |
| Extensions to Unsewered Areas | |
| S-04—Sewer Main D Extension | Portion completed in 2022 \$1,330,000 |
| S-05—Iman Cemetery Road Extension | \$1,045,000 |
| S-06—Foster Creek Road Extension | \$1,525,000 |
| Total | \$3,900,000 |
| Annual Operations and Maintenance | |
| Annual Pump Station Operation & Maintenance | In Annual Budget \$41,200 |
| Annual Sewer Inspection & Cleaning | In Annual Budget \$5,000 |
| Annual Pipe and MH Rehab | In Annual Budget \$80,000 |

9. RECOMMENDED PLAN

This chapter summarizes the recommended plan for upgrading the City of Stevenson’s wastewater collection and treatment facilities. The recommended plan covers collection system improvements in two phases and WWTP improvements in one phase.

9.1 RECOMMENDED IMPROVEMENTS

9.1.1 Collection System Improvements

Gravity Sewer Capacity Upgrades

The following projects will upgrade existing gravity sewers to provide additional capacity.

- **Cascade Avenue Sewer, Phase 1 (Project S-01)**—Replace 920 feet of 8-inch sewer pipe in Cascade Avenue with new 12-inch pipe
- **Cascade Interceptor, Phase 1 (Project S-02)**—Replace 1,250 feet of 12-inch Cascade Interceptor located in Rock Creek Drive with new 18-inch pipe
- **Cascade Interceptor, Phase 2 (Project S-03)**—Replace 1,650 feet of 12-inch Cascade Interceptor from Rock Creek Drive to Railroad Avenue and Russell Avenue with new 18-inch pipe

Phase 1 projects (to be completed from 2017 to 2025) are those required to address areas identified by modeling to have inadequate capacity for existing flows. Phase 2 projects (to be completed from 2025 to 2040) are those required to address future capacity issues.

Extensions to Unsewered Areas

The following projects are intended to facilitate conversions of existing septic systems and allow future extensions to developable areas in the City. Phasing is not explicitly defined for these projects because their timing will depend on funding, rates of septic failures, and development trends.

- **Main D Extension (Project S-04)**—Extend Sewer Main D north along East Loop Road and Frank Johns Road by installing 3,500 feet of 8-inch sewer pipe
- **Iman Cemetery Road (Project S-05)**—Extend sewer from Rock Creek Drive and Ryan Allen Road continuing north on Iman Cemetery Road by installing 2,800 feet of 8-inch sewer pipe
- **Foster Creek Road (Project S-06)**—Extend sewer from the intersection of Ryan Allen Road and Iman Cemetery Road and continuing east to Foster Creek Road and north to the intersection of Foster Creek Road and Hollstrom Road by installing 4,000 feet of 8-inch sewer pipe

Pump Station Upgrades

The following projects address deficiencies at existing pump stations

- **Rock Creek Pump Station, Phase 1 (Project PS-01)**—Existing equipment is undersized and full pump station replacement is required. Construct new 1,500-gpm firm capacity duplex or triplex submersible pump station with new control panel, auxiliary standby power, and new 12-inch force main to the WWTP.
- **Fairgrounds Pump Station, Phase 1 (Project PS-02)**—Minor upgrades are required, including provision for bypass pumping, new discharge flow meter, and integration of new flow recorder into existing controls. Relocation of a portion of force main may be required to accommodate WWTP expansion.
- **Fairgrounds Pump Station, Phase 2 (Project PS-03)**—Future increases in flow will require additional capacity upgrades, including new submersible pumps in new wet well, new control panel and instrumentation, and new electrical equipment including standby generator and automatic transfer switch.
- **Kanaka Pump Station, Phase 1 (Project PS-04)**—At a minimum, a flow meter should be installed to verify model results that show pump station to be undersized. Pump station replacement is recommended, consisting of a new 500-gpm firm capacity duplex submersible pump station with new control panel and auxiliary standby power.
- **Cascade Pump Station, Phase 1 (Project PS-05)**—Minor upgrades are required, including provision for bypass pumping and upgrade of controls to include an auto-dialer or remote telemetry unit.
- **Cascade Pump Station, Phase 2 (Project PS-06)**—Future increases in flow will require additional capacity upgrades, including replacement of pumps with new submersible pumps in a new wet well and new control panel and instrumentation.

Phase 1 projects (to be completed from 2017 to 2025) are those required to address current capacity or safety issues. Phase 2 projects (to be completed from 2025 to 2040) are those required to address future capacity issues.

Project Prioritization

Table 9-1 shows the Phase 1 collection system improvements sorted by priority. Design and construction of the Rock Creek Pump Station improvements and Phase 1 Fairgrounds Pump Station Improvements have been scheduled to coincide with the WWTP improvements because standby power for the pump stations is provided by the generator at the WWTP, and because control improvements at the pump stations will need to be linked to new control systems at the WWTP. A second group of collection systems improvements has been scheduled for the following year.

Table 9-1. Phase 1 Collection System Improvements Prioritization

| Priority | Project ID | Project Name | Year |
|----------|------------|---|------|
| 1 | PS-01 | Rock Creek Pump Station | 2021 |
| 2 | PS-02 | Fairgrounds Pump Station - Phase 1 | 2021 |
| 3 | PS-05 | Cascade Pump Station - Phase 1 | 2022 |
| 4 | S-01 | Cascade Avenue Sewer | 2022 |
| 5 | PS-04 | Kanaka Pump Station | 2022 |
| 6 | S-02 | Cascade Interceptor - Rock Cr PS to MH CI-4 | 2022 |

The Phase 2 collection system improvements will need to be initiated when the capacity of the gravity sewer and/or pump station is no longer adequate or when the age of the equipment is causing excessive operation or maintenance issues. Table 9-2 summarizes the trigger or triggers for each of the Phase 2 projects.

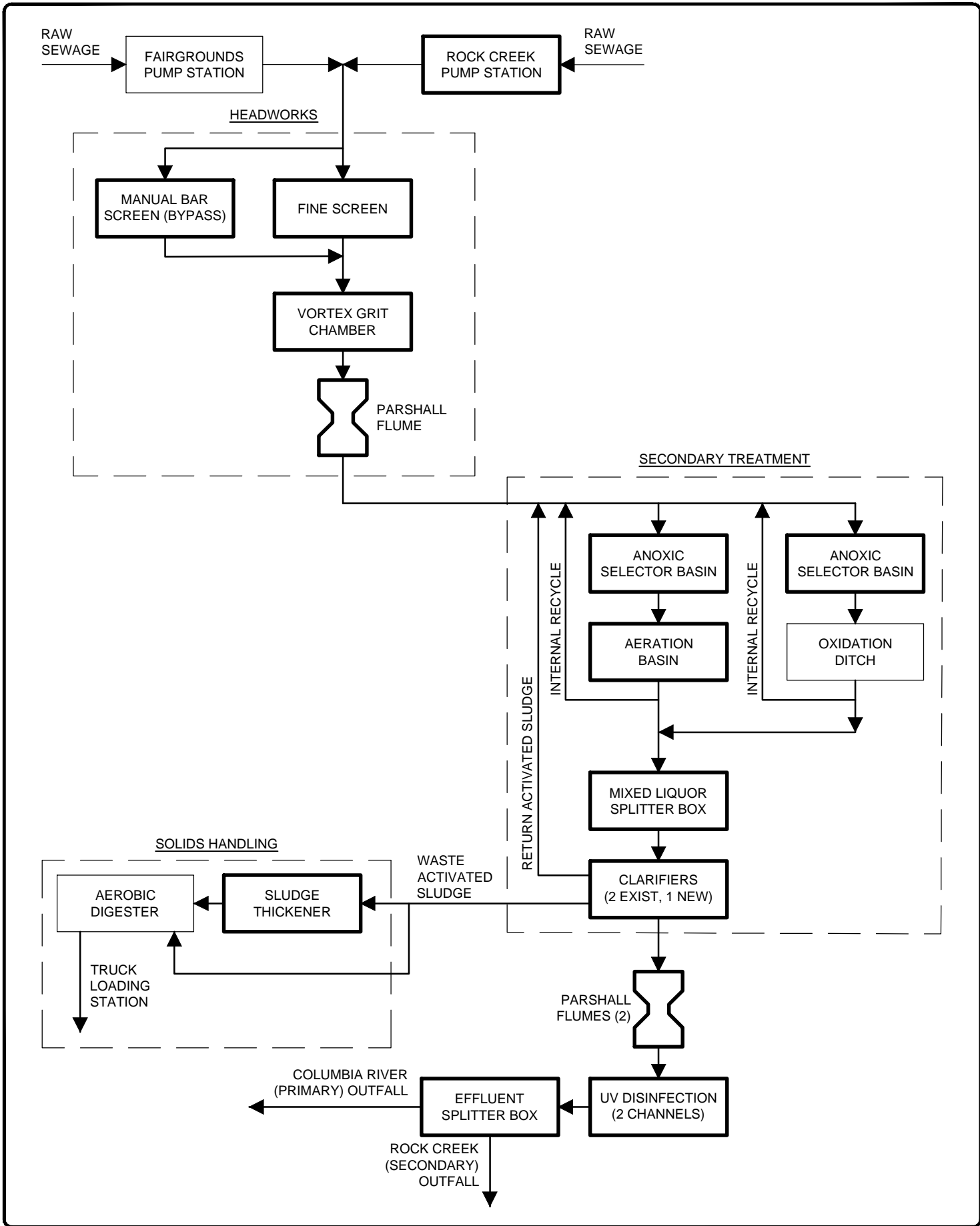
Table 9-2. Phase 2 Collection System Improvements

| Project ID | Project Name | Trigger |
|------------|------------------------------------|---|
| S-03 | Cascade Interceptor - Phase 2 | <p><u>Capacity:</u> The trigger for upgrade will be when the pipe reaches full capacity and surcharges during peak-hour flow.</p> <ul style="list-style-type: none"> Existing Pipe Capacity = 650 gpm Existing Peak-Hour Flow = 580 gpm Year 2040 Peak-Hour Flow = 810 gpm <p>Full capacity will be reached when approximately 150 new ERUs are added to the Cascade Interceptor service area.</p> |
| PS-03 | Fairgrounds Pump Station - Phase 2 | <p><u>Capacity:</u></p> <ul style="list-style-type: none"> Existing Station Firm Capacity = 280 gpm Existing Peak-Hour Flow = 225 gpm Year 2040 Peak-Hour Flow = 355 gpm <p>Full capacity will be reached when approximately 115 new ERUs are added to the pump station service area.</p> <p><u>Age:</u> The station is 39 years old, whereas the typical design life for pump station mechanical and electrical equipment is 30 years. Increased maintenance time, limited availability of replacement parts, and funding availability are likely triggers for the project.</p> |
| PS-06 | Cascade Pump Station - Phase 2 | <p><u>Age:</u> The station is 45 years old whereas the typical design life for pump station mechanical and electrical equipment is 30 years. Increased maintenance time, limited availability of replacement parts, safety issues related to accessing the equipment, and funding availability are likely triggers for the project.</p> |

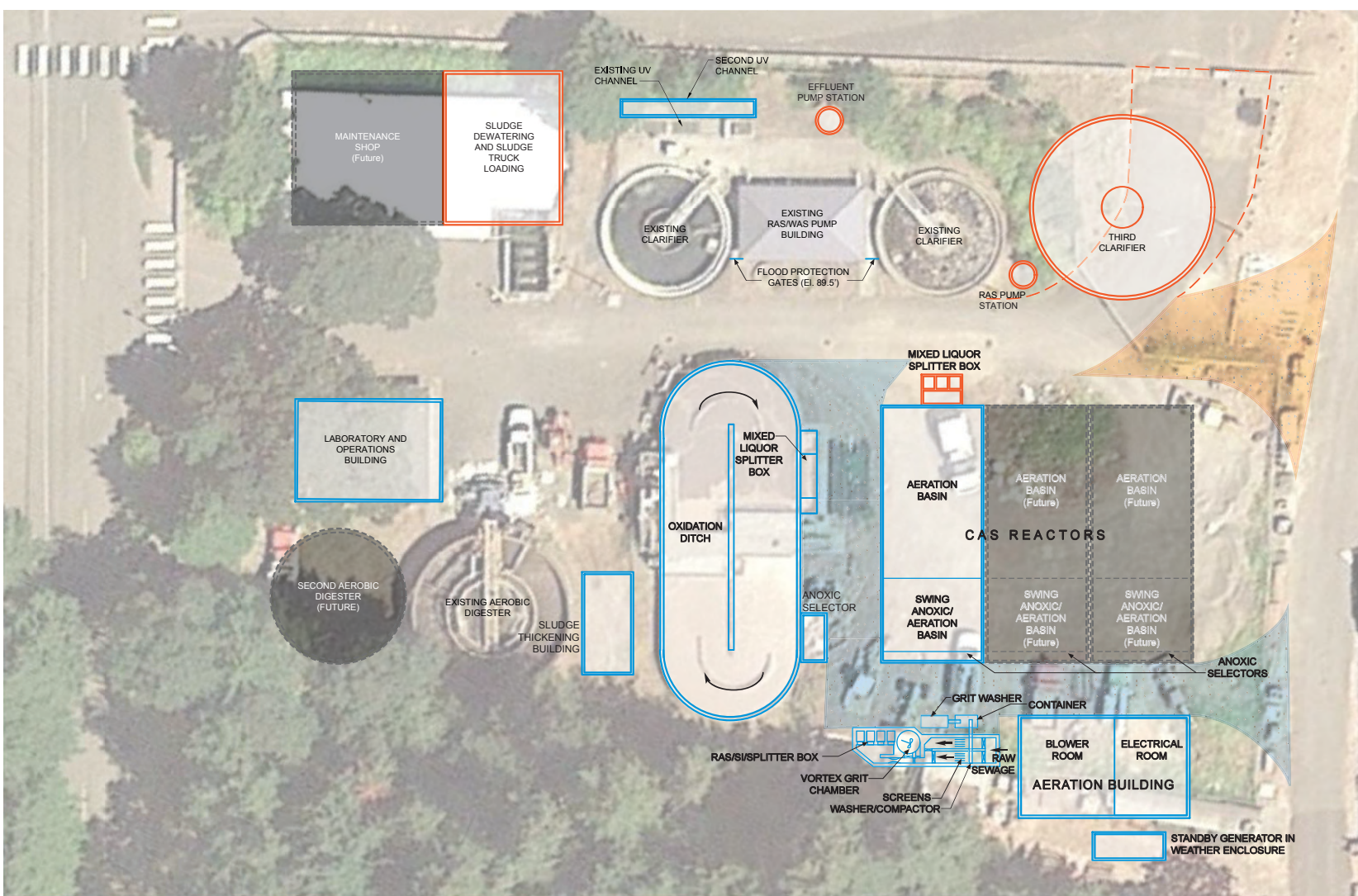
9.1.2 Wastewater Treatment Plant Improvements

Alternative 1B is the recommended alternative. The improvements would increase plant capacity for conditions projected through 2040. Figure 9-1 shows a flow diagram of the recommended WWTP improvements; Figure 9-2 shows a site plan. Specific improvements, to be implemented before 2022, are as follows:

- **Headworks**—Construct new headworks southwest of the existing oxidation ditch and abandon the existing headworks. The new headworks facility would be designed to handle a peak-hour flow of 2.7 mgd. It would include a junction box for two interceptors, a new sampling station, flow metering, a new screening facility consisting of one screening channel with a 6-mm fine screen and an emergency bypass channel with a manual bar screen, and a vortex grit chamber with horizontal recessed impeller grit pump and grit cyclone/classifiers.
- **Secondary Treatment, Conventional Activated Sludge**—Maintain the existing oxidation ditch in operation and construct one new conventional activated sludge (CAS) biological reactor, with space for two more to be constructed in the future. Provide fine-bubble aeration in the CAS reactors, using blowers to be installed in a new aeration building. Install two 10,000-gallon anoxic selector tanks (one for the oxidation ditch and one for the CAS reactor) equipped with submersible mixers and submersible low-head propeller pumps to circulate mixed liquor between each biological reactor and anoxic selector in each reactor train.
- **Secondary Treatment, Clarifier**—Construct new 50-foot diameter clarifier adjacent to existing clarifiers. Provide RAS pumping using two submersible pumps, one duty and one standby, in a wet well next to the new clarifier. Construct a new flow splitter box to route flows to the three clarifiers.
- **Disinfection**—Construct a second UV channel parallel to the existing UV channel, with upstream Parshall flumes providing a flow split and flow measurement. Retrofit the existing UV channel with two banks of LPHO UV lamps and provide two matching banks of LPHO UV lamps for the new second channel.



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Tt TETRA TECH
 www.tetratech.com
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 Portland, OR 97224

CITY OF STEVENSON, WA
 GENERAL SEWER PLAN UPDATE
**RECOMMENDED ALTERNATIVE 1B
 WITH PHASED IMPLEMENTATION**

Project No.: 200-48600-19001
 Date: JANUARY 2019
 Designed By:
Figure 1

Copyright Tetra Tech

Bar Measures 1 inch

The first phase of construction will include the following improvements:

- **Headworks**—Fine screen; washer compactor; grit chamber; grit pump and classifier; shed for equipment
- **Secondary Treatment**—Second aeration basin with selector basin; selector basin for existing oxidation ditch; blowers and blower building
- **Disinfection**—Second UV channel and equipment
- **Solids handling**—Thickeners and pumps; new building
- **Support facilities**—Lab and operations building; standby generator; electrical and control facilities; instrumentation; SCADA upgrade
- **Flood protection**—Site modifications for flood protection

Phase 2 is expected to be required between 2030 and 2040, depending on City growth, particularly the growth of the beverage industry. The effectiveness of BMPs in reducing loading from SIUs will be a major factor in determining how soon the second phase is required. Phase 2 will include the following improvements:

- **Secondary Treatment**—Third secondary clarifier; RAS pump station and splitter box
- **Solids handling**—Dewatering screw press and support equipment; new building
- **Effluent pumping**—Pump station

Planning level cost estimates for Alternative 1B were updated to incorporate the recommended phasing and escalate costs to 2019 dollars, as shown in Table 4. The GSP evaluated two alternatives for improving the Stevenson WWTP: Alternative 1B provided WWTP improvements needed if minimal pretreatment were provided for wastewater from SIUs; Alternative 2 provided improvements needed if SIU wastewater were pretreated to domestic strength. Alternative 1B was selected as the recommended alternative in the GSP due to its higher treatment capacity at the WWTP site and ability to accommodate smaller offsite pretreatment facilities. The 2019 alternatives analysis took a new look at varying levels of pretreatment at the SIUs and concluded that minimal pretreatment (low-effort BMPs) would be more cost-effective than pretreatment to domestic strength. The selection of Alternative 1B is supported by the conclusions of the alternatives analysis, so costs associated with Alternative 2 have not been updated for this Amendment. The capital improvement plan, shown in Table 5, was updated to reflect the modified costs and schedule. The collection system improvements shown have been updated to escalate costs to 2019 dollars.

Table 4. Updated Planning Level WWTP Cost Estimates – Alternative 1B Phase 1

| Under Construction | | | |
|-----------------------------------|----------------------|-------------------------------------|-----------------------|
| Component | Capital Project Cost | Annual Operation & Maintenance Cost | 20-Year Present Worth |
| Headworks | \$1,998,000 | \$49,104 | \$3,079,000 |
| Secondary Treatment | \$2,382,000 | \$118,903 | \$7,377,000 |
| Disinfection | \$1,164,000 | \$26,599 | \$1,634,000 |
| Solids Handling | \$1,886,000 | \$177,711 | \$8,020,286 |
| Support Facilities | \$3,293,000 | \$84,605 | \$8,594,000 |
| Flood Protection | \$215,000 | \$1,771 | \$246,000 |
| WWTP Mgt Tasks | | \$68,640 | \$1,214,056 |
| Lab Labor | | \$102,960 | \$1,821,084 |
| Pretreatment Program Labor | | \$68,640 | \$1,214,056 |
| WWTP Total | \$10,938,000 | \$698,933 | \$34,162,482 |

Note: This table replaces Table 8-4 from the 2017 GSP.

Table 5. Updated Capital Improvements Plan for the Recommended Alternatives

| Item | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|------------------|------------------|--------------------|--------------------|--------------------|
| Const. Wastewater Treatment Plant Improvements (Alt 1B, Phase 1) | \$521,000 | \$521,000 | \$2,121,000 | \$7,776,000 | |
| Const. Rock Creek Pump Station (PS-01) | \$61,000 | \$61,000 | \$249,000 | \$913,000 | |
| Design Fairgrounds Pump Station – Phase 1 (PS-02) | \$6,000 | \$6,000 | \$23,000 | \$84,000 | |
| Design Cascade Pump Station – Phase 1 (PS-05) | | | | \$4,000 | \$35,000 |
| Cascade Avenue Sewer – Phase 1 (S-01) | | | | \$44,000 | \$413,000 |
| Design Kanaka Pump Station – Phase 1 (PS-04) | | | | \$73,000 | \$697,000 |
| Const. Cascade Interceptor - Rock Cr PS to MH CI-4 (S-02) | | | | \$67,000 | \$641,000 |
| Total | \$588,000 | \$588,000 | \$2,393,000 | \$8,961,000 | \$1,786,000 |

Note: This table replaces Table 9-4 from the 2017 GSP.

UPDATED FINANCIAL PROGRAM

On the financial side, it is clear to the City that significant changes were necessary to be able to afford the improvements recommended in the GSP and subsequently the updated capital improvements plan shown in Table 5. The City has been evaluating and implementing changes to the financial program in terms of rates and fees to allow for increased maintenance and operations of the system to come into compliance.

Program Changes Already in Place

Increased Monthly Sewer Rates

The City Council adopted multi-year water and sewer rate increases for 2018 and 2019 (Ordinance No. 2017-1112):

- The 2017 single-family residential sewer rate of \$29.95 was increased to \$44.93 for 2018 and \$58.41 for 2019.
- A new downspout/sump pump connection fee of \$10.00 per month was established to encourage property owners to disconnect rain catchment and sump pumps from the sewer system.
- A new BOD surcharge was established with usage rates for non-residential connections with BOD strength higher than residential to help ensure they are paying their share.

Increased Sewer System Development Charges

The City Council updated the system development charge paid by new or upsized connections to the system, from \$2,800 per ERU in 2017 to \$5,607 per ERU in 2018-19 (Ordinance No. 2017-1109). The City has also redesigned when the connection fee is due and plans to update the fee for 2020 when the improvement costs are better known.

Continued Moratorium on Commercial Connections

The City continues the moratorium on accepting commercial applications for sewer connection. New residential sewer connections are allowed.

Maintenance & Operating Expenses

The City has significantly increased the maintenance and operating expenses for both the collection system and the WWTP plant:

**City of Stevenson Wastewater Facility Plan/General Sewer Plan
Collection System Planning Cost Estimates
Tetra Tech Inc.**

17-Nov-17

| | | Capital Project Cost | Annual O&M | 20 yr Present Worth |
|--|---|----------------------------|-----------------|---------------------------|
| Phase 1 Projects 2017-2025 | | | | |
| S-01 | Cascade Avenue Sewer | \$441,000 | \$1,200 | \$462,000 |
| S-02 | Cascade Interceptor - Rock Cr PS to MH CI-4 | \$682,000 | \$1,900 | \$716,000 |
| PS-01 | Rock Creek Pump Station | \$1,226,000 | \$13,700 | \$1,468,000 |
| PS-02 | Fairgrounds Pump Station - Phase 1 | \$111,000 | \$800 | \$125,000 |
| PS-04 | Kanaka Pump Station | \$770,000 | \$9,800 | \$943,000 |
| PS-05 | Cascade Pump Station - Phase 1 | \$37,000 | \$300 | \$42,000 |
| | Total | \$3,267,000 | \$27,700 | \$3,756,000 |
| Phase 2 Projects 2025-2040 | | | | |
| S-03 | Cascade Interceptor - MH CI-4 to CI-12 | \$1,050,000 | \$2,700 | \$1,098,000 |
| PS-03 | Fairgrounds Pump Station - Phase 2 | \$917,000 | \$10,700 | \$1,106,000 |
| PS-06 | Cascade Pump Station - Phase 2 | \$509,000 | \$7,000 | \$633,000 |
| | Total | \$2,476,000 | \$20,400 | \$2,837,000 |
| Extensions to Unsewered Areas | | | | |
| S-04 | Sewer Main D Extension | \$1,330,000 | \$4,100 | \$1,403,000 |
| S-05 | Iman Cemetery Road Extension | \$1,045,000 | \$3,300 | \$1,103,000 |
| S-06 | Foster Creek Road Extension | \$1,525,000 | \$4,600 | \$1,606,000 |
| | Total | \$3,900,000 | \$12,000 | \$4,112,000 |
| Annual Operations And Maintenance | | | | |
| | Annual Sewer Inspection & Cleaning | | \$5,000 | |
| | Annual Pipe and MH Rehab | | \$80,000 | |