

TASK ORDER NO. 1

CITY OF CAMAS

AND

CAROLLO ENGINEERS, INC.

This Task Order is issued by the OWNER and accepted by ENGINEER pursuant to the mutual promises, covenants and conditions contained in the Agreement between the above named parties dated the _____ day of _____, 2019, in connection with:

**City of Camas
General Sewer Plan**

PURPOSE

The purpose of this Task Order is to provide engineering services to assist the City of Camas (City) with updating its General Sewer Plan Update in accordance with WAC 173-240-050 and the State of Washington, Department of Ecology.

ENGINEER'S SERVICES

GENERAL SEWER PLAN

Engineering services to be performed in accordance with the Scope of Services in Exhibit A.

TIME OF PERFORMANCE

Services to begin in upon acceptance of this Task Order and be completed by December 31, 2020 in accordance with the Scope of Services in Exhibit A.

PAYMENT

Services to be performed on a time and expense basis, invoiced monthly in accordance with the Agreement for Professional Services and Exhibits A, B, and C, with a not-to-exceed amount of *two hundred eighty one thousand two hundred eighteen dollars (\$281,218)*.

EFFECTIVE DATE

This Task Order No. 1 is effective as of the _____ day of _____, 2019.

IN WITNESS WHEREOF, duly authorized representatives of the OWNER and of the ENGINEER have executed this Task Order No. 1 evidencing its issuance by OWNER and acceptance by ENGINEER.

CITY OF CAMAS

CAROLLO ENGINEERS, INC.

Accepted this ____ day of _____, 2019

By: _____
Name:
Title:

By: _____
Lara R. Kammereck
Vice President

By: _____
Name:
Title:

By: _____
Brian R. Matson
Senior Vice President

EXHIBIT A

SCOPE OF SERVICES

CITY OF CAMAS GENERAL SEWER PLAN UPDATE

SCOPE OF SERVICES

The following Scope of Services has been developed to assist the City of Camas (City) with its General Sewer Plan Update (Plan). The objective of this project is to evaluate City's sewer collection system infrastructure and summarize findings from the Wastewater Treatment Engineering Report (Engineering Plan); resulting in a defensible and affordable Capital Improvement Plan for all aspects of the sewer system. The following tasks under this Scope of Services have been prepared based on Carollo Engineer's (Consultant) current understanding of the proposed project, previous experience by the Consultant team members, and discussions with City staff.

PROJECT BACKGROUND

The City operates and maintains a wastewater collection system, serving the City and its Urban Growth Boundary. Wastewater is collected and treated by the City. The City's collection system is characterized as being made up of three parts:

- Septic Tank Effluent (STE) systems
- Gravity Sewers
- Large industrial customers.

There are currently 26 pump stations in the collection system serving a mix of STE and Gravity Sewers.

The Wastewater Treatment Facility (Facility) is an activated sludge wastewater treatment plant that discharges to the Columbia River. Its treatment process includes: influent screens, primary clarifiers, MLE biological treatment system with selector zones, tertiary filters, and UV disinfection.

The City completed 2010 its last General Sewer Plan in 2010 (Grey and Osborn's General Sewer / Wastewater Engineering Report (2010 Plan)). Since that time, the City has continued to address Inflow and infiltration (I/I), begun to develop the infrastructure needed to serve the North Shore area, and made condition related at the treatment plant. The project is divided into three efforts and the resulting documents:

- General Sewer Plan Update (Plan),
- Wastewater Treatment Engineering Report (Engineering Report), and
- Wastewater Treatment Facility Operations and Maintenance Plan Update (O&M Plan).

This scope covers the General Sewer Plan, which constitutes Tasks 1000 (Project Management) and 2000 (Master Plan), outlined in the following sections.

PROJECT ASSUMPTIONS

- Carollo Engineers, Inc. and its subconsultants and work performed by them will be referred to as “Consultant” in this document.
- The City of Camas and its staff will be referred to as “City” in this document.
- ADS Inc. and its staff will be referred to as “ADS” in this document.
- FCS GROUP and its staff will be referred to as “FCS” in this document.
- State of Washington Department of Ecology and its staff will be referred to as “Ecology” in this document.
- All meetings will be held at the City offices. Some workshops will be held via web conference, as specified below.
- Draft Chapters and Technical Memoranda will be provided electronically (PDF and/or Microsoft Word, as directed by City).
- Meeting notes and related materials will be transmitted electronically in PDF format via email.
- The City will print and produce additional copies of all documents as necessary for its use.
- The City will provide available information related to the project and as requested by the Consultant in a timely manner.
- Web conferencing and teleconferencing will be used to discuss project coordination and for some presentations to the City in lieu of the meetings at the City.
- The Tasks scope and budget were based on Carollo completing the Engineering Report.

TASKS

To meet the objectives of this scope of services, the Consultant shall complete the tasks as summarized in the table below and discussed in detail in the text that follows.

Task	Title
TASK 1000	PROJECT MANAGEMENT
Task 1011	Project Management Plan
Task 1012	Meeting No. 1 – Kick-off and Data Analysis
Task 1013	Project Administration
TASK 2000	MASTER PLAN
Task 2010	Introduction
Task 2020	Regulations, Policies, and Criteria
Task 2030	Basis of Planning
Task 2040	Existing System
Task 2050	I/I Program

Task	Title
Task 2060	Collection System
Task 2070	Wastewater Treatment Facility
Task 2080	Operation and Maintenance
Task 2090	Capital Improvement Plan
Task 2100	Financial Analysis
Task 2110	Plan Integration

General Sewer Plan

Chapter	Title
General Sewer Plan	
Chapter 1	Introduction
Chapter 2	Regulations, Policies, and Criteria
Chapter 3	Basis of Planning
Chapter 4	Existing System
Chapter 5	I/I Program
Chapter 6	Collection System
Chapter 7	Wastewater Treatment Facility
Chapter 8	Operation and Maintenance
Chapter 9	Capital Improvement Plan
Chapter 10	Financial Analysis
Appendix	
Appendix A	Approvals
Appendix B	Agency Comment Letters and Responses
Appendix C	Demographic Projections
Appendix D	Flow Monitoring Report
Appendix E	Hydraulic Model Update and Calibration TM
Appendix F	I/I Program Reports
Appendix G	Local Limits Program Reports
Appendix H	Wastewater Treatment Plant Permits
Appendix I	Wastewater Treatment Engineering Report
Appendix J	Spill Response Plan
Appendix K	CIP Project Sheet
Appendix L	Financial Backup
Appendix M	O&M APE Examples

TASK 1000 – Project Management

This task includes managing the work of the project team from notice to proceed to project closeout, planning for and carrying out regular communication with the City, and planning for and carrying out quality management activities.

Task 1010 Subtasks

Activities

1011. *Project Management Plan.* Prepare a Project Management Plan (PMP) that describes project roles and responsibilities, lists contact information for the project team, describes communication protocols, quality management, and includes the scope of services, schedule, and budget. Quality Management includes, but is not limited to, the following elements:

- a. Project Manager overview of all primary documents to verify technical consistency and compliance with contract requirements.
- b. Organization of the work into logical deliverables with qualified staff for each task assigned to the work.
- c. Resolution of all review comments with a comment response log summarizing key comments and the manner in which each was addressed in the work.

The PMP will be introduced and discussed with the Consultant and City project team at the Project Kick-off Meeting. A revised final PMP will be delivered after the Project Kick-off Meeting.

1012. *Meeting No. 1 - Kick-off and Data Analysis.* Facilitate a meeting to kick-off the General Sewer Plan and review the initial data request.

1013. *Project Administration.*

- a. Prepare and administer subcontracts with Consultant team members.
- b. Manage the project team to track time and budget, work elements accomplished, work items planned for the next period, manpower, scope changes, time and budget needed to complete the project.
- c. Prepare eighteen (18) monthly project progress reports to accompany each monthly invoice; identify accomplishments for the month, planned work next month, and identify current or potential problems or changes. The reports will also include a narrative describing progress measured against budget and schedule. In the event of schedule or budget lag, the report will indicate a plan to get the project in line with the schedule and budget.
- d. Create and maintain a working project schedule based on the schedule in the PMP.
- e. Review project status, including scope, budget, and schedule as part of scheduled meetings.

Meetings

- Meeting No. 1 - Kick-off & Data Analysis

Deliverables

- Draft and Final PMP
- Eighteen (18) monthly progress reports
- Preliminary schedule, and no more than two (2) updates
- Meeting agendas and notes

City Input

- Contact information for project staff.
- Review of PMP.

Assumptions

- The PMP will be updated once after City review of the draft PMP.
- The project is anticipated to take eighteen (18) months.

TASK 2000 – GENERAL SEWER PLAN

This task will update the City's General Sewer Plan (GSP). It includes a summary of policies and criteria, updated sewer flow and load projections, hydraulic model calibration, collection system analysis, I/I Program summary, collection system analysis, wastewater treatment plant analysis, development of a Capital Improvement Plan, and Financial Analysis. A City Draft GSP, Agency Draft GSP, and Final GSP will be developed to aid in review and acceptance of the GSP.

Task 2010 – Introduction

The purpose of this task is to provide an introduction to the Plan documenting the purpose, review and approvals, and direction to pertinent information. The task effort will be documented in Chapter 1 – Introduction.

Task 2010 Subtasks

Activities

2011. *Regulatory Information Reference.* Prepare a table that provides reference in the Plan to each regulatory required information in the Plan. The intent of this reference is to aid the agency reviewers in conducting an efficient and thorough review of the Plan.
2012. *Draft Chapter 1 - Introduction.* Prepare Draft Chapter 1 for the City's review and approval. Chapter will include the purpose and need for the plan, review and approvals, and direction to pertinent information. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into the Chapter as part of the City Review Draft Plan.

Meetings

- No meeting under this task.

Deliverables

- Draft Chapter 1 - Introduction
- Comment Response Log for Chapter 1

City Input

- Review of Draft Chapter 1.

Assumptions

- None.

Task 2020 – Regulations, Policies, & Criteria

The purpose of this task is to document applicable regulations, summarize policies impacting long-term sewer planning, and defining planning criteria. The task effort will be documented in Chapter 2 – Regulations, Policies, & Criteria.

Task 2020 Subtasks

Activities

2021. *Applicable Regulations.* Review and update regulatory requirements presented in Chapter 4 of the 2010 Plan. Include a summary of requirements from the City's Wastewater Treatment Plan NPDES Permit WA002049. Text will be included as part of Chapter 2.
2022. *Policies & Criteria.* Obtain any existing level of service policies, financial policies, planning criteria, and design standards from the City. Review policies and criteria and make recommendations for additional or revised criteria and service area goals that best fit the needs of the City. Establish the design storm used for the capacity evaluation. Review current and potential future design standards for the sewer system, including design depth to pipe diameter (d/D) standards. Criteria will include allowable pipeline d/D values during peak flows, minimum velocities, minimum/maximum slope, and pumping requirements.
2023. *Meeting No. 2 – Policies and Criteria.* Facilitate a meeting to review City policies and criteria.
2024. *Draft Chapter 2 - Regulations, Policies, & Criteria.* Prepare Draft Chapter 2 for the City's review and approval. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into the Chapter as part of the City Review Draft Plan.

Meetings

- Meeting No. 2 – Policies and Criteria

Deliverables

- Draft Chapter 2 – Regulations, Policies, and Criteria
- Comment Response Log for Chapter 2
- Meeting Agenda and Minutes

City Input

- Review of Chapter 2 – Regulations, Policies, and Criteria.

Assumptions

- The City can provide all elements listed above.

Task 2030 – Basis of Planning

The purpose of this task is to establish planning criteria and all planning assumptions for use in evaluation of the wastewater collection system. The planning area assumed for this Plan includes the current utility services boundary and the North Shore expansion area. The task efforts will be documented in Chapter 3 – Basis of Planning.

Task 2030 Subtasks

Activities

2031. *Data Gap Analysis.* Review previously completed documents relating to the wastewater collection system, review existing system maps and mapping data, and identify data gaps required for completing the Plan. Subtasks include the following:
- a. Prepare and submit a data request in the form of an excel spreadsheet to the City for tracking data needs. The initial request may include Geographic Information Systems (GIS) data, base maps, land use and zoning data, current service area population/employment, demographic data (as necessary). The request will include ADS flow monitoring data and historical pump run time data at Pump Stations, lift station flow data (if available), major industrial discharges, WWTF influent flow monitoring for at least 10 years. Additional information includes level of service policies, planning criteria, design standards, and financial data from the City.
2032. *Service Area Boundaries.* Map the City's service area boundaries to be considered in the Plan for the existing system service area ("Existing"), the 20-year timeframe ("20-Year"), and the ultimate ("Build-out") planning periods. City to review and confirm the service area boundaries.
2033. *Demographic Analysis.* Develop service area and land use maps using GIS data. Review current population, land use, and zoning to establish the historical demographics and to develop future demographics for the service area. Establish land use data per basin for the existing system service area ("Existing"), the 20-year timeframe ("20-Year"), and the ultimate ("Build-out") planning periods. Demographics within the 20-Year timeframe will be based on the Water System Master Plan.
2034. *Industrial Flows and Loads.* Summarize Industrial flows and loads based on information provided by the City. City to provide a list of establishments producing industrial wastewater, the quantity of wastewater and periods of production, and the character of the industrial wastewater insofar as it may affect the sewer system or treatment plant. City to provide estimate of future industrial expansion.

2035. *Review Flow Monitoring & Report.* The City will contract with ADS to conduct flow monitoring. Delineate flow monitoring basins and calculate pipe length statistics based on City GIS to aid in ADS's I/I Analysis. Flow monitoring basins and statistics will be provided in an email to ADS. ADS will provide raw data, and a full report on flow and I/I Analysis for each metered basin. This data will be verified by the Consultant and used for flow development and model calibration. The flow monitoring program will take place in the winter of 2018/2019 and is anticipated to capture dry and wet weather flows, including storm events required to meet calibration standards.
2036. *Meeting No. 3 - Flow Monitoring Results.* Facilitate a webinar meeting to review flow monitoring data and results with ADS and the City.
2037. *Flow Projections:* Flow projections are based on demographic assumptions and the data obtained from flow monitoring.
- a. *Flow Data Review.* Compare base sanitary flows estimated from existing land use to dry weather flow calculated through the flow monitoring for each basin. Existing land use and currently served areas will be used to estimate flow factors in gallons per acre per land use category. The flow factors will be customized to match the observed existing Average Dry Weather Flow (ADWF) and will be used to develop flow projections. Pump Station runtime data and City pump-down curves will be used to proportion ADWF throughout basins, where available.
 - b. *Base Flow Projections:* Develop base sanitary flows for three planning periods: existing conditions, 20-year, and Build-out scenarios.
 - c. *Infiltration & Inflow Projections.* Estimate I/I flow rates for each sewer basin based on current and future land use and area-specific I/I factors. Developed I/I flow rates will be compared to I/I flow rate estimates per monitored basin. Develop I/I flow rates for each pump station basin to be included in the Model Calibration under Task 2060. Develop I/I flow rates for new areas to be added to the system.
 - d. *Flow Projections.* Future flows, including base flows, I/I, and industrial point flows, will be projected based on service area growth. Future flows will be assessed for each sewer and pump station basin for the selected planning periods. This data will be used for establishing future capacity requirements of the conveyance system under Task 2060.
2038. *Meeting No. 4 – Flow Projections.* Facilitate a webinar meeting to review flow projections with the City. Confirm flow projections are consistent with City understanding of the current and future system. Flows will be summarized by basin and at the Facility.
2039. *Wastewater Loading:* Consultant shall review historic biochemical oxygen demand (BOD) and total suspended solids (TSS) wastewater load contributing to the wastewater treatment plant. Unit loading factors will be developed using existing flow and population data to provide a basis for projected future loading within the service area. The unit loading factors will be established on an Equivalent Residential Units (ERU) basis for both residential and employment units. It is anticipated different loading factors will be developed for STE and gravity customers. Additionally, individual loading factors will be developed for up to five of the City's largest industries based on available information. Load projections will be summarized by Basin and at the Facility. Resulting load projections will be used for Engineering Report.

2040. *Meeting No. 5 –Load Projections.* Facilitate a webinar to review flow projections with the City. Confirm flow projections are consistent with City understanding of the current and future system. Loads will be summarized by basin and at the Facility.
2041. *Draft Chapter 3 - Basis of Planning.* Prepare Draft Chapter 3 for the City’s review and approval. City review comments will be addressed in a comment response log for the City’s final approval. Comments will be incorporated into the Chapter as part of the City Review Draft Plan.

Meetings

- Meeting No. 3 – Flow Monitoring Results (Webinar).
- Meeting No. 4 – Flow Projections (Webinar).
- Meeting No. 5 – Flow and Load Projections.

Deliverables

- Data Request
- Provide ADS Draft and Final Flow Monitoring Data and Report to Carollo.
- Flow Monitoring Basin Information
- Comments on the Flow Monitoring Report
- Draft Chapter 3 - Basis of Planning
- Comment Response Log for Chapter 3
- Meeting Agenda and Minutes

City Input

- Provide data as listed above.
- City will confirm the service area boundaries.
- The City will contract with ADS to conduct flow monitoring. The Consultant will not review or manage the flow monitoring, except in final report format.
- Involve City planning staff to provide direction on where development is planned.
- Review of Chapter 3 - Basis of Planning.

Assumptions

- No more than 5 flow monitoring sites will be installed.
- The City can provide all elements listed above.

Task 2040 – Existing System

The purpose of this task is to document and create an inventory of all facilities in the existing wastewater collection system.

Task 2040 Subtasks

Activities

2041. Data Request:

- a. GIS: City boundary, UGA boundary, Water Systems (e.g. City, Group A and Group B). Existing and future Sewer Service Area. City Critical Areas. County Critical Areas. Existing collection System (i.e., gravity mains, manholes, force mains, STEP mains, pump and lift station locations, etc.), proposed collection system, and the treatment plant.

2042. Study Area. Update and incorporate study area information in Chapter 4 - Existing System. This information was previously presented in the 2010 Plan as Chapter 2 – Study Area. Update Background Information.

- a. Consultant will prepare updated text and prepare a map showing the topography for the revised Service Area for topography, soils, and climate.
- b. The Consultant will generate maps of critical maps with the existing and future sewer system for the City's five critical areas types: Wetlands, Critical Aquifer Recharge Areas, Frequently Flooded Areas, Geologically Hazardous Areas, and Fish and Wildlife Habitat Conservation Areas. It is anticipated that the City will provide a text summary of Critical Areas ordinance.
- c. Generate a map of the sewer system overlaying the Water System, including location of wells or other private sources of water supply. Discussion of the location of all facilities as they are related to both existing and proposed domestic wastewater treatment facilities.
- d. Map any existing domestic or industrial wastewater treatment facilities within twenty (20) miles of the general plan area and within the same topographical drainage basin containing the general plan area. It is assumed this information will be provided by the City.

2043. *Existing System.* Review the components of major sewer collectors and pump stations using data from the City's GIS, available pipe database, discussions with staff, and previous studies. Incorporate information from the City's 2010 Plan. Subtasks include the following:

- a. Update chapter text, tables, and figures summarizing the City's collection and conveyance system. Summarize the boundaries of sewer service basins and pump station basins (if different). Provide descriptions for each of the City's sewage pump stations, and force mains. Provide total length of pipe based on diameter and material, if available.
- b. Summarize improvements to the City's wastewater collection system that have been completed since the 2010 Plan, based on discussions with City Staff.

- c. Develop figures for the Plan of the existing system infrastructure using the City's GIS data.

2044. *Draft Chapter 4 – Existing System Draft.* Prepare Chapter 4 – Existing System to document the study area and existing sewer system. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into the Chapter as part of the City Review Draft Plan.

Meetings

- No meeting under this task.

Deliverables

- Draft Chapter 4 – Existing System.
- Comment Response Log for Chapter 4.

City Input

- Review sewer system maps for accuracy.
- Discuss pump station operation with City staff.
- City will provide GIS of all water systems in Sewer Service Area.
- Text summary of the Critical Area Ordinance.
- Review of Chapter 4 – Existing System.

Assumptions

- No condition assessment of the existing system will be performed under this task. Condition assessment evaluation can be performed under Task C -Additional Tasks Contingent on Change Order.

Task 2050 – I/I Program

The purpose of this task is to document the City's I/I Program. Future I/I rates with and without the Program will be estimated for use in the Collection System evaluation.

Task 2050 Subtasks

Activities

2051. *Summarize Existing I/I Program.* Summarize the existing I/I Program from City provided annual reports. Tabulate City I/I projects by year and I/I reduction. Create a map of historical I/I projects, if data is available. Identify future activities to be conducted by the I/I Program. *Draft Chapter 5 – I/I Program.*
2052. Prepare Draft Chapter 5 to document the I/I Program for the City's review. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into a City Review Draft Plan.

Meetings

- No meetings under this task.

Deliverables

- Draft Chapter 5 – I/I Program.
- Meeting Agenda and Minutes.

City Input

- Annual I/I reports.
- Review of Chapter 5 – I/I Program.

Assumptions

- The I/I analysis will be based on the City's annual I/I reports. No new data will be evaluated.

Task 2060 – Collection System

The purpose of this task is to evaluate existing and future capacity, identify system deficiencies, and provide recommendations to resolve deficiencies. Recommended projects will be included in the CIP.

Task 2060 Subtasks

Activities

2061. Hydraulic Model Development and Calibration.

- a. Upgrade the City's Danish Hydraulic Institute (DHI) MOUSE model to DHI MIKE Urban model. Update the City's piping and pumping facilities. Model pipe data will be updated from the City's GIS data. The data will be imported into the model and the pipe connectivity for all nodes will be confirmed. Model extents will include:
 - 1) STE System: Major STE Forcemain and pump stations. The flows will be added to the model geographically by mini-basin for the existing, projected 20-year and build-out conditions.
 - 2) Gravity System: The model will include all pipes greater than 6-inches. The flows will be added to the model geographically by mini-basin for the existing, projected 20-year and build-out conditions.
 - 3) North Shore: Constructed and planned North Shore Sewer infrastructure based on prior City effort. The flows will be added to the model geographically by mini-basin for the existing, projected 20-year and build-out conditions.
- b. Calibration will focus on a quantitative approach based on the recommendations for hydraulic model verification contained in the "Code of Practice for the Hydraulic Modeling of Sewer Systems", version 3.001, published by the Wastewater Planning Group, a section of the Chartered Institution of Water and Environmental Management

and the Consultants expertise. These recommended calibration criteria include, but are not limited to, the following:

- 1) The comparison period between observed and modeled events should last until flow has substantially returned to winter DWF.
 - 2) Observed and modeled hydrographs should meet the criteria for at least two out of three events.
 - 3) The peak flow should be in the range +25% to -10%.
 - 4) The volume of flow should be in the range of +20% to -10%.
- c. The existing dry and wet weather flows as described in a previous task will be calibrated based upon the flow monitoring data, and rainfall data provided by the flow monitoring program as well as additional data available from the City's SCADA system for up to 5 meter locations in the collection system. Existing flow depths and velocities will also be checked and calibrated.
 - d. Calibrate the model to dry weather flow conditions. Flow monitoring data will provide custom hourly diurnal curves that establish the daily flow patterns for each metering basin. Model parameters will be adjusted, as needed, to best match the flow monitoring and SCADA data. It is assumed that the City will provide SCADA data in electronic format.
 - e. Calibrate the model for wet weather conditions. Rainfall information will aid in developing the required rainfall-derived infiltration/inflow (RDI/I) estimations that enter the collection system during a storm event. It is recommended that the use of a single calibration period incorporating a number of independent rainfall events should be considered whenever possible. Model results will be reviewed and adjusted, as needed, to best match the flow monitoring, rainfall and SCADA data.
 - f. The flows from any unmetered basins will be developed as best possible using a mass balance between the available existing meters, pump SCADA data, and the flow meter, and proportioned as best as possible based on development type, age, pipe material, and extent of collection system components.
2062. *Meeting No. 6 - Hydraulic Model Development.* Facilitate a webinar to review the hydraulic model development and resolve outstanding questions.
2063. *Draft and Final Technical Memorandum No. 1 - Hydraulic Model Development.* Prepare Draft TM to document the hydraulic model update and calibration for the City's review. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into a Final TM.
2064. *Capacity Evaluation.* Perform a hydraulic capacity analysis under the design storm for each basin using the calibrated model, and projected peak flow rates and system expansion developed in Task 200. The analysis will be performed for existing, 10-year, 20-year, and build-out scenarios only, and will assist in identifying any system deficiencies and improvements required to resolve deficiencies. Subtasks include the following:
- a. Review related reports and studies for related capacity analyses and recommendations.
 - b. Estimate the available capacity of each basin given existing infrastructure while meeting all performance criteria.

- c. Develop a future hydraulic modeling scenario that evaluates the impact of wastewater flows associated with future growth, as well as redevelopment projects on the collection system. Maps will be developed showing current and future deficiencies.
- d. Review and document resulting capacity deficiencies for 20-year and Build-out conditions. Use the hydraulic model to confirm the sizing of the backbone facilities to serve the North Shore.
- e. Evaluate the capacities of the pump stations in the hydraulic model for their ability to convey peak flows under firm capacity for existing and 20-year and Build-out conditions. Pump stations not in the hydraulic model are assumed to have sufficient capacity.
- f. Update capacity deficiencies based on City field investigations or additional information, as needed.

- 2065. *Meeting No. 7 - Capacity Evaluation.* Facilitate a workshop to review deficiencies identified in the capacity evaluation. City staff will confirm known deficiencies and identify any areas for additional City lead investigation (field visit, reference as-builts, etc.).
- 2066. *Capacity Improvements.* Develop infrastructure recommendations to resolve deficiencies. Improvements will be sized for meeting build-out conditions and City criteria.
- 2067. *Meeting No. 8 - Capacity Improvements.* Facilitate a workshop to review capacity related collection system improvements. Highlight recommended improvements on system maps for discussion with City staff
- 2068. Estimate RUL for Sewer Mains. Calculate the RUL of each pipe considering the value of replacing versus maintaining the pipe for the entire gravity collection system. It is expected that RUL will be based on sewer main age, material, and previously identified deficiencies, as available from the City. The RUL will be used to recommend the extent of the City's pipeline replacement during the planning period.
- 2069. Meeting No. 9 – RUL and Condition Assessment Webinar. Review and confirm RUL data and results in a Webinar. Discuss potential improvements and timing for projects identified in the condition assessment. GIS maps will be created to identify the location of these improvements.
- 2070. *Draft Chapter 6 – Collection System.* Prepare Draft Chapter 6 to document the I/I Program for the City's review. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into a City Review Draft Plan.

Meetings

- Meeting No. 6 - Hydraulic Model Development (Webinar).
- Meeting No. 7 - Capacity Evaluation.
- Meeting No. 8 - Capacity Improvements.
- Meeting No. 9 – RUL and Condition Assessment.

Deliverables

- Draft TM No. 1 - Hydraulic Model Development.
- Final TM No. 1 - Hydraulic Model Development.
- Draft Chapter 6 – Collection System.
- Comment Response Log for Chapter 6.
- Meeting Agenda and Minutes.
- Updated hydraulic model.

City Input

- Select a hydraulic model to use.
- Review of Draft TM - Hydraulic Model Development.
- Confirm performance criteria to use to evaluate the existing system.
- Review of Chapter 6 – Collection System.

Assumptions

- The City's existing model and GIS pipe data is assumed to have full connectivity, correct topology, and correct elevations. If the data is found to be lacking, the Consultant will notify the City and put modeling efforts on hold until updated data to be provided.
- At the completion of the master planning process all hydraulic and hydrologic model files will be provided to the City.
- Pump stations not in the hydraulic model are assumed to have sufficient capacity.
- The Consultant will not provide the software program or license. The Consultant will use its own version of the software for this project.

Task 2070 – Wastewater Treatment Facility

Under this task, the Consultant will summarize wastewater treatment facility information from the Task 300 Engineering Report.

Task 2070 Subtasks

Activities

2071. *WTF Historical operations.* Summarize WTF historical operations from the Engineering Report. It is anticipated
2072. *WTF Unit Capacity.* Summarize the unit capacity of the treatment plant from the Engineering Report. Discuss the adequacy of the treatment
2073. *Alternative Analysis.* Summarize the alternative analysis to resolve WTF deficiencies from the Engineering Report.
2074. *Identified Improvements.* Summarize improvements identified in the Engineering Report.

2075. *Evaluation of Reuse.* Summarize considerations of reuse from the 2010 Plan. It is anticipated that the subtask will include new analysis.
2076. *Draft Chapter 7 – Wastewater Treatment Facility.* Prepare Draft Chapter 7 to document the Wastewater Treatment Facility for the City's review. It is anticipated the chapter will provide a summary of the Wastewater Engineering Report. No new analyses are anticipated. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into a City Review Draft Plan.

Meetings

- No meeting under this task.

Deliverables

- Draft Chapter 7 – Wastewater Treatment Facility
- Comment Response Log for Chapter 7
- Meeting Agenda and Minutes

City Input

- Review of Chapter 7 - Wastewater Treatment Facility

TASK 2080 – Operation and Maintenance

This task summarizes the City's current O&M program, organization structure, and future program needs. The chapter establishes the duties, O&M program, and documents and discusses problem areas.

Task 2080 Subtasks

Activities

2081. *Data Request.* Data required to summarize and evaluate the City's current O&M program will be requested. Data may include:
- Organization structure.
 - Staffing levels and positions.
 - Summary of ongoing maintenance activities and operational tasks.
 - Current O&M funding.
 - Planned or future O&M programs.
 - Record keeping procedures.
 - Sewer main age and material.
2082. *Summarize O&M Programs and Problem Areas.* Summarize the City's O&M program, including both preventative and corrective maintenance. This includes the planned and scheduled activities, such as treatment plant preventative maintenance, biosolids management, lift station inspection and maintenance, manhole inspection and maintenance, video inspection, root cutting, grease removal, and hydraulic line cleaning.

Summarize O&M problem areas based on City provided data, such accumulation of solids or access issues. Maps will be prepared to aid in the review of O&M problem areas. Summarize customer-oriented programs, such as fats, oils, and grease (FOG), and the City's procedure to address suggestions/complaints. This task assumes the City will provide written materials for use in summarizing the existing O&M Program. The task assumes the Consultant will not prepare new summaries or documentation.

2083. *Evaluate O&M Programs.* Conceptually evaluate the ability of existing O&M programs to address problem areas within the short-term and long-term planning horizons with City staff in a workshop. Propose updated or new programs, if necessary, to address problem areas within the planning period. The purpose of this task is to aid the City in establishing the quantity of work needed and subsequent cost of the ongoing O&M programs. A detailed evaluation of individual programs is not envisioned in this task.
2084. *Meeting No. 10 – O&M Program Workshop.* Facilitate a workshop to discuss the City's O&M Programs. Meeting materials will be provided to aid in the discussion.
2085. *Draft Chapter 8 - Operation and Maintenance.* Prepare Draft Chapter 8 for the City's review and approval. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into the Chapter as part of the City Review Draft Plan.

Meetings

- Meeting No. 10 – Operations and Maintenance.

Deliverables

- Draft Chapter 8 – Operation and Maintenance.
- Comment Response Log for Chapter 8.
- Meeting Agenda, Materials, and Minutes.

City Input

- Review of Chapter 8 – Operation and Maintenance
- Provide a summary of existing O&M program.

Assumptions

- City will provide.

Task 2090 – Capital Improvement Plan

Under this task, the Consultant will prepare a Capital Improvement Plan (CIP) for implementing recommended projects outlined in the previous tasks.

Task 2090 Subtasks

Activities

- 2091. *Project Prioritization.* Prioritize condition-related and capacity-related projects identified in the previous tasks with City staff for inclusion in the CIP. Include I/I Reduction recommendations as they overlap with recommended condition-related improvements.
- 2092. *Cost Estimating.* Develop planning level cost estimates for all recommended projects using costs provided in other planning efforts. City to provide recent costs for completed projects. Cost estimates for construction, site acquisition, engineering, permitting, and other contingencies will be prepared; all costs will be given in 2019 dollars.
- 2093. *CIP Schedule.* Schedule identified projects for the three planning periods: existing, 20-year, and Build-out conditions. A summary table will present all CIP projects, year for construction, and estimated costs, and will be organized according to a recommended phasing plan.
- 2094. *Electronic CIP.* Develop an electronic CIP tool using Excel to assist the City with future budgeting. Each major project will be listed on a separate tab including project description, justification, estimated cost, and recommended year for implementation. City staff will be provided the ability to adjust indirect costs and escalation factors. A copy of the electronic CIP will be provided to City staff. Hardcopies of the project cut-sheets will be included as an appendix. The Consultant will train City staff on using the CIP Tool.
- 2095. *System Maps.* Develop maps showing recommended future system pipes and facilities. Maps will include recommended projects color-coded by CIP phase and annotated with project identification numbers.
- 2096. *Meeting No. 11 - CIP Review.* Facilitate a meeting to review the CIP.
- 2097. *Draft Chapter 9 - Capital Improvement Plan.* Prepare Draft Chapter 9 for the City's review and approval. City review comments will be addressed in a comment response log for the City's final approval. Comments will be incorporated into the Chapter as part of the City Review Draft Plan.
- 2098. *Financial Summary.* Provide a discussion, including table, that shows the cost per service in terms of both debt service and operation and maintenance costs, of all facilities (existing and proposed) during the planning period. It is anticipated the discussion will be based on the Task 2100 effort; no analyses will be conducted.

Meetings

- Meeting No. 11 - CIP Review

Deliverables

- Draft Chapter 9 - Capital Improvement Plan
- Comment Response Log for Chapter 9
- Meeting Agenda and Minutes

City Input

- Review of Chapter 9 - Capital Improvement Plan.

Task 2100 – Financial Analysis

The City's financial analysts, FCS, will evaluate the impacts of the resulting capital improvement program (CIP) on the Sewer utility's rates and system development charges (SDCs):

Task 2100 Subtasks

Activities

2101. *Data Collection / Validation:* FCS will provide a data needs list encompassing historical and projected financial, operational, billing and planning information. The provided data will be reviewed, analyzed and validated for inclusion in the study process. Detailed customer statistics will not be analyzed as part of this effort. The City's 2017/2018 rate study customer data analysis will be utilized for this update.
2102. *Revenue Requirement Update:* This task establishes a sustainable, multi-year (5-20 year) financial management plan that meets the projected total financial needs of the sewer utility through generation of sufficient, sustainable revenue.

Annual cash flow needs will be analyzed by identifying expenses incurred to operate and manage the sewer system including:

- Cost increases resulting from staffing changes, enhanced programs or initiatives.
- Capital project needs (renewal/replacement, upgrades and expansion) identified in the upcoming GSP update.
- New and existing debt repayment obligations.
- Fiscal policy achievement related to operating and capital reserve targets, system reinvestment funding or rate funded capital, and coverage requirements.

Projected revenue will consider the sensitivities of changes in economic, weather and demand trends in order to mitigate volatility and stabilize revenue. Rate implementation scenarios will be generated to evaluate the impact of changes to key variables such as funding sources, growth rates, capital project need and timing, or others identified by the City. The budget includes three (3) alternative scenarios for the sewer utility.

The resulting revenue requirement and multi-year rate strategy developed will meet the City's specified financial metrics, goals and objectives and deliver a self-sustaining, individual utility financial planning toolset.

2103. *Rate Design:* No structural changes are included as part of this scope of services. Any changes to the previous rate strategy, which was identified in the last rate study, will be applied on an across the board basis.

2104. *System Development Charges:* An SDC is a one-time charge imposed as a condition of service on new development or on expanded connection to the system. The charge represents a prorated share of the capital investment made to provide system capacity. The SDC is calculated based on the intent and structure of the Revised Code of Washington (RCW) statute for Water-Wastewater Cities (RCW 35.092.025). In general, each connection shall bear a proportional share of the cost of the system capacity required.

This task will focus on updating the City's existing SDC for the sewer utility. The SDC shall reflect an updated inventory of existing system assets, the most recent approved capital improvement program costs related to growth and current expectations for future population/customer growth as identified as part of the GSP update.

2105. *Meetings and Presentations:* Two (2) review meetings are included to go over assumptions and results of the revenue requirement update. These meetings will be performed over an interactive conference call.

One (1) City Council workshop to share results of the updated revenue requirements and SDCs.

Any additional meetings can be added on a time and materials basis at the request from the City.

2106. *Documentation:* A written technical memorandum documenting the study process, methodology, key assumptions, results and recommendations will be provided. Included will be one (1) electronic copy of the memo and modeling tool, which will also act as the technical appendix.

Meetings

- Meeting No. 12 – Financial Review Webinar
- Meeting No. 13 – Financial Review Webinar
- Meeting No. 14 – Financial Analysis Council Presentation

Deliverables

- Draft and Final Financial Analysis Technical Memorandum

City Input

- Provide and validate financial data.
- Review of financial assumptions and analysis results.

Assumptions

- No structural changes are included as part of this scope of services.
- No Plan Chapter will be prepared for this Task.

Task 2110 – Plan Preparation

This task includes the compilation of all previous tasks mentioned in this scope of services, including incorporating all prepared chapters into a draft and final updated Wastewater Collection System Master Plan. This task includes assisting the City to coordinate plan review from Ecology. Under this task, the Consultant will assist the City with a public commenting period. Comments received from the public review meetings, adjacent sewer providers, Clark County, and Ecology will be incorporated into the updated Plan for City Council's approval and adoption.

Task 2110 Subtasks

Activities

- 2111. *Executive Summary.* The Consultant will prepare an Executive Summary to be included with the Plan.
- 2112. *City Review Draft.* The Plan will be developed as a City Review Draft and reviewed by City Staff. Under this task, the Plan will be prepared incorporating the previous chapters according to the summary table above.
- 2113. *Meeting No. 15 – City Review Draft.* Facilitate a meeting to review the City's comments on the City Review Draft Plan.
- 2114. *Meeting No. 16 – Council Meeting.* Upon completion of the City Review Draft, the Plan will be presented to the City at City Council. The City will lead the meeting with support by the Consultant.
- 2115. *Agency Review Draft.* City comments on the City Review Draft will be incorporated into an Agency Review Draft. The City will submit Agency Review Draft to adjacent sewer providers, Clark County, and Ecology.
- 2116. *Meeting No. 17 - Agency Review Meeting.* The Consultant will attend one (1) agency review meeting. The City will develop written responses received during Agency Review Draft Plan process. The Consultant will incorporate comments into a comment response log and into the Final Plan.
- 2117. *Final Plan.* The City will lead the City Plan approval process. The Final Plan will be submitted to the City Council for approval. The Consultant's Professional Engineer will stamp the Final Plan.

Meetings

- Meeting No. 16 – City Review Draft
- Meeting No. 17 – Council Meeting
- Meeting No. 18 - Agency Review Meeting

Deliverables

- Draft and Final Executive Summary
- Draft Master Plan - City Review Draft
- Draft Master Plan - Agency Review Draft

- Consultant will incorporate Agency comments into an Agency Review Comment Response Log.
- Final Master Plan (2 hardcopies, electronic copy in Word, a searchable PDF File with bookmarks)
- All final electronic documents, spreadsheets, presentations, modeling and GIS data

City Input

- Review of Executive Summary, City Review Draft, Agency Review Draft.

Assumptions

- All City Staff comments will be received together for inclusion in the Agency Review Draft.
- No additional draft plans will be developed.

Report Summary
Meeting No. 1 - Kick-off & Data Analysis.
Meeting No. 2 – Policies and Criteria
Meeting No. 3 – Flow Monitoring Results (Webinar).
Meeting No. 4 – Flow Projections (Webinar).
Meeting No. 5 – Flow and Load Projections.
Meeting No. 6 – Hydraulic Model Development.
Meeting No. 7 - Capacity Evaluation.
Meeting No. 8 - Capacity Improvements.
Meeting No. 9 – RUL and Condition Assessment.
Meeting No. 10 - O&M Program Workshop.
Meeting No. 11 - CIP Review.
Meeting No. 12 – Financial Review Webinar
Meeting No. 13 – Financial Review Webinar
Meeting No. 14 – Financial Analysis Council Presentation
Meeting No. 15 - City Review Draft.
Meeting No. 16 - Council Meeting.
Meeting No. 17 - Agency Review Meeting.

Deliverable Summary
Draft and Final PMP.
Eighteen (18) monthly progress reports.
Preliminary schedule, and no more than two (2) updates.
Data Requests
Meeting agendas and notes.
Comment Response Logs
Draft Chapter 1 – Introduction.
Draft Chapter 2 – Regulations, Policies, and Criteria.
Provide ADS Draft and Final Flow Monitoring Data and Report to Carollo.
Flow Monitoring Basin Information.
Comments on the Flow Monitoring Report.
Draft Chapter 3 - Basis of Planning.
Draft Chapter 4 – Existing System.
Draft Chapter 5 – I/I Program.
Draft TM No. 1 - Hydraulic Model Development.
Final TM No. 1 - Hydraulic Model Development.
Draft Chapter 6 – Collection System.
Updated hydraulic model.
Draft Chapter 7 – Wastewater Treatment Facility.
Draft Chapter 8 – Operation and Maintenance.
Draft Chapter 9 - Capital Improvement Plan.
Draft and Final Financial Analysis Technical Memorandum.
Draft and Final Executive Summary.
Draft Master Plan - City Review Draft.
Draft Master Plan - Agency Review Draft.
Final Master Plan (2 hardcopies, electronic copy in Word, a searchable PDF File with bookmarks).
All final electronic documents, spreadsheets, presentations, modeling and GIS data.

Exhibit B

General Sewer Plan - Cost Estimate

TASK / DESCRIPTION		Quantity	Manager, Lara Kammerack	Treatment QA/QC	Project Manager, Dan Reisinger	Senior Professional, Alan Straub	Project Professional	Professional	Staff Professional,	Biological Modeling - Principal	E&C Staff Professional	E&C Principal	Structural Principal	Designer, Technician, GIS,	Clerical/WP	Total Hours	Carollo Labor Cost	SUBCONSULTANTS				OTHER DIRECT COSTS			TOTAL COST	
																		Sub Hours	Sub Base Cost	Sub Markup 10%	Total Sub Cost	Travel and Printing	PECE \$11.70	Total ODC		
Total Labor Rate		\$ 226	\$ 226	\$ 176	\$ 195	\$ 176	\$ 160	\$ 135	\$ 195	\$ 165	\$ 226	\$ 226	\$ 137	\$ 95												
Task 1010 - Project Management																										
1011	Project Management Plan	1			4										2	7	\$ 1,120	0	\$ -	\$ -	\$ -	\$ -	\$ 23	\$ 23	\$ 47	\$ 1,167
1012	Meeting No. 1 - Kick-off and Data Analysis				8	8									2	18	\$ 3,158	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 300	\$ 600	\$ 3,758
1013	Project Administration	16			40	8		18							18	100	\$ 16,806	0	\$ -	\$ -	\$ -	\$ -	\$ 211	\$ 211	\$ 421	\$ 17,227
1010	Subtotal - Task 1010	17	0	52	16	0	18	0	0	0	0	0	0	0	22	125	\$ 21,084	0	\$ -	\$ -	\$ -	\$ -	\$ 534	\$ 534	\$ 1,068	\$ 22,152
Task 2010 - Introduction																-										
2011	Regulatory Information Reference				1				4							5	\$ 716	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 59	\$ 59	\$ 775
2012	Draft Chapter 1 - Introduction	1			2	1			8						4	16	\$ 2,233	0	\$ -	\$ -	\$ -	\$ -	\$ 47	\$ 187	\$ 234	\$ 2,467
2010	Subtotal - Task 2010	1	0	3	1	0	0	12	0	0	0	0	0	0	4	21	\$ 2,949	0	\$ -	\$ -	\$ -	\$ -	\$ 47	\$ 246	\$ 293	\$ 3,242
Task 2020 - Regulations, Policies, & Criteria																										
2021	Applicable Regulations				4	4			16							24	\$ 3,644	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 281	\$ 281	\$ 3,925
2022	Policies & Criteria								24							24	\$ 3,240	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 281	\$ 281	\$ 3,521
2023	Meeting No. 2 - Policies and Criteria				4	4			8						2	18	\$ 2,754	0	\$ -	\$ -	\$ -	\$ -	\$ 50	\$ 211	\$ 261	\$ 3,015
2024	Draft Chapter 2 - Regulations, Policies, & Criteria	1			2	2			24						4	33	\$ 4,588	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 386	\$ 386	\$ 4,974
2020	Subtotal - Task 2020	1	0	10	10	0	0	72	0	0	0	0	0	0	6	99	\$ 14,226	0	\$ -	\$ -	\$ -	\$ -	\$ 50	\$ 1,158	\$ 1,208	\$ 15,434
Task 2030 - Basis of Planning																										
2031	Data Gap Analysis				2				8					2		12	\$ 1,706	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ 140	\$ 1,846
2032	Service Area Boundaries				1				2					4		7	\$ 994	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 82	\$ 82	\$ 1,076
2033	Demographic Analysis				4			1	8					4		17	\$ 2,492	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 199	\$ 199	\$ 2,691
2034	Industrial Flows and Loads				1	8			8							17	\$ 2,816	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 199	\$ 199	\$ 3,015
2035	Review Flow Monitoring & Report				8				16					8		32	\$ 4,664	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 374	\$ 374	\$ 5,038
2036	Meeting No. 3 - Flow Monitoring Results				2											2	\$ 352	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 23	\$ 23	\$ 375
2037	Flow Projections							8	24					8		40	\$ 5,616	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 468	\$ 468	\$ 6,084
2038	Meeting No. 4 - Flow Projections				1			2	4						2	9	\$ 1,226	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 105	\$ 105	\$ 1,331
2039	Wastewater Loading				1	8		2	24	24				8		67	\$ 11,072	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 784	\$ 784	\$ 11,856
2040	Meeting No. 5 - Load Projections					4		4	8	16					2	34	\$ 5,810	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 398	\$ 698	\$ 6,508
2041	Draft Chapter 3 - Basis of Planning	1			2	2			24					4	4	37	\$ 5,136	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 433	\$ 433	\$ 5,569
2030	Subtotal - Task 2030	1	0	22	22	0	17	126	40	0	0	0	0	38	8	274	\$ 41,884	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 3,206	\$ 3,506	\$ 45,390
Task 2040 - Existing System																										
2041	Data Request				2				4							6	\$ 892	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 70	\$ 70	\$ 962
2042	Study Area							2	4					16		22	\$ 3,052	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 257	\$ 257	\$ 3,309
2043	Existing System				2	4		4	36					16		62	\$ 8,824	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 725	\$ 725	\$ 9,549
2044	Draft Chapter 4 - Existing System Draft	1			2	4		4	24						4	39	\$ 5,618	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 456	\$ 456	\$ 6,074
2040	Subtotal - Task 2040	1	0	6	8	0	10	68	0	0	0	0	0	32	4	129	\$ 18,386	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,509	\$ 1,509	\$ 19,895
Task 2050 - I/I Program																										
2051	Summarize Existing I/I Program							2	8							10	\$ 1,400	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,400
2052	Draft Chapter 5 - I/I Program	1			1			2	8						4	16	\$ 2,182	0	\$ -	\$ -	\$ -	\$ -	\$ 47	\$ 47	\$ 94	\$ 2,276
2050	Subtotal - Task 2050	1	0	1	0	0	4	16	0	0	0	0	0	0	4	26	\$ 3,582	0	\$ -	\$ -	\$ -	\$ -	\$ 47	\$ 47	\$ 94	\$ 3,676

Exhibit B
General Sewer Plan - Cost Estimate

TASK / DESCRIPTION		Quantity	Manager, Lara Kammerack	Treatment QA/QC	Project Manager, Dan Reisinger	Senior Professional, Alan Straub	Project Professional	Professional	Staff Professional,	Biological Modeling - Principal	Ei&C Staff Professional	Ei&C Principal	Structural Principal	Designer, Technician, GIS,	Clerical/WP	Total Hours	Carollo Labor Cost	SUBCONSULTANTS				OTHER DIRECT COSTS			TOTAL COST	
																		Sub Hours	Sub Base Cost	Sub Markup 10%	Total Sub Cost	Travel and Printing	PECE			
																								Total ODC		
Total Labor Rate		\$ 226	\$ 226	\$ 176	\$ 195	\$ 176	\$ 160	\$ 135	\$ 195	\$ 165	\$ 226	\$ 226	\$ 137	\$ 95							\$11.70					
Task 2060 - Collection System																										
2061	Hydraulic Model Development and Calibration				4		12	32	40					16		104	\$ 15,528	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,217	\$ 1,217	\$ 16,745
2062	Meeting No. 6 – Hydraulic Model Development				4				8						2	14	\$ 1,974	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 164	\$ 164	\$ 2,138
2063	Draft and Final Technical Memorandum No. 1				2		1	4	16					4	2	29	\$ 4,066	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 339	\$ 339	\$ 4,405
2064	Capacity Evaluation				2		2	8	16							28	\$ 4,144	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 328	\$ 328	\$ 4,472
2065	Meeting No. 7 - Capacity Evaluation				4				8						2	14	\$ 1,974	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 164	\$ 464	\$ 2,438
2066	Capacity Improvements				2		8	16	40							66	\$ 9,720	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 772	\$ 772	\$ 10,492
2067	Meeting No. 8 - Capacity Improvements				8				12						2	22	\$ 3,218	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 257	\$ 557	\$ 3,775
2068	Estimate RUL from Sewer Mains				8			0	16					16		40	\$ 5,760	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 468	\$ 468	\$ 6,228
2069	Meeting No. 9 - RUL and Condition Assessment				2			0	4					4	2	12	\$ 1,630	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 140	\$ 140	\$ 1,770
2070	Draft Chapter 6 - Collection System	1			2		1	8	24						4	40	\$ 5,654	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 468	\$ 468	\$ 6,122
2060	Subtotal - Task 2060	1	0	38	0	24	68	184	0	0	0	0	40	14		369	\$ 53,668	0	\$ -	\$ -	\$ -	\$ -	\$ 600	\$ 4,317	\$ 4,917	\$ 58,585
Task 2070 - Wastewater Treatment Facility																										
2071	Summarize Engineering Report					2			8							10	\$ 1,470	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 117	\$ 117	\$ 1,587
2072	Document of Prior Reuse Study					2			2							4	\$ 660	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 47	\$ 47	\$ 707
2073	Draft Chapter 7 - Wastewater Treatment Facility	1			2	8			2					4	4	21	\$ 3,336	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 246	\$ 246	\$ 3,582
2070	Subtotal - Task 2070	1	0	2	12	0	0	12	0	0	0	0	4	4		35	\$ 5,466	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 410	\$ 410	\$ 5,876
Task 2080 - Operation and Maintenance																										
2081	Data Request				2				4							6	\$ 892	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 70	\$ 70	\$ 962
2082	Summarize O&M Programs and Problem Areas				4	4			12					16		36	\$ 5,296	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 421	\$ 421	\$ 5,717
2083	Evaluate O&M Programs				4	4			8							16	\$ 2,564	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 187	\$ 187	\$ 2,751
2084	Meeting No. 10 - O&M Program Workshop				4	4			8						2	18	\$ 2,754	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 211	\$ 511	\$ 3,265
2085	Draft Chapter 9 - Operation and Maintenance	1			4	4			16						4	29	\$ 4,250	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 339	\$ 339	\$ 4,589
2080	Subtotal - Task 2080	1	0	18	16	0	0	48	0	0	0	0	16	6		105	\$ 15,756	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 1,229	\$ 1,529	\$ 17,285
Task 2090 - Capital Improvement Plan																										
2091	Project Prioritization					4			8					8		20	\$ 2,956	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 234	\$ 234	\$ 3,190
2092	Cost Estimating				4	4		8	24							40	\$ 6,004	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 468	\$ 468	\$ 6,472
2093	CIP Schedule				4	4			8							16	\$ 2,564	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 187	\$ 187	\$ 2,751
2094	Electronic CIP				4	4			16					8		32	\$ 4,740	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 374	\$ 374	\$ 5,114
2095	System Maps				2	1		0	8					16		27	\$ 3,819	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 316	\$ 316	\$ 4,135
2096	Meeting No. 11 - CIP Review				4	4		0	4						2	14	\$ 2,214	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 164	\$ 464	\$ 2,678
2097	Financial Summary				12	1										13	\$ 2,307	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 152	\$ 152	\$ 2,459
2098	Draft Chapter 9 - Capital Improvement Plan	1			2	4		4	16						4	31	\$ 4,538	0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 363	\$ 363	\$ 4,901
2090	Subtotal - Task 2090	1	0	32	26	0	12	84	0	0	0	0	32	6		193	\$ 29,142	0	\$ -	\$ -	\$ -	\$ -	\$ 300	\$ 2,258	\$ 2,558	\$ 31,700

Exhibit B
General Sewer Plan - Cost Estimate

TASK / DESCRIPTION		Quality Manager, Lara Kammerack	Treatment QA/QC	Project Manager, Dan Reisinger	Senior Professional, Alan Straub	Project Professional	Professional	Staff Professional,	Biological Modeling - Principal	EI&C Staff Professional	EI&C Principal	Structural Principal	Designer, Technician, GIS,	Clerical/WP	Total Hours	Carollo Labor Cost	SUBCONSULTANTS				OTHER DIRECT COSTS			TOTAL COST
																	Sub Hours	Sub Base Cost	Sub Markup 10%	Total Sub Cost	Travel and Printing	PECE \$11.70	Total ODC	
Total Labor Rate		\$ 226	\$ 226	\$ 176	\$ 195	\$ 176	\$ 160	\$ 135	\$ 195	\$ 165	\$ 226	\$ 226	\$ 137	\$ 95										
Task 2100 - Financial Analysis																								
2101	Data collection			1				2							3	\$ 446	4	\$ 450	\$ 45	\$ 495	\$ -	\$ 35	\$ 35	\$ 976
2102	Revenue Requiremnet Analysis														-	\$ -	26	\$ 4,180	\$ 418	\$ 4,598	\$ -	\$ -	\$ -	\$ 4,598
2103	Rate Design														-	\$ -	7	\$ 1,200	\$ 120	\$ 1,320	\$ -	\$ -	\$ -	\$ 1,320
2104	System Development Charges														-	\$ -	24	\$ 4,000	\$ 400	\$ 4,400	\$ -	\$ -	\$ -	\$ 4,400
2105	Meetings/Presentations			4				4							8	\$ 1,244	32	\$ 2,360	\$ 236	\$ 2,596	\$ -	\$ 94	\$ 94	\$ 3,934
2106	Documentation	1		4				2						2	9	\$ 1,390	24	\$ 3,690	\$ 369	\$ 4,059	\$ -	\$ 105	\$ 105	\$ 5,554
2100	Subtotal - Task 2100	1	0	9	0	0	0	8	0	0	0	0	0	2	20	\$ 3,080	117	\$ 15,880	\$1,588	\$ 17,468	\$ -	\$ 234	\$ 234	\$ 20,782
Task 2110 - Plan Preparation																								
2111	Executive Summary			2	2			4							8	\$ 1,282	0	\$ -	\$ -	\$ -	\$ -	\$ 94	\$ 94	\$ 1,376
2112	City Review Draft			8	4		4	24						24	64	\$ 8,348	0	\$ -	\$ -	\$ -	\$ -	\$ 749	\$ 749	\$ 9,097
2113	Meeting No. 12 - City Review Draft			4				4						2	10	\$ 1,434	0	\$ -	\$ -	\$ -	\$ 300	\$ 117	\$ 417	\$ 1,851
2114	Meeting No. 13 - Council Meeting			8	8			12						2	30	\$ 4,778	0	\$ -	\$ -	\$ -	\$ 300	\$ 351	\$ 651	\$ 5,429
2115	Agency Review Draft	4		8	2			16						24	54	\$ 7,142	0	\$ -	\$ -	\$ -	\$ 1,500	\$ 632	\$ 2,132	\$ 9,274
2116	Meeting No. 14 - Agency Review Meeting			4	2									2	8	\$ 1,284	0	\$ -	\$ -	\$ -	\$ -	\$ 94	\$ 94	\$ 1,378
2117	Final Plan	2		8	2			16						24	52	\$ 6,690	0	\$ -	\$ -	\$ -	\$ 1,500	\$ 608	\$ 2,108	\$ 8,798
2110	Subtotal - Task 2110	6	0	42	20	0	4	76	0	0	0	0	0	78	226	\$ 30,958	0	\$ -	\$ -	\$ -	\$ 3,600	\$ 2,644	\$ 6,244	\$ 37,202
2000	Total - Task 2000	33	0	235	131	24	133	706	40	0	0	0	162	158	1,622	\$ 240,181	117	\$ 15,880	\$1,588	\$ 17,468	\$ 5,778	\$ 17,792	\$23,569	\$281,218

Exhibit C

City of Camas General Sewer Plan Update Proposed Schedule

