City of Sherwood Oregon

Home of the Tualatin River National Wildlife Refuge

RESOLUTION 2015-007

AUTHORIZING THE CITY MANAGER TO ENTER INTO A PROFESSIONAL SERVICES CONTRACT WITH MURRAY SMITH AND ASSOCIATES, INC (MSA) FOR THE SANITARY SEWER SYSTEM MASTER PLAN UPDATE PROJECT

WHEREAS, the City of Sherwood owns, operates and maintains the public sanitary sewer collection and conveyance system within the City limits; and

WHEREAS, the City of Sherwood developed a sanitary master plan which evaluated the City's sanitary sewer system based on existing and future anticipated population which was adopted by Resolution 2007-071 on August 7, 2007; and

WHEREAS, the City expects to continue to grow through expansion and development of the Urban Growth Boundary (UGB), by continued infill and redevelopment of existing undeveloped and underdeveloped lots; and

WHEREAS, it is common practice to revise and update utility master plans on a five to seven year cycle to account for continued growth and expansion of the City population within the UGB, changes to the sanitary systems configuration and degradation of system components, and to help establish a running 5-year Capital Improvement Project (CIP) budget program; and

WHEREAS, City staff solicited proposals for Master Plan development through the Daily Journal of Commerce (DJC) on September 3, 2014 and again on September 5, 2014. The Request for Proposal (RFP) was open to all consultants in compliance with the formal qualifications based selection procedure established by Oregon Administrative Rules (OAR) 137-048-0220 and Oregon Revised Statutes (ORS) 279A through 279C; and

WHEREAS, the City received two (2) qualified consultant proposals; and

WHEREAS, City staff consisting of representatives from Engineering, Public Works, and Community Development reviewed, scored and ranked the consultant submittals in accordance with the selection requirements of the RFP; and

WHEREAS, Murray Smith and Associates, Inc. (MSA) was found to be a highly qualified firm and received the highest ranking from the selection committee; and

WHEREAS, City staff and MSA began negotiations and agreed to a final scope of work and related fee which meets the RFP requirements and the budget constraints established for the project (see attached Exhibit A – Scope of Work, Exhibit B – Fee Schedule, Exhibit C - Schedule); and

WHEREAS, that MSA's contract fee for the proposed scope of work is an amount not to exceed $121,900.00.

NOW, THEREFORE, THE CITY OF SHERWOOD RESOLVES AS FOLLOWS:

Section 1. The City Manager is authorized to enter into a professional services contract with Murray Smith and Associates, Inc. (MSA) for the project scope and fee described in attached Exhibits A, B and C, in an amount not to exceed $121,900.00.

Section 2. The City Manager is authorized to amend the contract by up to $6,095.00 (5% contingency) for unanticipated issues, for a project total not-to-exceed budget amount of $127,995.00.

Section 3. This Resolution shall be effective upon its approval and adoption.

Duly passed by the City Council this 20th day of January 2015.

Krisanna Clark, Mayor

Attest:

Sylvia Murphy, MMC, City Recorder

EXHIBIT A
PROPOSED SCOPE AND FEE FOR
SANITARY SEWER MASTER PLAN UPDATE
CITY OF SHERWOOD, OREGON

This scope of work is for professional engineering services between Murray, Smith & Associates, Inc. (MSA) and the City of Sherwood, Oregon (City) to develop a Sanitary Sewer Master Plan Update (Plan).

Background

This project will provide the City with an updated Sanitary Sewer Master Plan including collection system capital improvement recommendations and budget-level capital cost estimates. The Plan will also consider flow contributions from rainfall derived infiltration and inflow (RDII) based on pipe condition and provide the City with recommendations on maintenance, repair, and replacement. A hydraulic model will be developed for the collection system and used as the tool for evaluating capacity deficiencies. All improvement analysis will emphasize elimination of collection system overflows to satisfy Oregon Department of Environmental Quality (DEQ) regulatory requirements. Additionally, the Plan will include summaries of regulatory requirements and intergovernmental agreements (IGAs). The project will employ workshops and presentations to solicit City input and develop consensus at key points in the master planning process.

SCOPE OF SERVICES

Task 1 –Project Management

The purpose of this task is to provide management of the project team, schedule and budget. As project manager, Shad Roundy, PE, will maintain communication with the City and the team throughout the duration of the project, lead meetings and workshop discussions, keep the City up-to-date on any study issues or details and make sure the City's input is incorporated into the work product.

Subtask 1.1 – Kick-Off Meeting

A kick-off meeting will be held, once notice to proceed has been received, to allow the City and the MSA team to begin working together. MSA will attend and lead the kick-off meeting with City Staff to introduce the project team, establish project objectives, review consultant and City communication protocol, discuss the project scope and examine the project schedule including key delivery dates. The primary focus of this meeting will be a discussion of the City's goals for the project.

This subtask assumes up to a two (2) hour kick-off meeting with the MSA project manager, one (1) task lead and one (1) support staff. Two (2) hours of preparation time is included for the PM. MSA will provide meeting minutes from the kick-off meeting in electronic format.

Subtask 1.2 – Progress Reports, Meetings, and Billing

Included in this subtask are monthly invoicing, budget and schedule review, updates, and general administrative tasks.

The project will be managed to maintain the scope, schedule, and budget. At a minimum, updates on project schedule and budget will be provided as part of the monthly invoicing process.

Meetings and workshop facilitation will be limited to those specifically identified in this scope of work. Additional communication will be handled through phone calls and email as needed.

Subtask 1.3 – Quality Assurance/Quality Control (QA/QC)

This subtask accounts for management of in-house and City reviews of various interim and final work products as outlined in the scope of work. The subtask assumes the City will provide clear, concise and timely input and review on the work products produced by the consultant. All interim deliverables (prior to compiled draft documentation in task 6) are assumed to be delivered in electronic format (Microsoft Word and PDF).

Task 2 –Data Collection/Study Area Characteristics

In this task, MSA will review background information and develop a formal data request for completion of the work. Data will be requested from both the City and Clean Water Services (CWS). Where applicable, planning assumptions will be used from the City's Water Master Plan (WMP) update to minimize duplication of effort and to maintain consistency between planning documents.

Also under this task current and prior planning will be evaluated and general study area characteristics will be documented. Sanitary sewer basins will be defined and characterized within the Urban Growth Boundary (UGB) and designated areas of interest in the METRO Urban Reserve (URA). These areas include the West Urban Reserve, Tonquin Employment Area (TEA), Tonquin Urban Reserve, and Brookman Annexation Area. Other URAs are assumed to be excluded from the study. A draft version of the "Study Area" section of the master plan will be provided to the City for review.

Subtask 2.1 – Data Compilation and Review

Compile and review currently available data relative to the sanitary sewer system. Anticipated information items include pump station operational settings, historic flow

monitoring data, record drawings, mapping and GIS information, Durham Basin hydraulic model, and land use data. Data will be compiled through requests to the City and CWS.

Subtask 2.2 – Planning Document and General Planning Criteria Review

Compile and review prior City and CWS studies, plans and reports, as well as available planning guidance documents and design standards. It is anticipated that the following documents will be included in this evaluation work:

- Current City budget.
- Sewer collection system maintenance reports, operation and maintenance reports, and inspection records.
- Condition assessment data (GIS database)
- Three years accurate budget data showing real cash flow for both income and expenses.
- Intergovernmental Agreement with CWS.
- City of Sherwood Sanitary Sewer Plan Update, July 2007, Murray, Smith & Associates, Inc.
- 2009 CWS Sanitary Sewer Master Plan Update, March 31, 2009, West Yost Associates.
- City of Sherwood, Comprehensive Plan.
- Division 11, Public Facilities Planning.
- Adams Avenue North Concept Plan
- Brookman Road Concept Plan
- Tonquin Employment Area Concept Plan
- Sherwood Town Center Plan
- Urban Growth Boundary expansion study areas.
- Sherwood zoning map.
- CWS and City of Sherwood collection and trunk sewer system map showing rim and invert elevations and pipe sizes (GIS databases).

Subtask 2.3 – Study Area Characterization

Review current land use designations and characteristics based on the City's current Comprehensive Plan and information provided by the City's Planning Department to define the study area and its uniqueness relative to sanitary sewer analyses. Develop draft "Study Area" section of the master plan by describing community background, socioeconomic conditions, population, geography, and land use.

Subtask 2.3 – Base Mapping Development

Under this subtask a base map will be developed that will be used for the sanitary sewer system. The mapping will be a comprehensive illustration of the City's existing sanitary sewage collection system and include CWS facilities. It is anticipated that mapping used to develop the City's WMP update will be used as this mapping includes digital topography, rights-of-way, tax lots, land use, zoning and other important features. Other mapping resources and data will be used as necessary to develop an accurate base map. The map will be provided to the City in both hard copy and electronic format.

Subtask 2.4 – Basin Delineation

Included in this subtask is the delineation and description of sewer service basins. This work will begin with confirming the previous basin configurations developed as part of the previous master plan and expanding the delineations to include new areas and the designated areas of interest. The study area basins map and descriptions will be included in the draft "Study Area" section of the document.

Task 3 - Existing System Inventory, Flow Projections and Planning Criteria

Work under this task includes completing a comprehensive system inventory and a discussion of the existing system. Additionally, population projections and land use assumptions will be used from the City's WMP update and used to define sanitary flow projections. Draft versions of the "Existing System" and "Flow Projection" sections of the master plan will be provided to the City for review.

Subtask 3.1 – Existing System Inventory and Description

Based on the available GIS and staff interviews, system elements under the jurisdiction of the City will be inventoried and described. The system description will focus on the following categories:

1. *Community Background* – The existing customer base and land use; residential, commercial and industrial customers; political jurisdictions and agreements; population and history of Sherwood's sanitary sewer system will be reviewed for discussions and documentation.

2. *Sanitary Sewer System Infrastructure Description*– Information and mapping of the physical features of the existing system will be prepared as will an explanation of how the system is currently operated (Operational Strategy). This will also include information on City-wide sewer discharge volumes based on historical City records and CWS flow data. The description will include information on how the City's system contributes to the regional CWS system.

3. *Funding/Budget* – A description and discussion of the City's existing funding mechanisms encompassing operations and maintenance (O&M) and capital improvements program (CIP) will be included in the documentation as will a discussion of the City's system development charge (SDC) and it's inter-relationship with CWS.

Subtask 3.2 – Planning Criteria and Regulatory Requirements

Under this subtask, MSA will document project-specific planning criteria regarding wastewater collection and conveyance requirements.

1. *Planning Criteria* – Identify planning criteria that is specifically applicable to the development of the Sanitary Sewer Master Plan update. Criteria include depth of flow in the pipe during peak dry conditions and allowable surcharging during peak wet weather conditions. The criteria will borrow the methodology and design storm from CWS to characterize each pipeline with a hydraulic grade line (HGL) status during the 5-year design storm. This methodology allows for overflow risk assessment and facilitates improvement prioritization. Additional criteria will account for pump station firm capacity, force main maximum velocity, and gravity pipeline minimum scouring velocity.

2. *Federal, State and Local Rules and Regulations* – A discussion of the Federal, State and local rules and regulations that relate to the City's sanitary sewer system will be provided as part of plan documentation.

Subtask 3.3 – Population Forecasts

Population forecasts will be identified for the long range (20-year) planning period and "build-out" based on information and projections provided by the City's Planning Department. Projections will be identified for five-year intervals to the 20-year planning horizon and to saturation development.

Subtask 3.4 – Land Use Analysis, Unit Loading Factors, and Wastewater Flow Projections

Existing and future wastewater flows will be characterized and distributed by land use. Flows will be forecast for a 20-year planning period in five-year intervals and at saturation development. Flow projections will be based on the population forecasts established for the existing UGB and designated areas of interest.

1. *Wastewater Evaluations* – At least five years of historical records of flow obtained from City and/or CWS records will be evaluated. The records will be tabulated in spreadsheet to show averages, minimum and maximum (peak) flows for both wet and dry weather conditions.

2. *Land Use and Unit Loading Factors* – CWS developed unit loading factors by land use based on flow monitoring data from 2011 and 2012. These unit loading factors will be verified and refined for the City based on location specific flow data and winter-time water consumption records. For residential land classifications, the unit loading factors will be verified against METRO recommended planning densities and per-capita-wastewater usage. Future loading will be distributed based on the refined land use unit loading factors and City land use classifications at the parcel level.

3. *Wastewater Flow Projections* – Wastewater flow projections will be developed based on the established population projections and land use data. Flow projections will include average daily, maximum monthly, maximum daily, and instantaneous flow rates for both wet and dry weather flow conditions. The forecasts will also be quantified on a per-capita flow basis.

Task 4 - Sanitary Sewer System Analysis and Alternatives Evaluation

MSA will develop a hydraulic model of the collection system to determine available capacity and identify potential restrictions and system improvements using the HGL status methodology. The evaluation of existing system and proposed improvements will be completed considering both current and forecasted flows resulting from infill development and new service areas. Modeling will include all sewer system collection sewers 8-inches and larger and trunk lines up to the CWS Sherwood Pump Station. Modeling will be of sufficient detail to identify specific improvements within the study area including potential extensions to serve designated areas of interest. Additionally, improvement analysis will consider existing system condition issues and RDII impacts. A draft version of the "System Analysis" section of the master plan will be provided to the City for review. MSA will borrow concepts and results from the "Sherwood West Concept Plan" where applicable to avoid duplication of effort.

Subtask 4.1 – Model Development

MSA will expand the CWS Durham Basin model to include piping from the City's GIS. Critical data required to evaluate pipe capacity include diameter, length, rim elevation and invert elevation. The model is run in InfoSWMM (Innovyze) and utilizes the EPASWMM hydraulic engine. EPASWMM allows for dynamic simulations which are critical for estimating system surcharging and backwater as well as evaluating operational efficiencies.

1. *CWS Model* - Data will be extracted from the CWS model for initial setup of the existing system flows and projected future system flows. The CWS loading will be scaled and assigned to the Sherwood system based on winter-time water consumption data and unit loading factors developed in Task 3.

2. *Calibration and Flow Monitoring* - A brief calibration will be performed to validate existing flows during a dry weather period and during the largest storm event

available for the flow monitoring period. Flow monitoring data is available from CWS for two meter locations with the largest storm event occurring in January 2012. Additional flow monitoring is not included in this scope of work. This subtask assumes that the City can identify development between 2012 and 2014.

Subtask 4.2 – Existing System Evaluation

MSA will utilize the hydraulic model to identify capacity issues during existing peak dry and wet weather flows based on the planning criteria and the CWS 5-year design storm.

1. *HGL Analysis* - Overflow risk will be analyzed based on the HGL methodology where the HGL is the projected elevation of the water surface at the specific location in the collection system. The HGL is generated by the computer model based on the design flow conditions and the hydraulic conveyance capacity of the downstream collection system. To assess the capacity of a sewer line segment, the HGL is compared to the elevations of the pipeline features such as pipe invert, the top of pipe, the ground surface at the manhole lid, etc. To identify the severity of the capacity limitation, a classification is developed and referred to as the "HGL status". This series of classifications ranges from "OK" (HGL is below the top of the pipe) to "DS" (manhole overflow), with intermediate levels indicating various degrees of manhole surcharging.

2. *Operational Strategies* - The hydraulic model will be used to identify pump station deficiencies during existing peaks flows. Additionally, system operation strategies will be reviewed and documented for potential improvement analysis.

Subtask 4.3 – Existing System RDII Analysis and Condition Assessment

MSA will present a technical description and evaluation of wastewater collection, pumping and conveyance systems based on existing conditions. The evaluations will be performed in close consultation with City operations staff to ensure that all deficiencies of the existing facilities are identified.

1. *Problem Area Inventory* – Interview City and CWS staff and inventory condition issues and problem areas. Utilize City CCTV inspection database where available. Also, utilize pipe age and material attributes within the GIS to identify potential pipe condition risk and improvements.

2. *RDII Assessment* – To quantify the impacts of RDII, historic flow records will be evaluated and compared to recent records. As previously described, CWS flow monitoring data will be used at two meter locations. Recent evaluations of the CWS data indicate RDII of approximately 1,800 gallons-per-acre-per-day in the City. Previous reports from the City and CWS will be used to identify areas of excessive

RDII. The assessment of RDII will be coordinated and reviewed with City prior to documentation in the Sanitary Sewer Master Plan Update.

Subtask 4.4 – Future Loading Development

MSA will extrapolate loading for future development utilizing City land use data, City concept planning, and the unit loading factors developed in Task 3. The CWS model currently includes loading for 2025, 2035, and build-out conditions and includes revisions to their 2009 Master Plan. The CWS build-out scenario also overlaps with the City's designated areas of interest. The CWS future loading will be validated and reviewed for consistency with City planning data. MSA will carefully coordinate all future loading assumptions with the City to ensure successful plan review and adoption. RDII rates will be extrapolated to future areas based on City and CWS peak rate requirements and the 5-year design storm.

Subtask 4.5 – Future System Evaluation

MSA will utilize the hydraulic model to identify capacity issues of the existing system during future peak dry and wet weather flows based on the planning criteria and the 5-year design storm. The evaluation will consider varied planning horizons consistent with the CWS Master Plan. Additionally, phased scenarios will be considered for build-out of the UGB and service to designated areas of interest. Based on the existing and future flow scenarios, available excess capacity will be extracted from the model to identify areas of available capacity in the system. As with the existing system evaluation, the future system evaluation will consider overflow risks utilizing the HGL status methodology. Operations of the pump stations will be considered to address future capacity deficiencies.

Subtask 4.6 – Improvement Alternatives Evaluation

MSA will analyze improvement alternatives to address capacity, operational, and condition issues during existing and future flow conditions. These alternatives will include gravity sewers, pumping stations and force mains as necessary to adequately collect and convey wastewater to the CWS Regional System. Alternatives will be considered for expanding the collection system to serve future development within the Sherwood UGB and designated areas of interest outside of the UGB.

1. *Preliminary Alternatives Workshop* - MSA will hold a two hour workshop with City staff to present the results of the system deficiencies analysis, review excess capacity mapping, and discuss preliminary alternatives. During the workshop, the City and MSA will collaboratively identify improvements alternatives for further evaluation. The workshop with focus on both growth within the UGB and potential service of designated areas of interest.

2. *Capacity Alternatives* – The hydraulic model will be used to size improvements for up to three alternative based on the design criteria and 5-year design storm.

3. *Condition Alternatives* – Pipeline repair and replacement strategies including trenchless technology will be identified to maximize investment in existing infrastructure.

4. *Operational Alternatives* – Conceptual operational strategies will be considered to minimize system improvements. This work includes relevant CWS operations objectives and recommendations on how those objectives can be achieved by the City.

5. *Cost Estimates* – Under this subtask project unit costs and cost curves will be developed specific to the City. These cost estimates will be applied to each alternative to identify total project costs. All project cost estimates will include appropriate allowances and contingency factors as well as cost index referencing to provide for future cost estimate updating. Costs will be Class 5 estimates as defined by the Association for the Advancement of Cost Engineering (AACE).

6. *Conceptual Analysis of Designated Areas of Interest* – Work under this subtask includes development of conceptual planning of major facilities needed to serve the designated areas of interest. The analysis is intended to evaluate major trunk line extensions and pump station facilities. A key focus of this analysis is to determine what reserve capacity may exist, and what potential future urban areas can most efficiently and cost effectively be served by extension of the existing or planned City system. MSA will borrow concepts and results from the "Sherwood West Concept Plan" where applicable to avoid duplication of effort.

Task 5 – Development of Recommended Plan and CIP

MSA will work with the City to select the most effective improvements from the alternatives analysis and develop a prioritized Capital Improvement Program (CIP). Selection of improvements will focus on the capacity analysis, environmental considerations, community impacts, cost effectiveness, alignment with other transportation or water projects, and other City goals. A draft version of the "Capital Improvement Program" section of the master plan will be provided to the City for review.

Subtask 5.1 – Improvement Workshop and Capital Improvement Selection

MSA will hold a two hour improvement selection workshop with City staff to review the results of the alternatives analysis and select the most effective improvements for the CIP. During the workshop MSA will solicit City input on project prioritization.

Subtask 5.2 – Improvement Prioritization and CIP Development

With City input on project priorities, a prioritized Capital Improvements Program (CIP) will be developed for inclusion in the master plan document. Information in the CIP table will include project descriptions (location, size, etc.), project drivers (development, condition, etc.), estimated costs, percentage of ultimate flow attributed to growth, and time frame of project implementation. The time frame will group projects into 5-year increments. CIP mapping will be developed where each project will be clearly labeled.

Subtask 5.3 – Implementation Program

The CIP will include an implementation program that will explain improvement priorities so that immediate improvements can be included in the current 5-year time frame and others can be programmed into subsequent planning horizons. The program will also describe project drivers and identify key regulatory dates or other critical dates when specific improvements may be required.

Task 6 – Plan Documentation, Review and Formal Adoption

Under this task, MSA will develop draft and final master plan documentation for City review. Additionally, MSA will assist the City with one public open house, two presentations to the Planning Commission, and one presentation to the City Council.

Subtask 6.1 – Sanitary Sewer Master Plan Documentation

Included in this subtask is development of an updated comprehensive Sanitary Sewer Master Plan document that includes text narrative, tables, figures and maps that describe and present findings and recommendations. Draft sections previously provided to the City under each task will be edited based on City review comments and compiled into a draft document. Key sections of the documented are highlighted below:

1. *Executive Summary* – An executive summary will be completed as part of the plan documentation and will provide a brief and concise summary of the findings of the Master Plan including a statement of the project purpose, assumptions, and recommendations. This section will also summarize the CIP with project descriptions and cost tables.

2. *Introduction and Background*– An introduction will be provided highlighting the overall purpose of the Sanitary Sewer Master Plan, the background on the wastewater system, and the scope of work.

3. *Study Area Characteristics* – This section will document work performed in Task 2 to describe study area characteristics related to community background, socioeconomic conditions, population, geography, and land use.

4. *Existing System Characteristics* – This section will describe the existing sanitary sewer infrastructure, operational procedures, design criteria for system evaluations, and regulatory requirements as outlined in Task 3.

5. *Flow Projections* – Information from task 3 will also be used to summarize population projections, unit loading factors based on land use, existing wastewater flows, and future wastewater flow projections.

6. *System Analysis* – This section will document work performed in Task 4 to evaluate existing system capacity and condition, analyze system RDII impacts, develop future loading scenarios, and evaluate system improvement alternatives. Mapping of improvement alternatives and system capacity analysis will be provided.

7. *Capital Improvement Program* – This is the key element of the planning document and represents the culmination of all previous tasks. The tabular CIP developed in Task 5 will be provided with project descriptions, project drivers, estimated costs, and descriptions of project timing. This section will also describe the implementation strategy for capital investments. All projects will be represented and labeled on clear system mapping.

8. *Appendices* – The Master Plan appendix will include calibration plots and cost assumption methodology.

Subtask 6.2 – Final Review Process

Ten (10) hard copies of the draft plan will be submitted for City review. Additionally, electronic Microsoft Word and PDF versions will be provided. Upon completion of the review, MSA will hold a meeting to discuss City review comments. Responses to the City's comments will be prepared and, where applicable, incorporated into the final draft document. The schedule allows the City a four week review period for the review process.

Subtask 6.3 – Offer Plan to CWS for Review

A copy of the plan will be submitted to CWS for comment concurrent with the City review described above. MSA will provide response to CWS comments and incorporate edits as appropriate with final direction from City staff.

Subtask 6.4 –Participate in Public and City Meetings

MSA will assist City staff in presenting the draft and final plan at the following meetings. Meeting are assumed to be two hours in duration.

1. *Preliminary Planning Commission Meeting* – The meeting will be held prior to completion of the draft documentation. The presentation will address the goals of the master plan update, provide background on planning assumptions, and review the preliminary CIP. A PDF version of the presentation will be provided in advance to be included in the meeting packet.

2. *Planning Commission Meeting* – The meeting will be held after completion of the draft final master plan document. The presentation will address the purpose of the master plan update, provide background on planning assumptions and improvement analysis, and present the finalized CIP. A PDF version of the presentation and master plan "Executive Summary" will be provided in advance to be included in the meeting packet.

3. *Public Open House* – The open house will be held after completion of the draft final master plan document. A brief presentation will address the purpose of the master plan update, provide background on planning assumptions, and present the finalized CIP. MSA will provide four D-size posters for display.

4. *City Council* – The meeting will be held to adopt the master plan document. A brief presentation will address the purpose of the master plan update, provide background on planning assumptions, and present the finalized CIP. A PDF version of the presentation and master plan "Executive Summary" will be provided in advance to be included in the meeting packet.

Subtask 6.5 – Submit Final Adopted Plan

MSA will prepare and submit 25 bound copies of the final recommended plan, and 50 copies of a simple executive summary brochure, of the adopted Master Plan to the City, within two (2) weeks of final adoption.

BUDGET

The overall not to exceed budget estimate for this project is $121,900 as shown in Table 1 and Exhibit B. The work provided in this Scope of Work will be billed on a time and expense basis.

Table 1. Total Project Fee

Item	Hours	Fee
Task 1: Project Management	44	$6,800
Task 2: Data Collection/Study Area Characterization	80	$9,900
Task 3: Existing System Inventory, Flow Projections, Planning Criteria	82	$10,200
Task 4: Sanitary Sewer System Analysis and Alternatives Analysis	300	$36,800
Task 5: Development of Recommended Plan and Capital Improvement Program	120	$15,100
Task 6: Plan Documentation, Review, and Formal Adoption	336	$43,100
Project Total		$121,900

TIME OF PERFORMANCE

The Plan is anticipated to be completed over a period of approximately 10 months, beginning in February 2015. MSA will make every effort to complete the work in a timely manner; however, it is agreed that MSA cannot be responsible for delays occasioned by factors beyond its control, nor by factors that could not reasonably have been foreseen at the time this scope was executed. A schedule is provided in Exhibit C.

Sanitary Sewer Master Plan Update
City of Sherwood
Fee and Labor Estimate
EXHIBIT B

	LABOR CLASSIFICATION (HOURS)						ESTIMATED FEES		
	Project Manager S. Roundy $148	Project Eng. (writing) N. McMurtrey $132	Project Eng. Engineer S. McAller $108	Senior Reviewer M. Carr $172	Admin. I $69	Total Hours	Labor	Expenses	Total
Task 1: Project Management									
1.1 Project Kick Off Meeting and Project Schedule	4	2		2		8	$ 1,200	$ 12	$ 1,212
1.2 Progress Reports, Meetings, and Billings	20					20	$ 2,960	$ 30	$ 2,990
1.3 Quality Assurance/Quality Control (QA/QC)	8			8		16	$ 2,560	$ 26	$ 2,586
Task 1 Subtotal	**32**	**2**	**0**	**10**	**0**	**44**	**$ 6,720**	**$ 67**	**$ 6,787**
Task 2: Data Collection/Study Area Characterization									
2.1 Information Compilation and Review	2	8	8			18	$ 2,216	$ 22	$ 2,238
2.2 Planning Documents and General Planning Criteria Review	2	8	8			18	$ 2,216	$ 22	$ 2,238
2.3 Study Area Characterization	2	8	8	2		20	$ 2,560	$ 26	$ 2,586
2.4 Base Mapping Development		4	8			12	$ 1,392	$ 14	$ 1,406
2.5 Basin Delineation and Characterization		4	8			12	$ 1,392	$ 14	$ 1,406
Task 2 Subtotal	**6**	**32**	**40**	**2**	**0**	**80**	**$ 9,776**	**$ 98**	**$ 9,874**
Task 3: Existing System Inventory, Flow Projections and Planning Criteria									
3.1 Existing System Inventory and Description	2	8	8	1		19	$ 2,388	$ 24	$ 2,412
3.2 Planning Criteria and Regulatory Requirements	2	8	8	1		19	$ 2,388	$ 24	$ 2,412
3.3 Population Projections	2	8				10	$ 1,352	$ 14	$ 1,366
3.4 Land Use Analysis, Unit Loading Factors and Wastewater Flow Projections	2	8	24			34	$ 3,944	$ 39	$ 3,983
Task 3 Subtotal	**8**	**32**	**40**	**2**	**0**	**82**	**$ 10,072**	**$ 101**	**$ 10,173**
Task 4: Sanitary Sewer System Analysis and Alternatives Analysis									
4.1 Model Development	4	8	60			72	$ 8,128	$ 81	$ 8,209
4.2 Existing System Evaluation	4	8	16	1		29	$ 3,548	$ 35	$ 3,583
4.3 Existing System I&I Analysis and Condition Assessment	4	24	16			44	$ 5,488	$ 55	$ 5,543
4.4 Future Loading Development	4	8	24			36	$ 4,240	$ 42	$ 4,282
4.5 Future System Evaluation	4	8	16	1		29	$ 3,548	$ 35	$ 3,583
4.6 Improvement Alternatives Evaluation & Workshop	32	16	40	2		90	$ 11,512	$ 115	$ 11,627
Task 4 Subtotal	**52**	**72**	**172**	**4**	**0**	**300**	**$ 36,464**	**$ 365**	**$ 36,829**
Task 5: Development of Recommended Plan and Capital Improvement Program (CIP)									
5.1 Selection of Preferred Improvements & Workshop	8	8	24	2		42	$ 5,176	$ 52	$ 5,228
5.2 Improvement Prioritization and CIP Coordination	8	16	16			40	$ 5,024	$ 50	$ 5,074
5.3 Implementation Strategy	4	16	16	2		38	$ 4,776	$ 48	$ 4,824
Task 5 Subtotal	**20**	**40**	**56**	**4**	**0**	**120**	**$ 14,976**	**$ 150**	**$ 15,126**
Task 6: Plan Documentation, Review and Formal Adoption									
6.1 Sanitary Sewer Master Plan Documentation	24	40	40	10	20	134	$ 16,252	$ 163	$ 16,415
6.2 Final Review Process and Plan Preparation	28	40	40	8		116	$ 15,120	$ 151	$ 15,271
6.3 Offer Plan to CWS for Review	8					8	$ 1,184	$ 12	$ 1,196
6.4 Planning Commission, Public Open House, City Council Meetings	32			8		40	$ 6,112	$ 61	$ 6,173
6.5 Submit Final Adopted Plan	8	8		2	20	38	$ 3,964	$ 40	$ 4,004
Task 6 Subtotal	**100**	**88**	**80**	**28**	**40**	**336**	**$ 42,632**	**$ 426**	**$ 43,058**
TOTAL - ALL TASKS	***218***	***266***	***388***	***50***	***40***	***962***	***$ 120,640***	***$ 1,207***	***$ 121,847***

Exhibit C

City of Sherwood Sanitary Master Plan Update Project Schedule