CLACKAMAS
WATER ENVIRONMENT SERVICES

GREGORY L. GEIST | DIRECTOR
Water Quality Protection
Surface Water Management
Wastewater Collection & Treatment

October 28, 2021

Board of County Commissioners
Clackamas County

Members of the Board:

**Approval of Contract Amendment #2 between Water Environment Services and Otak, Inc. for the Water Environment Services & Happy Valley Storm System Master Plan**

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|---|---|
| **Purpose/Outcomes** | This contract is to complete a Storm System Master Plan on behalf of WES, Clackamas County, and the City of Happy Valley. Amendment #2 will add capacity to conduct targeted basin planning and expand CIP development. |
| **Dollar Amount and Fiscal Impact** | The original contract amount was $476,999.00; Amendment #2 adds $215,602.00 for a total not to exceed $692,601.00. |
| **Funding Source** | WES Surface Water Operating Funds. No general funds. |
| **Duration** | Amendment execution through June 30, 2022. |
| **Previous Board Action** | Original Contract approved by the Board on 4-25-2019.<br>Reviewed in Issues on October 26, 2021. |
| **Strategic Plan Assignment** | This project aligns with the County's strategic goals of building strong infrastructure and also honoring, utilizing, promoting, and investing in the county's natural resources. This project also supports WES's resiliency and infrastructure performance goals in two ways:<br>• 30% of streams within WES' jurisdiction meet or exceed water quality standards.<br>• Initiative: By December 31, 2020, Clackamas County will adopt a Master Plan for surface water management that will enhance the quality of surface water. |
| **Procurement Review** | Was this item processed through Procurement? ☒ yes ☐ no<br>If no, provide a brief explanation: |
| **Counsel Review** | This Contract Amendment was reviewed by County Counsel on October 11, 2021. |
| **Contact Person** | Leah Johanson, Civil Engineer, 503-742-4620<br>Ron Wierenga, Environmental Services Manager 503-742-4581 |
| **Contract #** | 1367 |

**BACKGROUND:**

Otak is under contract to prepare the Storm System Master Plan on behalf of WES, Clackamas County, and the City of Happy Valley. WES is investing in the Storm System Master Plan to enhance the quality of surface water and prioritize system extensions, repairs, and upgrades throughout its stormwater service area. The original scope of work included review of existing data, field work, draft project list, and recommended modeling to address specific problem areas.

While initially contemplated, the scope of the original contract did not include extensive storm system modeling and targeted basin planning, rather that work would be proposed as-needed. After completing an extensive portion of the original scope, WES has identified the need for Otak to complete a Targeted Storm System Capacity Study in a high-priority chronic drainage area in Happy Valley. There are several conveyance system failures all in a localized area that if addressed individually may not cost effectively address the problems. The scope of work for the study includes detailed data review and modeling, inlet capacity analysis, data collection, and identification of potential solutions to address the chronic drainage issues. Amendment #2 includes $164,000 for the Targeted Storm System Capacity Study.

In addition, the project has been delayed in 2020 due to complications imposed by the ongoing COVID-19 pandemic and by the need for additional project reviews and a more complex CIP design process. Amendment #2 includes $51,402 for this additional work.

**PROCUREMENT PROCESS:**
This Amendment is in accordance with LCRB C-047-0800(b) for an unanticipated amendment.

**RECOMMENDATION:**
Staff recommends that the Board of County Commissioners of Clackamas County, acting as the governing body of Water Environment Services, approve and execute Amendment #2 between Water Environment Services and Otak, Inc. for the Water Environment Services & Happy Valley Storm System Master Plan.

Respectfully submitted,

Chris Storey Digitally signed by Chris Storey Date: 2021.10.20 11:09:29 -07'00'

Chris Storey, Assistant Director
Water Environment Services

Placed on the BCC agenda_____by Procurement and Contract Services.

**AMENDMENT #2**
**TO THE CONTRACT DOCUMENTS WITH OTAK, INC. FOR WATER ENVIRONMENT SERVICES AND HAPPY VALLEY STORM SYSTEM MASTER PLAN (2018-115)**
**Contract #1367**

This Amendment #2 is entered into between **Otak, Inc.** ("Contractor") and Water Environment Services ("District") and shall become part of the Contract documents entered into between both parties on **April 25, 2019** ("Contract").

The Purpose of this Amendment #2 is to make the following changes to the Contract:

**1.** ARTICLE I, Section 1. **Effective Date and Duration** is hereby amended as follows:

The Contract termination date is hereby changed from January 21, 2022 to **June 30, 2022.**

**2.** ARTICLE I, Section 2. **Scope of Work** is hereby amended as follows:

As a result of the initial storm system masterplan work, the District has identified the need to complete a more detailed Targeted Storm System Capacity Study in a high-priority chronic drainage area. The supplemental scope of work is attached as **Exhibit G** and hereby incorporated by reference.

**3.** ARTICLE I, Section 3. **Consideration** is hereby amended as follows:

District is authorizing an additional **$215,602.00** in fees to complete the additional Work. The additional fee schedule is included with Exhibit G. The total Contract compensation shall not exceed $692,601.00.

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| ORIGINAL CONTRACT | $ 476,999.00 |
| AMENDMENT #1 | Time Extension |
| **AMENDMENT #2** | **$ 215,602.00 + Time** |
| **TOTAL AMENDED CONTRACT** | **$ 692,601.00** |

Except as expressly amended above, all other terms and conditions of the Contract shall remain in full force and effect. By signature below, the parties agree to this Amendment #2, effective upon the date of the last signature below.

**Otak, Inc.**
**808 SW Third Ave., Ste. 300**
**Portland OR 97204**

10/12/2021
Authorized Signature Date

MILLICENT WILLIAMS
Printed Name

**Water Environment Services**

Chair

Recording Secretary

Date

**Approved as to form**

Amanda Keller Digitally signed by Amanda Keller Date: 2021.10.19 16:11:44 -07'00'

County Counsel Date

**EXHIBIT G**
**SUPPLEMENTAL SCOPE OF WORK AND ASSOCIATED FEE SCHEDULE**

# WES and Happy Valley Storm System Master Plan
# Otak Project #19109
# Contract Amendment No. 2
# Supplemental Scope of Work

**August 20, 2021**

## UNDERSTANDING

As with many planning projects, scope of work may shift over the months, some tasks may be underestimated or overestimated, and additional services may be requested. The project has been delayed in 2020 due to changes in the work environment and staffing related to COVID-19 and by the need for additional project definition, reviews, and a more complex CIP design process. In addition, WES has newly recognized a high-priority drainage concern which requires additional study. The purpose of this amended scope is to supplement the original contract scope of work.

## Supplement Scope of Work in Existing Tasks

Task 1.1.a, Project Management Communications, is amended to include up to 17 additional one-hour coordination meetings while the project is extended from January 31, 2021 to June 30, 2022 (17 months). Due to the efficiency of these meetings demonstrated over the duration of the project thus far, our anticipated budget need for the additional scope of work is approximately 50% of the per/meeting unit cost in the contracted scope of work. This task is also known as Phase 110, Task A00 on our invoices.

Task 1.1.c, Project Management Monthly Status Reports, is amended to include 17 additional status reports. Due to the efficiency in completing this task over the duration of the project thus far, our anticipated budget need for the additional scope of work is approximately 75% of the per report unit cost in the contracted scope of work. This task is also known as Phase 110, Task C00 on our invoices.

Task 5.1.b.vi, Finalize Program Fact Sheets, is amended to include three additional Program Fact Sheets. In addition, we slightly underestimated the amount of work needed for each Program, so an additional $500 for each fact sheet (x 5) is requested. This task is also known as Phase 510, Task B60 on our invoices.

Task 5.1.b.vii, Prepare Draft Long List of Projects, Descriptions, Details, Costs, which in part is the development of the CIP, has been undertaken in a more detailed manner than our intended process. We intended to use our stormwater toolkit to develop concept project plans for 10 CIPs. Our toolkit contains stormwater project elements we have commonly encountered in previous stormwater master planning projects in the Pacific Northwest, and we added two new tools to it based on our earlier discussions about which types of projects would be selected for the SSWMP. We added a bioretention planter tool and a UIC tool. Ultimately, among the list of 10 projects, four projects were types that were not well-represented in the toolkit, and our design process thus has required a more manual engineering design approach. These two types are large culvert replacements and drainage projects that require significant ROW acquisition and/or additional road width. (It should be noted that Otak has frequently designed these types of projects, but not using our toolkit approach.) In addition, one CIP covers a large



808 SW Third Avenue, Suite 800, Portland, OR 97204 ▪ Phone (503) 287-6825 Fax (503) 415-2304 **otak.com**

geographic area called the North Clackamas Revitalization Area (NCRA) and contains within it concepts for numerous separate projects, which each could qualify as a standalone-CIP. The NCRA CIP is a hybrid between a neighborhood-scale concept plan and a typical stormwater CIP. This CIP has required significantly more engineering analysis and higher participation by more senior engineers than we typically provide using our toolkit approach. In addition, we would like to include one more round of Client review of the NCRA CIP to account for the complexity of this CIP. This task is also known as Phase 510, Task B70 on our invoices.

Task 5.1.b.ix, Update Draft List and Geodatabase and Create Map, is amended to include an additional round of review and edits to Known Issue definitions, Potential Project definitions, and creation of interim Project Data Sheets to facilitate internal discussions (up to 40 Project Data Sheets, up to 2 drafts). This task is also known as Phase 510, Task B90 on our invoices.

Task 5.3.c, Prepare Project Fact Sheets for CIP List, is amended to include nine two-page CIP fact sheets and one four-page fact sheet for the NCRA CIP and one additional round of review for the NCRA CIP Fact Sheet. This task is also known as Phase 530, Task C00 on our invoices.

## Supplement Scope of Work with New Tasks

A new Phase G, Additional Studies, and a new Task 9.0, Targeted Storm Sewer Capacity Study, is added to the scope of work. See detailed scope of work below, and see detailed fee estimate in Attachment A.

## Phase G: Additional Studies

### *UNDERSTANDING*

A home at the south end of SE 121st Ct. in Happy Valley has flooded repeatedly since 2014. The home is at the low end of a cul-de-sac. There is a catch basin inlet in front of the house and the storm sewer is located across their property in an easement. Other known issues exist in Happy Valley on the south side of Mt. Scott that are believed to be related to capacity of the storm sewer inlets, pipes, and detention pipes to provide the expected level of service for managing stormwater runoff. This project is to evaluate capacity of the existing (highlighted yellow) systems for approximately the area shown in Figures 1. The following specific known issues have been identified through the Storm System Master Planning process:

- Issue #304 at SE Cedar Way Culvert
- Issue #306 a modified culvert under a path
- Issue #314 on SE Adoline Ave.
- Issue #323 on SE Cedar Way Drainage
- Issue #324 at 11183 SE Cedar Way
- Issue #330 on SE Cougar Pl. and SE William Otty
- New issue on SE 121st Ct.

An online map of the mapped storm sewer system and known issues is available at the following URL:
https://otak.maps.arcgis.com/apps/webappviewer/index.html?id=fd5768d1c11946b19c5c48bdffb8c74a

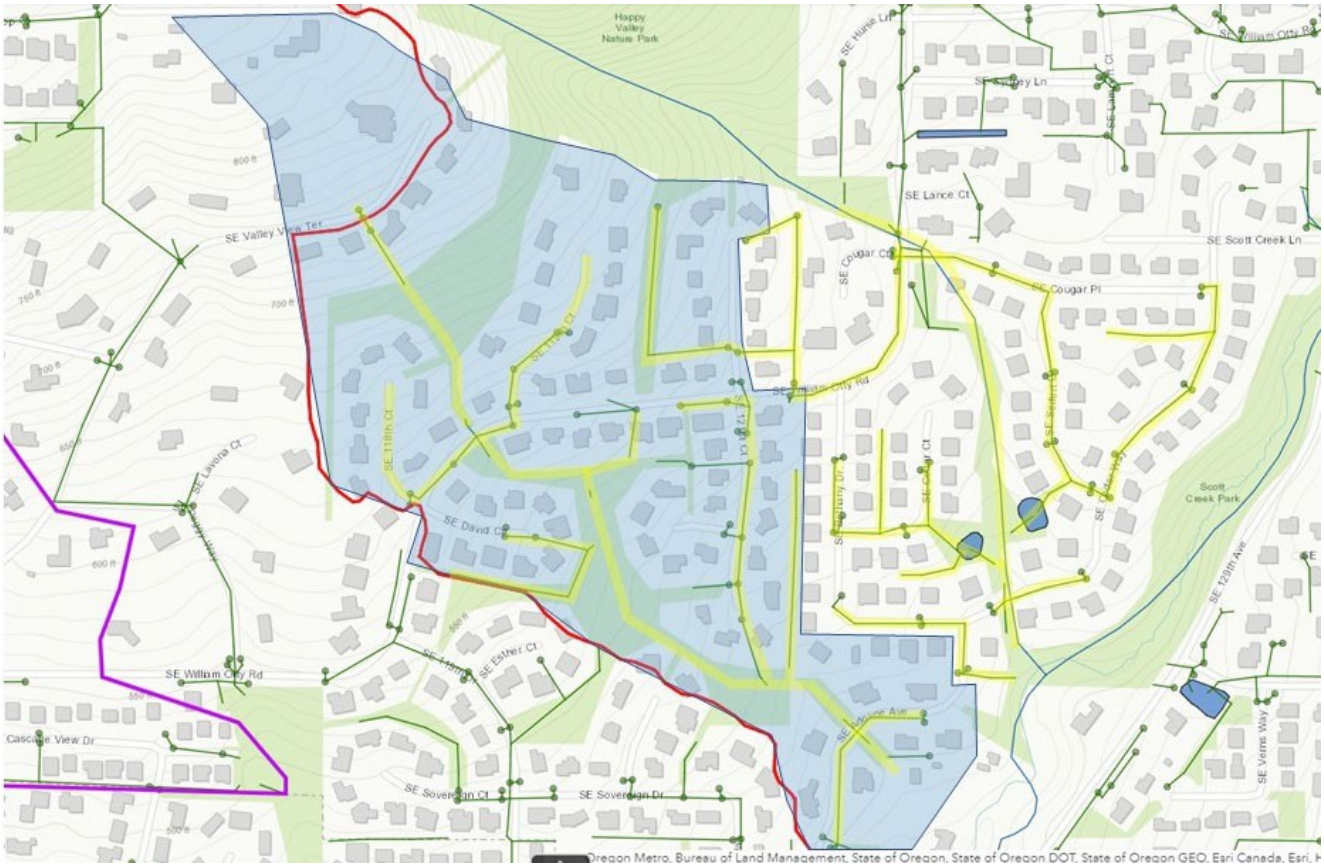


***Figure 1: Estimate of Study Area draining through SE 121st Court and downstream to Mt. Scott Creek, along with adjacent storm sewer system to be included in the hydraulic model***

## *SCOPE OF WORK*

# 9. Targeted Storm Sewer Capacity Study

The purpose of this task is to evaluate capacity of the existing (highlighted) systems for approximately the area shown in Figures 1 and provide recommendations for conveyance system improvements. The following specific known issues have been identified through the Storm System Master Planning process:

- Issue #304 at SE Cedar Way Culvert
- Issue #306 a modified culvert under a path

- Issue #323 on SE Cedar Way Drainage
- Issue #324 at 11183 SE Cedar Way
- Issue #330 on SE Cougar Pl. and SE William Otty
- New issue on SE 121st Ct.

## 9.1. Data Review

Consultant shall:

a. Submit a request for available as-built information from the City of Happy Valley and Clackamas WES.
b. Coordinate with the City and Clackamas WES on transfer of files.
c. Review previous studies and as-builts to identify and to extract data useful to this study (i.e.-study by Pacific Water Resources).

d. Update available system mapping information to better define the limits of the system that needs to be evaluated in this study and prepare data and maps to support field investigations.
e. Visit the study area to confirm the limits of the contributing drainage area by field verifying storm sewer connections (i.e.-inlets, manholes, pipes, ditches, etc.) and observe storm sewer conditions (i.e.- evidence of clogging, siltation, vegetation, standing water, etc.).
f. Walk the stream channels (where accessible) within the study area to observe conditions (i.e.- width, depth, slope, vegetation, sign of erosion, slope instability, channel incision, etc.).
g. Update available system mapping information to better define the limits of the system that need to be evaluated in this study and update the data and maps to support field investigations.
h. Visit the study area to field verify above-ground flow paths (i.e. gutter connections, curb-less streets, inlet grate types, etc.) to document possible sources of runoff bypass to the system under evaluation.
i. Prepare a map of the storm sewer system to be modeled for the study area.
j. Prepare a specific survey work plan and submit a request to Clackamas WES for authorization of Task 9.3 Data Collection budget to execute the survey work plan.

### *Assumptions*

- The site visits to field verify and observe existing system conditions are budgeted to happen separately.
- We will only model detention pipes that have available as-built plans.

### *Deliverables*

- Survey Work plan
- Map of storm sewer system draining to Mt. Scott Creek through a culvert under SE Adoline Avenue
- Map of storm sewer system draining to Mt. Scott Creek downstream of SE Cedar Way

## 9.2. Inlet Capacity Analysis

The purpose of this task is to evaluate the capacity for existing capture of stormwater runoff in the study area and identify areas where stormwater flow exceeds the capacity of the inlets.

Consultant shall:

a. Perform inlet capacity calculations following the ODOT Hydraulic Manual to identify the appropriate inlet spacing on up to ten (10) streets within the study area. Rather than modeling every inlet, identify conditions on each street that represent worse case and typical conditions and determine the ideal inlet spacing.
b. Inventory inlet spacing on each street and compare against the results of the capacity calculations to identify locations where the system would benefit from additional inlets.
c. Perform a literature search on inlet capture efficiency to identify options for replacing the existing grates with alternate inlet grates and recommend locations that would benefit from the increased efficiency.
d. Review the current design standards with respect to inlet spacing and comment on whether there is an opportunity to modify the design standards based upon findings of this analysis.
e. Summarize findings and recommendations in a Draft Inlet Capacity Memorandum
f. Incorporate response to review comments and prepare a Final Inlet Capacity Memorandum

### *Assumptions*

Inlet capacity is anticipated to include the following streets:

- SE 118th Court
- SE William Otty Road
- SE 121st Court
- SE 119th Court
- SE David Court

- SE Adoline Avenue

### *Deliverables*

- Draft and *Final Inlet Capacity Memorandum* Current Condition Calculations

## 9.3. Data Collection

The purpose of this task is to perform topographic survey to collect storm sewer data per the approved work plan.

Consultant shall:

a. Establish survey control to record data on the same datums as Clackamas WES GIS.
b. Perform up to eight (8) days of topographic data collection to survey storm sewer system features (.i.e.- catch basins, manholes, pipe type/size, culvert inverts, ditch cross-section, etc.) determined in the survey work plan to be necessary for hydrologic and hydraulic model input.
c. Process data collected and populate a geodatabase file

### *Assumption*

- Up to 100 nodes need to be surveyed
- 12-15 Nodes per day
- Otak may subcontract for traffic control services for locations where surveyors determine it is necessary for their safety.

### *Deliverables*

- Storm modeling data geodatabase

## 9.4. Existing Conditions

The purpose of this task is to simulate hydraulic performance of the existing storm sewer system to identify problem areas, to quantify the magnitude/frequency of the problem, and create a tool for testing solutions.

Consultant shall:

a. Compile storm system geometry data (rims, inverts, pipe size & type, etc., cross-sections, stage/storage, etc.) from as-builts, GIS, and/or topographic survey.
b. Develop hydraulic model of storm sewer conveyance systems, including storm sewer mainlines and existing detention pond(s) using the XP-SWMM software program.
c. Review and/or analyze existing data to determine downstream model boundary conditions.
d. Review and crop LiDAR based data to prepare a DTM file for the study area.
e. Delineate drainage basin areas contributing flow to each location defined for flow input in the model and characterize the land use (soil, slope, land cover, impervious area, etc.) to determine runoff curve numbers.
f. Calculate time of concentration for each basin and/or subbasin.
g. Perform design storm based hydrologic calculations using the Santa Barbara Urban Hydrograph Method and the XP-SWMM software program for the 2-year, 5-year, 10-year, and 25-year, 24-hour design storms.
h. Link the hydrology model to the hydraulic model.
i. Run the hydraulic model for multiple hydrographs, including the following:

- 2-year, 24-hour storm hydrograph
- 5-year, 24-hour storm hydrograph
- 10-year, 24-hour storm hydrograph

- 25-year, 24-hour storm hydrograph

j. Review the model performance for continuity and stability and make adjustments to model input to achieve a minimum of "good" continuity.
k. Identify locations where the model shows that the system capacity is exceeded.
l. Iteratively, modify the hydraulic model to include additional detail (i.e.-laterals, inlets, multi-links, weirs, storage nodes, etc.) to provide enough definition of conveyance capacity to contain all of the stormwater in the model and re-create a simulation of the known issues.
m. Summarize the frequency, depth, velocity, and volume of water in the model at each location of a known issue based upon model results in a Model Results Output Table.
n. Describe the source of the problem in the study area.
o. Identify possible solutions to the problem and recommend a work plan to Clackamas WES for hydrologic and hydraulic modeling to be completed to test the solutions under the Proposed Conditions Task.

### *Assumptions*

- The study area drains to two locations along Mt. Scott Creek, so two model will be prepared one for each branch of the study area. This will improve data management and model run times.
- Each model will have less than 60 nodes.
- Detention systems located upstream from the part of the storm sewer system being modeled will be ignored.

### *Deliverables*

- Model Results Output Table
- XP-SWMM model files (compressed *.zip folder)
- Recommendations for Modeling Proposed Solutions

## 9.5. Proposed Conditions

The purpose of this task is to test potential solutions to solving the problems identified in the Existing Conditions Modeling.

Consultant shall:

a. Modify the Existing Conditions Models for the study area and create Proposed Scenario Models for up to ten (10) scenarios to test the effectiveness of ten changes to the storm sewer system for reducing the magnitude and/or frequency of problems.
b. Attend a 2-hour workshop with County staff to review results of the proposed conditions modeling, select solutions to carry forward as recommendations, and define the scope of up to four (4) Storm Sewer Improvement projects.
c. Modify the Existing Conditions Models for the study area and create Proposed Conditions Models to simulate one set of recommendations and quantify the benefits to reducing the magnitude and frequency of flooding.

### *Assumptions*

- One scenario is defined as one contiguous system improvement (i.e. upsizing a run of storm sewer pipe, or adding in one storage facility, etc.).

### *Deliverables*

- Model Results Output Table
- XP-SWMM model files (compressed *.zip folder)

### 9.6. Documentation

The purpose of this task is to prepare documentation of the storm sewer capacity analysis.

Consultant shall:

a. Prepare an introductory narrative (1 page) to describe the purpose and need for this study.
b. Summarize hydrologic model input data and output results (2 pages).
c. Summarize hydraulic model input data and output results (2 pages).
d. Prepare a narrative describing the conclusions drawn from review of model results (2 pages).
e. Prepare a narrative describing the scenarios evaluated (4 pages).
f. Prepare a narrative describing recommendations for improvements to the storm sewer system (2 pages).
g. Prepare Schematic Diagram and Planning Level Cost Estimates for each recommendation.
h. Combine sections into a Draft Targeted Storm Sewer Capacity Memorandum.
i. Incorporate review comments into a Final Targeted Storm Sewer Capacity Memorandum.

#### *Deliverables*

- Draft and Final Targeted Storm Sewer Capacity Memorandum

### 9.7. Task Management

The purpose of this task is to monitor project progress with respect to scope, schedule, and budget; to maintain regular communication with Clackamas WES, and to manage the quality control process.

Consultant shall:

a. Prepare project work plan and hold kick-off meeting with team to review work plan and set expectations for the scope of work performed under this task.
b. Prepare detailed schedule and one update specific to this task.
c. Plan and track progress with respect to scope, schedule, and budget.
d. Conduct regular check-in phone calls with the Clackamas WES Project Manager.
e. Attend up to two (2), 1-hour project coordination meetings
f. Coordinate quality review of study deliverables.

#### *Deliverables*

- Task-specific Project Schedule

## Adjust Billing Rates

The contract Exhibit F, Fee Schedule, is amended to reference the category billing rates in Attachment B, Otak 2021 Billing Rates, for supplemental work. The existing rate schedule remains in effect for original scope.

## Proposed Fee Summary

| | |
|---|---|
| ***Contract Fee Total*** | ***$476,999*** |
| Above additional scope (existing tasks) | $51,402 |
| Above additional scope (new tasks) | $160,200 |
| Supplement Expenses | $4,000 |
| Supplement Fee Total | $215,602 |
| ***Revised Fee Total*** | ***$692,601*** |

See Attachment A for the detailed fee.