EXHIBIT "A"

SCOPE OF WORK

CITY OF OLYMPIA
ELLIOTT AND FIR STREET RESERVOIRS SEISMIC RETROFIT PROJECT

PROJECT OVERVIEW

The City of Olympia would like to design seismic retrofits for the Elliott and Fir Street reservoirs to address seismic deficiencies. The City has previously completed assessments of these reservoirs in 2001 and 2011. The City would like to review these previous assessments and update the seismic analysis for each reservoir considering current building code requirements and the current conditions of the reservoirs. Based on these updated assessments, the City would like to design and construct seismic retrofit improvements for these reservoirs.

The 2.0 MG Elliott reservoir is a circular concrete tank with prestressed walls. Previously identified deficiencies for the Elliott reservoir include excessive roof spans, insufficient capacity for lateral force transfer at the edge of the roof diaphragm, overstress in seismic cables in the base of the wall due to passive soil pressure, and corrosion of rebar in concrete columns.

The two 2.5 MG reservoirs at the Fir Street site are rectangular with truncated corners, were originally constructed in the 1930s, and have had several phases of improvements over the years. Previously identified deficiencies for the two 2.5 MG Fir Street reservoirs include insufficient roof diaphragm reinforcing, and cracking/spalling at the top of interior concrete columns.

As part of this project, the City would also like the following reservoir accessories and appurtenances to be evaluated and improvements designed so that they can be constructed while the reservoirs are out of service for construction of the seismic retrofits:

<u>Elliott Reservoir</u>

1. The existing hatch serves as an access point, vent, and overflow. When the Department of Health completed their last sanitary survey, they requested that the vent and overflow be improved to meet current standards.

<u>Fir Street Reservoirs</u>

1. The existing vents are below grade and appear to be undersized. They need to upgraded to meet current standards.

2. Replace the existing steel piping and valves in the McCormick Valve House.

3. If possible, install new flowmeters on the reservoir outlet lines in the McCormick Valve House. Abandon existing flowmeters on the west side of McCormick Street.

4. Evaluate the integrity of the existing reservoir liners and develop estimated costs for alternatives to eliminate leakage from the reservoirs.

5. Reposition the staff gauges in the reservoir to be consistent with the existing level sensors.

SCOPE OF WORK

Gray & Osborne has prepared the following scope of work for this project.

Task 1 –Predesign Services

1. Provide Project Management

   Provide comprehensive project management of the Predesign phase of the project. This task will include coordinating and managing the schedule and budget for the consultant team, including subconsultants. A project schedule will be developed and the City will be provided with monthly progress updates. This task will also include coordination with other project stakeholders and regulatory agencies and assistance with the City's public communication program.

2. Review Background Information

   Review previous reports and record drawings.

3. Complete Preliminary Design Analysis

   Complete field inspections of each of the reservoirs and complete preliminary design analysis. Gray & Osborne will provide the following services to support completion of this task.

   a. Complete Inspection of the Elliott Street Reservoir

      Complete a field inspection of the Elliott Street Reservoir to assess the current condition of the interior and exterior of the reservoir, review findings from previous reports, and confirm record drawing information.

b. Complete Inspection of the Fir Street Reservoirs

Complete a field inspection of the Fir Street Reservoirs to assess the current condition of the interior and exterior of the reservoirs, review findings from previous reports, and confirm record drawing information. As part of the Fir Street Reservoir inspection, ground penetrating radar will be used to determine if any voids exist under the reservoir slabs.

c. Identify Reservoir Seismic Performance Objectives

Review criticality of each reservoir and define seismic performance objectives in accordance with ASCE 41-13.

d. Complete Geotechnical Assessment of the Reservoir Sites

- Complete site-specific seismic hazard and response analysis to determine seismic design parameters by code-based methods.
- Complete seismic slope stability analysis and provided seismic earth pressure recommendations with updated seismic design parameters.
- Develop site-specific foundation bearing capacities.
- Prepare geotechnical report and meet with City to review.

e. Complete Seismic Evaluation of the Reservoirs

Complete seismic evaluations for each reservoir using defined seismic performance objectives. Check strength and deformation compatibility of all components of the reservoir in accordance with current building code requirements. Identify live load capacity for the roof of each reservoir.

f. Identify Deficiencies and Evaluate Potential Improvement Alternatives

Characterize deficiencies and identify improvement alternatives. Any related reservoir component deficiencies (such as piping, drains, vents, access, and liners) will also be identified. Evaluate retrofit options using several criteria, including minimizing impact to reservoir operation and construction cost. At least two retrofit options will be generated for each deficiency.

g. Prepare Draft Predesign Report

Prepare a draft Predesign Report for the project. The report will document the findings of the seismic analysis, incorporate the alternatives analyses for correcting identified deficiencies and document proposed improvements. The Predesign Report will meet the requirements of

WAC 246-290-110 for a project report. The draft report will be submitted to the City for review. We will meet with City staff to review the report.

h. Prepare Final Predesign Report

Address any review comments provided by the City and prepare a final Pre-Design Report for the project.

5. Complete QA/QC Review

Conduct Quality Assurance/Quality Control reviews of the Pre-Design Report.

6. Attend Meetings

Attend meetings with City staff and project stakeholders during the Predesign phase. The following meetings have been anticipated:

- Project Kick-off Meeting
- Predesign Report Review Meeting

Task 2 –Design Engineering Services

1. Provide Project Management

Provide comprehensive project management of the Design phase of the project. This task will include coordinating and managing the schedule and budget for the consultant team and subconsultants. The project schedule will be updated and the City will be provided with monthly progress updates. This task will also include coordination with other project stakeholders and regulatory agencies and assistance with the City's public communication program.

2. Complete Reservoir Retrofit Design

Complete civil and structural engineering design of the Elliott and Fir Street Reservoirs Seismic Retrofit Project. This task includes completing the engineering analysis and calculations necessary to complete the design. This task also includes preparation of detailed plans, specifications, and cost estimates to adequately describe the work for a public works contractor. Gray & Osborne will provide the following services to complete this task.

a. Prepare 30 Percent Plans and Cost Estimate

Prepare 30 percent plans and construction cost estimates for the project. Plans will include preliminary civil and structural sheets including reservoir civil and structural plans and preliminary details. A specification

outline will be submitted. 30 percent plans and cost estimates will be submitted to the City for review and comment. Gray & Osborne will meet with City staff to complete a facilitated review of the plans.

b. Prepare 60 Percent Plans, Specifications, and Cost Estimate

Prepare 60 percent plans, specifications, and construction cost estimates for the project. City comments from the 30 percent submittal will be addressed. Plans will be provided with additional detail. Specifications will be prepared in CSI format with applicable City of Olympia General Conditions and contract forms. 60 percent plans, specifications, and cost estimates will be submitted to the City for review and comment. Gray & Osborne will meet with City staff to complete a facilitated review of the plans and specifications.

c. Prepare 90 Percent Plans, Specifications, and Cost Estimate

Prepare 90 percent plans, specifications, and construction cost estimates for the project. City comments from the 60 percent submittal will be addressed. Plans and specifications will be near completion. Specifications will be prepared in CSI format with applicable City of Olympia General Conditions and contract forms. 90 percent plans, specifications, and cost estimates will be submitted to the City for review and comment. Gray & Osborne will meet with City staff to review any comments.

d. Prepare Final Plans, Specifications, and Cost Estimate

Prepare final plans, specifications, and construction cost estimates for the project. City comment from the 90 percent submittal will be addressed. Plans and specifications will be suitable for public works bid. Specifications will be prepared in CSI format with applicable City of Olympia General Conditions and contract forms. Final plans, specifications, and cost estimates will be submitted to the City for regulatory approval and distribution to contractors.

e. Provide Permitting Assistance

Assist the City with applying for and obtaining the required permits for the project. It is anticipated that Gray & Osborne will take the lead and will provide engineering support for the following permit applications:

- Department of Health Project Approval
- City of Olympia Building Permit

Permit application and review fees have not been included in this scope of work. It has been assumed that these will be paid directly by the City.

Since the City of Olympia is receiving funding for the project through the Drinking Water State Revolving Fund (DWSRF) Program, it is anticipated that the City will need to satisfy the Investment Grade Energy Audit requirement of the DWSRF program. Gray & Osborne will work with City and DWSRF staff to determine the extent of documentation necessary.

3. Complete QA/QC Review

Conduct Quality Assurance/Quality Control reviews of the 30 percent, 60 percent submittal, 90 percent submittal, and final submittal for project.

4. Attend Meetings and Site Visits

Attend meetings with City staff, stakeholders, and the public during development of the plans and specifications to discuss project issues and review draft deliverables. Complete site visits and meet with regulatory agencies as necessary to coordinate the work. Prepare exhibits for communication with the public and stakeholders.

- 30 Percent Design Review Meeting
- 60 Percent Design Review Meeting
- 90 Percent Design Review Meeting
- Final Design Review Meeting
- Prebid Walkthrough
- Public Meetings (1)

5. Provide Bid and Award Services

Assist the City with the bid and award process for the Elliott and Fir Street Reservoir Seismic Retrofit project. Participate in a prebid walkthrough. Respond to bidder inquiries. Prepare addenda as necessary. Review bid results and bidder qualifications. Prepare an award recommendation for the City.

Task 3 –Construction Management Services

1. Provide Project Management

Provide project management services during the Construction phase of the project. This task will include coordinating and managing the schedule and budget for the project team, including subconsultants. The City will be provided

with budget updates on a monthly basis. This task will also include coordination with the contractor and regulatory agencies and assistance with the City's public communication program.

2. Provide Construction Management Services

Gray & Osborne will assist the City with management of the construction phase of the project by providing the following services:

a. Review Submittals

Review equipment, material, and plan submittals from the contractor for conformance with the Plans and Specifications. Return submittal review comments to the City.

b. Review and Respond to Requests for Information

Review and respond to requests for information and clarifications from the contractor. Prepare any clarification drawings or design modifications necessary to complete the project. Prepare and distribute responses.

c. Review, Negotiate, and Prepare Change Orders

Review, negotiate and prepare change orders as necessary for review and approval by the City.

d. Attend Construction Meetings

Attend the preconstruction conference and regular project progress meetings to coordinate work activities with the contractor and City. It is anticipated that there will be biweekly construction meetings. Conduct site visits as necessary to review project progress and resolve construction issues. 18 meetings have been assumed.

e. Coordinate Materials Testing and Special Inspection and Review Results

Coordinate materials testing and special inspection required during construction. Review results of materials testing and special inspection for conformance with the plans and specifications. Materials testing and special inspection for the project will be conducted by our subconsultant, MTC.

f. Inspect Structural Components

Provide on-site inspection of structural components of the project as requested by the City. Eight visits have been assumed.

g. Prepare Record Drawings

Prepare record drawings in AutoCAD format based on contractor and field inspector redlines and deliver to the City.

3. Provide Startup and Testing Services

Gray & Osborne will provide the following Start-up, Testing, and Training services for the project:

a. Review Startup and Testing Plans

Review startup and testing plans prepared by the construction contractor. Provide feedback to the contractor on these plans.

b. Coordinate and Assist with Start-up and Testing Activities

Coordinate startup and testing activities with the contractor and City staff. Be on-site to assist with the startup and testing process.

Task 6 – Project Management Reserve

The project management reserve fund has been established to allow the City to authorize additional work tasks to address unanticipated engineering issues without executing a formal contract amendment. The City must provide prior written authorization before using any project management reserve funds.

ASSUMPTIONS

The following assumptions have been made in developing this scope of work. Preliminary engineering and alternatives analyses will be completed during preliminary design that will further define the improvements to be constructed.

1. The City will drain each of the reservoirs during the pre-design evaluation to allow Gray & Osborne personnel access to the reservoirs for inspection. We understand that the Fir Street Reservoir inspections will need to occur on separate trips.

2. Topographic survey will be provided by the City of Olympia.

3. One bid package will be prepared for the project that describes the work at both reservoir sites, including McCormick Valve House improvements.

4. Construction duration is estimated to be 8 months and it is assumed that only one reservoir will be taken out of service at a time.

5. An allowance of $20,000 has been assumed for materials testing and special inspection.

6. The City of Olympia will provide daily construction inspection.

7. The City will review certified payrolls and complete employee wage rate interviews.

BUDGET

Based on the Scope of Work described above, the total estimated cost for engineering services is **$427,000** as shown in the attached Exhibit "B."

DELIVERABLES

Deliverables will be provided in the following format:

- Reports – five paper copies
- Plans and Specifications – five paper copies of each submittal
- Test Reports and Other Project Documentation – three paper copies
- Record Drawings – three paper copies

Electronic files will also be supplied for each deliverable.

PROJECT SCHEDULE

The anticipated project schedule is as follows:

Notice to Proceed	April 2019
Complete Predesign	April 2019 - July 2019
Complete Engineering Design	July 2019 – December 2019
Construct Reservoir Retrofit Project	March 2020 – October 2020

EXHIBIT "B"

ESTIMATED PROJECT COST SUMMARY

City of Olympia - Elliot and Fir Street Reservoirs Seisimic Retrofit Project

Task 1 - Predesign Services	$118,200
Task 2 - Design Engineering Services	$181,200
Task 3 - Construction Management Services	$112,900
Task 4 - Management Reserve	$15,000
Total Estimated Cost	**$427,000**

EXHIBIT "B-1"

Task 1 - Predesign Services
Estimated Cost

City of Olympia - Elliot and Fir Street Reservoirs Seismic Retrofit Project

Tasks	Principal Hours	Project Mgr. Hours	Civil Eng. Hours	Structural Eng. Hours	Electrical Eng. Hours	Engineer-In-Training Hours	CADD Tech. Hours
1. Provide Project Management		8					
2. Review Background Information	1	4	4	8		4	
3. Complete Preliminary Design Analysis							
a. Complete Inspection of the Elliot Reservoir		8		8		8	
b. Complete Inspection of the Fir Street Reservoirs		16		16	4	16	
c. Identify Reservoir Seismic Performance Objectives	2	4		8		8	
d. Complete Geotechnical Assessment of the Reservoirs		2		4			
e. Complete Seismic Evaluation of the Reservoirs	2	4	8	24		40	
f. Identify Deficiencies and Evaluate Potential Improvement Alternatives	2	8	16	24	8	40	16
f. Prepare Draft Predesign Report	2	8	16	16	2	24	16
g. Prepare Final Predesign Report		2	4	4	1	4	4
4. Complete QA/QC Review	4	4	4	4		4	
5. Attend Meetings		8	4	8		4	
Hour Estimate:	13	76	56	124	15	152	36
Fully Burdened Billing Rate Range:*	$129 to $190	$119 to $190	$103 to $135	$106 to $167	$113 to $190	$81 to $130	$48 to $126
Estimated Fully Burdened Billing Rate:*	$175	$170	$130	$150	$160	$120	$90
Fully Burdened Labor Cost:	$2,275	$12,920	$7,280	$18,600	$2,400	$18,240	$3,240

Subtotal Labor Cost:	$	64,955
Direct Non-Salary Cost:		
Mileage & Expenses (Mileage @ IRS Rate)	$	369
Subconsultant:		
Geotechnical Investigation (Landau Associates)	$	46,958
Ground Penetrating Radar (GPRS)	$	3,400
Subconsultant Overhead (5%)	$	2,518
TOTAL ESTIMATED COST:	**$**	**118,200**

EXHIBIT "B-2"

Task 2 - Design Engineering Services
Estimated Cost

City of Olympia - Elliot and Fir Street Reservoirs Seismic Retrofit Project

Tasks	Principal Hours	Project Mgr. Hours	Civil Eng. Hours	Structural Eng. Hours	Electrical Eng. Hours	Engineer-In-Training Hours	CADD Tech. Hours
1. Provide Project Management		16					
2. Complete Reservoir Retrofit Design							
a. Prepare 30 Percent Plans and Cost Estimate	2	16	60	40	8	80	180
a. Prepare 60 Percent Plans, Specifications and Cost Estimate	4	16	60	40	16	80	180
b. Prepare 90 Percent Plans, Specifications, and Cost Estimate	4	16	40	24	8	60	124
c. Prepare Final Plans, Specifications and Cost Estimate	4	16	24	16	4	24	64
d. Provide Permitting Assistance		4	2	16		16	16
3. Complete QA/QC Review	16	16	16	16	4	16	
4. Attend Meetings and Site Visits		30	6	30		15	
5. Provide Bid and Award Services		8	12	4			8
Hour Estimate:	30	138	220	186	40	291	572
Fully Burdened Billing Rate Range:*	$129 to $190	$119 to $190	$103 to $135	$106 to $167	$113 to $190	$81 to $130	$48 to $126
Estimated Fully Burdened Billing Rate:*	$175	$170	$130	$150	$160	$120	$90
Fully Burdened Labor Cost:	$5,250	$23,460	$28,600	$27,900	$6,400	$34,920	$51,480

Subtotal Labor Cost:	$	178,010
Direct Non-Salary Cost:		
Mileage & Expenses (Mileage @ IRS Rate)	$	437
Printing	$	600
Subconsultant:		
Geotechnical Review (Landau Associates)	$	2,050
Subconsultant Overhead (5%)	$	103
TOTAL ESTIMATED COST:	**$**	**181,200**

EXHIBIT "B-3"

Task 3 - Construction Management Services
Estimated Cost

City of Olympia - Elliot and Fir Street Reservoirs Seismic Retrofit Project

Tasks	Principal Hours	Project Mgr. Hours	Civil Eng. Hours	Structural Eng. Hours	Electrical Eng. Hours	Engineer-In-Training Hours	CADD Tech. Hours
1. Provide Project Management		16					
2. Provide Construction Management Services							
a. Review Submittals	2	8	16	16	4	40	
b. Review and Respond to RFIs	4	32	16	32	2	24	16
b. Review, Negotiate and Prepare Change Orders	4	16	8	8		8	
d. Attend Construction Meetings		72	16	36	4	24	
e. Coordinate Materials Testing/Special Inspection and Review Results		4		16			
f. Inspect Structural Components		8		32			
g. Prepare Record Drawings		4	4	4		16	24
3. Provide Startup Services							
a. Review Startup, Testing, and Commissioning Plans		6	6	6		6	
b. Coordinate and Assist with Startup Activities		24	4	8	4	4	
Hour Estimate:	10	190	70	158	14	122	40
Fully Burdened Billing Rate Range:*	$129 to $190	$119 to $190	$103 to $135	$106 to $167	$113 to $190	$81 to $130	$48 to $126
Estimated Fully Burdened Billing Rate:*	$175	$170	$130	$150	$160	$120	$90
Fully Burdened Labor Cost:	$1,750	$32,300	$9,100	$23,700	$2,240	$14,640	$3,600

Subtotal Labor Cost:	$	87,330
Direct Non-Salary Cost:		
Mileage & Expenses (Mileage @ IRS Rate)	$	1,817
Printing	$	600
Subconsultant:		
Materials Testing/Special Inspection (MTC)	$	20,000
Geotechnical Consultation (Landau Associates)	$	2,050
Subconsultant Overhead (5%)	$	1,103
TOTAL ESTIMATED COST:	**$**	**112,900**