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18 April 2022

Mr. Steve Wall, P.E.  
Public Works Director  
City of Camas  
616 NE 4<sup>th</sup> Avenue  
Camas, WA 98607

**Subject: Proposal for Execution of Field Work for the Cyanobacterial Lake Management QAPP for Lacamas, Round, and Fallen Leaf Lakes**

Dear Mr. Wall,

On behalf of Geosyntec Consultants, Inc. (Geosyntec), we are pleased to present the City of Camas (City) with our scope of work for execution of the previously completed and Washington Department of Ecology (Ecology)-approved Lacamas, Round, and Fallen Leaf Lakes Quality Assurance Project Plan (QAPP).

This proposal outlines the tasks needed to complete field work to collect data in support of a Cyanobacterial Lake Management Plan, as outlined in the QAPP. The intent of this scope of work is to collect the water quality and hydraulic data needed to understand the algal blooms that have become common within the lakes. This data will also inform the strategies that can be developed with the intention of decreasing the frequency and duration of the algal blooms.

This proposal is divided into three main phases, each containing multiple tasks, which are summarized as follows:

- Phase 1: Administration and Coordination
- Phase 2: Field Work Execution
- Phase 3: Data Management

The scope of services for each phase and accompanying tasks are presented below.

## **PHASE 1: ADMINISTRATION AND COORDINATION**

### **Objective**

The objective of this task is to effectively manage the project schedule and budget, prepare for and coordinate sampling events, and provide timely progress updates.

### **Activities**

- Project set up and monthly invoicing
- Internal progress meetings within Geosyntec and with our subcontractors
- Progress meetings with the City
- Subcontract and invoice management for field supplies and other purchases

### **Deliverables**

- Monthly invoices
- Summary slides for progress meetings with the City

### **Assumptions**

- Project management and invoicing tasks will last up to 18 months
- One 30 minute virtual meeting per month for 12 months is assumed for internal meetings
- One 1-hour virtual meeting per quarter for 5 quarters is assumed for City progress meetings

## **PHASE 2: FIELD WORK EXECUTION**

### **Task 2.1: Field Preparation**

#### **Objective**

Set the project up for success by ensuring sampling events are safe and well-coordinated.

### **Activities**

- Create a health and safety plan; health and safety coordinators, staff members and subcontractors to review
- Review Ecology SOPs as specified in the QAPP
- Coordinate sampling schedule and personnel
- Develop field templates (e.g. daily field reports, data specific sample logs, etc.), as necessary

### **Deliverables**

- Log of SOPs reviewed

### **Assumptions**

- No major health and safety issues that prevent work from occurring, or require a significant change to the scope or budget, will be discovered prior to sampling
- No SOPs beyond those listed in the QAPP will need to be reviewed or developed

## **Task 2.2: Flow Gage Installation and Data Downloads**

### **Objective**

Obtain continuous flow data from Lacamas Creek at Goodwin Road for up to 12 months.

### **Activities**

- Research, select, and procure equipment
- Install equipment
- Interface with data collection equipment
- Apply existing rating curve
- Manage data and troubleshoot equipment or data issues that may arise

### **Deliverables**

- Continuous flow record for Lacamas Creek at Goodwin Road

### **Assumptions**

- Installation of the flow gage can be completed using two field personnel in one field visit, and one follow up visit to verify the equipment is functioning properly.
- Flow data do not need to be available remotely
- Flow data do not to be provided in a specific file format
- Flow data will not need to be uploaded to Ecology's Environmental Information Management (EIM) database
- A new rating curve will not be developed – the existing rating curves from previous flow monitoring efforts at this location will be sufficient
- Flow data will only be downloaded/recovered during creek sampling events (approximately monthly)
- Flow data will be collected for up to 12 months; after that time equipment will be removed unless the City requests that it remain. If it remains, it will become the City's responsibility unless an alternate agreement is made.

### **Task 2.3: Thermistor Installation and Data Downloads**

#### **Objective**

Obtain continuous temperature data from Lacamas and Round Lakes.

#### **Activities**

- Research, select, and procure materials
- Install equipment
- Interface with data collection equipment
- Download data during lake sampling visits

#### **Deliverables**

- Continuous temperature record for Lacamas and Round Lakes

#### **Assumptions**

- Installation of both thermistors can be completed using two field personnel in one field visit

- A contingency for replacement parts is included in case a small number of sensors stop functioning or become dislodged. Costs for full replacement of thermistor chains in case of a major event, such as theft, vandalism, or destruction by flood debris, is not included.
- Data do not need to be available remotely
- Data do not need to be provided in a specific file format
- Data will not need to be uploaded to Ecology's EIM database
- Thermistors will be installed only in the locations specified in the QAPP
- Data will only be retrieved during lake sampling events, or as necessary to prevent data that has not yet been downloaded from being overwritten (approximately 8 times)
- Boats needed to access thermistors for data recovery will be provided by a subcontractor.
- Thermistor data will be collected for up to 12 months; after that time equipment will be removed unless the City requests that it remain. If it remains, it will become the City's responsibility unless an alternate agreement is made.

## **Task 2.4: Surface Water Sampling**

### **Objective**

Obtain surface water samples from creeks and lakes, and vertical lake water quality profiles in accordance with the QAPP.

### **Activities**

- Prepare and/or rent field equipment
- Obtain laboratory containers for sample collection
- Conduct surface water sampling or water quality profiling
- Upload notes and data to secure server after event completion

### **Deliverables**

- Field notes from sampling events
- Invoices for rented equipment submitted with monthly invoices

### **Assumptions**

- Data will not be formally summarized in a written document in advance of the draft Lake Management Plan, which is being prepared under a separate scope of work

- Surface water sampling refers to only lake (Lacamas, Round, and Fallen Leaf) and creek (five locations specified in the QAPP) water sampling
- A City technician will be available to assist with at least 75% of surface water sampling events
- Sampling will consist only of the parameters specified in the QAPP, at the frequency and locations specified in the QAPP

## **Task 2.5: Sediment Sampling**

### **Objective**

Obtain sediment samples from each of the three lakes as specified in the QAPP.

### **Activities**

- Prepare and/or rent field equipment
- Obtain laboratory containers for sediment samples
- Conduct sediment sampling
- Upload notes and data to secure server after event completion

### **Deliverables**

- Field notes from sampling events

### **Assumptions**

- Data will not be formally summarized in a written document in advance of the draft Lake Management Plan, which is being prepared under a separate scope of work
- Sampling will consist only of the parameters specified in the QAPP, at the frequency specified in the QAPP
- Sampling will preferably occur prior to lake stratification, which typically occurs in early summer
- Sediment sampling will be performed by a subcontractor under the supervision of Geosyntec

## **Task 2.6: Stormwater Sampling**

The City has expressed a preference to conduct stormwater sampling internally, using City technicians. As such, this task consists of up to eight hours of coordination between Geosyntec's project manager and the City to ensure samples are collected in accordance with the QAPP.

### **Assumptions**

- Geosyntec will not participate in stormwater sampling events in the field
- Geosyntec will not submit samples to the lab, and will not prepare any data summaries in advance of the draft Lake Management Plan, which is being prepared under a separate scope of work

## **Task 2.7: Aquatic Vegetation Survey**

### **Objective**

Identify aquatic vegetation species present in Round and Lacamas Lakes following the methods and requirements described in the QAPP.

### **Activities**

- Prepare maps and select sample points
- Conduct survey
- Upload notes and data to secure server after event completion

### **Deliverables**

- Summary of results as part of the lake management plan (funded separately)

### **Assumptions**

- The survey size and scope will follow what is specified in the QAPP
- Vegetation can be obtained using waders/kayak/rowboat and hand tools
- Vegetation surveys and identification will be completed by a subcontractor
- Geosyntec will not provide field assistance during the vegetation survey

## **Task 2.8: Lake Use Survey Coordination**

### **Objective**

Estimate the number of people using the lakes and the types of activities conducted.

### **Activities**

- Create survey form
- Work with the City to coordinate a volunteer event to execute survey
- Review and digitize completed forms

### **Deliverables**

- Summary of results as part of the lake management plan (funded separately)

### **Assumptions**

- The survey size and scope will follow what is specified in the QAPP
- The survey will be conducted by volunteers and/or City staff
- Up to 4 hours of coordination for two Geosyntec personnel is assumed and does not include field visits

## **Task 2.9: Laboratory Fees**

### **Objective**

Obtain water quality data for surface water samples and lake sediment samples.

### **Activities**

- Conduct one preparation and coordination meeting with the analytical laboratory before sampling begins
- Analyze surface water samples for water quality, as specified in the QAPP
- Analyze sediment samples for sediment quality, as specified in the QAPP
- Extract phosphorus (P) species from sediment and analyze for total P

### **Deliverables**

- Analytical laboratory reports and electronic data deliverables (EDDs)



- Laboratory invoices will be submitted with monthly invoices

### **Assumptions**

- Only the number and type of analyses specified in the QAPP will be required
- Laboratory costs for stormwater samples, which will be obtained by the City (see Phase 2, Task 2.6) are not included
- The laboratory will be able to meet the detection/quantitation limits as specified in the QAPP
- The laboratory will be able to provide an EDD in an EIM format.
- Third party data validation will not be necessary

## **PHASE 3: DATA MANAGEMENT**

### **Task 3.1: Sample Event Peer Review**

#### **Objective**

Ensure sample events are completed as scoped, notes are legible and complete, and issues are identified and remedied, if possible.

#### **Activities**

- Review field notes and forms
- Discuss potential issues with field staff and City

#### **Deliverables**

- Documentation of peer review

#### **Assumptions**

- Peer review will occur within three weeks of sampling event completion

## **Task 3.2: Sample Event Tracking and Data Organization**

### **Objective**

Ensure scope of work is completed as proposed and documentation is saved to a secure folder in a logical file structure.

### **Activities**

- Create a field event tracking form with necessary tasks listed
- Organize continuous data and laboratory data as completed or downloaded
- At the completion of the field events, compile EDDs into one file containing water quality data and one file containing sediment data for the sampling program

### **Deliverables**

- Updated tracking form to be delivered prior to or during each City update meeting
- Compiled water quality data for discrete sample data

### **Assumptions**

- Tracking form will be updated monthly or as field tasks are scheduled, whichever is first
- Compiled water quality data files will contain only data associated with this scope of work

## **Task 3.3: Upload Data to Ecology's EIM Database**

### **Objective**

Ensure water quality data are available to Ecology and the public.

### **Activities**

- Set up EIM account
- Prepare data for submission to EIM
- Upload data to EIM

### **Deliverables**

- Water quality data in EIM

- Sediment data in EIM

### **Assumptions**

- Continuous data will not be uploaded to EIM
- Laboratory EDDs will be provided in an EIM format

### **SCHEDULE**

Work will begin as soon as authorized, preferably in late April 2022. The timeline will adhere to the QAPP, which assumes:

- Lake surface water sampling and vertical profiling on Lacamas and Round Lakes will occur monthly from April through October, and once in December or January
- Lake surface water sampling and vertical profiling on Fallen Leaf Lake will occur three times between May and October
- Creek sampling will occur monthly
- Sediment sampling will occur once, preferably in spring
- The aquatic vegetation survey will be completed between April and October

## BUDGET

Geosyntec is pleased to provide you this proposal on a time and materials basis of \$294,800. This budget estimate includes a 3% communications fee on Geosyntec labor only and a 10% markup on subconsultant labor and any expenses. This is based on the Geosyntec standard rate schedule as provided. Table 1 provides a budget summary for the phases and tasks outlined above.

*Table 1: Costs for Proposed Scope of Work.*

Phase/Task	Professional Services	Expenses
<b>Phase 1 - Administration and Coordination</b>		
Task 1 - Administration and Coordination	\$30,900	\$0
<b>Phase 2 - Field Work Execution</b>		
Task 1 - Field Preparation	\$16,200	\$0
Task 2 - Flow Gage Installation and Data Downloads	\$11,300	\$3,100
Task 3 - Thermistor Installation and Data Downloads	\$10,100	\$10,700
Task 4 - Surface Water Sampling	\$72,600	\$28,500
Task 5 - Sediment Sampling	\$9,000	\$15,800
Task 6 - Stormwater Sampling	\$1,700	\$0
Task 7 - Aquatic Vegetation Survey	\$0	\$12,100
Task 8 - Lake Use Survey Coordination	\$4,900	\$0
Task 9 - Laboratory Fees	\$900	\$42,900
<b>Phase 3 - Data Management</b>		
Task 1 - Sample Event Peer Review	\$12,500	\$0
Task 2 - Sample Event Tracking and Data Organization	\$7,500	\$0
Task 3 - Upload Data to EIM	\$4,100	\$0
<b>SUBTOTAL</b>	<b>\$181,700</b>	<b>\$113,100</b>
<b>TOTAL</b>	<b>\$294,800</b>	

## CLOSURE

If you have any questions regarding this draft scope of work, please feel free to contact me at (971) 271-5906/(503) 936-0115, or by email at [RAnnear@geosyntec.com](mailto:RAnnear@geosyntec.com).

Mr. Steve Wall  
18 April 2022  
Page 13

Thank you for the opportunity to submit this scope of work for your consideration.

Sincerely,

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