



523 East Second Avenue  
Spokane, Washington 99202  
509.363.3125

April 10, 2019

City of West Richland  
3100 Belmont Boulevard, Suite 102  
West Richland, Washington 99353

Attention: Roscoe C. Slade III, PE, Public Works Director

Subject: Revised Phase 2 Proposal  
Drainage Problem Area Characterization  
West Richland, Washington  
File No. 3234-005-02

## **INTRODUCTION AND BACKGROUND**

GeoEngineers, Inc. (GeoEngineers) is pleased to present this revised proposal for Phase 2 of an investigation of the hydrogeologic conditions that underly a drainage problem area (DPA) within the City of West Richland, Washington (herein referred to as the City). Based on water levels observed within infiltration structures such as drywells and infiltration trenches, the City identified a DPA within a topographic plateau roughly bounded by Polaris Way on the south, South 54<sup>th</sup> Avenue on the east, Collins Road on the north and Onyx Avenue on the west.

The City has observed shallow water levels in DPA manholes, drywells and infiltration trenches during their monitoring operations, and noted slow or restricted drainage in a number of these facilities. The observed groundwater levels and drainage problems appear to fluctuate seasonally, with levels rising through the summer lawn irrigation season and peaking during late fall. The City has also received complaints from residents within the DPA related to flooding of basements and other structures.

Our Phase 2 proposal builds on our conversations with you and the results of Phase 1, which primarily consisted of a review of existing hydrogeologic information for the DPA. Results of our Phase 1 investigation are described in our Phase 1 report dated February 14, 2019. The proposed Phase 2 investigation focuses on two basic components:

1. Field work intended to fill gaps in the project dataset that limit the City's understanding of the observed drainage problem and its cause(s).
2. A preliminary feasibility evaluation of a swale identified by the City as a possible location for discharge of stormwater from the DPA. This location, herein termed the potential regional infiltration facility (RIF), is an existing swale about ¼-acre in area located southwest of Northview Loop Road in the northern portion of the DPA.

## INNOVATIVE APPROACH

In many poorly-drained areas of eastern and central Washington, the hydrogeologic conditions underpinning the drainage problems are clear. For example, the presence of shallow, impermeable bedrock that perches infiltrating water is an obvious hydrostratigraphic contact that is readily identified in the field during excavations and drilled borings.

Within the City's DPA, we believe that the hydrogeologic conditions that support elevated groundwater are more subtle and complex. For example, the transition from loose Pasco gravel to dense Ringold formation sediments has the potential to perch water. Identification of this contact could be critical to understanding DPA cause(s).

Therefore, GeoEngineers has developed an approach, described in the below "Scope of Services," that maximizes the value of each proposed exploration and analysis. We gain efficiency through obtaining more information from each investigation component than conventional site assessment methods. Examples of the innovation in our Phase 2 proposal include:

**Sonic Drilling:** Conventional drilling approaches, such as hollow-stem auger or air rotary, create disturbed drill cuttings that are examined at the surface by the field geologist. These cuttings samples are frequently augmented by collection of split-spoon samples, during which a steel sampler is periodically driven into sediment to provide a less-disturbed sample of the conditions at the bottom of the boring. Nevertheless, these approaches always provide an intermittent view of subsurface conditions and thin perching layers and contacts are frequently missed.

Sonic drilling, in contrast, collects a continuous sample core of the drilled material. The field geologist is able to view the entire, uninterrupted stratigraphic section and no parts of the vertical soil profile are missed. Sonic drilling, as proposed herein, is ideal for identifying the potentially thin and subtle perching layers we expect to find below the DPA.

**Borehole Permeability Testing:** Observing soil conditions in drilled borings provides important clues about the ability of the sediment to drain water. However, it is our experience that, because of soil density differences and other factors, soils that appear similar can have widely-varying infiltration characteristics. Therefore, in order to understand variations in drainage capacity with depth, in-place permeability testing is necessary.

Herein, we propose to pause drilling at key depths within boreholes and conduct borehole permeability tests. Borehole permeability tests consist of injecting water into the drilled boring and measuring the capacity of the surrounding formation to infiltrate the injected water. Looking at the horizontal and vertical distribution in these results across the DPA will be an important tool in the identification of portions of the DPA that are highly sensitive to groundwater level increase.

**Pilot Infiltration Testing:** For residential developments, the infiltration characteristics of site soil often are characterized by tests conducted on a small scale. A common example of this scale of testing is a ring infiltrometer. Water injected into the ring remains in close proximity during testing and, therefore, these tests only provide information for the limited areas surrounding the ring.

When contemplating larger facilities, such as the RIF, testing at a larger scale is required. This is necessary to more closely replicate the hydraulic load that could occur at the proposed facility during storm events. Herein, we propose to conduct a pilot infiltration test within the RIF in general compliance with Appendix 6B of the *Stormwater Management Manual for Eastern Washington*, dated February 2019. During pilot infiltration testing, water will be injected into a roughly 100-square-foot excavation at a sufficient rate to maintain a constant water level and infiltration rate for a period of at least one hour. Performance of the RIF during testing, combined with subsequent groundwater mounding analyses, will shed light on the ability of the RIF to safely dispose of DPA drainage water.

**Surface Geophysics:** Drilled boreholes provide critical information for drainage investigations, but only provide information for a single point. Increasing the density of boreholes within an area as large as the DPA can be cost prohibitive. To provide more detailed information within key portions of the DPA, we propose the use of a surface geophysical survey based on seismic velocities. The intent of the survey is to evaluate whether we can correlate the seismic velocity profile with a subsurface boundary (such as the contact between Ringold Formation and younger sediments) that could inhibit infiltration of DPA drainage. If successful, this technology could provide important subsurface detail beneath the roughly 4,650 feet of geophysical survey line proposed herein.

Sedimentary contacts, such as the one described above, do not always demonstrate sharp differences in seismic velocity that can be discerned during geophysical survey. Therefore, we propose the following "off-ramp" that will mitigate the risk to the City that this portion of the project will not be fruitful. We propose to initially complete one survey transect and conduct a brief on-site reduction and evaluation of the data. If results of the initial transect suggests that the seismic velocity survey will not inform DPA perching conditions, the remaining three seismic lines will be omitted and the City will incur no cost associated with the remaining three lines.

## SCOPE OF SERVICES

### Goal

The goals of our Phase 2 hydrogeologic services are to: (1) preliminarily evaluate the feasibility of infiltrating a portion of DPA drainage within the RIF; and (2) address DPA data gaps that were identified during Phase 1 and described in our February 14, 2019 report.

GeoEngineers' proposed scope of services for the Phase 2 investigation consists of the following:

### Task 1: Planning, Reconnaissance, and Project Management

1. Perform a field reconnaissance in coordination with City personnel to:
  - a. Observe the RIF property and surrounding area and identify specific exploration locations selected to inform the RIF feasibility evaluation.
  - b. Identify specific exploration locations intended to address DPA data gaps.
  - c. Preliminary boring (B-1 through B-5 and MW-1 through MW-8) locations are shown in the attached Proposed Exploration Locations, Figure 1.

2. Arrange for public and private utility locates of the RIF and DPA exploration locations, including the test pit excavation to be used for pilot infiltration testing.
3. Coordinate with the City to obtain applicable permitting regarding work conducted in City right-of-way.
4. Subcontract a qualified drilling contractor to drill exploratory soil borings, install monitoring wells, and assist with percolation testing within the RIF property and DPA study area.
5. Subcontract a qualified surveyor to survey the horizontal and vertical locations of the installed monitoring wells.
6. Subcontract a qualified geophysical firm to conduct a geophysical survey within the RIF property and DPA study area.
7. Conduct project management activities related to project coordination with the City, project accounting, and invoicing.

**Task 2: RIF Feasibility Evaluation**

***Borehole Exploration, Percolation Testing and Monitoring Well Construction***

1. Identify two boring locations within the RIF property. Preliminary proposed locations are shown in Figure 1.
2. GeoEngineers will subcontract and oversee the work of a qualified drilling contractor. At each exploration location, drill one soil boring using sonic drilling methods. Borings will be drilled to a depth of 30 feet below ground surface (bgs), until the presence of bedrock is confirmed, or drilling progress is refused, whichever is shallowest. A detailed log of the exploration will be recorded by GeoEngineers' field geologist or engineer.
3. At two depths in each soil boring, conduct borehole permeability tests. We preliminarily propose conducting borehole permeability tests at 5 and 15 feet bgs, depending on encountered subsurface conditions.
4. Conduct laboratory testing of up to two selected soil samples from each soil boring. Laboratory testing will consist of gradation analyses completed in accordance with ASTM International (ASTM) Method C 136.
5. Construct a monitoring well within both RIF soil borings. Monitoring wells will be constructed of 2-inch-diameter, Schedule 40, polyvinyl chloride (PVC) casing and well screen.
6. Develop the monitoring wells using a combination of surging and bailing/pumping to develop an efficient hydraulic connection between the well screen and adjacent aquifer, if water is present in the well.

***Water Level Monitoring Instrumentation***

7. Install pressure transducers/dataloggers within one of the RIF monitoring wells. Program the datalogger for measurement of groundwater levels on a 2- to 4-hour interval.

***RIF Slug Testing and Analysis***

8. Where a sufficient column of groundwater exists within installed monitoring wells (approximately 5 feet or greater), conduct rising- and/or falling-head slug tests.
9. Analyze slug test data to estimate the hydraulic conductivity of shallow soil beneath the RIF.

***Pilot Infiltration Testing and Analysis***

10. Excavate a test pit within the RIF property. The test pit will be 75 to 100 square feet in area and excavated to a depth of approximately 3 feet bgs. We assume that the City will provide a backhoe and operator to excavate the test pit in consultation with GeoEngineers' field staff and that the City will be responsible for restoring the excavation after testing.
11. Record soil and groundwater observations during test pit excavation. Obtain bulk samples of soil for testing in GeoEngineers' Spokane office laboratory.
12. Conduct laboratory testing of up to two selected soil samples from the test pit excavation. Laboratory testing will consist of gradation analyses completed in accordance with ASTM Method C 136.
13. Coordinate with the City to secure a water source for testing. We assume that the City will provide access (and associated permitting) to use the nearest water hydrant on Northview Loop Road.
14. Conduct a pilot infiltration test within the test pit excavation. For cost estimating, we assume a 6-hour constant-head test period and 2-hour falling-head period. Depending on site conditions, we might approach the City regarding conducting a longer constant-head test period.
15. Monitor groundwater elevations in RIF monitoring wells MW-1 and MW-2 during a 2-hour pre-test period, the constant-head period, and the falling-head period.
16. Analyze the infiltration test data for infiltration rate and hydraulic conductivity.

***Preliminary RIF Feasibility***

17. Using analytical (spreadsheet-based) methods, estimate the extent of groundwater mounding that can be anticipated to occur during RIF infiltration. Our analysis will be based on assumed constant infiltration rates, infiltration durations of 72 hours, and a conservative baseline groundwater elevation.
18. Based on results of pilot infiltration testing, soil conditions encountered during site exploration, and results of groundwater mounding analyses, develop an opinion regarding:
  - a. The feasibility of regional stormwater infiltration at the proposed RIF.
  - b. Preliminary design infiltration rates for the RIF.

***Draft and Final RIF Reporting***

19. Prepare a draft technical memorandum summarizing Task 2 findings and conclusions and provide the report for City review.
20. Attend a meeting with the City to discuss comments to our draft technical memorandum. We assume that Kevin Lindsey will attend in person and Jonathan Rudders will attend via conference call.
21. Incorporate mutually-agreed-to changes and submit our final technical memorandum to the City.

**Task 3: DPA Phase 2 Investigation**

***Traffic Control***

1. Retain a traffic control contractor to develop, obtain any necessary permitting for, and implement a traffic control plan during DPA exploration activities. Note that the associated fee estimate for this task should be considered approximate and will depend on specific City traffic control requirements for the exploration locations.



**Geophysical Survey**

16. Conduct a geophysical survey using seismic velocity survey methods along four key transects within the DPA. Preliminary transect locations, totaling approximately 4,650 lineal feet, are shown in Figure 1. These will be refined in Task 1 during the planned site walkover with City.
17. Interpret geophysical survey results within the context of the DPA hydrogeologic conceptual model.

**DPA Analysis and Evaluation**

18. Based upon Phase 2 exploration data, refine the following components of our DPA hydrogeologic evaluation:
  - a. Characteristics and thickness of shallow sediments overlying basalt.
  - b. Top of basalt elevation surface.
  - c. Top of, and characteristics of, limiting stratigraphic unit.
  - d. Hydrogeologic cross-sections.
  - e. Depth to groundwater and groundwater elevation mapping.
  - f. Hydrogeologic conceptual model.
19. Update the Phase 1 water budget analysis of the DPA, comparing pre-development and post-development conditions.
20. Refine our interpretations regarding the interpreted cause of and hydrogeologic conditions that support the observed groundwater level rise within the DPA.

**Draft and Final DPA Reporting**

21. Prepare a draft report summarizing Task 3 findings, conclusions, and recommendations and provide the report for City review.
22. Attend a meeting with the City to discuss comments to our draft report. We assume that Kevin Lindsey will attend in person and Jonathan Rudders will attend via conference call.
23. Incorporate mutually-agreed-to changes and submit our final report to the City.

**Task 4: Public Education**

1. Local conservation districts and the Washington State University (WSU) Extension offer a wide range of materials, ideas, and services related to a variety of urban and rural soil management, water management, and landscaping practices. In Task 4, the GeoEngineers team will review and compile materials available from these entities for the City to use in potential future public outreach activities.

**PHASE 3 INVESTIGATION**

Once Phase 2 data gaps are filled, the City will be in a position to develop a scope of services and estimate costs associated with civil engineering components of the project in Phase 3. These may include:

- An estimate of the reduction in the design capacity of the City's stormwater system that has resulted from the increase in DPA stormwater levels.

- The ability of the City's stormwater system to convey/infiltrate stormwater associated with a selected design storm.

**SCHEDULE**

We are prepared to initiate our services immediately upon your authorization to proceed. The field investigation described herein (Tasks 2 and 3 drilling, monitoring well construction, test pit excavation, hydraulic testing, and geophysical survey) will begin following the completion of Task 1 and require approximately 8 weeks to complete, with actual schedule depending on subcontractor availability and conditions encountered during field work. Our draft deliverables will be available approximately 4 weeks after completion of field activities for Task 2 and/or Task 3. We will submit our final deliverables within approximately 1 week of receiving city comments to our draft deliverables. Please let us know if this tentative schedule does not meet your needs and we will work with you to refine it.

**TERMS AND BUDGET**

The professional services listed above will be provided in accordance with the terms described in the attached General Conditions, which are attached and form a part of this agreement. Please review the terms of this agreement carefully and advise us if you have any questions.

The fee for our services will be determined on a time-and-materials basis using the rates contained in the Schedule of Charges for our Kennewick, Washington office, which also is attached and forms a part of this agreement. We estimate that our fee for the hydrogeologic services outlined above will be approximately \$169,500, as summarized in Table 1. We will not exceed our fee estimate without your prior authorization. We will keep you informed of project status and advise you if it appears appropriate to modify the scope and budget.

**TABLE 1. FEE ESTIMATE BREAKDOWN**

<b>Task</b>	<b>Estimated Fee</b>
<b>Task 1: Planning, Reconnaissance and Project Management</b>	<b>\$9,600</b>
<b>Task 2: RIF Feasibility Evaluation</b>	
<i>Borehole Exploration, Percolation Testing, and Monitoring Well Construction</i>	\$19,300
<i>Water Level Monitoring Instrumentation</i>	\$1,100
<i>RIF Slug Testing and Analysis</i>	\$2,200
<i>Pilot Infiltration Testing and Analysis</i>	\$5,800
<i>Preliminary RIF Feasibility</i>	\$3,000
<i>Draft and Final RIF Reporting</i>	\$4,900
<b>Task 2 Subtotal</b>	<b>\$36,300</b>
<b>Task 3: DPA Phase 2 Investigation</b>	
<i>Traffic Control</i>	\$10,700
<i>Borehole Exploration, Percolation Testing, and Monitoring Well Construction</i>	\$56,300
<i>Location Survey, Groundwater Level Monitoring, and Groundwater Mapping</i>	\$6,300



<b>Task</b>	<b>Estimated Fee</b>
<i>Water Level Monitoring Instrumentation</i>	\$7,100
<i>DPA Slug Testing and Analysis</i>	\$5,400
<i>Geophysical Survey</i>	\$18,100
<i>DPA Analysis and Evaluation</i>	\$11,300
<i>Draft and Final DPA Reporting</i>	\$6,400
<b>Task 3 Subtotal</b>	<b>\$121,600</b>
<b>Task 4: Public Education</b>	<b>\$2,000</b>
<b>Total</b>	<b>\$169,500</b>

We recognize that the estimated Phase 2 project fee might be challenging for the City to fund. We have attempted to reduce cost to the City through the following:

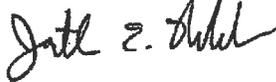
- We consider the project to be local to our Kennewick office. Regardless of home office, our field staff will not charge per diem and mileage accrual will originate at our Kennewick office location.
- It is GeoEngineers' policy to apply an associated project cost (APC) charge of 6 percent to all labor charges. We propose to waive this fee for this Phase 2 contract, which will result in a savings to the City of approximately \$4,600.
- We have also organized the Phase 2 project into the four tasks described above. Task 1 is integral to the project and supports both Task 2 and Task 3. However, if the City does not currently have the funding for both Task 2 and Task 3, the City could initially choose to conduct Task 1 in combination with either Task 2 or Task 3 while pursuing additional resources.

There are no intended third-party beneficiaries arising from the services described in this proposal and no party other than the party executing this proposal shall have the right to legally rely on the product of our services without prior written permission of GeoEngineers.

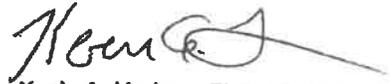
This proposal is valid for a period of 60 days commencing from the first date listed above and subject to renegotiation by GeoEngineers, Inc., after the expiration date. Authorization to proceed with our proposed services and your acceptance of the scope of services and terms and conditions contained herein may be provided by signing in the appropriate space below and returning one signed copy of this proposal to our office, or by your preferred method.

We appreciate the opportunity to submit this proposal. Please call if you have any questions. We look forward to working with you on this project and appreciate your confidence in our firm.

Sincerely,  
GeoEngineers, Inc.



Jonathan E. Rudders, LG, LHG  
Senior Hydrogeologist



Kevin A. Lindsey, PhD, LG, LHG  
Principal Hydrogeologist

JER:KAL:mst:jlh

Attachments:

- General Conditions— Standard 2018
- Schedule of Charges—Kennewick 2019
- Figure 1. Phase 2 Exploration Map
- One copy submitted electronically

The parties hereto have made, executed and agreed to this Agreement as of the day and year first above written. By signature below, Client accepts the scope of services and all terms described herein. In addition, Client's signature shall constitute as authorization to proceed on the date listed below Client's printed/typed name unless such authorization has been otherwise provided in writing.

<p>City of West Richland</p> <hr/> <p>ORGANIZATION</p>	 <hr/> <p>* SIGNATURE</p>
<p>April 17, 2019</p> <hr/> <p>DATE</p>	<p>Brent Gerry</p> <hr/> <p>TYPED OR PRINTED NAME</p> <p>*Individual with contracting authority.</p>

Proprietary Notice: The contents of this document are proprietary to GeoEngineers, Inc. and are intended solely for use by our clients and their design teams to evaluate GeoEngineers' capabilities and understanding of project requirements as they relate to performing the services proposed for a specific project. Copies of this document or its contents may not be disclosed to any other parties without the written consent of GeoEngineers.

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## GENERAL CONDITIONS

### Definitions

The words and phrases listed below have the following meanings when used in this Agreement:

"**Agreement**" means the complete agreement between Client and GeoEngineers, and consists of all of the following: 1) The Services Agreement or Proposal, including the Scope of Services contained within it; 2) These General Conditions and its attached Schedule of Charges, as applicable; 3) Any documents expressly incorporated by reference into the Services Agreement, Proposal or General Conditions; 4) Any modifications to this Agreement, if mutually agreed to by the parties in writing.

"**Client**" means the individual(s) or entity that has entered into this Agreement with GeoEngineers.

"**GeoEngineers**" means GeoEngineers, Inc., a Washington corporation, and any of its employees, officers and directors. GeoEngineers is sometimes referred to as "us," "we" or "our" throughout this Agreement.

"**Hazardous Materials**" means any toxic substances, chemicals, radioactivity, pollutants or other materials, in whatever form or state, known or suspected to impair the environment in any way whatsoever. Hazardous Materials include, but are not limited to, those substances defined, designated or listed in any federal, state or local law, regulation or ordinance concerning hazardous wastes, toxic substances or pollution.

"**Scope of Services**" means the sum total of all of our activities and all of the Instruments of Service undertaken or provided pursuant to this Agreement.

"**Excluded Services**" means those services that we are not providing under this Agreement, which includes any services recommended to Client and which Client chooses not to include in our Scope of Services.

### Integrated Written Agreement

This Agreement represents the entire and integrated agreement between Client and GeoEngineers and supersedes all prior communications, negotiations, representations or agreements, either written or oral between the parties. No agreement or understanding varying or extending this Agreement shall bind either party, other than by a subsequent written agreement, signed by Client and GeoEngineers.

GeoEngineers has made no promise or inducements to Client to enter into this agreement other than what is explicitly provided in the agreement. Client is not relying on any representations made by GeoEngineers outside of those embodied in this Agreement.

### Conflicts

Any alteration to these General Conditions or appended terms and conditions by Client shall be void and not included as part of this Agreement unless mutually agreed to in writing by both parties. In the event of conflict between these General Conditions and any terms appended by the Client that are agreed to by the parties and incorporated as part of this Agreement, the terms of these General Conditions shall prevail.

### Standard of Care and Warranty Disclaimer

GeoEngineers will endeavor to perform its professional services with that degree of care and skill ordinarily exercised under similar conditions by professional consultants practicing in the same discipline at the same time and location. No warranty or guarantee, either express or implied, is made or intended by this Agreement or by any report, opinion, or other Instrument of Service provided pursuant to this Agreement.

### Client Furnished Information and Obligations

Client will provide GeoEngineers with the following: a description of the property; the locations of any underground utilities, facilities or structures on or adjacent to the property which could impact our work; and the nature and location of any known or suspected hazardous materials that may exist on the property. Client understands that GeoEngineers is not responsible for damages to underground utilities, facilities or structures known by Client to exist and not specifically or correctly identified to us, and Client agrees to indemnify GeoEngineers for these

damages to the extent provided in the INDEMNIFICATION section of these GENERAL CONDITIONS. GeoEngineers is neither responsible nor liable for the creation, existence, or presence of any hazardous materials, including asbestos, present at the work site prior to or during the performance of this Agreement, except any hazardous materials generated solely by us, our agents or subcontractors.

Additionally, the Client shall furnish, at the Client's expense, all information, requirements, reports, data, surveys, and instructions required by this Agreement. GeoEngineers may use such information, requirements, reports, data, surveys and instructions in performing the services and is entitled to rely upon their accuracy and completeness.

### Permits and Agency Arrangement

If included in the Scope of Services, GeoEngineers will assist Client in applying for necessary permits and licenses. Client may, upon written acceptance by GeoEngineers, designate GeoEngineers as its agent for the purposes of drafting permit and/or license applications. GeoEngineers' agency authority under this arrangement shall be limited solely to the completion and submission of the permit and/or license applications. GeoEngineers will rely upon data collected by and information provided by Client in preparing the applications. GeoEngineers shall not be responsible for errors or inaccuracies contained in data and information supplied by Client. Client shall assume full responsibility for reviewing, understanding and signing all permit and license applications drafted by GeoEngineers.

GeoEngineers cannot and does not guarantee that permits or approvals will be issued by the governing authorities, and will not be subject to any claims, losses or damages allegedly incurred as a result of Client's failure to obtain the necessary permits and approvals.

Client waives any claim against GeoEngineers relating to errors or inaccuracies in data and information provided by Client and permit-related project delays caused by other parties, including, but not limited to Client, project opponents, and permitting or licensing agencies.

### Rights of Entry

Unless otherwise agreed to in writing, Client will provide for right of entry and any authorizations needed for us to enter upon property to perform our Services under this Agreement.

### Surface and Subsurface Disturbance

GeoEngineers will take reasonable precautions to minimize surface and subsurface disturbance. However, in the normal course of exploratory work some surface disturbance may occur, the restoration of which is not part of this Agreement unless specifically included in our Scope of Services.

### Discovery of Hazardous Materials

"Unanticipated hazardous materials" are any hazardous materials that may exist at the project site, but which this Agreement does not identify as present and whose existence is not reasonably anticipated. The discovery of unanticipated hazardous materials will constitute a changed condition that will require renegotiation of the Scope of Services or termination of this Agreement.

The discovery of unanticipated hazardous materials may necessitate that we take immediate protective measures. If we discover unanticipated hazardous materials, we will notify Client as soon as practicable. Based on our professional judgment, we may also implement protective measures in the field. Client will pay the cost of any such additional protective measures.

Client is responsible for reporting releases of hazardous substances to appropriate government agencies as required by law.

Client waives any claim against GeoEngineers relating to the discovery of unanticipated hazardous materials and will indemnify GeoEngineers to the extent provided in the INDEMNIFICATION section of these GENERAL CONDITIONS.

### Off-site Disposal of Hazardous Materials

Client acknowledges that GeoEngineers is not and shall not be required to be in any way an 'arranger', 'operator', or 'transporter' of hazardous materials present

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or near the project site, as these terms are defined in applicable Federal or State Statutes. In addition, Client shall sign all manifests for the disposal of substances affected by regulated contaminants.

However, if the parties mutually agree that GeoEngineers sign such manifests and/or to hire for Client a contractor to transport, treat, or dispose of the hazardous materials, GeoEngineers shall do so only as Client's agent. Client agrees to defend, indemnify, and hold harmless GeoEngineers, its officers, directors, employees and agents from any claim, suit, arbitration, or administrative proceeding, damages, penalties or liability that arise from the executing of such manifests on Client's behalf.

Further, GeoEngineers will, at Client's request, help Client identify appropriate alternatives for off-site treatment, storage, or disposal of such substances, but GeoEngineers shall not make any independent determination about the selection of a treatment, storage, or disposal facility.

### Unanticipated and Changed Conditions

Actual subsurface conditions may vary from those encountered at the specific locations where GeoEngineers conducts its surveys or explorations. We can only base our site data, interpretations and recommendations on information reasonably available to us. Practical and reasonable limitations on available data will result in some level of uncertainty, and therefore risk, with respect to the interpretation of environmental, geological and geotechnical conditions even when we have followed the standard of care.

The discovery of unanticipated or changed conditions may require renegotiation of the Scope of Services or termination of services. GeoEngineers reserves the right to solely determine the continued adequacy of this Agreement in light of any discovery of conditions that were not reasonably anticipated or known at the time of this Agreement. If we determine that renegotiation is necessary, GeoEngineers and Client will in good faith enter into renegotiation of this Agreement to permit us to continue to meet Client's needs. If Client and GeoEngineers cannot agree on new terms, we reserve the right to terminate this Agreement and receive payment from Client for all services performed and expenses incurred up to and including the date of termination. Underground utilities that are not properly indicated on plans and specifications provided to GeoEngineers by others or not reasonably located by the utility owner will be considered a changed condition under this clause.

### Site Safety

GeoEngineers will maintain a safety program for our employees. GeoEngineers specifically disclaims any authority or responsibility for general job site safety and for the safety of persons who are not employed by us. GeoEngineers is not responsible for the job safety or site safety of the general project and is not responsible for compliance with safety programs and related OSHA and state regulations that apply to other entities or persons. Client is independently responsible for requiring that its construction or remediation contractors take responsibility for general job site safety.

### Construction and Remediation Observation

The conclusions and recommendations for construction or remediation in our reports are based on limited sampling and the interpretations of variable subsurface conditions. Therefore, our conclusions and recommendations shall be deemed preliminary unless or until we are requested by Client to validate our assumptions and finalize our conclusions and recommendations by reviewing preconstruction design documents and observing actual construction or remediation activities on site. If our Scope of Services does not include preconstruction plan review and construction/remediation observation, then any reliance by Client or any other party on our preliminary assumptions, conclusions or recommendations is at the risk of that party and without liability to GeoEngineers.

Our job site activities do not change any agreement between Client and any other party. Only Client has the right to reject or stop work of its contractors or agents. Our presence on site does not in any way guarantee the completion, quality or performance of the work by any other party retained by Client to provide field or construction/remediation services. We are not responsible for, and do not have control or charge of, the specific means, methods, techniques, sequences or procedures selected by any contractor or agent of Client or any third party to this Agreement.

Further, a duty to provide contract administration or contract management services may not be imputed from GeoEngineers' professional actions or affirmative conduct when on the job site.

### Sample Retention and Disposal

We will discard nonhazardous samples 60 days after they are obtained, unless Client makes prior arrangements to store or deliver the samples. Samples containing hazardous materials regulated under federal, state or local environmental laws are the property and responsibility of Client. Client will arrange for lawful disposal, treatment and transportation of contaminated samples at Client's expense, unless Client makes other written agreements regarding their disposal.

### Identification of Other Contaminants

Sampling and Analysis Plans (SAPs) typically specify the contaminants of interest (COIs) on a site and the standard EPA/state agency analytical methods (Standard Methods) to be used by laboratories for determining the estimated concentration of such COIs in soil and water samples. GeoEngineers' instructions notwithstanding, application of Standard Methods by an analytical laboratory may occasionally result in the inadvertent identification of contaminants that are not COIs. If in the course of GeoEngineers' laboratory data validation review non-COI contaminants are identified with COI-equivalent data quality and analytical values at or above regulatory action levels, GeoEngineers will disclose such results to Client with appropriate recommendations, which may include recommendations for reporting to regulatory agencies. Client actions subsequent to any such disclosure shall be at Client's sole risk, and Client shall indemnify and hold harmless GeoEngineers from any claims, liabilities, damages or costs arising from the discovery of regulated non-COIs to the extent provided in the INDEMNIFICATION SECTION in these GENERAL CONDITIONS.

### Confidential Information

Unless otherwise agreed to in writing by the parties, each party expressly undertakes to retain in confidence, and to require its employees and consultants to retain in confidence, all data and/or information of the other party that is not generally known to the public, whether of a technical, business or other nature, that has been identified as being proprietary and/or confidential or that by the nature of the circumstances surrounding the disclosure reasonably ought to be treated as proprietary and confidential ("Confidential Information"). Each party agrees not to use the Confidential Information of the other party except pursuant to this Agreement. The receiving party will not disclose any item of Confidential Information to any person other than its employees, agents or contractors who need to know the same in the performance of their duties except as may be required by law or judicial order. The receiving party will protect and maintain the confidentiality of all Confidential Information of the disclosing party with reasonable care, including but not limited to informing all employees, agents or contractors to whom Confidential Information is disclosed of the confidentiality obligations imposed by this Agreement. Confidential Information does not include any data or information which the receiving party can prove (a) was in the receiving party's lawful possession prior to its disclosure by the disclosing party; (b) is later lawfully obtained by the receiving party from a third party not under an obligation of confidentiality; (c) is independently developed by the receiving party; or (d) is, or later becomes, available to the public through no breach of an obligation of confidentiality. Notwithstanding the foregoing, GeoEngineers may use the Client's name and logo in connection with identifying its prior customers and projects. Data and/or information that is disclosed due to a party's computer systems being hacked or through other such improper or illegal cyber conduct, including but not limited to phishing and viruses, shall not be considered a disclosure under this paragraph.

### Instruments of Service and Proprietary Methodologies

Reports, field data, laboratory data, analyses, calculations, estimates, designs and other documents prepared by GeoEngineers are Instruments of Service and remain our property. We will retain final project records for a period of 20 years from completion of our services.

Neither Client nor any other party may modify or use the Instruments of Service for additions or alterations to this project, or for other projects, or otherwise outside the scope of this Agreement, without our prior written permission. GeoEngineers is not responsible for such modification or reuse (unless such modification or reuse is expressly authorized by GeoEngineers in writing). Client will defend, indemnify, and hold GeoEngineers harmless against any claims,

damages, or losses relating to such modification or reuse to the extent of the INDEMNIFICATION section in these GENERAL CONDITIONS.

GeoEngineers grants Client a limited license to utilize its Instruments of Service for the purposes described in the scope of services, and for maintenance of the Project thereafter, subject to any limitations expressed in the Instruments of Service. GeoEngineers may withdraw or terminate that limited license at any time if Client fails to comply with this Agreement, including but not limited to the circumstance in which Client fails to timely pay outstanding invoices. In the event that GeoEngineers withdraws the limited license, Client herein acknowledges that Client is prohibited from using the Instruments of Service for any purpose from that date forward. GeoEngineers will not be responsible nor liable, and Client will hold GeoEngineers harmless for any damages or injury flowing, or allegedly flowing, from Client's inability to utilize the Instruments of Service as a result of the circumstances described herein. Client herein agrees that injunctive or other relief is appropriate if GeoEngineers believes that Client is utilizing the Instruments of Service in a manner contrary to this paragraph or as otherwise described in the preceding paragraphs under this Article titled "Instruments of Service and Proprietary Methodologies." This paragraph shall survive the termination of this Agreement.

GeoEngineers may provide Client with Instruments of Service that include pre-existing content or data which are generated at least in part by or derived from proprietary and/or patented methodologies and systems. GeoEngineers may also apply proprietary and/or patented methodologies and systems in fulfilling the terms of this agreement, and may also make temporarily available to Client a working knowledge of such proprietary and/or patented methodologies and systems during the term of this agreement.

Notwithstanding anything to the contrary, GeoEngineers shall retain ownership over all intellectual property rights including, but not limited to, inventions, patents, copyrights, know how, trade secrets, and trademarks in such Instruments of Service and their associated data and in the proprietary and/or patented methodologies and systems. Subject to full payment by Client to GeoEngineers of all amounts owed hereunder and the terms of any licensing agreement between the parties, GeoEngineers grants to Client a nonexclusive, nontransferable license to use the Instruments of Service. Client shall not distribute, rent, lease, service bureau, sell, sublicense, or otherwise transfer the Instruments of Service or their data or content, unless previously agreed to in writing by GeoEngineers, and shall not decompile, reverse engineer, disassemble, reverse translate, or in any way derive any trade secrets or source code from the Instruments of Service. Unless otherwise specified in writing between the parties, no such Client use of Instruments of Service shall give rise to any right in the Client to use the proprietary and/or patented methodologies and systems referred to herein. During and only during the term of this agreement, GeoEngineers grants to Client a nonexclusive, nontransferable license to employ such proprietary and/or patented methodologies and systems as have been disclosed to Client by GeoEngineers pursuant to fulfilling the terms of this agreement.

Data stored in electronic media format can deteriorate or be modified inadvertently or otherwise. When transferring documents in electronic media format, we make no representations as to long-term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by us.

We shall not be responsible for any alterations, modifications or additions made in the electronic data by the Client or any reuse of the electronic data by the Client or any other party for this project or any other project without our consent. Client shall defend, indemnify and hold us harmless against any claims, damages or losses arising out of the reuse of the electronic data without our written consent and arising out of alterations, modifications, or additions to the electronic data made by anyone other than GeoEngineers to the extent of the INDEMNIFICATION section in these GENERAL CONDITIONS.

All documents, including the electronic files that are transferred by us to Client are Instruments of Service of GeoEngineers and created for this project only, and no representation or warranty is made, either express or implied, concerning the files and data.

### Billing and Payment

We will bill for our services monthly. Payment is due on receipt of the invoice unless otherwise agreed to in writing. Client will notify GeoEngineers within 20 days of receipt of invoice of amounts in dispute. A service charge of 1-1/2% per month shall apply to any undisputed amounts that are more than 30 calendar days past due and amounts in dispute where Client has not notified GeoEngineers

within the 20-day period. In addition to any past due amount, Client will pay all of our reasonable expenses necessary for collection of any past due amounts including, but not limited to, attorneys' fees and expenses, filing fees, lien costs and our staff time. Collection efforts for past due amounts by GeoEngineers shall not be subject to the DISPUTES clause of these GENERAL CONDITIONS.

Payment of invoices shall not be subject to any discounts or set-offs by the Client, unless agreed to in writing by GeoEngineers. Payment to GeoEngineers for services rendered and expenses incurred shall be due and payable regardless of any subsequent suspension or termination of this Agreement by either party. Payment to GeoEngineers shall not be withheld, postponed or made contingent on the construction, completion or success of the project or upon receipt by the Client of offsetting reimbursement or credit from other parties.

### Adjustment for Increased Costs

GeoEngineers reserves the right to invoice Client for additional charges incurred in the event of an unanticipated increase in project-related taxes, fees or similar levies; or if GeoEngineers must modify project-related services, facilities or equipment to comply with new laws or regulations or changes to existing laws or regulations that become effective after execution of this Agreement.

GeoEngineers revises its Schedule of Charges annually. Therefore, we reserve the right to modify our Schedule of Charges applicable to our services if performance of this Agreement extends beyond 12 months, or if changes in the project schedule result in our services extending into the next calendar year.

### Scope of Services and Additional Services

Our engagement under this Agreement includes only those services specified in the Scope of Services. GeoEngineers has no duty to provide services beyond those explicitly described in the scope of services or as may be changed (provided that such changes do not materially change the original scope), or added via a signed directive by the Client, as described more fully in the next paragraph. Client understands and agrees that GeoEngineers' scope will not be expanded by, and no duties or responsibilities may be imputed from GeoEngineers' actions or affirmative conduct when on site.

If agreed to in writing by the Client and GeoEngineers, GeoEngineers shall provide the changed or additional services which shall become part of the Scope of Services and subject to the terms of this agreement. Such services shall be paid for by the Client in accordance with GeoEngineers' then prevailing Schedule of Charges unless otherwise agreed to in writing by the parties.

Client agrees it will not hold us liable and expressly waives any claim against GeoEngineers for 1) not performing additional services that Client instructed us not to perform, 2) not performing additional services that were not specifically requested in writing by Client and agreed to by both parties, 3) not performing recommended additional services that Client has not authorized us to perform.

### Termination of Services

#### Termination for Cause

Either party may terminate this Agreement upon at least seven (7) days written notice, in the event of substantial failure by the other party to perform in accordance with this Agreement through no fault of the terminating party. Such termination is not effective if the failure is cured before expiration of the period specified in the written notice. Upon termination for cause by either party, all invoices for services performed up to the date of termination are immediately due and payable.

#### Termination for Convenience

Either party may terminate this Agreement for convenience upon seven (7) days written notice to the other. In the event that Client requests early termination of our services for convenience, we reserve the right to complete such analyses and records as are necessary to place our files in order and to complete a report on the services performed to date. Charges for these termination activities are in addition to all charges incurred up to the date of termination. Upon termination for convenience by either party, all invoices for services performed up to the date of termination and termination fees defined herein are immediately due and payable.

#### Suspension of Services

If the project or GeoEngineers' services are suspended by the Client for more than thirty (30) calendar days, consecutive or in the aggregate, over the term of this

Agreement, GeoEngineers shall be compensated for all services performed and reimbursable expenses incurred prior to the receipt of notice of suspension. In addition, upon resumption of services, the Client shall compensate GeoEngineers for expenses incurred as a result of the suspension and resumption of its services, and GeoEngineers' schedule and fees for the remainder of the project shall be equitably adjusted.

If GeoEngineers' services are suspended for more than ninety (90) days, consecutive or in the aggregate, GeoEngineers may terminate this Agreement subject to the terms in the "Termination for Convenience" clause.

If Client is in breach of the payment terms, states their intention not to pay forthcoming invoices, or otherwise is in material breach of this Agreement, GeoEngineers may suspend performance of services upon five (5) calendar days' notice to Client or terminate this Agreement according to the "Termination for Cause" clause. In the event of suspension, GeoEngineers shall have no liability to the Client, and the Client agrees to make no claim for any delay or damage as a result of such suspension caused by Client's breach of this Agreement. In addition, we may withhold submittal of any work product if Client is in arrears at any time during the performance of services under this Agreement. Upon receipt of payment in full of all outstanding sums due from Client, or curing of such other breach which caused GeoEngineers to suspend services, GeoEngineers shall resume services and submit any withheld work product, and there shall be an equitable adjustment to the remaining project schedule and fees as a result of such suspension. Any suspension by GeoEngineers exceeding 30 calendar days shall, at GeoEngineers' option, make this Agreement subject to renegotiation or termination according to the "Termination for Cause" clause in this Agreement.

In the event Client has paid a retainer to GeoEngineers, GeoEngineers shall be entitled to apply the retainer to cover any sums due from Client up to the date of suspension. Prior to resuming services after such suspension, Client shall remit to GeoEngineers sufficient funds to replenish the retainer to its full prior amount.

#### Delays

The Client agrees that GeoEngineers is not responsible for damages arising directly or indirectly from any delays for causes beyond GeoEngineers' control. Such causes include, but are not limited to, strikes or other labor disputes; severe weather disruptions or other natural disasters; fires, riots, terrorist acts, wars or other emergencies or acts of God; failure of any government agency to act in a timely manner; failure of performance by the Client or the Client's Contractors or other Consultants; or unanticipated discovery of any hazardous materials or differing site conditions. In addition, if the delays resulting from any such causes increase the cost or time required by GeoEngineers to perform its services in an orderly and efficient manner, GeoEngineers shall be entitled to an equitable adjustment in schedule and/or compensation.

#### Indemnification

GeoEngineers will indemnify and hold the Client harmless from and against any claims, liabilities, damages and costs (including reasonable attorney fees and costs of defense) arising out of death or bodily injury to persons or damage to property to the extent proven to be caused by or resulting from the sole negligence of GeoEngineers, its agents or its employees. For any such claims, liabilities, damages or costs caused by or resulting from the concurrent negligence of GeoEngineers and other parties, including the Client, the duty to indemnify shall apply only to the extent of GeoEngineers' proven negligence.

The Client will defend, indemnify and hold GeoEngineers, including its subsidiaries and affiliates, harmless from and against any and all claims (including without limitation, claims by third parties and claims for economic loss), liabilities, damages, fines, penalties and costs (including without limitation reasonable attorney fees and costs of defense) arising out of or in any way related to this project or this Agreement, provided that Client's indemnification obligations shall not apply to the extent of the proven negligence of GeoEngineers, its officers, agents and employees.

Client's indemnification obligation shall include, but is not limited to, all claims against GeoEngineers by an employee or former employee of Client, and Client expressly waives all immunity and limitation of liability under any industrial insurance act, worker's compensation act, disability benefit act, or employee benefit act of any jurisdiction which would otherwise be applicable in the case of such claim. Client's waiver of immunity by the provisions of this paragraph extends only to claims against GeoEngineers by Client's current or former employees and does not include or extend to any claims by Client's employees or former employees directly against Client.

Client's duty to defend in this paragraph means that Client shall assume the defense of such claim using legal counsel selected or approved by GeoEngineers and GeoEngineers shall be entitled to participate in the strategy and direction of the defense. In the course of defending a claim under this paragraph, Client shall not compromise or settle the claim without GeoEngineers' consent unless: (i) such settlement or compromise only involves monetary relief that is paid in full by Client, (ii) GeoEngineers is not liable for any such settlement or compromise, and (iii) there is no finding or admission that GeoEngineers is or was liable under any legal theory for damages relating to the claim.

By entering into this Agreement, Client acknowledges that this indemnification provision has been reviewed, understood and is a material part of the Agreement, and that Client has had an opportunity to seek legal advice regarding this provision.

#### Limitation of Remedies

GeoEngineers' aggregate liability responsibility to Client, including that of our subsidiaries and affiliates, officers, directors, employees, agents and subconsultants, is limited to \$50,000 or the amount of GeoEngineers' fee under this Agreement, whichever is greater. This limitation of remedy applies to all lawsuits, claims or actions, whether identified as arising in tort, contract or other legal theory, (including without limitation, GeoEngineers' indemnity obligations in the previous paragraph) related to our services under this Agreement and any continuation or extension of our services.

If Client desires a higher limitation, GeoEngineers may agree, at Client's request, to increase the limitation of remedy amount to a greater sum in exchange for a negotiated increase in our fee. Any additional charge for a higher limit is consideration for the greater risk assumed by us and is not a charge for additional professional liability insurance. Any agreement to increase the limitation of remedy amount must be made in writing and signed by both parties in advance of the provision of services under this Agreement.

By entering into this Agreement, Client acknowledges that this Limitation of Remedies Clause has been reviewed, understood and is a material part of this Agreement, and that Client has had an opportunity to seek legal advice regarding this provision.

#### Insurance

GeoEngineers maintains Workers' Compensation and Employer's Liability Insurance as required by state law. We also maintain comprehensive general, auto, professional and environmental impairment liability insurance. We will provide copies of certificates evidencing these policies at the request of the Client.

#### Mutual Waiver of Consequential Damages

In no event will either party be liable to the other for any special, indirect, incidental or consequential damages of any nature arising out of or related to the performance of this Agreement, whether founded in negligence, strict liability, warranty or breach of contract. In addition, Client expressly waives any and all claims against GeoEngineers for any liquidated damages liability that may be incurred by or assessed against Client.

#### Disputes

Any dispute, controversy or claim arising out of or related to this Agreement or its breach that is not resolved through negotiation between the parties, must be referred to mediation before pursuing any other dispute remedy. Each party shall bear its own costs and attorneys' fees arising out of the mediation and the costs of the mediation shall be divided equally between the standing parties.

If the matter has not been resolved through the mediation process, either or both parties may elect to pursue resolution through litigation. The parties submit to the jurisdiction of the State of Washington and agree that any legal action or proceeding arising out of or relating to this Agreement must be brought in the Superior Court in Benton County, Washington.

#### Choice of Law

This Agreement is governed by and subject to interpretation pursuant to the laws of the State of Washington.

#### Biological Pollutants

Our Scope of Services specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. The term

"Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

Our Instruments of Service will not include any interpretations, recommendations, findings or conclusions pertaining to Biological Pollutants. Accordingly, Client agrees that GeoEngineers will have no liability for any claims alleging a failure to investigate, detect, prevent, assess, or make recommendations for preventing, controlling, or abating Biological Pollutants. Furthermore, Client agrees to defend, indemnify, and hold harmless GeoEngineers from all claims by any third party concerning Biological Pollutants to the extent of the INDEMNIFICATION section in these GENERAL CONDITIONS.

#### **Claims Assistance for Client**

If a construction contractor or other party files a claim against Client, relating to services performed by GeoEngineers and Client requires additional information or assistance to evaluate or defend against such claims, we will make our personnel available for consultation with Client's staff and for testimony, if necessary. We will make such essential personnel available upon reasonable notice from Client and Client will reimburse GeoEngineers for such consultation or testimony, including travel costs, at the rates that apply for other services under this Agreement. We will provide services in connection with any such claims pursuant to a written supplement, if necessary, extending this Agreement.

#### **Time Bar to Legal Action**

The parties agree that all legal actions by either party against the other concerning our services pursuant to this Agreement or for failure to perform in accordance with the applicable standard of care, however denominated, including but not limited to claims sounding in tort or in contract, and arising out of any alleged loss or any alleged error, will become barred after the applicable Statute of Limitations.

#### **No Third Party Rights**

Nothing in this Agreement or as a consequence of any of the services provided gives any rights or benefits to anyone other than Client and GeoEngineers. All duties and responsibilities undertaken pursuant to this Agreement are for the sole and exclusive benefit of Client and GeoEngineers and not for the benefit of any other party. No third party shall have the right to rely on the product of GeoEngineers' services without GeoEngineers' prior written consent and the third party's agreement to be bound to the same terms and conditions as the Client.

#### **Assignment of Contract or Claims**

Neither the Client nor GeoEngineers may delegate, assign, sublet, or transfer the duties, interests or responsibilities set forth in this Agreement, or any cause of action or claim relating to the services provided under this Agreement, to other entities without the written consent of the other party.

#### **Survival**

These terms and conditions survive the completion of the services under this Agreement and the termination of this Agreement, whether for cause or for convenience.

#### **Severability**

If any provision of this Agreement is ever held to be unenforceable, all remaining provisions will continue in full force and effect. Client and GeoEngineers agree that they will attempt in good faith to replace any unenforceable provision with one that is valid and enforceable, and which conforms as closely as possible with the original intent of any unenforceable provision.

#### **Equal Opportunity Employment**

GeoEngineers is an Equal Opportunity and Affirmative Action Employer. GeoEngineers shall abide by, and shall require that any subcontractors or vendors hired by GeoEngineers abide by, the requirements of 41 CFR 80-1.4(a), 60-300.6(a) and 60-741.5(a) which are incorporated as part of this Agreement. These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability or veteran status.

## Schedule of Charges – 2019

### COMPENSATION

Our compensation will be determined on the basis of time and expenses in accordance with the following schedule unless a lump sum amount is so indicated in the proposal or services agreement. Current rates are:

#### Professional Staff

Staff 1 Engineer/Scientist/Analyst	\$	99/hour
Staff 2 Engineer/Scientist/Analyst	\$	110/hour
Staff 3 Engineer/Scientist/Analyst	\$	120/hour
Engineer/Scientist/Analyst 1	\$	127/hour
Engineer/Scientist/Analyst 2	\$	135/hour
Senior Engineer/Scientist/Analyst 1	\$	152/hour
Senior Engineer/Scientist/Analyst 2	\$	163/hour
Associate	\$	185/hour
Principal	\$	210/hour
Senior Principal	\$	220/hour

#### Technical Support Staff

Administrator 1	\$	69/hour
Administrator 2	\$	74/hour
Administrator 3	\$	79/hour
CAD Technician	\$	85/hour
CAD Designer	\$	94/hour
CAD Design Coordinator	\$	103/hour
Technician	\$	54/hour
Senior Technician	\$	65/hour
Lead Technician	\$	73/hour
Environmental Technician	\$	83/hour

Contracted professional and technical services will be charged at the applicable hourly rates listed above. Staff time spent in depositions, trial preparation and court or hearing testimony will be billed at one and one-half times the above rates. Time spent in either local or inter-city travel, when travel is in the interest of this contract, will be charged in accordance with the foregoing schedule. Rates for data storage and web-based access will be provided on a project-specific basis.

**Equipment**

Air Quality Equipment, per day	\$	155.00
Environmental Exploration Equipment, per day	\$	180.00
Geotechnical Exploration Equipment, per day	\$	130.00
Groundwater Monitoring Equipment, per day	\$	248.00
Operations and Maintenance Equipment, per day	\$	255.00
Special Inspection and Testing Equipment, per day	\$	18.00
Water Quality Equipment, per day	\$	155.00
	\$	

**Specialized Equipment**

Crack Gauges, per gauge	\$	30.00
Data Logger with Transducers, per day	\$	105.00
Disposable Bafflers, each	\$	16.00
Field Data Acquisition Equipment, per day	\$	50.00
Flowmeter, per day	\$	105.00
GPS Unit, per day	\$	105.00
Level C PPE, per day	\$	26.00
Nuclear Density Gauge, per day	\$	40.00
Padlocks, each	\$	15.00
pH Meter, per day	\$	15.00
Scuba Diving Equipment, per day, per diver	\$	260.00
Soil Samples (in Rings), per sample	\$	5.00
Soil Samples (in Sleeves), per sample	\$	8.00
Underwater Camera - Still, per day	\$	50.00
Underwater Camera - Video, per day	\$	155.00
Vehicle usage, per mile, or \$60/day, whichever is greater	\$	0.65
Vehicle - 4-Wheel Drive Truck, per day (1 day min.)	\$	85.00
Water Filters, each	\$	32.00
Miscellaneous Field Equipment, at current rates, list available upon request, per day	\$	20.00

*Specialized equipment will be quoted on a per-job basis.*

**OTHER SERVICES, SUPPLIES AND SPECIAL TAXES**

Charges for services, equipment, supplies and facilities not furnished in accordance with the above schedule, and any unusual items of expense not customarily incurred in our normal operations, are charged at cost plus 15 percent. This includes shipping charges, subsistence, transportation, printing and reproduction, miscellaneous supplies and rentals, surveying services, drilling equipment, construction equipment, watercraft, aircraft, and special insurance which may be required. Taxes required by local jurisdictions for projects in specific geographic areas will be charged to projects at direct cost.

**In-House Disposable Field Supplies**

Routinely used field supplies stocked in-house by GeoEngineers, at current rates, list available upon request.

**Associated Project Costs (APC)**

Computer hardware and software, telephone and fax communications, printing and photocopying and routine postage via USPS will be charged at a flat rate of 6 percent of labor charges.

### Laboratory Schedule of Charges

Type of Test	Unit Price*
Moisture Content / Oven (ASTM D2216)	\$ 18.00
Sample Preparation	
Extrusion - Extrude and log (visual classification) Shelby tube sample, per hour	\$ 48.00
Trimming - Trim a soil sample to 2.41-inch dia. for consolidation testing, per hour	\$ 48.00
Remolding - Remold a soil sample to desired moisture and density, per hour	\$ 48.00
Moisture/Density	
Rings	\$ 25.00
Shelby Tubes, waxed chunk	\$ 40.00
Tubes (liners), chunk	\$ 40.00
Organic Content (ASTM D2974)**	\$ 62.00
Particle Size Analysis	
Sieve (ASTM C136) max size < 3/4-inch (includes -200 Wash, Dry Sieve)	\$ 88.00
Sieve (ASTM C136) max size > 3/4-inch (includes -200 Wash, Dry Sieve)	\$ 90.00
Percent Passing No. 200 (ASTM C117-87/D1140)	\$ 48.00
Combined Sieve and Hydrometer (ASTM D422)	\$ 150.00
Hydrometer only (ASTM D422)	\$ 98.00
Atterberg Limits (ASTM D4318)	\$ 110.00
Nonplastic	\$ 68.00
Specific Gravity, Fine Material (ASTM D854)	\$ 68.00
Specific Gravity, Coarse Material (ASTM C-127)	\$ 55.00
Percent of Fracture (ASTM D5821)	\$ 38.00
Sand Equivalent (AASHTO T 176, ASTM D-2419)	\$ 63.00
Compaction (ASTM D1557/D698, Methods A, B and C, AASHTO T-180)	
4 point	\$ 150.00
Direct Shear (ASTM D3080)	
Per point	\$ 110.00
Vane Shear (ASTM D4648)	
3 points**	\$ 57.00
Consolidation (ASTM D2435)	
With 2 timed load increments	\$ 360.00
Permeability	
Constant or falling head in rigid wall permeameter (ASTM D 2434, D 5856)**	\$ 190.00
In triaxial cell with back pressure saturation (ASTM D 5084)**	\$ 520.00
One-Dimensional Swell (ASTM D4546)	
Method A**	\$ 360.00
Method B**	\$ 360.00
Method C**	\$ 620.00
Triaxial Compression	
Unconfined Comp. - UC (ASTM D2186)	\$ 93.00
Unconsolidated Undrained - UU (ASTM D2850)**	\$ 180.00
Triaxial Unconsolidated Undrained (back pressure saturation)**	\$ 360.00
Consolidated Undrained (ASTM D4767) with pore press. meas. - CU/S/P**	\$ 520.00
Consolidated Drained - CD**	\$ 520.00
Consolidated Undrained or Consolidated Drained (3 points)**	\$ 1,250.00
CBR with 4 point Proctor (ASTM D1883)	\$ 470.00
Rock Point Load Index Test (ASTM D5731)	\$ 26.00
Unconfined compressive strength of rock cores (ASTM D7012)	\$ 36.00
Concrete Cylinders (ASTM C39) compressive strength (includes C31 molding/curing)	\$ 20.00
Mortar Cylinders (ASTM C780)	\$ 20.00
Masonry Unit Prisms (ASTM C1314)	\$ 105.00
Grout Prisms (ASTM C1019)	\$ 26.00
High Strength Grout Cubes (ASTM C109)	\$ 20.00
Soil Cement/CLSM Unconfined Compression (ASTM D 4832)	\$ 36.00
Concrete Beam Flexural Strength by Third-Point Loading (ASTM C 78)	\$ 80.00
Compressive Strength of Drilled Concrete Core (ASTM C 42)	\$ 38.00
SFRM Density (ASTM E605)	\$ 34.00

Other tests charged at negotiated rates

\*Increase unit prices by 20 percent – 50 percent for contaminated samples.

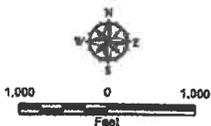
\*\* Conducted in our Redmond Laboratory, additional shipping charges may apply.

All rates are subject to change upon notification.



**Notes:**  
 1. The location of all features shown are approximate.  
 2. This drawing is for information purposes. It is intended to assist in planning but does not constitute a contract. GEOENGINEERS, Inc. cannot guarantee the accuracy and extent of electronic data. The master file is stored by GEOENGINEERS, Inc. and will serve as the official record of this computerized data.  
 3. Egs = below ground surface.  
 Date Revised: April 2008  
 Project#: NAO 1883 State/Plane Washington South FPG 4822 Feet

- Legend**
-  Proposed Monitoring Well Designation and Approximate Location
  -  Proposed Boring Designation and Approximate Location
  -  Proposed Geophysical Survey Line
  -  Approximate Drainage Problem Area Boundary



**Proposed Phase 2 Exploration Map**

Drainage Problem Area  
City of West Richland, Washington

**GEOENGINEERS**  **Figure 1**