

**CITY OF PORTLAND  
AGREEMENT FOR PROFESSIONAL, TECHNICAL, OR EXPERT SERVICES**

**CONTRACT NUMBER 30003799**

**TITLE OF WORK PROJECT  
Water System Seismic Study**

This contract is between the City of Portland ("City," or "Bureau") and **InfraTerra, Inc.**, hereafter called Consultant. The City's Project Manager for this contract is **Ryan Nelson**.

**Effective Date and Duration**

This contract shall become effective on **May 5, 2014**. This contract shall expire, unless otherwise terminated or extended, on **June 30, 2016**.

**Consideration**

- (a) City agrees to pay Consultant a sum not to exceed \$1,124,590 for accomplishment of the work.
- (b) Interim payments shall be made to Consultant according to the schedule identified in the STATEMENT OF THE WORK AND PAYMENT SCHEDULE.

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**CONSULTANT DATA AND CERTIFICATION**

Name (print full legal name): InfraTerra, Inc.

Address: 5 3<sup>rd</sup> Street, Suite 224, San Francisco, CA 94103

Employer Identification Number (EIN): 45-3338205  
[INDEPENDENT CONTRACTORS: DO NOT PROVIDE SOCIAL SECURITY NUMBER (SSN) – LEAVE BLANK IF NO EIN]

City of Portland Business Tax Registration Number: 755645

- Citizenship: Nonresident alien     Yes                       No
- Business Designation (check one):     Individual               Sole Proprietorship     Partnership     Corporation
- Limited Liability Co (LLC)     Estate/Trust     Public Service Corp.     Government/Nonprofit

Payment information will be reported to the IRS under the name and taxpayer I.D. number provided above. Information must be provided prior to contract approval.

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**TERMS AND CONDITIONS**

**1. Standard of Care**

Consultant shall perform all services under this contract using that care, skill, and diligence that would ordinarily be used by similar professionals in this community in similar circumstances.

**2. Effect of Expiration**

Passage of the contract expiration date shall not extinguish, prejudice, or limit either party's right to enforce this Contract with respect to any default or defect in performance that has not been corrected.

**3. Order of Precedence**

This contract consists of these Terms and Conditions, the Statement of Work and Payment Schedule, and any exhibits that are attached. Any apparent or alleged conflict between these items will be resolved by using the following order of precedence:

- a) these Terms and Conditions; b) Statement of Work and Payment Schedule; and c) any exhibits attached to the contract.

**4. Early Termination of Contract**

- (a) The City may terminate this Contract for convenience at any time for any reason deemed appropriate in its sole discretion. Termination is effective immediately upon notice of termination given by the City.
- (b) Either party may terminate this Contract in the event of a material breach by the other party that is not cured. Before termination is permitted, the party seeking termination shall give the other party written notice of the breach, its intent to terminate, and fifteen (15) calendar days to cure the breach. If the breach is not cured within 15 days, the party seeking termination may terminate immediately by giving written notice that the Contract is terminated.

**5. Remedies and Payment on Early Termination**

- (a) If the City terminates pursuant to 4(a) above, the City shall pay the Consultant for work performed in accordance with the Contract prior to the termination date. No other costs or loss of anticipated profits shall be paid.
- (b) If the City terminates pursuant to 4(b) above, the City is entitled all remedies available at law or equity. In addition, Consultant shall pay the City all damages, costs, and sums incurred by the City as a result of the breach.
- (c) If the Consultant justifiably terminates the contract pursuant to subsection 4(b), the Consultant’s only remedy is payment for work prior to the termination. No other costs or loss of anticipated profits shall be paid.
- (d) If the City’s termination under Section 4(b) was wrongful, the termination shall be automatically converted to one for convenience and the Consultant shall be paid as if the Contract was terminated under Section 4(a).
- (e) In the event of early termination the Consultant's work product before the date of termination becomes property of the City.

**6. Assignment**

Consultant shall not subcontract, assign, or transfer any of the work scheduled under this agreement, without the prior written consent of the City. Notwithstanding City approval of a subconsultant, the Consultant shall remain obligated for full performance hereunder, and the City shall incur no obligation other than its obligations to the Consultant hereunder. The Consultant agrees that if subconsultants are employed in the performance of this Agreement, the Consultant and its subconsultants are subject to the requirements and sanctions of ORS Chapter 656, Workers’ Compensation.

**7. Compliance with Applicable Law**

Consultant shall comply with all applicable federal, state, and local laws and regulations. Consultant agrees it currently is in compliance with all tax laws. Consultant shall comply with Title VI of the Civil Rights Act of 1964 and its corresponding regulations as further described at: <http://www.portlandoregon.gov/bibs/article/446806>. In connection with its activities under this Contract, the Contractor shall comply with all applicable Grant Terms and conditions. This includes all terms and conditions contained in this contract and, for a contract involving a grant, the Grant Terms and Conditions as further described at: <http://www.portlandoregon.gov/bibs/article/455735>.

**8. Indemnification for Property Damage and Personal Injury**

Consultant shall indemnify, defend, and hold harmless the City, its officers, agents, and employees, from all claims, losses, damages, and costs (including reasonable attorney fees) for personal injury and property damage arising out of the intentional or negligent acts or omissions of the Consultant, its Subconsultants, suppliers, employees or agents in the performance of its services. Nothing in this paragraph requires the Consultant or its insurer to indemnify the City for claims of personal injury or property damage caused by the negligence of the City. This duty shall survive the expiration or termination of this contract.

**9. Insurance**

Consultant shall obtain and maintain in full force at Consultant expense, throughout the duration of the Contract and any warranty or extension periods, the required insurance identified below. The City reserves the right to require additional insurance coverage as required by statutory or legal changes to the maximum liability that may be imposed on Oregon cities during the term of the Contract.

- (a) Workers' compensation insurance as required by ORS Chapter 656 and as it may be amended. Unless exempt under ORS Chapter 656, the Consultant and all subconsultants shall maintain coverage for all subject workers.

Required and attached //  Proof of exemption (i.e., completion of Workers’ Compensation Insurance Statement)

- (b) General commercial liability (CGL) insurance covering bodily injury, personal injury, property damage, including coverage for independent contractor’s protection (required if any work will be subcontracted), premises/operations, contractual liability, products and completed operations, in per occurrence limit of not less than \$1,000,000, and aggregate limit of not less than \$2,000,000.

Required and attached //  Waived by Bureau Director or designee //  Reduce by Bureau Director or designee

- (c) Automobile liability insurance with coverage of not less than \$1,000,000 each accident, and an umbrella or excess liability coverage of \$2,000,000. The insurance shall include coverage for any auto or all owned, scheduled, hired and non-owned auto. This coverage may be combined with the commercial general liability insurance policy.

Required and attached //  Waived by Bureau Director or designee //  Reduce by Bureau Director or designee

- (d) Professional Liability and/or Errors & Omissions insurance to cover damages caused by negligent acts, errors or omissions related to the professional services, and performance of duties and responsibilities of the Consultant under this contract in an amount with a combined single limit of not less than \$1,000,000 per occurrence and aggregate of \$3,000,000 for all claims per occurrence. In lieu of an occurrence based policy, Consultant may have claims-made policy in an amount not less than \$1,000,000 per claim and \$3,000,000 annual aggregate, if the Consultant obtains an extended reporting period or tail coverage for not less than three (3) years following the termination or expiration of the Contract.

Required and attached //  Waived by Bureau Director or designee //  Reduce by Bureau Director or designee

Continuous Coverage; Notice of Cancellation: The Consultant agrees to maintain continuous, uninterrupted coverage for the duration of the Contract. There shall be no termination, cancellation, material change, potential exhaustion of aggregate limits or non renewal of coverage without thirty (30) days written notice from Consultant to the City. If the insurance is canceled or terminated prior to completion of the Contract, Consultant shall immediately notify the City and provide a new policy with the same terms. Any failure to comply with this clause shall constitute a material breach of Contract and shall be grounds for immediate termination of this Contract.

Additional Insured: The liability insurance coverages, except Professional Liability, Errors and Omissions, or Workers' Compensation, shall be without prejudice to coverage otherwise existing, and shall name the City of Portland and its bureaus/divisions, officers, agents and employees as Additional Insureds, with respect to the Consultant's activities to be performed, or products or services to be provided. Coverage shall be primary and non-contributory with any other insurance and self-insurance. Notwithstanding the naming of additional insureds, the insurance shall protect each additional insured in the same manner as though a separate policy had been issued to each, but nothing herein shall operate to increase the insurer's liability as set forth elsewhere in the policy beyond the amount or amounts for which the insurer would have been liable if only one person or interest had been named as insured.

Certificate(s) of Insurance: Consultant shall provide proof of insurance through acceptable certificate(s) of insurance, including additional insured endorsement form(s) and all other relevant endorsements, to the City prior to the award of the Contract if required by the procurement documents (e.g., request for proposal), or at execution of Contract and prior to any commencement of work or delivery of goods or services under the Contract. The Certificate(s) will specify all of the parties who are endorsed on the policy as Additional Insureds (or Loss Payees). Insurance coverages required under this Contract shall be obtained from insurance companies acceptable to the City of Portland. The Consultant shall pay for all deductibles and premium. The City reserves the right to require, at any time, complete, certified copies of required insurance policies, including endorsements evidencing the coverage the required.

Subconsultant(s): Consultant shall provide evidence that any subconsultant, if any, performing work or providing goods or service under the Contract has the same types and amounts of coverages as required herein or that the subconsultant is included under Consultant's policy.

#### **10. Ownership of Work Product**

All work product produced by the Consultant under this contract is the exclusive property of the City. "Work Product" includes, but is not limited to: research, reports, computer programs, manuals, drawings, recordings, photographs, artwork and any data or information in any form. The Consultant and the City intend that such Work Product shall be deemed "work made for hire" of which the City shall be deemed the author. If for any reason a Work Product is deemed not to be a "work made for hire," the Consultant hereby irrevocably assigns and transfers to the City all right, title and interest in such work product, whether arising from copyright, patent, trademark, trade secret, or any other state or federal intellectual property law or doctrines. Consultant shall obtain such interests and execute all documents necessary to fully vest such rights in the City. Consultant waives all rights relating to work product, including any rights arising under 17 USC 106A, or any other rights of authorship, identification or approval, restriction or limitation on use or subsequent modifications. If the Consultant is an architect, the Work Product is the property of the Consultant-Architect, and by execution of this contract, the Consultant-Architect grants the City an exclusive and irrevocable license to use that Work Product.

Notwithstanding the above, all pre-existing trademarks, services marks, patents, copyrights, trade secrets, and other proprietary rights of Consultant are and will remain the exclusive property of Consultant.

#### **11. EEO Certification**

In the event Consultant provides in excess of \$2,500.00 for services to the City in any fiscal year, Consultant shall obtain EEO certification from the City.

#### **12. Equal Benefits**

Consultant must comply with the City's Equal Benefits program as prescribed by Chapter 3.100 of the Code of the City of Portland. The required documentation must be filed with Procurement Services, City of Portland, prior to contract execution.

#### **13. Successors in Interest**

The provisions of this contract shall be binding upon and shall inure to the benefit of the parties hereto, and their respective successors and approved assigns.

#### **14. Severability**

The parties agree that if any term or provision of this contract is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the particular term or provision held to be invalid.

#### **15. Waiver**

The failure of the City to enforce any provision of this contract shall not constitute a waiver by the City of that or any other provision.

## **16. Errors**

The Consultant shall promptly perform such additional services as may be necessary to correct errors in the services required by this contract without undue delays and without additional cost.

## **17. Governing Law/Venue**

The provisions of this contract shall be interpreted, construed and enforced in accordance with, and governed by, the laws of the State of Oregon without reference to its conflict of laws provisions that might otherwise require the application of the law of any other jurisdiction. Any action or suits involving any question arising under this contract must be brought in the appropriate court in Multnomah County Oregon.

## **18. Amendments**

All changes to this contract, including changes to the scope of work and contract amount, must be made by written amendment and approved by the Chief Procurement Officer to be valid. Any amendment that increases the original contract amount by more than 25% must be approved by the City Council to be valid.

## **19. Business Tax Registration**

The Consultant shall obtain a City of Portland business tax registration number as required by PCC 7.02 prior to beginning work under this Contract.

## **20. Prohibited Conduct**

The Consultant shall not hire any City employee who evaluated the proposals or authorized the award of this Contract for two years after the date the contract was authorized without the express written permission of the City and provided the hiring is permitted by state law.

## **21. Payment to Vendors and Subconsultants**

The Consultant shall timely pay all subconsultants and suppliers providing services or goods for this Contract.

## **22. Access to Records**

The Consultant shall maintain all records relating to this Contract for three (3) years after final payment. The City may examine, audit and copy the Consultant's books, documents, papers, and records relating to this contract at any time during this period upon reasonable notice. Copies of these records shall be made available upon request. Payment for the reasonable cost of requested copies shall be made by the City.

## **23. Audits**

- (a) The City may conduct financial and performance audits of the billings and services specified in this agreement at any time in the course of the agreement and during the three (3) year period established by paragraph 22. Audits will be conducted in accordance with generally accepted auditing standards as promulgated in Government Auditing Standards by the Comptroller General of the United States Government Accountability Office.
- (b) If an audit discloses that payments to the Consultant exceed the amount to which the Consultant was entitled, the Consultant shall repay the amount of the excess to the City.

## **24. Electronic Signatures**

The City and Consultant may conduct this transaction, including any contract amendments, by electronic means, including the use of electronic signatures.

## **25. Merger Clause**

This Contract encompasses the entire agreement of the parties, and supersedes all previous understandings and agreements between the parties, whether verbal or written.

## **26. Dispute Resolution/Work Regardless of Disputes**

The parties shall participate in mediation to resolve disputes before conducting litigation. The mediation shall occur at a reasonable time after the conclusion of the Contract with a mediator jointly selected by the parties. Notwithstanding any dispute under this Contract, the Consultant shall continue to perform its work pending resolution of a dispute, and the City shall make payments as required by the Contract for undisputed portions of the work. In the event of litigation no attorney fees are recoverable. No different dispute resolution paragraph(s) in this contract or any attachment hereto shall supersede or take precedence over this provision.

## **27. Progress Reports: Applicable / Not Applicable**

If applicable, the Consultant shall provide monthly progress reports to the Project Manager as described in the Statement of the Work and Payment Schedule.

## **28. Consultant's Personnel: Applicable / Not Applicable**

If applicable, the Consultant shall assign the personnel listed in the Statement of the Work and Payment Schedule for the work required by the Contract and shall not change personnel without the prior written consent of the City, which shall not be unreasonably withheld.

### 29. Subconsultants

The Consultant shall use the subconsultants identified in its proposals. The Consultant shall not change subconsultant assignments without the prior written consent of the Chief Procurement Officer. The City will enforce all social equity contracting and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Consultant in its proposals. Failure to use the identified M/W/ESB subconsultants without prior written consent is a material breach of contract.

For contracts valued \$50,000 or more, the Consultant shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this contract by reference, reporting ALL subconsultants employed in the performance of this agreement. An electronic copy of the MUR may be obtained at: <http://www.portlandoregon.gov/bibs/45475>.

### 30. Third Party Beneficiaries

There are no third party beneficiaries to this contract. Enforcement of this contract is reserved to the parties.

### 31. Conflict of Interest

Contractor hereby certifies that, if applicable, its contract proposal is made in good faith without fraud, collusion or connection of any kind with any other proposer of the same request for proposals or other City procurement solicitation(s), that the Contractor as a proposer has competed solely on its own behalf without connection or obligation to, any undisclosed person or firm. Contractor certifies that it is not a City official/employee or a business with which a City official/employee is associated, and that to the best of its knowledge, Contractor, its employee(s), its officer(s) or its director(s) is not a City official/employee or a relative of any City official/employee who: i) has responsibility in making decisions or ability to influence decision-making on the contract or project to which this contract pertains; ii) has or will participate in evaluation or management of the contract; or iii) has or will have financial benefits in the contract. Contractor understands that should it elect to employ any former City official/employee during the term of the contract then that the former City official/Contractor employee must comply with applicable government ethics and conflicts of interest provisions in ORS Chapter 244, including but not limited to ORS 244.040(5) and ORS 244.047, and the City's Charter, Codes and administrative rules, including lobbying prohibitions under Portland City Code Section 2.12.080.

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## STATEMENT OF THE WORK AND PAYMENT SCHEDULE

### SCOPE OF WORK

The Consultant shall provide technical services, develop seismic hazard maps and perform water system seismic assessment to identify system vulnerabilities and assist in the development of a long-term seismic improvement program to meet the goals of the Oregon Resilience Plan.

Key features of the Project include:

- Develop liquefaction and lateral spreading maps;
- Model backbone distribution system performance;
- Assess distribution system performance;
- Define mitigation measures; and,
- Evaluate emergency preparedness for response and recovery.

The following provides a more detailed description of the key tasks to be performed as part of this project. The Consultant shall work closely with designated Portland Water Bureau Project Manager, their designated representative, PWB contractors and their subcontracts, and other City personnel to accomplish the following:

#### **TASK 1 DEVELOP LIQUEFACTION AND LATERAL SPREADING MAPS**

##### Background

Liquefaction and lateral spread have been identified as primary hazards to the Portland Water Bureau (PWB)'s system in the Oregon Resilience Plan from a Cascadia megathrust event. Liquefaction occurs in loose, saturated granular sediments (principally sand and silty sand), and has caused extensive damage to water systems during past earthquakes. Damage to pipelines and support structures in liquefied sediments can result from liquefaction-triggered differential settlement, bearing capacity failure of foundations, flotation of buried structures, lateral spreading and slope failure, ground cracking, and ground oscillation.

Key facilities and portions of the PWB system not covered by the Department of Geology and Mineral Industries (DOGAMI) maps shall be mapped to provide an overall uniform assessment of earthquake-induced hazard/risk. In addition, the DOGAMI maps shall be updated as part of this task. Fill-in mapping, geotechnical data compilation, supplemental data collection, and scenario/site specific hazard assessment shall be performed in a consistent manner to develop information for integration into risk evaluation (e.g., pipeline break modeling). This mapping shall include compilation and integration of existing data (e.g., ODOT borings) within Geographic Information System (GIS).

The liquefaction susceptibility mapping process to be completed by the Consultant shall include the following steps: (1) creating detailed Quaternary geologic maps delineating deposits of various ages, depositional environments, and texture; (2) evaluating deposit thickness and depth to groundwater; (3) performing initial evaluation of relative liquefaction susceptibility using a decision tree process; and (4) identifying units of similar susceptibility and grouping them to form liquefaction susceptibility zones. Integration of GIS to this process facilitates rapid synthesis of large amounts of data, ultimately resulting in a powerful geologic hazard GIS database.

Depth to groundwater at primary backbone facilities and along major pipelines shall be evaluated using existing geotechnical and available well data to provide delineation of subsurface materials and depth to the groundwater table.

Liquefaction resistance (i.e., triggering) shall be evaluated using the Youd and Idriss, 2001 (NCEER) procedure for the selected earthquake scenarios. The Youd and Idriss (2001) procedure is widely recognized as the most recent consensus procedure for evaluation of liquefaction hazards. As needed, advanced modeling methods will be used for dynamic landslide slope stability, including one and two-dimensional site response analysis SHAKE (equivalent linear), TESS (nonlinear), FLAC (nonlinear), and PLAXIS computer programs.

Ground motion input from USGS shall be obtained to estimate median ground motions from the Cascadia megathrust event for the area covered by the water infrastructure.

#### Task Approach

1. The Consultant shall collect available published data on Quaternary geology, geomorphology geotechnical data for the purposes of liquefaction assessment. As part of this task, the Consultant shall communicate and coordinate with DOGAMI to obtain geology and geotechnical data, discuss methodology used by DOGAMI to develop liquefaction and lateral spread hazard maps (Geological Map Series; GMS-79) for PWB's current retail service area. The maps shall incorporate methodology used by DOGAMI in the development of maps for the water system.
2. The Consultant shall ensure that field mapping be conducted by two geologists, including licensed professionals (Professional Geologist or Certified Engineering Geologist), experienced in mapping surficial deposits and characterizing liquefaction hazards. The geologists shall calibrate geologic maps with field observations as well as an examination of key areas of potential hazard for exposures of native and man-placed materials that are potentially prone to failure in future large earthquakes. The field observations shall be logged on GPS-enabled laptops running GIS so that key localities and observations are correctly located and incorporated in the final geologic and liquefaction hazard maps. In addition, the field data collected by the geologists shall be used to refine Light Detecting and Ranging (LiDAR)-derived geologic profiles (cross sections) based on walking along the right-of-way or transects of critical aqueducts and other facilities.
3. The Consultant shall obtain from USGS, peak ground acceleration (PGA) and peak ground velocity (PGV) maps for a scenario ground motion representative of a Magnitude 9.0 megathrust earthquake on the Cascadia Subduction Zone.
4. The Consultant shall use methods such as Youd and Idriss, 2001, Zhang et al. (2002 and 2004), Tokimatsu and Seed (1987), Ishihara and Yoshimine (1992) including as-needed site response analysis (linear or non-linear) to develop estimates of dynamic landslide slope instability and liquefaction induced lateral spread displacement and settlement.
5. The Consultant shall develop updated hazard maps to assist in PWB's emergency response. Two new layers in the City's ArcGIS shall be developed. One layer would show liquefaction susceptibility and the other layer would show lateral spread displacement and dynamic slope instability. Hazard maps shall be prepared to a resolution that can be utilized in the modeling of the seismic response of the water system. The resolution of mapping will vary depending upon the extent of hazard and vulnerability of system components but shall be sufficient to adequately capture the spatial variability in the hazard across the system including key facilities and portions of the PWB system not covered by the DOGAMI maps. PWB's Project Manager (PM) and their designated staff shall assist the Consultant in locating and translating relevant geotechnical and system data to a GIS format available to the Consultant for preparation of the hazard maps.

#### Deliverables

1. Deliverables shall include hard copy maps and ArcGIS map layers of liquefaction susceptibility, lateral spread displacement and dynamic slope instability. Metadata shall be provided that conforms to the standards established by the U.S. Federal Geographic Data Committee (FGDC) and used by U.S. Federal agencies for documenting geospatial data. Ten copies of draft and final maps shall be provided by the Consultant to the PWB PM.

2. Draft and Final technical memorandum that documents the assumptions and methodology used in the development of ground motion, liquefaction, lateral spread and dynamic slope instability maps. Ten copies of the draft and final memorandum shall be provided by the Consultant to the PWB PM.
3. Ten laminated copies of final liquefaction and lateral spreading maps overlain by PWB's water distribution system shall be provided on 22"x34" paper by the Consultant to the PWB PM.

## **TASK 2 MODEL BACKBONE DISTRIBUTION SYSTEM PERFORMANCE**

### Task Approach

The task shall include the four main sub-tasks to be completed by the Consultant and are as follows:

- System Hydraulic Analysis;
- Facility Assessment and Development of Fragilities;
- Pipeline Assessment and Development of Fragilities; and,
- Risk Analysis/System Assessment.

Scope of work for each of these sub-tasks is described below:

1. System Hydraulic Analysis – The following activities shall be performed by the Consultant:
  - a. Obtain water system map and hydraulic model from the PWB. The water system maps shall be provided as an ArcGIS layer. The hydraulic model shall be provided by the City as converted EPANET2.0 files from the City's SynerGEE model. The City's EPANET converter does not have the capability to convert the model for extended period simulation (EPS) and does not accurately match the water system in GIS. The Consultant shall work with PWB to modify the model to include EPS. The EPS scenario shall be developed based on the diurnal demand variation and typical system performance, such as typical hourly tank variation, pump flowrate, suction and discharge pressure that will be provided by PWB. The existing hydraulic model is based on 2002 demands and has not been updated for recent demands. The Consultant shall work with PWB to update the model to include current demands. System demands shall be updated based on meter data provided by PWB in a GIS shape file format.
  - b. The Consultant shall work with the PWB staff to test and calibrate the hydraulic model and identify backbone assets. The supply system will not be modeled; however, as a minimum the model shall include the following elements of the backbone system:
    - i. The Conduits, which convey treated Bull Run water to the 162<sup>nd</sup> Avenue Interties;
    - ii. Transmission mains, which carry water from the Groundwater Pump Station site or the 162<sup>nd</sup> Avenue Interties, to the Terminal Storage reservoirs in the City and to large wholesale customers west of Portland;
    - iii. Distribution-Transport mains that move water from terminal reservoirs to pump stations, tanks or other distribution supply facilities or between these distribution facilities;
    - iv. Tanks, reservoirs and pump stations; and,
    - v. Mains that serve critical facilities or service areas (to be selected through discussion with PWB).
  - c. The Consultant shall perform hydraulic simulations of the backbone system to assess loss of functionality during an earthquake. Seismic vulnerability of system components such as pipelines, tanks and pump stations shall be incorporated in the simulations. Hydraulic simulations will also study the impact of effects such as loss of electric power or other pertinent energy sources, loss of transportation networks and loss of information and communications.
2. Facility Assessment and Development of Fragilities – The purpose of this sub-task is to assess the vulnerability of system components to earthquake effects and develop their seismic fragilities. The following activities shall be performed by the Consultant:
  - a. The Consultant shall obtain and review applicable as-built drawings and design specifications for water system components such as tanks, pump stations and treatment facilities. PWB's staff shall assist the Consultant in locating, copying and making such data available to the Consultant. The purpose of this review is to develop an overall understanding of the seismic design features of the critical structures to assist in the development of fragilities. Simplified hand calculations to develop a general understanding of the seismic

capacity shall be performed; however, detailed structural calculations and analyses or code compliance reviews shall not be performed.

- b. The Consultant shall perform site reconnaissance visits at the critical backbone system facilities. The purpose of the site visit is to observe the as-built conditions of the facilities to visually identify and document potential seismic vulnerabilities. This information shall be used together with the simplified calculations for the development of seismic fragilities. Published standards such as ASCE 41-13, FEMA P-58 and ALA shall be used as appropriate for seismic assessment and development of fragilities. Seismic fragilities for facilities such as pump stations will be developed by combining the fragilities of critical components within the pump station to develop the overall fragility of the facility. PWB's staff will assist the Consultant in conducting site visits by providing access, answering questions related to maintenance and operations, and accompanying the Consultant on site visits.
3. Pipeline Assessment and Development of Fragilities – The purpose of this sub-task is to assess the seismic response of pipelines and to develop their seismic fragilities. The following activities shall be performed:
    - a. The Consultant shall obtain and review applicable as-built drawings and design specifications for backbone pipelines. Information such as pipeline types, joint details, backfill properties and depth of burial shall be obtained. Segments of pipelines crossing zones of Permanent Ground Deformation (PGD) resulting from liquefaction, lateral spread, landslide and fault rupture, mapped as part of Task 1, shall be identified. PWB's staff shall assist the Consultant in locating, copying and making such data available to the Consultant.
    - b. The Consultant shall perform site reconnaissance at critical locations such as river crossings and stream crossings and areas of high PGD hazard. Site reconnaissance shall be performed by Consultant's engineers and geologists, as appropriate, to document actual field conditions at the crossings. This information shall be used to further refine and micro-zone seismic hazard along pipeline corridors. PWB's staff will assist the Consultant in conducting site visits by providing access, answering questions related to maintenance and operations and accompanying the Consultant on site visits.
    - c. The Consultant shall develop pipeline damage estimates for both permanent and transient ground deformations (PGD and TGD) using published fragilities that relate pipeline repair rates as a function of ground deformation for sections of pipeline subjected to PGD and as a function of Peak Ground Velocity (PGV) for TGD. Regression relationships such as Jeon and O'Rourke (2005), Wang (2006) and ALA (2001) shall be used. Where appropriate the regressions shall be modified based on design and construction details specific to the PWB pipelines.
4. Risk Analysis/System Assessment
    - a. The Consultant shall use the results of hydraulic simulations to evaluate reliability of water system performance. System performance shall be expressed at a minimum in terms of system Serviceability Index (SI), which is a ratio of pre- and post-event flows. Statistical analyses of results shall be performed to develop probabilities of not meeting the level of service (LOS) goals established based on the Oregon Resilience Plan.
    - b. The Consultant shall work with the PWB to establish repair times, prioritization of repairs and restoration prioritization of pipelines, tanks and pump stations to be used in the hydraulic simulations and in the computation of SI.

#### Deliverables

1. A draft technical memorandum shall be provided by the Consultant to the PWB PM for information purposes. The purpose of the memorandum is to document the assumptions, approach and results of backbone distribution system modeling. Information such as system description, identification of backbone system, modeling assumptions, result and findings of the work, assessment criteria, software and technical resources shall be included. Any comments from the City shall be included in the water distribution system seismic report (as detailed in Task 7-Water Distribution System Seismic Report). One electronic copy of the technical memorandum, in pdf or Microsoft (MS-Word format, shall be provided by the Consultant to the PWB PM.
2. Electronic copies shall be provided of computer aided analysis files in the format of the application they were created.

### **TASK 3 MODEL DISTRIBUTION SYSTEM PERFORMANCE**

#### Task Approach

The following activities shall be performed by the Consultant:

1. The Consultant shall assess the seismic performance of distribution system using geographical information system. The Consultant shall obtain ArcGIS data for the distribution system pipelines and overlay the system on seismic/geologic hazard maps prepared under Task 1. Pipeline segments subjected to geologic hazards defined in Task 1 shall be identified.
2. Similar to that for the backbone system, the Consultant shall develop pipeline damage estimates for both PGD and TGD for distribution system pipelines using published fragilities that relate pipeline repair rates as a function of ground deformation for sections of pipeline subjected to PGD and as a function of Peak Ground Velocity (PGV) for TGD. Regression relationships such as Jeon and O'Rourke (2005), Wang (2006) and ALA (2001) shall be used. Where appropriate the regressions shall be modified based on design and construction details specific to the PWB pipelines.
3. Develop damage estimates for distribution system pipelines for the water system using pipeline fragilities and ground deformation estimates. Present the results in both tabular form and color coded maps.
4. The Consultant shall work with the PWB to establish repair times, prioritization of repairs and restoration prioritization of pipelines, tanks and pump stations to be used in the overall assessment of the distribution system reliability and the ability to meet the goals of the Oregon Resilience Plan.

#### Deliverables

1. A draft technical memorandum shall be provided by the Consultant to the PWB PM for information purposes. The purpose of the memorandum is to document the assumptions, approach and results of distribution system assessment. Information such as system description and findings of the assessment shall be included. Any comments from the City shall be included in the water distribution system seismic report (Task 7 - Water Distribution System Seismic Report). One electronic copy of the technical memorandum, in pdf or MS-Word format, will be provided.
2. Electronic files used in the analysis shall be provided by the Consultant to the PWB PM in the format of the application in which they were created.

### **TASK 4 DEFINE MITIGATION MEASURES**

#### Task Approach

1. Based on the results of backbone and distribution system assessment, the Consultant shall develop mitigation measures that can range from pre-event mitigation, post-event repair, operational changes or risk transfer. The Consultant shall work with the PWB to develop goals to achieve the target states of recovery and LOS necessary to meet the requirements of the Oregon Resilience Plan.
2. Based on the results of the hydraulic simulations, the Consultant shall assess if the LOS goals can be met with the existing infrastructure and probabilistic repair time lines. If these goals cannot be met, then the Consultant shall develop and prioritize a Capital Improvement Program (CIP) mitigation plan that will enable the LOS goals to be met within 50 years.
3. The Consultant shall assist PWB with the development of prioritization policies. Prioritization of pipeline, tank, pump station, and miscellaneous pressure zone upgrade projects will be a part of the CIP mitigation improvement plan. At a minimum, a Benefit Cost Analysis (BCA) shall be used as a tool to assist in ranking of the rehabilitation projects. Quantification of benefits shall be developed by performing "before and after project" hydraulic simulations that show improvement in system performance through comparison of pressure or flows at critical nodes, serviceability indices or the probability of meeting required flows at critical nodes; and where the required flows have been assessed based on meeting the goals of the Oregon Resilience Plan. Minimum pressure and flow requirements for firefighting shall be established based on discussions with PWB and Fire Department Chiefs. Computation of expected fire losses is not included as part of this scope.

## Deliverables

1. A prioritized list of mitigation projects shall be provided by the Consultant to the PWB PM.

### **TASK 5 EVALUATE EMERGENCY PREPAREDNESS FOR RESPONSE AND RECOVERY**

#### Task Approach

The task shall include the four main sub-tasks as follows:

- Review PWB's emergency water supply plan;
- Develop an emergency repair plan;
- Develop a plan for system operations following an emergency; and,
- Develop emergency fire flow plan.

The scope of work for each of these sub-tasks is described below:

1. Review PWB's emergency water supply plan – The Consultant shall review PWB's Emergency Supply Plan, which shall be provided by the PWB. The purpose of the review is to characterize alternative sources of water supply available to PWB following a major earthquake.
2. Develop an emergency repair plan – The Consultant shall develop a plan for emergency repairs. The following activities shall be performed:
  - a. Assess and quantify the need for post-earthquake repair resources including pipeline, hoses, equipment, valves and other hardware. Results from hydraulic simulations and system assessment shall be used for this purpose.
  - b. Assess and quantify PWB's current staged resources at storage facilities. The assessment shall be performed through detailed discussions with PWB's engineering, operations, and maintenance staff.
  - c. Assess the ability of local pipe manufacturer's ability to provide repair resources and pipe in a short time frame.
  - d. Assess and quantify additional repair resources needs, including but not limited to amount of pipe, repair hardware, valves, emergency pumps, emergency generators, construction equipment, fuel, and crew. The Consultant shall work with PWB to identify appropriate locations within the City where the resources should be stored and how the resources would be staged in an emergency.
3. Develop a plan for system operations following an emergency – The Consultant shall work with PWB to develop a plan for system operations following an emergency. The following activities shall be performed:
  - a. Review PWB's Emergency Water Supply Plan to evaluate various methods of supplying potable water to the public in case of disruption in water supply following a major seismic event.
  - b. Based on insights developed from hydraulic simulations and system assessment, the Consultant shall work with PWB to investigate and recommend alternative valving operations and addition of new valves to reduce water losses at critical locations throughout the City.
4. Develop emergency fire flow plan – The Consultant shall work with PWB and the City's Fire and Rescue Bureau (PF&R) to develop emergency processes and procedures to provide water for firefighting in case of supply interruptions. The following activities shall be performed:
  - a. Conduct one meeting/workshop with PF&R representatives to develop an understanding of firefighting needs.
  - b. Work with PWB and PF&R to develop emergency processes, identify additional sources of water and required hardware and equipment to readily draft water for firefighting.

## Deliverables

1. Consultant shall provide the PWB PM with minutes of the meeting/workshop and summary of discussions with PF&R representatives to document firefighting needs including preliminary recommendations for firewater supply following interruption resulting from a major earthquake as discussed during the workshop.
2. A draft technical memorandum shall be provided by the Consultant to the PWB PM for information purposes. The purpose of the memorandum is to document recommendations for operational response following a major earthquake. Any comments from the City shall be included in the water distribution system seismic report (Task 7 – Water Distribution System Seismic Report). One electronic copy of the technical memorandum, in pdf or MS-Word format, shall be provided by the Consultant to the PWB PM.

## **TASK 6 PROJECT MANAGEMENT**

The Consultant shall work with PWB staff to develop and implement key project management protocols so that the project is delivered on time and within budget.

The scope of work for this task shall include the following:

### Task Approach

1. Perform general administration, project/contract management and subconsultant management for successful completion of all tasks and elements of the Project within the established scope, schedule and budget.
2. Develop project work plan and technical method statement:
  - a. A work plan shall be prepared that details the Consultant's approach to the project. The work plan shall include specific tasks, a description of products, schedule, deliverables, costs by task and discipline, and an explanation of team's interaction protocol.
  - b. The work plan shall include a technical method statement to describe the technical methodology to be used in the project. The method statement shall be developed through consultation with the Technical Advisory Panel (TAP). The method statement is a living document that will be modified, as needed, during the course of the project as new information is developed or obtained.
  - c. Meet with the City Project Manager to review the work plan and make any revisions.
3. Meetings with the Technical Advisory Panel - The TAP for this project consists of:
  - a. Dr. Tom O'Rourke
  - b. Dr. Steve Kramer
  - c. Dr. Charles Scawthorn
  - d. Ivan Wong

Consultant's project manager shall attend all TAP meetings. Two full day TAP meetings are proposed with the City of Portland. The timing of the meetings will be established after discussions with the City of Portland Water Bureau technical staff.

4. Monthly face to face meeting with the PWB, monthly Project Summary Reports, monthly subconsultant management and utilization reports and invoicing and general project management activities shall be performed. The monthly summary reports shall highlight work progress during the previous month and list any unresolved outstanding issues.
5. Monthly Subconsultant Payment and Utilization Reports shall be provided to PWB by the 15<sup>th</sup> of each month.
6. Minutes of all meetings that occur throughout the project shall be submitted by the Consultant to the PWB PM within one week following the scheduled meeting. A total of 15 meetings are budgeted.

**TASK 7 WATER DISTRIBUTION SYSTEM SEISMIC REPORT**

1. The Consultant shall be responsible for providing fifteen hard copies of the final report shall be prepared. The final report shall include:
  - a. A technical manual describing in detail the tasks and resources used in the seismic modeling. Modeling assumptions, criteria, software, and technical resources shall be included. One electronic copy of all computer aided analysis files in the format of the application they were created in.
  - b. Findings from the modeling work shall be documented.
  - c. Clarification shall be provided on what was considered a part of the backbone distribution system. A map, graphically showing the assets, shall be included as a part of the backbone system.
  - d. A prioritized list of mitigation measures and the criteria used to establish prioritization shall be provided.
  - e. Findings from the emergency management work task shall be included.
  - f. A list of next recommended steps shall be included.
  - g. The report shall include 11x17 maps showing PWB water system overlaid by liquefaction and lateral spread maps.
  - h. Preliminary construction cost estimates shall be provided for each mitigation measure.

**TASK 8 MITIGATION**

1. Other work may be authorized depending on the project needs. These may include but is not limited to additional hydraulic modeling, additional mapping, or additional mitigation measures. The attached Exhibit A – Budget Detail reflects a not to exceed amount of \$100,000 for possible Mitigation work required under this Contract. The Task 8, Mitigation budget shall only be used by the Consultant when the PWB PM provides the Consultant and the PWB Contract Administration Branch with a letter authorizing that funds may be utilized. The PWB letter will contain the specific work and deliverable required by the PWB and the not to exceed amount authorized for the Consultant to use for the work.

**CONSULTANT PERSONNEL**

The Consultant shall assign the following personnel to do the work in the capacities designated:

| NAME                  | ROLE ON PROJECT     |
|-----------------------|---------------------|
| Ahmed Nisar           | Project Manager     |
| Christopher Hitchcock | Geotech Task Leader |
| Vladimir Calugaru     | Project Engineer    |
| Andrew Lutz           | Senior Geologist    |

**SUBCONSULTANTS**

The Consultant shall assign the following subconsultants to perform work in the capacities designated:

| NAME                                     | ROLE ON PROJECT   | SUBCONTRACT AMOUNT |
|--|---|--------------------|
| Fugro Consultants                        | Geoscience Data Collection & Interpretation             | \$126,082          |
| Alcantar & Associates                    | Data Collection, Civil Engineering, Surveying           | \$18,000           |
| URS Corporation                          | Hydraulic Analysis, Cost Estimation, Seismic Assessment | \$151,798          |
| SPA Risk LLC                             | Risk Analysis   | \$98,800           |
| Elwyn & Palmer Consulting Engineers PLLC | Hydraulic Analysis                                      | \$0                |
| Cascade GIS & Consulting, LLC            | GIS Data Management                                     | \$35,575           |
| Applied GeoDynamics, Inc.                | Geotechnical Engineering                                | \$31,248           |
| D.G. Honegger Consulting                 | Pipeline Analyses                                       | \$30,800           |
| Steven L. Kramer                         | Geotechnical Engineering                                | \$22,000           |

|                |                          |          |
|----------------|--------------------------|----------|
| T. D. O'Rourke | Geotechnical Engineering | \$40,200 |
|----------------|--------------------------|----------|

The City will enforce all social equity contracting and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Consultant in its Proposal. For contracts valued \$50,000 or more, the Consultant shall submit a Monthly Subconsultant Payment and Utilization Report (MUR), made part of this contract by reference, reporting ALL subconsultants employed in the performance of this agreement. An electronic copy of the MUR may be obtained at: <http://www.portlandoregon.gov/bibs/45475>.

## **COMPENSATION**

The maximum that the Consultant can be paid on this contract is \$1,124,590 (hereafter the “not to exceed” amount.) as described in the attached Exhibit A – Budget Detail. The “not to exceed” amount includes all payments to be made pursuant to this contract, including reimbursable expenses, if any. Nothing in this contract requires the City to pay for work that does not meet the Standard of Care or other requirements of the Contract. The actual amount to be paid Consultant may be less than that amount.

The Consultant is entitled to receive progress payments for its work pursuant to the Contract as provided in more detail below. The City will pay Consultant based on these invoices for acceptable work performed and approved until the “not to exceed” amount is reached. Thereafter, Consultant must complete work based on the Contract without additional compensation unless there is a change to the scope of work.

Any estimate of the hours necessary to perform the work is not binding on the City. The Consultant remains responsible if the estimate proves to be incorrect. Exceeding the number of estimated hours of work does not impose any liability on the City for additional payment.

If work is completed before the “not to exceed” amount is reached, the Consultant’s compensation will be based on the Consultant’s bills previously submitted for acceptable work performed and approved.

## **PAYMENT TERMS: Net 30 Days**

### **Hourly Rates**

The billing rates shall not exceed those set forth below:

Ahmed Nisar: \$223.56 / hour  
Christopher Hancock: \$223.56 / hour  
Andrew Lutz: \$126.68 / hour  
Vladimir Calugaru 111.78  
Staff: \$81.97 / hour  
Stephen Kramer: \$262.50  
TI/Admn: 44.71 / hour  
Applied GeoDynamics, Inc. – S. Vahdani: \$248 / hour  
D.G. Honegger Consulting – D. Honegger: \$175 / hour  
Steven Kramer: 250 / hour  
T.D. O’Rourke: \$300 / hour

### **Hourly Rate Multiplier**

The multiplier to be applied to the Successful Proposer’s direct labor costs shall be limited to 3.1. This multiplier is meant to include fringe benefits, payroll bonuses, autos, telecommunications, facsimile services, overhead expenses including but not limited to local and long distance telephone, parking, delivery/courier, general business and professional liability insurance, advertising costs, postage, leasing of office equipment, travel costs within a 100 mile radius of Portland, information technology (including computer time, CAD or Microsoft Station services, Project Management Database, and other related highly specialized equipment), all other direct costs not identified as reimbursable, other indirect costs (support staff such as legal, accounting, officers, computer) and profits.

### **Standard Reimbursable Costs**

The following costs will be reimbursed without mark-up:

Actual labor cost of personnel working directly on the project, travel beyond a 100 mile radius of Portland when specifically required by the Contract (which may also specify limits on travel costs and per diem charges), document reproduction costs in excess of the number required as part of the contract, mileage costs directly attributable to the project, and approved reimbursable direct costs. All other travel must be pre-approved by the PWB’s approving authority in writing. Successful Proposer is required to include any and all travel in their estimates that are beyond a 100 mile radius or Portland and indicate why this travel would be necessary.

## **Subconsultant Costs**

Compensation for subconsultants shall be limited to the same restrictions imposed on the Consultant. The maximum markup on subconsultant services shall not exceed 5%.

## **Adjustment of Labor Rates Due to Inflation**

Annual adjustment of hourly rates will be considered upon written request from the Consultant. Approval of a request for rate increases is solely within the City's discretion and under no circumstances is the City obligated to approve such a request.

Rate increases are subject to the following limitations:

- No increases will be granted before the one-year anniversary of the contract;
- No more than one increase shall be granted per contract year;
- Rate increases may not exceed the then-current average inflation rate for the Portland Metropolitan Area (as determined from the US Department of Labor statistics);
- Rate increases shall not be retroactive.

Other than the impact of inflation as described above, hourly rates may not be increased.

## **Progress Payments**

On or before the 15th of each month, the Consultant shall submit to the **Water Bureau's Accounts Payable department** an invoice for work performed by the Consultant during the preceding month. The invoice shall contain the following:

- City's Contract Number;
- City of Portland Bureau Name;
- City Project Manager;
- Set out all items for payment including, but not limited to:
  - Task number/subtask completed;
  - If Mitigation work has been approved a description of the work completed and the date of the letter of authorization provided by the PWB PM to the Consultant;
  - The name of the individual;
  - Labor category;
  - Direct labor rate;
  - Hours worked during the period;
  - Deliverable/work performed;
  - The percentage of work successfully completed for the task; and,
  - The percentage of work still required with remaining dollars available.

The Consultant shall also attach photocopies of claimed reimbursable expenses. The Consultant shall stamp and approve all subconsultant invoices and note on the subconsultant invoice what they are approving as "billable" under the contract. The billing from the Consultant must clearly roll up labor and reimbursable costs for the Consultant and subconsultants— matching the subconsultant invoices.

Invoices shall be e-mailed to: [wbaps@portlandoregon.gov](mailto:wbaps@portlandoregon.gov).

The City shall pay all amounts to which no dispute exists within 30 days of receipt of the invoice. Payment of any bill, however, does not preclude the City from later determining that an error in payment was made and from withholding the disputed sum from the next progress payment until the dispute is resolved.

The Consultant shall make full payment to its subcontractors within 10 business days following receipt of any payment made by the Bureau to Consultant.

## **ACH Payments**

It is the City's policy to pay its Consultant invoices via electronic funds transfers through the automated clearing house (ACH) network. To initiate payment of invoices, Consultants shall execute the City's standard ACH Vendor Payment Authorization Agreement which is available on the City's website at: <http://www.portlandoregon.gov/bfs/article/409834>.

Upon verification of the data provided, the Payment Authorization Agreement will authorize the City to deposit payment for services rendered directly into Consultant accounts with financial institutions. All payments shall be in United States currency.

**WORKERS' COMPENSATION INSURANCE STATEMENT**

**IF YOUR FIRM HAS CURRENT WORKERS' COMPENSATION INSURANCE, CONTRACTOR MUST SIGN HERE:**

I, undersigned, am authorized to act on behalf of entity designated below, and I hereby certify that this entity has current Workers' Compensation Insurance.

Contractor Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Entity: \_\_\_\_\_

**IF YOUR FIRM DOES NOT HAVE CURRENT WORKERS' COMPENSATION INSURANCE, CONTRACTOR MUST COMPLETE THE FOLLOWING INDEPENDENT CONTRACTOR CERTIFICATION STATEMENT:**

As an independent contractor, I certify that I meet the following standards:

1. The individual or business entity providing labor or services is registered under ORS Chapter 701, if the individual or business entity provides labor or services for which such registration is required;
2. Federal and state income tax returns in the name of the business or a business Schedule C or form Schedule F as part of the personal income tax return were filed for the previous year if the individual or business entity performed labor or services as an independent contractor in the previous year; and
3. The individual or business entity represents to the public that the labor or services are to be provided by an independently established business. Except when an individual or business entity files a Schedule F as part of the personal income tax returns and the individual or business entity performs farm labor or services that are reportable on Schedule C, an individual or business entity is considered to be engaged in an independently established business when four or more of the following circumstances exist. Contractor: check four or more of the following:

- \_\_\_\_\_ A. The labor or services are primarily carried out at a location that is separate from the residence of an individual who performs the labor or services, or are primarily carried out in a specific portion of the residence, which portion is set aside as the location of the business;
- \_\_\_\_\_ B. Commercial advertising or business cards as is customary in operating similar businesses are purchased for the business, or the individual or business entity has a trade association membership;
- \_\_\_\_\_ C. Telephone listing and service are used for the business that is separate from the personal residence listing and service used by an individual who performs the labor or services;
- \_\_\_\_\_ D. Labor or services are performed only pursuant to written contracts;
- \_\_\_\_\_ E. Labor or services are performed for two or more different persons within a period of one year; or
- \_\_\_\_\_ F. The individual or business entity assumes financial responsibility for defective workmanship or for service not provided as evidenced by the ownership of performance bonds, warranties, errors and omission insurance or liability insurance relating to the labor or services to be provided.

\_\_\_\_\_  
Contractor Signature

\_\_\_\_\_  
Date

**FOR CITY USE ONLY**

**PROJECT MANAGER-COMplete ONLY IF CONTRACTOR DOES NOT HAVE WORKER'S COMPENSATION INSURANCE**

ORS 670.600 Independent contractor standards. As used in various provisions of ORS Chapters 316, 656, 657, and 701, an individual or business entity that performs labor or services for remuneration shall be considered to perform the labor or services as an "independent contractor" if the standards of this section are met. The contracted work meets the following standards:

1. The individual or business entity providing the labor or services is free from direction and control over the means and manner of providing the labor or services, subject only to the right of the person for whom the labor or services are provided to specify the desired results;
2. The individual or business entity providing labor or services is responsible for obtaining all assumed business registrations or professional occupation licenses required by state law or local government ordinances for the individual or business entity to conduct the business;
3. The individual or business entity providing labor or services furnishes the tools or equipment necessary for performance of the contracted labor or services;
4. The individual or business entity providing labor or services has the authority to hire and fire employees to perform the labor or services;
5. Payment for the labor or services is made upon completion of the performance of specific portions of the project or is made on the basis of an annual or periodic retainer.

\_\_\_\_\_  
City Project Manager Signature

\_\_\_\_\_  
Date

**CONSULTANT SIGNATURE:**

This contract may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same Agreement.

The parties agree the City and Consultant may conduct this transaction, including any contract amendments, by electronic means, including the use of electronic signatures.

I, the undersigned, agree to perform work outlined in this contract in accordance to the STANDARD CONTRACT PROVISIONS, the terms and conditions, made part of this contract by reference, and the STATEMENT OF THE WORK made part of this contract by reference; hereby certify under penalty of perjury that I/my business am not/is not in violation of any Oregon tax laws; hereby certify that my business is certified as an Equal Employment Opportunity Affirmative Action Employer and is in compliance with the Equal Benefits Program as prescribed by Chapter 3.100 of Code of the City of Portland; and hereby certify I am an independent contractor as defined in ORS 670.600.

InfraTerra, Inc.

BY: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**CONTRACT NUMBER:** \_\_\_\_\_

**CONTRACT TITLE:** \_\_\_\_\_

**CITY OF PORTLAND SIGNATURES:**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Bureau Director

By: \_\_\_\_\_ Date: \_\_\_\_\_ Chief Procurement  
Officer

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Elected Official

Approved:

By: \_\_\_\_\_ Date: \_\_\_\_\_ Office of City  
Auditor

Approved as to Form:

By: \_\_\_\_\_ Date: \_\_\_\_\_ Office of City  
Attorney