ENGINEERING SERVICES AGREEMENT
DAM CONSULTANT OF RECORD

THIS AGREEMENT is between the City of Newport, an Oregon municipal corporation (City), and **HDR ENGINEERING INC.**, a Nebraska corporation, which is registered to practice engineering in the State of Oregon (Engineer).

RECITALS

A. Pursuant to District Rule 137-048-0220, the City of Newport (City) solicited proposals for professional engineering services to assist the City in identifying and correcting deficiencies associated with the Upper and Lower Big Creek Dams which impound water for the City's municipal drinking water system.

B. After reviewing all proposals, the City has selected HDR Engineering, Inc. (Engineer) as the most qualified engineer to provide the proposed services.

C. Engineer is willing and qualified to perform such services.

TERMS OF AGREEMENT

1. Engineer's Scope of Services

Engineer shall perform professional engineering services related to specific dam analysis and remediation projects pursuant to Task Orders executed by both parties and attached to this Agreement by reference. This Agreement does not require the City to utilize Engineer for any or all projects related to dam analysis and remediation. The City is free to utilize other engineers or consultants as it deems appropriate.

2. Effective Date and Duration

This agreement is effective on execution by both parties and shall expire, unless otherwise terminated or extended, after three years. The parties may extend the term by mutual agreement.

3. Engineer's Fee and Schedules

A. Fee

Fees for services under this Agreement shall be based on time and materials and pursuant to the rates shown in Exhibit A. Engineer may increase the rates shown in Exhibit A on an annual basis, subject to the written approval of the City. Engineer will alert the City that Engineer when Engineer is increasing its fees. Engineer will bill for progress payments on a monthly basis. In order to determine the maximum monetary limit for each Task Order, Engineer will submit a schedule and a labor hour estimate based on the rates shown in Exhibit A. Once a maximum monetary limit (not to exceed amount) is determined, and accepted by the City, Engineer will invoice monthly progress payments based on actual time worked on the project. The maximum monetary limit will not be exceeded without prior written approval by the City. Projects partially completed may be paid for in proportion to the degree of completion.

Engineer may from time to time be asked to perform consultation services not related to a specific project. In such instances, if services are less than $5,000, a written Task Order will not be required, and Engineer will be reimbursed at the rates shown in Exhibit A,

Engineer will be reimbursed for direct charges such as the cost of printing, postage, delivery services, and subconsultant fees. Unless specifically noted in the Task Order, direct charges will be billed at cost without any markup. Office expenses such as computer cost, telephone calls, and overhead expenses are incidental and are included in the hourly rates shown in Exhibit A.

B. Payment Schedule for Basic Fee

Payments shall be made within 30 days of receipt of monthly billings based on the work completed. Payment by the City shall release the City from any further obligation for payment to the engineer for service or services performed or expenses incurred as of the date of the statement of services. Payment shall be made only for work actually completed as of the date of invoice. Payment shall not be considered acceptance or approval of any work or waiver of any defects therein.

C. Payment for Contingency Tasks

When agreed to in writing by the City, the Engineer shall provide services described as Contingency Tasks in a Task Order.

D. Certified Cost Records

Engineer shall furnish certified cost records for all billings to substantiate all charges. Engineer's accounts shall be subject to audit by the City. Engineer shall submit billings in a form satisfactory to the City. At a minimum, each billing shall identify the Task Order under such work is performed, work completed during the billing period, percentage of work completed to date, and percentage of budget used to date for each task.

E. Identification

Engineer shall furnish to the City its employer identification number.

F. Payment – General

1) Engineer shall pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

2) Engineer shall pay employees at least time and a half pay for all overtime worked in excess of 40 hours in any one week except for individuals under the contract who are excluded under ORS 653.010 to 653.261 or under 29 USC sections 201 to 209 from receiving overtime. Any subcontractors utilized by Engineer under this Agreement will be paid according to the then prevailing wage.

3) Engineer shall promptly, as due, make payment to any person, co-partnership,

association or corporation, furnishing medical, surgical and hospital care or other needed care and attention incident to sickness or injury to the employees of Engineer or all sums which Engineer agrees to pay for such services and all moneys and sums which Engineer collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service.

4) Engineer shall make payments promptly, as due, to all persons supplying services or materials for work covered under this contract. Engineer shall not permit any lien or claim to be filed or prosecuted against the City on any account of any service or materials furnished.

5) If Engineer fails, neglects or refuses to make prompt payment of any claim for labor, materials, or services furnished to Engineer, sub-consultant or subcontractor by any person as such claim becomes due, City may pay such claim and charge the amount of the payment against funds due or to become due to the Engineer. The payment of the claim in this manner shall not relieve Engineer or its surety from obligation with respect to any unpaid claims.

G. Schedule

Engineer shall provide services under this Agreement in accordance with the Project Schedule of each Task Order.

4. Ownership of Plans and Documents: Records; Confidentiality

A. Definitions. As used in this Agreement, the following terms have the meanings set forth below:

1) Engineer Intellectual Property means any intellectual property owned by Engineer and developed independently from this Agreement that is applicable to the Services or included in the Work Product.

2) Third Party Intellectual Property means any intellectual property owned by parties other than City or Engineer that is applicable to the Services or included in the Work Product.

3) Work Product means the Services Engineer delivers or is required to deliver to City under this Agreement. Work Product includes every invention, discovery, work of authorship, trade secret or other tangible or intangible item and all intellectual property rights therein, and all copies of plans, specifications, reports and other materials, whether completed, partially completed or in draft form.

B. Work Product

1) Except as provided elsewhere in this Agreement, all Work Product created by Engineer pursuant to this Agreement, including derivative works and compilations, and whether or not such Work Product is considered a "work made

for hire" or an employment to invent, shall be the exclusive property of City. City and Engineer agree that such original works of authorship are "work made for hire" of which City is the author within the meaning of the United States Copyright Act. To the extent that City is not the owner of the intellectual property rights in such Work Product, Engineer hereby irrevocably assigns to City any and all of its rights, title, and interest in all original Work Product created pursuant to this Agreement, whether arising from copyright, patent, trademark, trade secret, or any other state or federal intellectual property law or doctrine. Upon City's reasonable request, Engineer shall execute such further documents and instruments necessary to fully vest such rights in City. Engineer forever waives any and all rights relating to original Work Product created pursuant to this Agreement, including without limitation, any and all rights arising under 17 USC §106A or any other rights of identification of authorship or rights of approval, restriction or limitation on use or subsequent modifications.

2) In the event Engineer Intellectual Property is necessary for the use of any Work Product, Engineer hereby grants to City an irrevocable, non-exclusive, non-transferable, perpetual, royalty-free license to use Engineer Intellectual Property, including the right of City to authorize contractors, Engineers and others to use Engineer Intellectual Property, for the purposes described in this Agreement.

3) In the event Third Party Intellectual Property is necessary for the use of any Work Product, Engineer shall secure on City's behalf and in the name of City, an irrevocable, non-exclusive, non-transferable, perpetual, royalty-free license to use the Third Party Intellectual Property, including the right of City to authorize contractors, Engineers and others to use the Third Party Intellectual Property, for he purposes described in this Contract.

4) In the event Work Product created by Engineer under this Agreement is a derivative work based on Engineer Intellectual Property or is a compilation that includes Engineer Intellectual Property, Engineer hereby grants to City an irrevocable, non-exclusive, non-transferable, perpetual, royalty-free license to use the pre-existing elements of Engineer Intellectual Property employed in the Work Product, including the right of City to authorize contractors, Engineers and others to use the pre-existing elements of Engineer Intellectual Property employed in a Work Product, for the purposes described in this Agreement.

5) In the event Work Product created by Engineer under this Agreement is a derivative work based on Third Party Intellectual Property, or a compilation that includes Third Party Intellectual Property, Engineer shall secure on City's behalf and in the name of City an irrevocable, non-exclusive, non-transferable, perpetual, royalty-free license to use the pre-existing elements of the Third Party Intellectual Property, including the right to authorize contractors, Engineers and others to use the pre-existing elements of the Third Party Intellectual Property, for the purposes described in this Agreement.

6) To the extent permitted by the Oregon Constitution and by the Oregon Tort Claims Act, Engineer shall be indemnified and held harmless by City from liability

arising out of re-use or alteration of the Work Product by City which was not specifically contemplated and agreed to by the Parties in this Agreement.

7) Engineer may refer to the Work Product in its brochures or other literature that Engineer utilizes for advertising purposes and, unless otherwise specified, Engineer may use standard line drawings, specifications and calculations on other, unrelated projects.

C. Confidential Information

1) Engineer acknowledges that it or its employees, Sub-Engineers, subcontractors or agents may, in the course of performing their responsibilities under this Agreement, be exposed to or acquire information that is the confidential information of City or City's residents. Any and all information provided by City and marked confidential, or identified as confidential in a separate writing, that becomes available to Engineer or its employees, Sub-Engineers, subcontractors or agents in the performance of this Agreement shall be deemed to be confidential information of City ("Confidential Information"). Any reports or other documents or items, including software, that result from Engineer's use of the Confidential Information and any Work Product that City designates as confidential are deemed Confidential Information. Confidential Information shall be deemed not to include information that: (a) is or becomes (other than by disclosure by Engineer) publicly known; (b) is furnished by City to others without restrictions similar to those imposed by this Agreement; (c) is rightfully in Engineer's possession without the obligation of nondisclosure prior to the time of its disclosure under this Agreement; (d) is obtained from a source other than City without the obligation of confidentiality; (e) is disclosed with the written consent of City; or (f) is independently developed by employees or agents of Engineer who can be shown to have had no access to the Confidential Information; or (g) is required to be disclosed by law, subpoena, or other court order.

2) Engineer agrees to hold Confidential Information in strict confidence, using at least the same degree of care that Engineer uses in maintaining the confidentiality of its own confidential information, and not to copy, reproduce, sell, assign, license, market, transfer or otherwise dispose of, give, or disclose Confidential Information to third parties or use Confidential Information for any purposes whatsoever other than the provision of Services to City under this Agreement, and to advise each of its employees, Sub-Engineers, subcontractors and agents of their obligations to keep Confidential Information confidential. Engineer shall use its best efforts to assist City in identifying and preventing any unauthorized use or disclosure of any Confidential Information. Without limiting the generality of the foregoing, Engineer shall advise City immediately in the event Engineer learns or has reason to believe that any person who has had access to Confidential Information has violated or intends to violate the terms of this Agreement and Engineer will at its expense cooperate with City in seeking injunctive or other equitable relief in the name of City or Engineer against any such person. Engineer agrees that, except as directed by City, Engineer will not

at any time during or after the term of this Agreement disclose, directly or indirectly, any Confidential Information to any person, except in accordance with this Agreement, and that upon termination of this Agreement or at City's request, Engineer will turn over to City all documents, papers, and other matter in Engineer's possession that embody Confidential Information.

3) Engineer acknowledges that breach of this Section 4, including disclosure of any Confidential Information, will give rise to irreparable injury to City that is inadequately compensable in damages. Accordingly, City may seek and obtain injunctive relief against the breach or threatened breach of this Section 4, in addition to any other legal remedies that may be available. Engineer acknowledges and agrees that the covenants contained herein are necessary for the protection of the legitimate business interests of City and are reasonable in scope and content.

5. Assignment/Delegation

Neither party shall assign or transfer any interest in or duty under this Agreement without the written consent of the other. If City agrees to assignment of tasks to a subcontractor, Engineer shall be fully responsible for the acts or omissions of any subcontractors. Any approval of a subcontractor does not create a contractual relationship between the subcontractor and City.

6. Engineer is Independent Contractor

A. The City's project director, or designee, shall be responsible for determining whether Engineer's work product is satisfactory and consistent with this Agreement, but Engineer is not subject to the direction and control of the City. Engineer shall be an independent contractor for all purposes and shall not be entitled to compensation other than the compensation provided for under Section 3 of this Agreement. The City's acceptance of the work product as satisfactory does not relieve the Engineer from responsibility for any errors in the work product.

B. Engineer is an independent contractor and not an employee of City. Engineer acknowledges Engineer's status as an independent contractor and acknowledges that Engineer is not an employee of the City for purposes of workers compensation law, public employee benefits law, or any other law. All persons retained by Engineer to provide services under this Agreement are employees of Engineer and not of City. Engineer acknowledges that it is not entitled to benefits of any kind to which a City employee is entitled and that it shall be solely responsible for workers compensation coverage for its employees and all other payments and taxes required by law. Furthermore, in the event that Engineer is found by a court of law or an administrative agency to be an employee of the City for any purpose, City shall be entitled to offset compensation due, or to demand repayment of any amounts paid to Engineer under the terms of the Agreement, to the full extent of any benefits or other remuneration Engineer receives (from City or third party) as a result of the finding and to the full extent of any payments that City is required to make as a result of the finding.

C. The Engineer represents that no employee of the City or any partnership or corporation

in which a City employee has an interest, has or will receive any remuneration of any description from the Engineer, either directly or indirectly, in connection with the letting or performance of this Agreement, except as specifically declared in writing.

D. Engineer and its employees, if any, are not active members of the Oregon Public Employees Retirement System.

E. Engineer certifies that it currently has a City business license or will obtain one prior to delivering services under this Agreement.

F. Engineer is not an officer, employee, or agent of the City as those terms are used in ORS 30.265.

7. Indemnity

A. The City has relied upon the professional ability and training of the Engineer as a material inducement to enter into this Agreement. Engineer represents to the City that the work under this Agreement will be performed in accordance with the professional standards of skill and care ordinarily exercised by members of the engineering profession under similar conditions and circumstances as well as the requirements of applicable federal, state and local laws, it being understood that acceptance of an Engineer's work by the City shall not operate as a waiver or release. Acceptance of documents by City does not relieve Engineer of any responsibility for design deficiencies, errors or omissions.

B. Engineer shall defend, hold harmless and indemnify the City, its officers, agents, and employees from all claims, suits, or actions to the extent caused by the alleged negligent or otherwise wrongful acts or omissions of Engineer or its subcontractors, sub-Engineers, agents or employees under this Agreement. This indemnification does not extend to indemnification for negligent or otherwise wrongful acts or omissions of the City. If any aspect of this indemnity shall be found to be illegal or invalid for any reason whatsoever, the illegality or invalidity shall not affect the validity of the remainder of this indemnification.

C. Engineer shall save and hold harmless the City, its officers, agents, and employees from all claims, suits, or actions and all expenses incidental to the investigation and defense thereof, to the extent caused by the professional negligent acts, errors or omissions of Engineer or its subcontractors, sub-Engineers, agents or employees in performance of professional services under this Agreement. Any design work by Engineer that results in a design of a facility that does not comply with applicable laws including but not limited to relating to current requirements of the Federal Aviation Administration (FAA) and accessibility for persons with disabilities shall be considered a professionally negligent act, error or omission.

D. As used in subsections B and C of this section, a claim for professional responsibility is a claim made against the City in which the City's alleged liability results directly or indirectly, in whole or in part, from the quality of the professional services provided by Engineer, regardless of the type of claim made against the City. A claim for other than professional responsibility is a claim made against the City in which the City's alleged liability results

from an act or omission by Engineer unrelated to the quality of professional services provided by Engineer.

8. Insurance

Engineer and its subcontractors shall maintain insurance acceptable to City in full force and effect throughout the term of this Agreement as detailed in this section. The insurance shall cover all risks arising directly or indirectly out of Engineer's activities or work hereunder, including the operations of its subcontractors of any tier.

The policy or policies of insurance maintained by the Engineer and its subcontractors shall provide at least the following limits and coverages:

A. Commercial General Liability Insurance

Comprehensive General Liability Insurance covering Bodily Injury and Property Damage on an "occurrence" form with policy limits of at least per occurrence. This coverage shall include Contractual Liability insurance for the indemnity provided under this Agreement.

B. Professional Liability

Professional Liability Insurance covering any damages caused by an error, omission or any negligent acts. Combined single limit per claim shall not be less than $1,300,000, or the equivalent. Annual aggregate limit shall not be less than $2,000,000 and filed on a "claims-made" form.

C. Commercial Automobile Insurance

Commercial Automobile Liability coverage on an "occurrence" form including coverage for all owned, hired, and non-owned vehicles. The Combined Single Limit per occurrence shall not be less than $1,300,000.

D. Workers' Compensation Insurance

The Engineer, its subcontractors, if any, and all employers providing work, labor or materials under this Agreement are subject employers under the Oregon Workers' Compensation Law and shall comply with ORS 656.017, which requires them to provide workers' compensation coverage that satisfies Oregon law for all their subject workers. Out-of-state employers must provide Oregon workers' compensation coverage for their workers who work at a single location within Oregon for more than 30 days in a calendar year. Engineers who perform work without the assistance or labor of any employee need not obtain such coverage. This shall include Employer's Liability Insurance with coverage limits of not less than $100,000 each accident.

E. Additional Insured Provision

The Commercial General Liability Insurance Policy shall include the City its officers, directors, and employees as additional insureds with respect to this Agreement. Coverage will be endorsed to provide a per project aggregate.

F. Extended Reporting Coverage

If any of the liability insurance is arranged on a "claims made" basis, Extended Reporting coverage will be required at the completion of this Agreement to a duration of 24 months or the maximum time period the Engineer's insurer will provide if less than 24 months. Engineer will be responsible for furnishing certification of Extended Reporting coverage as described or continuous "claims made" liability coverage for 24 months following Agreement completion. Continuous "claims made" coverage will be acceptable in lieu of Extended Reporting coverage, provided its retroactive date is on or before the effective date of this Agreement. Coverage will be endorsed to provide a per project aggregate.

G. Notice of Cancellation

There shall be no cancellation, material change, exhaustion of aggregate limits or intent not to renew insurance coverage without 30 days written notice to the City. Any failure to comply with this provision will not affect the insurance coverage provided to the City. The 30 days notice of cancellation provision shall be physically endorsed on to the policy.

H. Insurance Carrier Rating

Coverage provided by the Engineer must be underwritten by an insurance company deemed acceptable by the City. The City reserves the right to reject all or any insurance carrier(s) with an unacceptable financial rating.

I. Certificates of Insurance

As evidence of the insurance coverage required by the Agreement, the Engineer shall furnish a Certificate of Insurance to the City. No Agreement shall be effected until the required certificates have been received and approved by the City. The certificate will specify and document all provisions within this Agreement. A renewal certificate will be sent to the address below ten days prior to coverage expiration.

J. Primary Coverage Clarification

The parties agree that Engineer's coverage shall be primary to the extent permitted by law. The parties further agree that other insurance maintained by the City is excess and not contributory insurance with the insurance required in this section.

K. Copy of Policy or Certificate of Insurance

A cross-liability clause or separation of insureds clause will be included in the general liability policy required by this Agreement. Engineer shall furnish City with at least 30-days written notice of cancellation of, or any modification to, the required insurance coverages. A copy of each insurance policy, certified as a true copy by an authorized representative of the issuing insurance company, or at the discretion of City, in lieu thereof, a certificate in form satisfactory to City certifying to the issuance of such insurance shall be forwarded to:

Timothy Gross, PE
Director of Public Works/City Engineer
City of Newport
169 SW Coast Highway
Newport, Oregon 97365

Thirty days cancellation notice shall be provided City by certified mail to the name at the address listed above in event of cancellation or non-renewal of the insurance. The procuring of the required insurance shall not be construed to limit Engineer's liability under this agreement. The insurance does not relieve Engineer's obligation for the total amount of any damage, injury, or loss caused by negligence or neglect connected with this Agreement.

9. Termination Without Cause

At any time and without cause, City shall have the right in its sole discretion, to terminate this Agreement by giving notice to Engineer. If City terminates the Agreement pursuant to this section, it shall pay Engineer for all undisputed invoices rendered to the date of termination.

10. Termination With Cause

A. City may terminate this Agreement effective upon delivery of written notice to Engineer, or at such later date as may be established by City, under any of the following conditions:

1) If City funding from federal, state, local, or other sources is not obtained and continued at levels sufficient to allow for the purchase of the indicated quantity of services. This Agreement may be modified to accommodate a reduction in funds.

2) If Federal or State regulations or guidelines are modified, changed, or interpreted in such a way that the services are no longer allowable or appropriate for purchase under this Agreement.

3) If any license or certificate required by law or regulation to be held by Engineer, its subcontractors, agents, and employees to provide the services required by this Agreement is for any reason denied, revoked, or not renewed.

Any termination of this agreement under paragraph (A) shall be without prejudice to any obligations or liabilities of either party already accrued prior to such termination.

B. City, by written notice of default (including breach of Agreement) to Engineer, may terminate this Agreement:

1) If Engineer fails to provide services called for by this Agreement within the time specified, or

2) If Engineer fails to perform any of the other provisions of this Agreement, or fails to pursue the work as to endanger performance of this Agreement in accordance with its terms, and after receipt of written notice from City, fails to correct such

failures within ten days or such other period as City may authorize.

C. If City terminates this Agreement, Engineer shall be entitled to payment for services provided prior to the termination date.

D. Damages for breach of Agreement shall be those allowed by Oregon law, reasonable and necessary attorney fees, and other costs of litigation at trial and upon appeal.

11. Non-Waiver

The failure of City to insist upon or enforce strict performance by Engineer of any of the terms of this Agreement or to exercise any rights hereunder, should not be construed as a waiver or relinquishment to any extent of its rights to assert or rely upon such terms or rights on any future occasion.

12. Notice

All notices, bills and payments shall be made in writing and may be given by personal delivery, mail, or by fax. Payments may be made by personal delivery, mail, or electronic transfer. The following addresses shall be used to transmit notices, bills, payments, and other information:

IF TO CITY OF NEWPORT

Timothy Gross
Director of Public Works/City Engineer
City of Newport
169 SW Coast Highway
Newport, OR 97365
541-574-3366
t.gross@newportoregon.gov

IF TO ENGINEER:

Verena Winter
Project Manager
HDR Engineering, Inc.
1001 S.W. Fifth Avenue
Suite 1800
Portland, OR 97204
(503) 423-3756
verena.winter@hdrinc.com

The date of deposit in the mail shall be the notice date for first class mail.
All other notices, bills and payments shall be effective at the time of actual delivery. Changes may be made in the names and addresses of the person to whom notices, bills and payments are to be given by giving written notice pursuant to this paragraph.

13. Merger

This writing is intended both as a final expression of the Agreement between the parties with respect to the included terms and as a complete and exclusive statement of the terms of the Agreement. No modification of this Agreement shall be effective unless and until it is made in writing and signed by both parties.

14. Force Majeure

Neither City nor Engineer shall be considered in default because of any delays in completion and

responsibilities hereunder due to causes beyond the control and without fault or negligence on the part of the parties so disenabled, including but not restricted to, an act of God or of a public enemy, civil unrest, volcano, earthquake, fire, flood, epidemic, quarantine restriction, area-wide strike, freight embargo, unusually severe weather or delay of subcontractors or supplies due to such cause; provided that the parties so disenabled shall within ten days from the beginning of such delay, notify the other party in writing of the cause of delay and its probable extent. Such notification shall not be the basis for a claim for additional compensation. Each party shall, however, make all reasonable efforts to remove or eliminate such a cause of delay or default and shall, upon cessation of the cause, diligently pursue performance of its obligation under the Agreement.

15. Non-Discrimination

Engineer agrees to comply with all applicable requirements of federal and state statutes, rules, and regulations. By way of example only, Engineer also shall comply with the Americans with Disabilities Act of 1990, ORS 659.425, and all regulations and administrative rules established pursuant to those laws.

16. Errors

Engineer shall perform such additional work as may be necessary to correct errors in the work required under this Agreement without undue delays and without additional cost.

17. Extra Work

Extra work or work on Contingency Tasks is not authorized unless the City authorizes the additional or contingency work in writing. Failure of Engineer to secure written authorization for extra work shall constitute a waiver of all right to adjustment in the Agreement price or Agreement time due to unauthorized extra work and Engineer shall be entitled to no compensation for the performance of any extra work not authorized in writing.

18. Governing Law

The Agreement is subject to Oregon law. Any action or suits involving any question arising under this Agreement must be brought in the appropriate court in Newport, Oregon.

19. Compliance With Applicable Law

Engineer shall comply with all federal, state, and local laws and ordinances applicable to the work under this Agreement, including but not limited to those set forth in ORS 279A, B & C. While all required contractual provisions are included in Exhibit B, Engineer shall be familiar with and responsible for compliance with all other applicable provisions of the Oregon Public Contracting Code.

20. Conflict Between Terms

This instrument shall control in the event of any conflict between terms between this document and the RFQ and/or proposal.

21. Access to Records

City shall have access to the books, documents, papers and records of Engineer that are directly pertinent to this Agreement for the purpose of making audit, examination, excerpts and transcripts.

22. Audit

Engineer shall maintain records to assure conformance with the terms and conditions of this Agreement, and to assure adequate performance and accurate expenditures within the Agreement period. Engineer agrees to permit City or its duly authorized representatives to audit all records pertaining to this Agreement to assure the accurate expenditure of funds.

23. Severability

In the event any provision or portion of this Agreement is held to be unenforceable or invalid by any court of competent jurisdiction, the validity of the remaining terms and provisions shall not be affected to the extent that it did not materially affect the intent of the parties when they entered into the Agreement.

24. Industrial Accident Fund Payment

Engineer shall pay all contributions or amount due the Industrial Accident Fund form that Engineer or subcontractors incur during the performance of this Agreement.

25. Arbitration

All claims, disputes, and other matters in question between the City and Engineer arising out of, or relating to this Contract, including rescission, reformation, enforcement, or the breach thereof except for claims which may have been waived by the making or acceptance of final payment, may be decided by binding arbitration in City's sole discretion, in accordance with the Oregon Uniform Arbitration Act, ORS 36.600, et seq. and any additional rules mutually agreed to by both parties. If the parties cannot agree on rules within ten (10) days after the notice of demand, the presiding judge of the Lane County Circuit Court will establish rules to govern the arbitration.

A claim by Engineer arising out of, or relating to this Contract must be made in writing and delivered to the City Administrator not less than 30 days after the date of the occurrence giving rise to the claim. Failure to file a claim with the City Administrator within 30 days of the date of the occurrence that gave rise to the claim shall constitute a waiver of the claim. A claim filed with the City Administrator will be considered by the City Board at the Board's next regularly scheduled meeting. At that meeting the Board will render a written decision approving or denying the claim. If the claim is denied by the Board, the Engineer may file a written request for arbitration with the City Administrator. No demand for arbitration shall be effective until the City Board has rendered a written decision denying the underlying

claim. No demand for arbitration shall be made later than thirty (30) days after the date on which the City has rendered a written decision on the underlying claim. The failure to demand arbitration within said 30 days shall result in the City Board's decision being binding upon the City and Engineer.

Notice of demand for arbitration shall be filed in writing with the other party to the agreement, subject to applicable statutes of limitation, except as set forth above. The City, if not the party demanding arbitration, has the option of allowing the matter to proceed with binding arbitration or by written notice within five (5) days after receipt of a demand for arbitration, to reject arbitration and require the Engineer to proceed through the courts for relief. If arbitration is followed, the parties agree that the award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modifications or appeal except to the extent permitted by Oregon law.

26. Attorney Fees

If suit, action or arbitration is brought either directly or indirectly to rescind, reform, interpret or enforce the terms of this contract, the prevailing party shall recover and the losing party hereby agrees to pay reasonable attorney's fees incurred in such proceeding, in both the trial and appellate courts, as well as the costs and disbursements. Further, if it becomes necessary for City to incur the services of an attorney to enforce any provision of this contract without initiating litigation, Engineer agrees to pay City's attorney's fees so incurred. Such costs and fees shall bear interest at the maximum legal rate from the date incurred until the date paid by losing party

27. Complete Agreement

This Agreement and any exhibit(s) hereto and any and all Task Orders executed by the parties constitute the entire agreement between the parties. No waiver, consent, modification, or change of terms of this Agreement shall bind either party unless in writing and signed by both parties. Any waiver, consent, modification, or change if made, shall be effective only in specific instances and for the specific purpose given. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. In the event of a conflict between the documents comprising this Agreement, interpretation shall occur in the following manner: 1) each individual Task Order; 2) this Agreement and any exhibits hereto; and 3) the RFQ and Response. The following exhibits are attached to and incorporated into this Agreement:

A. Exhibit A – Fees;
B. Exhibit B – Oregon Public Contracting Code/required contractual provisions
C. Exhibit C – Engineer of Record RFQ and Engineer's Proposal.

28. Miscellaneous

A. Engineer agrees that news releases and other publicity relating to the subject of this Agreement will be made only with the prior written consent of City.
B. Engineer shall comply with all virus-protection, access control, back-up, password, and other security and other information technology policies of City when using, having access

to, or creating systems for any of City's computers, data, systems, personnel, or other information resources.

C. Engineer certifies that Engineer is in compliance with Oregon tax laws pursuant to ORS 305.385

D. Engineer certifies that Engineer does not discriminate in regard to subcontractors as set forth in ORS 279A.110.

E. Engineer will include in all contracts with subcontractors appropriate provisions as required by ORS 279C.580.

F. Engineer will comply with environmental and natural resources regulations as set forth in ORS 279B.525 and regulations relating to the salvaging, recycling, composting or mulching yard waste material, and salvage and recycling of construction and demolition debris as set forth in ORS 279B.225 and 270C.510.

By their signatures hereunder, the parties acknowledge they have read and understand this Agreement and agree to be bound by its terms. This Agreement is effective on the date last signed below by a party below:

CITY OF NEWPORT:

Ted Smith

Ted Smith, Interim City Manager

Date: 9-5-2013

HDR Engineering, Inc.:

By: _____

Its: Vice President

Date: 9-5-13

EXHIBIT B

Oregon Public Contracting Requirements

ORS CHAPTER 279B PUBLIC CONTRACTING REQUIREMENTS FOR THE PURCHASE OF GOODS AND SERVICES

(1) Contractor shall pay promptly, as due, all persons supplying labor or materials for the prosecution of the work provided for in the contract, and shall be responsible for such payment of all persons supplying such labor or material to any Subcontractor. ORS 279B.220(1).

(2) Contractor shall promptly pay all contributions or amounts due the Industrial Accident Fund from such Contractor or Subcontractor incurred in the performance of the contract. ORS 279B.220(2).

(3) Contractor shall not permit any lien or claim to be filed or prosecuted against the Contracting Agency on account of any labor or material furnished and agrees to assume responsibility for satisfaction of any such lien so filed or prosecuted. ORS 279B.220(3).

(4) Contractor and any Subcontractor shall pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.617. ORS 279B.220(4).

(5) Contractor agrees that if Contractor fails, neglects or refuses to make prompt payment of any claim for labor or materials furnished to the Contractor or a Subcontractor by any person in connection with the contract as such claim becomes due, the City may pay such claim to the persons furnishing the labor or material and charge the amount of payment against funds due or to become due Contractor by reason of the contract. The payment of a claim in the manner authorized hereby shall not relieve the Contractor or his surety from his or its obligation with respect to any unpaid claim. If the City is unable to determine the validity of any claim for labor or material furnished, the City may withhold from any current payment due Contractor an amount equal to said claim until its validity is determined and the claim, if valid, is paid.

(6) Contractor shall promptly, as due, make payment to any person, copartnership, association, or corporation, furnishing medical, surgical and hospital care or other needed care and attention, incident to sickness or injury, to employees of such Contractor, of all sums which the Contractor agrees to pay for such services and all monies and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service. ORS 279B.230(1).

(7) All subject employers working under the contractor are either employers that will comply with ORS 656.017, or employers that are exempt under ORS 656.126. ORS 279B.230(2).

(8) Contractor shall pay employees for overtime work performed under the contract in accordance with ORS 653.010 to 653.261 and the Fair Labor Standards Act of 1938 (29 USC 201, et seq). ORS 279B.235(3).

(9) The Contractor must give notice to employees who work on this contract in writing, either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, of the number of hours per day and the days per week that the employees may be required to work. ORS 279B.235(2).

(10) All sums due the State Unemployment Compensation Fund from the Contractor or any Subcontractor in connection with the performance of the contract shall be promptly so paid. ORS 701.430.

(11) The contract may be canceled at the election of City for any willful failure on the part of Contractor to faithfully perform the contract according to its terms.

(12) Contractor certifies compliance with all applicable Oregon tax laws, in accordance with ORS 305.385.

(13) Contractor certifies that it has not discriminated against minorities, women or emerging small business enterprises in obtaining any required subcontractors. ORS 279A.110.

(14) As used in this section, "nonresident contractor" means a contractor that has not paid unemployment taxes or income taxes in the state of Oregon during the 12 calendar months immediately preceding submission of the bid for the contract, does not have a business address in this state, and stated in the bid for the contract that it was not a "resident bidder" under ORS 279A.120. When a public contract is awarded to a nonresident contractor and the contract price exceeds $10,000, the contractor shall promptly report to the Department of Revenue on forms to be provided by the department the total contract price, terms of payment, length of contract and such other information as the department may require before the bidder may receive final payment on the public contract. ORS 279A.120.

HDR ONE COMPANY | *Many Solutions*

June 28, 2013

Timothy Gross, PE, Director of Public Works/City Engineer
Department of Public Works
169 SW Coast Highway
Newport OR 97365

HDR has a policy of nondiscrimination in employment because of race, age, color, sex, religion, national origin, mental or physical handicap, political affiliation, marital status or other protected class, and has a drug-free workplace policy.

Re: Proposal for Dam Consultant of Record

Dear Mr. Gross and Selection Committee Members:

Big Creek Reservoirs 1 and 2 are critical components of the Newport water system. Without these dams, the City has no potable water. HDR and Cornforth (HDR|CCI) conducted the preliminary evaluation that identified the seismic vulnerabilities of the dams. We bring first-hand knowledge of the dams, the water system, and how to work with the City. **HDR|CCI will leverage our knowledge and expertise to identify the most affordable approach to securing the City's water supply system.** With the HDR|CCI Team, the City will receive:

- **State-of-the-art soil characterization that will avoid overdesign of improvements.** A key finding of the preliminary evaluation was that the soils beneath the dams tested on the borderline between those that liquefy during a seismic event and those that may be subject to strength loss due to cyclic loading. Without more-refined testing, design teams would have to make conservative assumptions, increasing the extent and cost of required improvements.

- **A full understanding of the seismic hazard risks at the site including the Cascadia Subduction Zone earthquake.** The understanding of seismic hazards in the Northwest has changed dramatically in the last ten years. Principal Designer Keith Ferguson has worked on over 150 dams in his 35-year career and is the "go to" expert to address CSZ dam safety hazards for local agencies. His experience is supplemented by HDR|CCI's deep bench of technical experts and the latest CSZ research from the Pacific Earthquake Engineering Center.

- **A clear path to supporting the City in balancing risks and affordability.** HDR|CCI's proven approach will provide you with a clear understanding of the costs and risks associated with the available alternatives so that you can make the right decision for the City. Project Manager Verena Winter and Principal Designer Keith Ferguson are skilled at synthesizing and communicating information, as evidenced by their efforts during this first phase of dam efforts. With this team, the City will receive not only solid analyses, but information that is packaged in a way that facilitates informed decision-making.

We look forward to continuing our partnership on this effort.

Sincerely,
HDR Engineering, Inc.

David C. Moyano, P.E., S.E. (authorized representative)
Vice President and Oregon Department Manager
Tel. 503- 423-3700, FAX 503-423-3737
dave.moyano@hdrinc.com

Verena Winter, P.E.
Project Manager
Tel. 503-423-3700, FAX 503-423-3737
verena.winter@hdrinc.com

2. Availability and Capability

With more than 60 licensed engineers in the State of Oregon, the HDR|CCI Team has the expertise and qualified personnel needed. Fifty percent of our proposed team members are located in Oregon. All of them will be available to assist with this project. They can respond to City inquiries or be on-site within a day's notice. The same level of service that the City received during your Water Treatment Plant design and construction will be available to you through this effort. We are dedicated to your success.

The HDR|CCI Team has the depth of staff, expertise, and availability to continue to assist the City of Newport through the various services that might be required of the dam consultant of record. These include updating the Emergency Action Plan, leading the seismic evaluation and analysis, obtaining the needed permits and environmental clearances, identifying and assessing possible remediation alternatives and associated construction costs, developing design documents, and assisting with construction-phase efforts.

Our team will be headed by Project Manager Verena Winter. In addition, our team includes key personnel who have previously been involved with site characterization and engineering evaluations of Upper and Lower Big Creek Dams, and our exclusive teaming partner Cornforth Consultants, Inc. We have supplemented our team with several seismic and constructability experts whose capabilities are described in Section 3, *The HDR|CCI Team.*

HDR's expert team will partner with City staff to determine the best approach for securing the City's water supply.

City Project Manager
Tim Gross, PE

HDR Project Manager
Verena Winter, PE

Principal Designer
Keith Ferguson, PE

Technical Advisors
Rich Hannan, PE
Ross Boulanger, PhD, PE [3]
Les Harder, PhD, PE - QA/QC
Yousef Bozorgnia, PhD, PE [2] - seismic hazards

Geotechnical Eng. Lead
John Ballegeer, PE

Risk Assessment
Elena Sossenkina, PE*
Nick Clark, PE

Soils Characterization
John Charlton, PG
Charlie Hammond [1]

Numerical Modeling
Scott Anderson, PE
Andy Vessely, PE [1]

Seismic Hazard
Chris Carpenter, PE [1]

Structural
Pete Gaby, PE, SE
Travis Ford, PE, SE

Soils Lab Testing
Cornforth
MEG Technical Services

Construction
Wade Osborne [1]

Support
Carl Jonasson - cost estimating and constructability
Dan Hertel - cost estimating and constructability
Leandra Cleveland - environmental permitting
Nesh Mucibabic, PE - pump station
Brian Bartle, PE - pipeline
David Eisley - civil design support

1 - Cornforth 2 - PEER at U.C. Berkeley 3 - U.C. Davis

** = licensed engineer in another state*

HDR Engineering, Inc. tasks: project management, risk analysis, design, construction-phase engineering

HDR brings the proven leadership, technical abilities, and whole-project focus needed to assist the City with identifying the approach for securing your water supply that best meets your goals. We propose Verena Winter, Keith Ferguson, and Elena Sossenkina as our key leadership for the project augmented by HDR's more than 8,000 employee-owners. For your Dam Consultant of Record, HDR's capabilities include specialty technical expertise in dam safety and condition assessment, Cascadia Subduction Zone (CSZ) and other seismic risk assessment, numerical modeling, design and construction of dam safety modifications for embankment dams, spillways, outlet works and any related structures for water conveyance and fish passage. With 240 staff in Oregon and 900 in the Pacific Northwest, supported by the national expertise that can only be provided by a billion dollar company ranked #11 in ENR's top 500 Design Firms, our team is ready to deliver.

Cornforth Consultants, Inc. (CCI) – tasks: engineering, geology, construction-phase eng., and soils lab testing

A frequent teaming partner, CCI is a Portland-based geotechnical firm established in 1983. They specialize in complex geotechnical engineering and engineering geology assignments with particular interest in earth and rockfill dams, liquefaction and seismic studies, earthquake engineering, and landslides. The firm has 24 employees with 18 registered geotechnical engineers and engineering geologists, including ten professionals each having more than 20 years experience in the State of Oregon.

All technical staff members hold advanced degrees in their fields and are registered Professional Engineers or Licensed Engineering Geologists in Oregon. The soils laboratory has the capability to provide all types of geotechnical testing including triaxial, consolidation, direct shear, and ring-shear tests. A comprehensive overview of the firm's capabilities and projects is provided on their website at www.CornforthConsultants.com.

MEG Technical Services (MTS) | tasks: specialty soils lab testing

MTS (Vancouver, BC) offers geotechnical laboratory services and high-quality data for engineering analyses, and is a part of the larger company MEG Consulting Services, which provides geotechnical expertise to onshore/offshore infrastructure and earthquake engineering projects around the world. A high-capacity cyclic direct simple-shear apparatus, two high-pressure resonant columns, and one high-pressure dynamic triaxal device allow them to provide dynamic testing services to clients requiring the dynamic characterization on samples recovered at depths of up to 500 feet. Because disturbing the soils samples during shipping can reduce the accuracy and reliability of test results, the lab's vicinity to the project site will make it possible to transport the samples undisturbed and get reliable findings on which solutions can be based.

3. The HDR|CCI Team

The proposed key staff bring experience with over30 projects of similar size and complexity including several in Oregon: Fern Ridge Dam remediation, Scoggins Dam seismic evaluations, Creekside Dam 1 and Creekside Irrigation Water Reservoir design and construction, and John Day Dam seismic evaluation.

The proposed HDR|CCI Team has been partnering with the City of Newport for the past four years. Through our involvement with the new Water Treatment Facility and the dam seismic studies done to date, we bring unique knowledge of the project details and a strong dedication to the City's success.

With the HDR|CCI Team, Newport will receive:

- **Dedicated Project Manager with your best interest at heart**. Verena Winter will continue in the role that she's held for the past three years on this effort, coordinating a team of experts and being the City's primary point of contact. She will guide this project to deliver the best recommendations for an affordable solution that meets the City's risk-management goals.
- **A dam expert whose experience with the seismic hazards of the northwest as well as seismic assessments of low density volcanic soils similar to those found at the project site will result in practical and cost effective concepts and designs.** Through dam analyses and feasibility studies on similar projects like the Scoggins Dam, OR and Fern Ridge Dam, OR, Keith Ferguson has gained valuable insight into the factors affecting the stability of the City's dams, and how to most effectively assess their risk and design around them.
- **Cadre of experts to help with determination of the soil properties and seismic risk: the most influential determinations of the project.** They include U.C. Davis, PEER at U.C. Berkeley, CCI, and MTS.
- **Skilled permitting/planning, design, and construction-phase services team to deliver a solution with long-term value.** This team will deliver the environmental compliance documents and permits, and solid construction documents.

Verena Winter, PE | Project Manager

As Project Manager, Verena will orchestrate the engagement of her team of experts, bringing in the right people for the right task. Verena is a skilled project manager, having led a variety of projects including the City of Newport's CM/GC water treatment facility, the initial Newport dam explorations project, and other projects in Oregon. **Her ability to focus a group of experts to gain quick results and her dedication to your success, which you saw on the Water Treatment Facility project and dam seismic projects, will be available to you on this Dam Consultant of Record contract.**

She understands the various considerations with the dams, having been working on the project since the issue was discovered. This insight will aid in keeping the team on-track to determine the design parameters and develop practical solutions.

- Scoggins Dam Corrective Action Study and Raise Appraisal Study, Clean Water Services, OR
- Newport Dam Seismic Analysis and Evaluation, Newport, OR
- Biosolids Upgrade to Wastewater Treatment Plant, City of Silverton, OR
- Wastewater Treatment Plant Repair, Restoration and Expansion, City of Newberg, OR

Keith Ferguson, PE | Principal Designer

Keith specializes in dam safety, dam engineering, soil and rock mechanics, foundation engineering, and design including specialized experience related to the CSZ. Since 1978, he has participated in more than 350 civil and mining engineering projects including evaluation; design and/or construction services for ,more than 160 embankment, concrete-faced rockfill, concrete-gravity, roller-compacted concrete, and multiple-arch concrete and tailings dams and appurtenant structures (e.g., spillways, outlet works, diversion dams); pipelines, and tunnel designs.

Keith is a recognized expert in dam safety, seepage and stability analysis of dams, and with Roller Compact Concrete (RCC). He has supervised multi-disciplined projects, many of which have involved large-scale field exploration programs, site surveys, geotechnical and engineering geology analyses, hydrologic/hydraulic analyses, hydrogeologic analyses, structural analyses, preparation of conceptual designs, final designs and preparation of construction documents, construction observation and supervision, and construction management.

He applied this expertise locally on the Scoggins Dam, where he worked with Clean Water Services and the U.S. Bureau of Reclamation (Reclamation) to help identify cost-effective and practical approaches that will reduce the seismic risk while expanding future water supplies. He helped lead the development of dam enlargement concepts, participated in risk analyses of identified potential-earthquake failure modes under Reclamation's dam safety program and guidelines for dam safety decision making, and helped to develop a decision-making process to select the preferred alternatives for conceptual level designs. HDR, under Keith's leadership, is currently providing consulting services to help the project sponsors better understand the Reclamation dam safety process, risk estimation procedure, risk estimation outcome and the potential impact of the outcome on future reservoir operations.

- Newport Dam Seismic Analysis and Evaluation, Newport, OR
- Scoggins Dam Corrective Action Study and Raise Appraisal Study | CWS OR
- Fern Ridge Dam Remediation | Oregon
- Lake Isabella Dam Potential Failure Modes Analysis | Central California
- Howard Hansen Dam Safety Evaluation, WA
- Creekside Irrigation Water Reservoir Design and Construction, OR

Rich Hannan | Technical Expert

With 40 years of geotechnical engineering experience in the Pacific Northwest including 34 years at the Portland District Corps of Engineers, **Rich knows the solutions that work best for Oregon's various geological conditions**. Skilled with the Corps dam safety program, Rich was the lead engineer for the Evaluation and Seepage Remediation of Fern Ridge Dam (OR), seismic assessment of John Day Dam (OR) as well as repairs to Cougar Dam (OR), which were similar in size and considerations to the Upper and Lower Big Creek Dams. Rich will provide continuity from the investments already made, and will aid in developing in a variety of practical options.

Ross Boulanger, PhD, PE* | Technical Advisor

Ross is a geotechnical earthquake engineering professor at U.C. Davis where he directs an internationally renowned center that houses the largest geotechnical centrifuge in the U.S., which is used for static and dynamic testing of soil and soil-structure models. His emphasis is on liquefaction and its remediation, seismic soil-pile-structure interaction, and seismic performance of earth dams and levees. **His lab will independently test the samples to confirm the lab findings.**

Yousef Bozorgnia, PhD, PE* | Technical Advisor, Seismic Hazards

Yousef is Executive Director of the Pacific Earthquake Engineering Research Center (PEER) at U.C. Berkeley. He is a recognized authority on earthquake hazards in the U.S. and internationally. **He brings research results from the most recent earthquakes in Japan and Chile, which will inform the evaluation of CSZ hazards, and thus the design solutions.**

John Ballegeer, PE | Geotechnical Lead

As the geotechnical lead on the Scoggins Dam Raise Appraisal Study, **John's recent experience with the Cascadia Seismic Zone will facilitate an accurate assessment of the potential risks in this region.** He has 32 years of experience leading geotechnical engineering projects for dams and has strong working relationships with the HDR|CCI Team members.

Elena Sossenkina, PE* | Risk Assessment

Elena has more than 14 years of experience with dams and levees. Her expertise includes risk assessment, geotechnical investigations, slope stability and seepage analyses, and geotechnical instrumentation. **Having worked on the first phase of this project, her familiarity with the site and stakeholders's priorities will assist with evaluating risks.**

John Charlton, PG | Soils Characterization, Lead

Accurate soils characterization will be foundational to an effective solution. **John's 21 years with and skill for reviewing regional geologic data for site seismic hazard assessment will be key.** He is also skilled with inspecting dam construction of soil, rock fill, and RCC dam sections. He will provide a reliable soils characterization, a role he has held on more than 100 projects including the Rose Hill Dam Reconstruction (SD) and the Bear Creek Dam Rehabilitation (AL).

Pete Gaby, PE, SE | Structural

Pete has 22 years of providing finite element modeling and seismic/structural engineering services for dams including embankment dams. His projects include Willow Creek dam Gate Tower Structural Evaluation (CO) and the San Vicente Dam Raise (CA), which was the highest dam raise at that time in the U.S. **Pete's skill with dam structural analysis and design will facilitate development of practical designs and accurate cost estimates for the structural components of the project including spillways, outlet works and fish passage facilities.**

Scott Anderson | Numerical Modeling

Scott specializes in numerical modeling of earth structures: static and dynamic deformation, static and dynamic soil properties, slope stability, seepage, and advanced laboratory testing. **With his 22 years of experience, he will develop a reliable model that best reflects the project components; providing direction for future steps.** His similar projects include numerical modeling of seepage and seismic response of a number of Corps and Reclamation dams including Scoggins Dam, Isabella Dam and alternatives for the restoration of the Salton Sea in southern California.

Chris Carpenter, PE | Seismic Hazard

Chris' career has been focused on earthquake engineering in Oregon, and has worked on various dam seismic studies that utilized the Pacific Northwest's constantly evolving earthquake criteria. He participated in the first phase of this project, calculating peak bedrock accelerations for return periods of 1,000; 2,500; and 5,000 years. **This level of expertise will assist with the development of right-sized (and not over-designed) solutions.**

Les Harder, PhD, PE | QA/QC

Les's national-level expertise with earth dams and levees will provide guidance and review to ensure that practical solutions are delivered. During his 30-year tenure with California's Department of Water Resources, Les helped to develop the state's levee standards, supervised several seismic stability evaluations, and directed several emergency levee repairs. While working for the U.S. Army Corps of Engineers, Les led several post-earthquake reconnaissance studies of the performance of earth structures. He was part of the National Science Foundation team that studied the performance of levees in the New Orleans area following Hurricane Katrina. In 2008, he was appointed to a team to develop and recommend a new national levee safety program.

Wade Osborne | Construction Observation

The City will want an experienced eye performing construction observation when the Big Creek dam repairs are being constructed. **Wade's combination of construction observation and geotechnical training make him the ideal candidate.** His recent projects include the Soda Springs Dam Fish Passage at Toketee Falls (OR) and Willamette Falls Dam Flow Control Structure in West Linn (OR).

Carl Jonasson | Cost Estimating and Constructability

With decades as a contractor, including Civil Construction Manager with Wilder Construction Company and Kiewit, Carl brings a unique perspective and tricks-of-the-trade to constructability reviews and cost estimating. **This contractor's perspective will result in a practical design and tighter construction documents, both of which benefit keeping the project on budget and schedule.** He even brings local experience, having worked with the team to estimate costs on the Scoggins Dam alternatives.

4. Performance on Similar Projects

The HDR|CCI Team has a strong track record of effectively delivering technically challenging projects similar to the City's dams. Examples include such notable projects as Scoggins Dam, Isabella Dam, Barney Hill Dam, Fern Ridge Dam, and the National Park Service's Low Hazard Dam Safety Program. Please contact the project references to find out more about our team's performance including our high quality of service, and ability to deliver on-time and on-budget.

The next steps of your project require expertise and sound judgment to produce a practical, cost-effective solution. This team brings both, having refined them through several similar projects involving seismic hazards that include earthquakes associated with the CSZ as well as soft, high void ratio soils of volcanic origin similar to those found at both dam sites.

First-hand knowledge of the City's dams

Dam Seismic Analysis and Evaluation | Newport, OR

Reference: *Tim Gross, City of Newport Director of Public Works 503.574.3366*

In 2009 HDR designed a new drinking water treatment facility for the City. Originally, the design involved modifying the intake structure to accommodate larger pumps and equipment. When a later geotechnical investigation indicated that the soil stability underneath the existing intake structure was very soft, the seismic stability of the dam was identified as a significant concern.

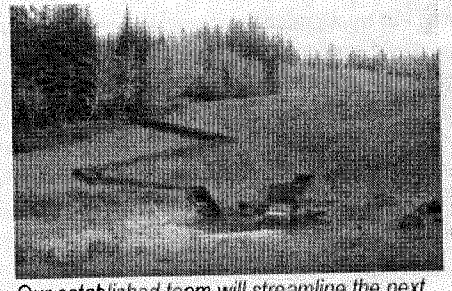
HDR performed an initial seepage, static stability, and post-earthquake stability analysis of Upper and Lower Big Creek Dams to understand the potential for large deformations and/or failure in case of a range of seismic events. Based on the results of the initial site investigation and analysis program, it was determined that additional site characterizations and engineering evaluations were required to improve the understanding of the subsurface stratigraphy, develop a geologic model of the site, and to better estimate the corresponding engineering properties and behavior of the foundation and embankment soils. Our subsequent investigations indicated that both dams could be susceptible to severe damage in even a moderate seismic event, which would compromise the City's only drinking water source.

Completed: Feb. 2013

Project cost: $340,000

Relevance: in-depth knowledge of findings, design considerations, and client's goals

Similar personnel: Keith Ferguson, Elena Sossenkina, Rich Hannan, Verena Winter, John Charlton, Andy Vessely, Chris Carpenter



Our established team will streamline the next steps in this important project.

Recent CSZ and Embankment Dam Experience

Scoggins Dam Corrective Action Study and Raise Appraisal Study | Washington County, OR

Reference: *Tom VanderPlaat, Clean Water Services 503.681.5107*

Clean Water Services is working with Reclamation to assess the seismic vulnerability of Scoggins Dam and evaluate additional water supplies for the future needs of the Tualatin Basin. Key members of the HDR|CCI Team have been working since 2010 to find cost-effective and practical approaches that will reduce the seismic risk while expanding the future water supply.

Partnering with our client and a panel of nationally recognized dam experts, HDR staff developed dam concepts and project configuration alternatives, and performed a decision analysis to help identify preferred alternatives for conceptual-level designs. HDR provided consulting services to help the project sponsors better understand the Reclamation dam safety process, risk-estimation procedure, risk-estimation outcome, and the potential impact of the outcome on future reservoir operations. Tasks included:

- Site Characterization investigations
- Risk Analysis
- Conceptual design of alts for the embankment dam, spillway and outlet works
- Cost Estimating

Completed: *ongoing*

Est. project cost: *$400M - $500M entire project, HDR $500,000; next phase $100,000*

Relevance: *risk-analysis workshops and development of risk models; evaluation of risk-reduction benefits; effective communication of technical information with stakeholders*

Similar personnel: *Verena Winter, Keith Ferguson, Elena Sossenkina, John Ballegeer, Carl Jonasson*

The CSZ played a large role in assessing seismic risk to this critical dam.

State-of-the-art testing to provide reliable recommendations

Barney Reservoir Dam Raise, Seismic Hazard Evaluation | Yamhill, OR

Reference: *Tom VanderPlaat, Clean Water Services 503.681.5107*

CCI was retained by the Barney Joint Water Commission to evaluate the seismic stability of a 50-foot raise of the Trask River Dam (subsequently renamed Eldon Mills Dam). Potential seismic ground motions were evaluated for three seismic sources: an interface subduction earthquake; an intraplate subduction earthquake; and various crustal earthquakes. The ground motion parameters assigned to each source included the maximum credible earthquakes (MCE), peak bedrock accelerations (mean and 84th percentile values), and acceleration time histories. Probabilistic estimates of return periods were also developed for the peak motions.

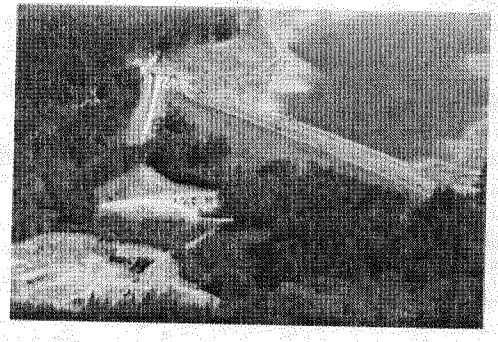
The bedrock acceleration time histories were propagated through the soil in a site-specific ground response analysis. The seismic stability of the dam was assessed using finite element methodology. Initial static shear stresses within the embankment and foundation soils were calculated, and the free-field time histories were input into a 2-dimensional finite element program to calculate the resulting dynamic shear stresses and accelerations within the embankment.

The dynamic shear strength of the slightly clayey silt foundation soil was tested in the laboratory using a cyclic triaxial apparatus. The dynamic shear strength was compared with the calculated shear stresses to obtain an estimate of the increase in pore water pressures that would be induced by earthquake motions. The resulting increase in pore water pressure was modeled in limit-equilibrium stability analyses. Finally, an estimate of the crest deformation was determined using a Newmark-type analysis.

Project cost: *$16.6 M*

Relevance: *state-of-the-practice stability analysis evaluating the potential seismic sources; performed deterministic and probabilistic seismic hazard analysis techniques and provided recommended ground response criteria*

Similar personnel: *Andy Vessely, Charlie Hammond*



Seismic repair of similarly sized earth dam

Fern Ridge Dam Dewatering and Laboratory Testing | Eugene, OR

Reference: *David Scofield, Corps of Engineers Portland District 503.808.4867*

Fern Ridge Dam (10 miles northwest of Eugene on the Long Tom River) is an earthfill structure with a gated concrete spillway. It is 1.2 miles long and 44 feet tall. In 2004 Fern Ridge Dam began showing signs that piping of embankment material was occurring. An evaluation team led by Rich Hannan (then with the USACE) developed an explorations and instrumentation plan to evaluate the cause with the assistance of CCI. Based on the information collected, an emergency response was prepared and a Board of Consultants chaired by Keith Ferguson was convened to evaluate the findings of the evaluation team and to review the proposed remediation plan. The Board agreed with the team's findings and added a sense of urgency to the proposed repairs. These required removal of the downstream half of the dam, replacing the drain, and rebuilding the downstream slope of the dam. **The proposed repair was tailored to the ability of local contractors and available equipment. This led to bids that were below the original contract estimate**, and completion of the project during one construction season rather than two seasons.

In addition to the drainage-system repair, a seismic evaluation was performed.

Project cost: *$16.5 M*

Relevance: *Analysis, design, and repair of similar embankment-style dam in Oregon*

Similar personnel: *Keith Ferguson, Rich Hannan, and CCI personnel (with other agencies)*

Other references for the team including Keith Ferguson include the following:

Reclamation Ongoing ID/IQ Contract – Phoebe Percell, Technical Lead 303.445.3253 papercell@usbr.gov

Isabella Dam Safety Evaluations and Modification Studies | Bakersfield, CA – David Serafini, Geotechnical Engineer 916.557.7584

Risk Screening and Dam Safety Evaluations for National Park Services, multiple dams – Mark Baker, NPS Dam Safety Officer 303.969.2921 mark_e_baker@nps.gov

5. Project Understanding

The HDR|CCI Team has unmatched understanding of this project. We have been partnering with the City on the initial stages of the explorations, so know first-hand the technical considerations, the data findings, and the City's preferences. From our experience working on more than 30 similar dam and levee projects, we understand the state and federal requirements including the safety program and the permitting process. This understanding will result in a practicable and cost-effective solution to securing the City's water supply.

During the construction of the new water treatment facility in Newport, geotechnical investigations were necessary to finalize foundation modifications of the existing intake structure. Those geotechnical borings through the Lower Big Creek Dam revealed that the foundation soils beneath the dam were very soft, and may be subject to significant strength loss during an earthquake event that could lead to seismic instability. The City hired HDR|CCI to conduct preliminary geotechnical investigations on both dams to assess the extent of the soil condition and impacts on the safety of the structures. The outcome of this assessment confirmed the seismic vulnerability of both dams.

The dams are critical to the City's water supply; without the dams, the City has no water. Though funds are tight, the City has prioritized further assessment of the two dams to secure the City's water supply. **HDR|CCI brings an approach and expert team that will identify practicable and cost-effective solutions to securing the City's water supply**. Based on our understanding, our approach includes:

- **Specialized investigations and testing to define soil properties and avoid overdesign of improvements.** The soils at the Big Creek dams are difficult to investigate and characterize. Some of the sandy and silty soils show the potential to liquefy where as others of a higher clay characteristic show a potential for some cyclic strength loss. The difference between these two types of soils will have a significant impact on the optimal remediation concepts and related cost of required improvements. The testing we are recommending will allow us to complete the geologic model of the site and select the appropriate engineering parameters and seismic response analyses leading to optimized remediation designs.
- **Selecting the appropriate seismic hazard design criteria.** The understanding of seismic hazards in the Northwest has changed dramatically in the last ten years with the identification of the unique characteristics associated with the CSZ ground motions. We are proposing to update our previous hazard characterization based on emerging information from the recent Fukushima Subduction Zone earthquake that occurred off the northwest coast of Japan in 2011. We will engage experts from the Pacific Earthquake Engineering Research (PEER) Center completing the evaluation of the Fukushima data, and the University of California at Davis to independently review our site characterization and hazard estimate to provide the most up-to-date evaluation currently possible.
- **A clear path to supporting the City in balancing affordability and risk.** HDR|CCI's proven approach to evaluation of alternatives including risk assessment will help you identify the right level of investment that balances affordability against the risk to the City's water supply. Our approach is based on Reclamation's methodology and supported by the State Engineer.
- **Leveraging our experienced team to decrease construction costs.** This team has worked on dozens of similar dam safety projects and understands the full range of improvement options. That experience has revealed the appropriate construction methods for the soil conditions at the site and some effective cost-saving measures. Design solutions that take advantage of the capabilities of local contractors will be thoroughly considered as part of our evaluations.

Emergency Plan Update

Every dam structure is required to have an Emergency Action Plan (EPA) according to state regulations. The last dam inspection report by the state in May 2013 indicated that the EPA for both Big Creek dams is 4 years old and needs to be updated. In addition to inundation areas in case of a breach of the dams, the plan needs to include the seismic response and inspection procedures, and residence communication plan after an earthquake. Our team has the capability to update the EPA accordingly.

Most importantly, **Project Manager Verena Winter, Principal Designer Keith Ferguson, and their team are skilled with synthesizing and communicating information**, as evidenced by their efforts during this first phase of dam efforts. With this team, the City will receive not only solid analyses, but information that is packaged in a way that facilitates informed decision-making. Our understanding of key project elements is provided herein:

1. Specialized Testing to Define Soil Properties and Avoid Overdesign of Improvements

A key finding of the preliminary evaluation was that the soils beneath the dams tested on the borderline between those that liquefy during a seismic event and those that may be subject to strength loss due to cyclic loading. The more sophisticated investigation methods, sampling, and laboratory testing our team offers are necessary to define the soil properties with a high degree of confidence. Without this clear definition, the team would have to make conservative assumptions which typically lead to more conservative (and costly) improvements. This additional testing does not replace the preliminary evaluation that the City has already invested in; instead it builds upon that initial work to provide more accurate information.

Sampling locations and testing methods will be selected and fine tuned to get the data needed for a better understanding and determination of the distribution of the soils at the site. Some of the samples will be going through the standard geotechnical testing such as gradation, plasticity, and water content. Other samples will be collected as undisturbed samples and driven to the special laboratory in Vancouver B.C. where state-of-the-art dynamic direct shear testing will be conducted. Carefully maintaining the samples in undisturbed condition by avoiding commercial shipping is critical as **disturbed samples can significantly under or over estimate the strength of the soils.** This can lead to designs that are either excessively conservative or in some cases, do not provide an adequate level of safety. Strength testing will be independently verified by similar sample handling and testing procedures at the University of California at Davis.

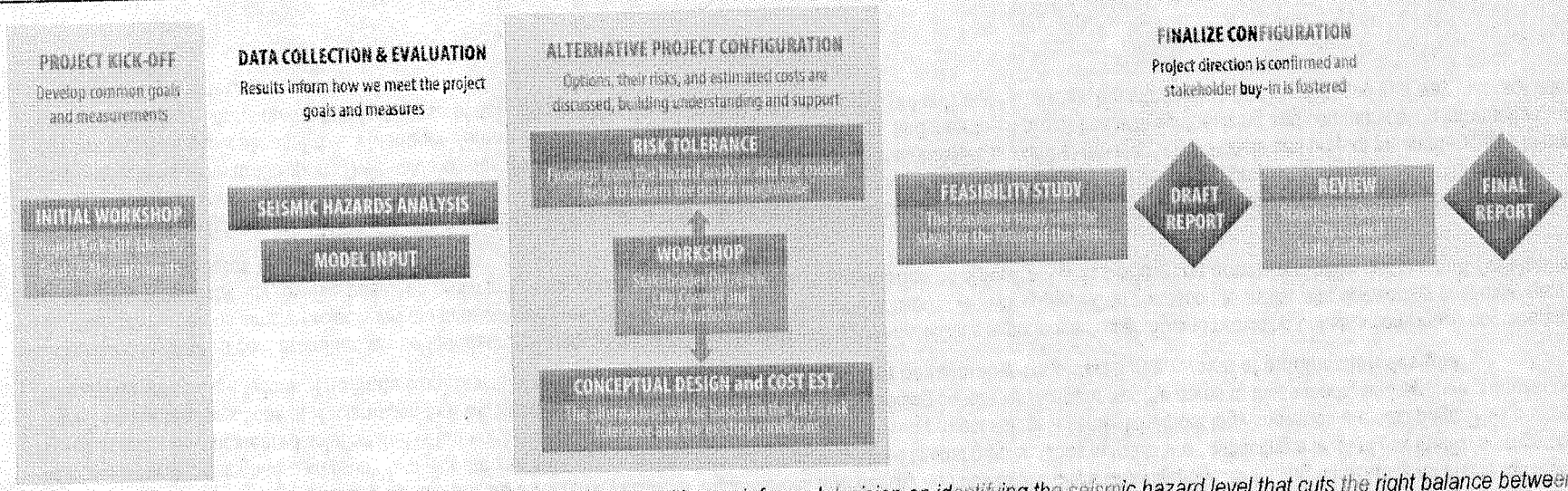
The data gained from the testing will be used to develop a seismic response numerical model using the computer program FLAC which will be run for different loading and dam modification scenarios. As noted above, our understanding of the seismic hazards along the coast of Oregon has been developing rapidly over the past 10 years. The recent subduction zone earthquake off the coast of Japan has introduced significant new data that should be considered for the Newport dams. To gain access to this information, we will use Dr. Yousef Bozorgnia at the Pacific Earthquake Engineering Research (PEER) Center to provide updated information on potential ground motions for the Newport site. Using this information, we will update the most recent seismic hazard report and ground motions for use in numerical modeling of the dams' response

2. A clear path to supporting the City in balancing affordability and risks

A key decision will be selecting an appropriate hazard level (design criteria that balances affordability and risk to the City's water supply). Selecting a hazard level that is too low could result in an under-designed dam repair that jeopardizes the City's water system and may require additional modifications in the future. Selecting a level of risk that is too high could result in and over-engineered solution that is unaffordable. The HDR|CCI Team will utilize the proven project risk assessment methodology shown on the next page. This approach is based on the best practices of Reclamation that will identify the appropriate hazard considering loading conditions, response of the dams to those loads, and estimated consequences associated with a dam failure. **The State Engineer has indicated that such an approach would be favorably considered in approval of modification designs.**

Accurate construction cost estimates will be foundational in the analysis of various potential solutions. HDR's experience designing and providing construction-phase engineering services for numerous similar projects will aid in developing reliable numbers on which to base decisions. We will engage Carl Jonasson to assist with developing cost estimates and performing constructability reviews based on preliminary design data. **Carl has extensive experience as a contractor in performing constructability review, and developing reliable cost estimates for dam related work.**

HDR's proven principles and procedures will help to **identify the City's desired balance of risk tolerance and water supply certainty, thus setting the design criteria that will provide a no-surprises basis for future decisions.** Foundational to this approach are the workshops that occur at key points during the project: project kick-off, one during design, and one at time of the draft report. Their value comes from open exploration of the topics with all stakeholders present to develop unified goals and project parameters, and to discuss options and their implications. Project Manager Verena Winter, Principal Designer Keith Ferguson, and their team are skilled with synthesizing and communicating information, as evidenced by their efforts during this first phase of dam efforts. With this team, the City will receive not only solid analyses, but information that is packaged in a way that facilitates informed decision-making.



HDR|CCI's proven risk assessment approach will support the City in making an informed decision on identifying the seismic hazard level that cuts the right balance between the risk to the City's water supply and the affordability of the required improvements.

3. Leveraging our experienced team to decrease construction costs

Our approach to designing improvements will be driven by the City's need for an affordable approach to secure your water supply. As discussed above, the main goal of the specialized testing we are recommending is to avoid either over- or under-design of improvements.

One example of our ability to improve affordability is our understanding of the capabilities of local contractors, based both on our team's work on numerous previous dam projects, as well as our work on within the local area. This becomes significant when considering improvement alternatives requiring more "exotic" improvements such as deep soil mixing as opposed to more conventional excavation and replacement of weak soils. In the case of the latter, soil excavation and replacement can be done with conventional earth moving equipment (bulldozers, excavators, compaction equipment). This conventional approach was used on the Fern Ridge Dam upgrades, which included excavation of downstream toe of the dam and replacement to replace a drain and develop a flatter, more stable slope and larger berms. This doesn't mean our team will not consider the latest approaches, but we have the experience to know that newer is not always better.

City Engagement

City Staff. *Any proposed dam modifications will be based on a range of rehabilitation concepts and methods that the City helped to create. The additional site explorations will provide data to equip the City to determine the desired safety factor for the two Big Creek dams. The Oregon dam safety engineers will be help with this decision from a regulatory perspective.*

Water Treatment. *The HDR|CCI Team is well aware that these reservoirs are the only drinking water source for the City of Newport. Constructability of any modifications and the construction schedule will be discussed with the water treatment facility and public works personnel to minimize interruption of drinking water production.*

City Council. *It is also anticipated that City Council will be involved in the decision-making process especially regarding construction cost. This will be a transparent process for all stakeholders. The consultant team will hold several workshops and attend City Council meetings, which will foster a unified understanding of the project.*

The HDR|CCI Team's understanding of the project is grounded in first-hand, on-site experience and informed by other, similar projects.

Project consideration	Where we've solved it before
Site characterization including geology, engineering geology, and site explorations such as boring with undisturbed sampling, cone penetration testing, insitu geophysical testing, and specialized laboratory testing to estimate the shear strength and potential strength reduction that may occur to low density and high plasticity sandy silts and silty sand materials subjected to cyclic loading.	
Soils with an unusually high-void ratio and low post-earthquake shear-strength properties (like the City's) require accurate test results in order to develop practical, long-term solutions that minimize total project costs. Both insitu testing and the testing of high-quality, undisturbed samples with appropriate laboratory procedures have been reliable methods.	• **Upper and Lower Big Creek Dams** - HDR|CCI Team partnered in the site characterization of both dams. Our first-hand knowledge of the sites and the information gathered will result in an efficient start to the next phase of work, and will assist with integration of this information into the numerical models. • **Fern Ridge Dam** - Keith Ferguson, Rich Hannan, and CCI were involved in the site characterization and subsequent repairs of this dam, which involved soils of volcanic origin with similar high void ratio (low density) characteristics. • **Waikaloa Reservoirs, Hawaii** – Evaluated and designed remediation following a Magnitude 7 earthquake in 2007. High void ratio soils of volcanic origin (similar to the City's) were investigated, characterized, and incorporated into construction solutions.
Experience with dam safety requirements of the State of Oregon and federal agencies such as the U.S. Bureau of Reclamation, and an understanding of seismic hazards and hazard characterization for dam safety including experience related to the Cascadia Subduction Zone (CSZ).	
State and federal dam safety requirements must be met at all stages of the project. We have extensive experience with the regulatory framework for the City's project including the state dam safety regulations and guidelines, and the applicable federal dam safety guidelines that the State relies upon (incl. Reclamation, USACE, and the National Resource Conservation Service).	• Rich Hannan was the senior geotechnical engineer responsible for the dam safety evaluations of the 14 USACE projects in Oregon between 1986 and 2006. He also performed dam safety inspections for the State of Oregon under the National Dam Safety Program including **Upper and Lower Bull Run Dams**, and **Canyon Meadows Dam**. • **Creekside Reservoir Projects** – Design and construction support services for two composite embankment/rockfill dams up to 100 feet high in Douglas County, OR. Dam designs met Reclamation standards. Interfaced with OR dam safety officials. • Coordination with Reclamation and the USACE on several major projects in the region including **Scoggins Dam** (OR), **Fern Ridge Dam** (OR), **Howard Hansen Dam** (WA), and **Isabella Dam** (CA), which all involved consideration of significant seismic hazards (such as the CSZ) and difficult foundation soil conditions.
Development and evaluation of **alternatives including new, or rehabilitation of existing, embankment dams** and associated civil infrastructure (outlet works, spill works).	
We will identify possible solutions to stabilize the dams. The option of keeping only one dam in operation may be evaluated based on the soil-characteristics findings. We refine alternatives enough to assess their implications, and stop design to conserve project funds. To develop evaluation criteria that best meet the client's goals and project parameters, a workshop can facilitate the process.	• **Fern Ridge Dam** - Rich Hannan was the lead engineer for the evaluation and rehabilitation of the dam's downstream foundation and toe drain system. Identified and assessed six possible solutions. One was selected and implemented. • **Scoggins Dam Enlargement Project** – Messers, Ferguson, Ballegeer, Jonasson, and Sossenkina were involved in developing and evaluating a range of alternatives for completing remediation and enlargement. • **Upper Chehalis River Flood Control Project, WA** – Evaluating alternative dam concepts on the main stem of the Chehalis River and is subject to severe flooding and related flood damages.
Planning and permitting of dam rehabilitation projects under both state and federal jurisdictions including preparation of environmental compliance documents and permits.	
Planning and permitting for modifications to existing dams is unique and significantly different from environmental compliance and permitting for other types of features/structures. **Our team brings the expertise to help the City avoid potential roadblocks through this process.** This	The HDR|CCI Team brings established procedures for processing the required documentation, and first-hand knowledge of the regulatory staff and procedures. This familiarity will assist with maintaining the project schedule and budget.

experience includes preparing and submitting a Joint Permit Application (JPA) for a Federal and State of Oregon 404 permit. This JPA approval process (USACE and the Oregon Division of State Lands) includes consultation with the appropriate Federal and State agencies to satisfy compliance regulations such as the Endangered Species Act, Clean Water Certification issued by the EPA, Wetlands Delineation and Mitigation, and other NEPA requirements (e.g., Storm Runoff Plan, Turbidity Monitoring Plan, and Discharge Permit during rehabilitation construction).	• Frog Lake Dam Reconstruction for Portland General Electric • St. John's Perimeter Levee Rehabilitation for Metro • Carty Reservoir Hydrogeologic Review for Portland General Electric • Bull Run Dam No. 2 spillway channel modifications for City of Portland • Bull Run Hydropower Project Decommissioning for Portland General Electric
Planning and rehabilitation design of water supply infrastructure (pipelines and water distribution systems, pump stations, water treatment facilities, and fish passage structures) that may be impacted by the seismic response of dams along with the rehabilitation alternatives associated with dams and reservoirs.	
Developing project requirements to maintain continuous water supply during construction will be a key element of this step. The modifications identified during configuration will be designed based on the City's risk tolerance decision. This will include hydrology, hydraulics, geotechnical design, structural design, civil design, mechanical design, and electrical design for all components. With 600 HDR staff in the NW, this team has the resources to connect the dam's infrastructure to the water treatment facility. Even if the upper reservoir becomes the main reservoir, and a new intake pump station and conveyance pipeline are needed to transport the water from the reservoir to the treatment plant, this team has the in-house capabilities. We can also quickly assist with updating the fish passage structure (pending ORFW regulations), and change or replace the spillway and outlet piping.	• Since 2003, HDR's Portland staff have designed and provided construction services for **400 miles of pipelines, pump stations** • Water Treatment Facility, Intake and Pumping system, Design and Construction Services, City of Newport, OR • Soda Springs Dam Fish Passage Improvements for PacifCorp • Source Water Improvements (intake, pipeline, and WTP), Bend, OR • Thompson Road Pump Station Suction Pipeline, TVWD, OR • Water Intake and Pump Capacity Expansion Study, Design, JWC, OR
Cost estimating and constructability reviews for dam safety modifications and related civil infrastructure (outlet works, spillways, pipelines, pump stations, and fish passage structures).	
Carl Jonasson, lead cost estimating and constructability reviewer, worked for 30 years as a contractor, providing construction services on earth structures including dams and levees. He knows first-hand how such projects are built, what to watch for in contract documents to ensure a tight bid package, and which construction methods are more cost effective in coastal Oregon. His experience is augmented by Keith Ferguson's, our principal designer, who has led **more than 30 dam safety rehabilitation or new dam projects.**	• **Scoggins Dam, OR** – Development of a range of alternatives for increasing the water supply and dam height including the development of detailed cost estimates and constructability reviews. Jonasson was a key member of this team working for Messers, Ferguson, and Ballegeer for dam concepts up to $400M in total construction cost. • **Salton Sea Restoration Project, Southern CA** –Messers, Ferguson, Ballegeer, Jonasson, and Sossenkina led a series of engineering evaluation and risk analysis of alternatives for constructing 30 miles of new embankment dams via overwater construction methods and composite earthfill and rockfill configurations. High seismic hazards were developed and presented in an engineering report that was submitted to the U.S. Congress for funding consideration. • **Creekside Grey Water Reservoir Project, Douglas County, OR** –Messers, Ferguson, Ballegeer, and Sossenkina recently completed final design and construction services for two new composite embankment/rockfill dams. As part of this effort, the design team developed cost estimates and performed constructability reviews.

6. Resources

This team has the depth of staff and expertise to deliver any services needed through this on-call contract. HDR alone has 8,000 staff, as are our team members. Most importantly, we are dedicated to the City's success. This depth of resources and drive to serve were evidenced through the City's Water Treatment Facility project where new areas of expertise were needed, including seismic and geological expertise, and the HDR|CCI Team delivered in short order. We will be there for you.

Please see our firm descriptions on page 1 for more information about each one's capabilities.

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Verena Winter, P.E.

Project Manager

Education

Master of Science, Environmental Engineering, Portland State University

Certificate, Hydrology, Portland State University

Bachelor of Science, Engineering Management, Bauhaus University Germany

Professional Registrations

Professional Engineer - Environmental, Oregon, No. 79262PE

Professional Affiliations

International Water Association, Member, 2009-Present

American Water Works Association, Member, 2010-Present

HDR Tenure

10 Years

Industry Tenure

11 Years

Professional Experience

Verena is a skilled project manager, having led the design team and construction team for the City of Newport's new water treatment facility and intake design. Other project management experiences include the Preliminary Geotechnical Investigation and Seismic Evaluation for Newport's Upper and Lower Big Creek Dams and the City of Silverton digester upgrade. She has also provided leadership as the deputy project manager for the City of Newberg wastewater treatment plant expansion. Verena's ability to focus a group of experts to gain quick results and her dedication to the City of Newport's success will be available to you on this Dam Consultant of Record contract.

She understands the various considerations with the dams, having been working on the project since the issue was discovered. Her projects have included pipelines, pump stations, and intakes; all possible components of design solutions. Verena's insight will aid in keeping the team on-track to determine the design parameters and develop practical solutions.

Select Project Experience

Upper and Lower Big Creek Dams Preliminary Geotechnical Investigation and Seismic Evaluation, City of Newport, OR. Project Manager. HDR provided evaluation, modeling, and geotechnical services for the Upper and Lower Big Creek Dams for the City of Newport. Verena was the project manager for the entire team of geotechnical engineers, dam and levee experts and several subconsultants. HDR provided an evaluation of both dams and their seismic stability in the event of an earthquake based on samples that were collected.

Newport Water Treatment Facility Improvements, City of Newport, OR. HDR provided predesign and final design, pilot study support, bid support, and construction engineering services for a new membrane filtration water treatment facility. The old four million gallons per day (MGD) potable water system was replaced with a new 10 MGD membrane filtration facility. The total project budget fell just under $20 million. Verena was the project manager for the entire project, the main client contact, in charge of the budget and schedule, and in charge of construction engineering working closely with the contractor. Verena has worked on this project as the project manager since the beginning of 2009 until the new treatment plant went online in November of 2012. This project provided her with the experience to be in charge of a project from the beginning to the end.

Scoggins Dam Corrective Action Study, Clean Water Services, OR. Project Manager. This project sought to identify cost-effective and practical approaches that will reduce the seismic risk while expanding future water supplies. Alternatives to raise the existing 150-foot-high dam by 40 feet, or construct a new and larger embankment, composite earthfill/rockfill, or Roller Compacted Concrete (RCC) dam immediately downstream of the existing dam were evaluated. New spillways and outlet works were also part of the feasibility level designs. Verena oversaw the project efforts and brought together a team of experts and appropriate staff to efficiently produce results.

Biosolids Upgrade to Wastewater Treatment Plant, City of Silverton, OR. Project Manager during Construction. HDR provided design and construction engineering services for digester upgrades for the City of Silverton. The project included 2 new digesters, a new boiler building, a new biogas building, a flair structure, and a new effluent pump. Verena took on the project management role during construction to the finish of the project. She was

in charge of all construction related engineering activities and associated project management.

Wastewater Treatment Plant Repair, Restoration and Expansion Project, City of Newberg, OR. Deputy Project Manager. HDR designed a new influent pump station , new headworks facility and modifications to the existing dewatering facility for the City of Newberg, OR. The project is an expansion to the existing wastewater treatment facility. In the future, the treatment plant will be able to treat a peak flow of 33MGD. Verena serves as the deputy project manager being in charge of schedule, budget, the design team, and subconsultants.

Grant Creek Environmental Restoration & Flood Control, Missoula County, MT. Project Engineer. The project involved collection of individual mitigation projects that would achieve the mutual objectives of environmental restoration and flood hazard reduction along the entire lower creek system. The project aimed to preserve renewable resources by restoring a degraded section of lower Grant Creek and conserving natural resources by improving fish passage and habitat. Verena was one of the engineers running the flood hazard models and analyzing the out-coming data to come up with recommendations for Missoula County.

Phase 3 - NPDES Permitting, Public Involvement and Feasibility Analysis, Spokane County, WA. Project Engineer. HDR conducted a facility plan for the City, recommending that a new treatment plant be constructed with a discharge to the Spokane River. Pre-design and siting for this facility is now underway, along with detailed evaluation of process options. The facility will have an initial capacity of 8 mgd, expanding in 2015 to 12 mgd. The county selected membrane bioreactors (MBRs) as the treatment concept, which will make the facility one of the largest MBR plants in the world. Verena assisted with data collection and analysis to assess environmental impact on the river.

Keith A. Ferguson, P.E.

Principal Designer

Education

Master of Science, Civil Engineering, University of Colorado Boulder

Bachelor of Science, Civil Engineering, University of Colorado Boulder

Professional Registrations

Professional Engineer - Civil, Oregon, No. 16917PE

Professional Engineer - Civil, California, No. C050851

Professional Affiliations

American Council of Engineering Companies, Member

American Society of Civil Engineers (ASCE), Member

Association of State Dam Safety Officials, Chair/Editorial Committee

Colorado Consulting Engineers (CCEC), Member

Colorado Water Congress, Member

National Water Resources Association, Member

United States Society on Dams (USSD), formerly USCOLD, Member

HDR Tenure

1 Year

Industry Tenure

32 Years

Professional Experience

Keith specializes in dam safety, dam engineering, soil and rock mechanics, foundation engineering, and design including specialized experience related to the CSZ. Since 1978, he has participated in more than 350 civil and mining engineering projects including evaluation; design and/or construction services for ,more than 160 embankment, concrete-faced rockfill, concrete-gravity, roller-compacted concrete, and multiple-arch concrete and tailings dams and appurtenant structures (e.g., spillways, outlet works, diversion dams); pipelines, and tunnel designs.

Keith is a recognized expert in dam safety, seepage and stability analysis of dams, and with Roller Compact Concrete (RCC). He has supervised multi-disciplined projects, many of which have involved large-scale field exploration programs, site surveys, geotechnical and engineering geology analyses, hydrologic/hydraulic analyses, hydrogeologic analyses, structural analyses, preparation of conceptual designs, final designs and preparation of construction documents, construction observation and supervision, and construction management.

Project Experience

Upper and Lower Big Creek Dams Preliminary Geotechnical Investigation and Seismic Evaluation, City of Newport, OR. Dam Expert. HDR provided evaluation, modeling, and geotechnical services for the Upper and Lower Big Creek Dams for the City of Newport. Keith was the dam expert, providing technical leadership and insight. HDR provided an evaluation of both dams and their seismic stability in the event of an earthquake based on samples that were collected.

Scoggins Dam Corrective Action Study, Clean Water Services, OR. Keith is served as a senior consultant to help identify cost-effective and practical approaches that will reduce the seismic risk while expanding future water supplies. He helped lead the development of dam enlargement concepts, participated in risk analyses of identified potential-earthquake failure modes under Reclamation's dam safety program and guidelines for dam safety decision making, and helped to develop a decision-making process to select the preferred alternatives for conceptual level designs. HDR, under Keith's leadership, is currently providing consulting services to help the project sponsors better understand the Reclamation dam safety process, risk estimation procedure, risk estimation outcome and the potential impact of the outcome on future reservoir operations.

Fern Ridge Dam U.S. Army Corps of Engineers, OR. Keith was retained as subject matter expert to serve on a senior review board. As part of this three-member board, Keith provided a comprehensive review of information and analyses that had been performed by Corps personnel with regard to a significant seepage and piping issue that had arisen. Based on the review, the Board determined that the dam was in an active state of failure and that immediate corrective actions were required. Subsequent to that determination, the Board provided the Corps with concepts for rehabilitation and provided Independent Technical Reviews (ITR) of the design analyses, construction rehabilitation and provided Independent Technical Reviews (ITR) of the design analyses, construction drawings and specifications for completion of the remediation work. With assistance from the Board, the Corps completed the review, designs, and construction of over $17M in repairs to the dam in less

than 1 year.

US. Army Corps of Engineers, California, Lake Isabella Dam. Keith is serving as principal technical consultant and project manager assisting the Sacramento District with a comprehensive evaluation of Lake Isabella Dam on the Kern River above Bakersfield. Currently, the work includes coordination with a panel of independent experts, site investigations, instrumentation, structural condition assessment of the Borel Canal Conduit/Outlet, seepage evaluations, stability evaluations, and deformation analyses of the auxiliary dam. The potential deficiencies that have been identified with the auxiliary dam include foundation liquefaction, seepage and piping along the Borel Canal cast-in-place outlet conduit, and fault rupture and displacement of the Kern Canyon fault that underlies the dams right abutment.

Howard Hansen Dam, USACE, WA. Keith was chosen to be on two separate panels of experts composed of multi-disciplinary engineers (geotechnical, geological, and hydraulic engineers) to evaluate a portion of the United States Army Corps of Engineer's portfolio of eight dams, including Howard Hansen Dam.

Creekside Irrigation Water Reservoir Design and Construction, Canyonville, OR. Keith is the Project Manager responsible for preparation of an Emergency Action Plan (EAP), Early Warning System and Standing Operating Procedures (SOP) for a new water supply dam and reservoir and the final design and construction of two embankment dam required to create a wastewater storage reservoir. Elements of work being performed for the EAP/SOP include development of dam breach simulation model, flood routings and preparation of inundation mapping for a distance of 18 miles downstream of the dam; development of a comprehensive dam instrumentation and monitoring program to be incorporated into the Early Warning System; and consultation on a landslide located in the reservoir rim area. The two new dams required for the wastewater storage reservoir range from 70 to over 90 feet high. Work included site investigations; preparation of final designs including plans and specifications; construction support services including onsite observation review and acceptance of work, submittal reviews, preparation of design modifications to match subsurface conditions; and post-construction activities including preparation of construction summary report, update of the project EAP/SOP, preparation of as-constructed drawings, and first fill monitoring.

O'Sullivan Dam, U.S. Bureau of Reclamation, Moses Lake, WA. Keith was the Project Engineer responsible for engineering evaluation of large quantities of seepage from an embankment dam and foundation for the U.S. Bureau of Reclamation. This earthfill dam was constructed in 1949, is 19,000 feet long, 225 feet high, and impounds 554,000 acre-feet of water.

Bradbury Dam, Cachuma Project Authority, CA. Keith was the Senior Geotechnical and Dam Safety Consultant during detailed seismic evaluation of a 265-foot-high embankment dam for the Cachuma Project Authority. Responsibilities included consultation to the U.S. Bureau of Reclamation and participant on their risk assessment and value engineering teams to determine corrective actions required to remediate liquefaction concerns and stability of spillway walls and large radial gates. The California DSOD reviewed work on this project. Keith's involvement on this project was critical to the removal of a severe reservoir storage restriction and substantial reduction in remediation costs.

Salton Sea Dam Restoration, U.S. Bureau of Reclamation, Riverside and Imperial Counties, CA. Planning level designs including extensive engineering evaluations and cost estimates were recently completed for the U.S. Bureau of Reclamation for the restoration of the Salton Sea in southern California. Keith was the project manager in the evaluation of alternative construction material sources for various embankment alternatives, seepage and stability analysis, deformation analyses, risk analysis, optimization of dam and levee embankment cross-section designs, and construction cost estimates for the embankment

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Scott T. Anderson

Sr Numercl Modeling Geotch Eng

Education

Master of Engineering, Geotechnical Engineering, University of Missouri Rolla

Bachelor of Science, Civil Engineering, University of New Mexico

Professional Registrations

Professional Engineer - Civil, Arizona, No. 48813

Professional Engineer - Civil, Colorado, No. 42432

Professional Engineer - Civil, Kansas, No. 17201

Professional Engineer - Civil, New Mexico, No. 18334

Professional Affiliations

American Rock Mechanics Association

American Society of Civil Engineers (ASCE), Engineering Mechanics Institute

American Society of Civil Engineers (ASCE), Geo-Institute, Computational Geotechnics Committee

Canadian Geotechnical Society

Chi Epsilon, National Civil Engineering Honor Society

Deep Foundations Institute

International Society for Rock Mechanics

International Society for Soil Mechanics and Geotechnical Engineering

Tau Beta Pi Engineering Honor Society

United States Society on Dams

American Society of Civil Engineers (ASCE), , 1989-Present

HDR Tenure

Less than a year

Industry Tenure

17 Years

Professional Experience

Scott specializes in numerical modeling of earth structures: static and dynamic deformation, static and dynamic soil properties, slope stability, seepage, and advanced laboratory testing. **With his 22 years of experience, he will develop a reliable model that best reflects the project components; providing direction for future steps.** His similar projects include numerical modeling of seepage and seismic response of a number of Corps and Reclamation dams including Scoggins Dam, Isabella Dam and alternatives for the restoration of the Salton Sea in southern California.

Select Project Experience

Evaluation of Tailings Dam Raise, United States Army Corps of Engineers – Sacramento District, – Salt Lake City, UT. Evaluation of data and analysis to support EIS application for a significant increase in area for a tailings facility. Performed finite element seepage analysis and limit equilibrium slope stability analysis to evaluate the planned alternative and several other alternatives to a proposed major increase in height and area of an existing tailings facility. Evaluation also included review of owners engineering analysis of the preferred alternative and study of existing engineering documentation of the analysis of the facility.

Scoggins Dam Raise Appraisal, USBR, Lake Gaston, Oregon. Principal Geotechnical Engineer. Performed numerical modeling and advanced laboratory testing. Performed review and assisted in direction of advanced laboratory testing of consolidated undrained and unconsolidated undrained triaxial tests and interpretation. Provided oversight and performed dynamic deformation analysis of embankment dam remediation alternatives. Size: 150-foothigh dam and associated structures.

USACE - Sacramento District, Lake Isabella Auxiliary Dam Seepage and Stability Evaluation, Kern County, California. Lead Engineer. Provided modeling services for the seismic deformation modeling of the auxiliary embankment dam. Main and auxiliary dams at Lake Isabella have the highest priority for the USACE due to safety concerns with seepage and seismic stability. Mr. Anderson also provided review of numerical modeling performed by USACE. Size: 185-foot-high main dam and 90-foot-high auxiliary dam.

Salton Sea Restoration, USBR , Riverside and Imperial Counties, CA. Lead Engineer. Provided numerical modeling services (FLAC) for seismic deformation modeling of several embankment dam alternatives for the restoration of the Salton Sea.

Urban and Non-Urban Levee Evaluation, Task Order 13, Geotechnical Fragility Curves, Sacramento California. Expert Panel Member. Served on the Expert Panel for both ULE and NULE Geotechnical Fragility Curves. Panel evaluated the methodology for the development of fragility curves for a total of 298 levee segments, which were based on both the levee assessment tool (LAT) for NULE and Phase 1 explorations for ULE. Fragility curves considered four failure modes: underseepage, stability, through seepage, and erosion. Fragility curves were used in HECRAS and HEC-FDA models for the Central Valley Flood Protection Plan.

West Sacramento Levees, City of West Sacramento, California. Principal Geotechnical Engineer. Developed fragility curves (USACE Methodology) for four index points along the

Sacramento River, Yolo Bypass, Deepwater Ship Channel, which surround the city of West Sacramento. Fragility curves were developed as a portion of the overall project that included the review of available subsurface information, geomorphic evaluation using historic topographic maps and geologic maps, exploration of the site subsurface conditions, laboratory testing of representative samples obtained during the field investigation, as well as engineering analyses on which to base the assessment of the levee stability and compliance of the levee with USACE and certain FEMA criteria.

County of Hawaii - Department of Water Supply, Waikoloa Reservoir Nos. 1 and 2, Waimea, Hawaii. Principal Engineer. Performed seismic deformation and soil-structure interaction analysis on a profile of an existing concrete-lined embankment reservoir that had experienced damage during the Kiholo Bay and Hilo earthquakes. Assisted in developing possible mitigation measures for the reservoir system. Size: Two 60- and 100-foot-high embankment dams.

Cross Creek Dam No. 33, Jackson County, Kansas. Principal Geotechnical Engineer. Responsible for subsurface exploration, laboratory testing, settlement, seepage and stability analysis, and design and construction recommendations for a new watershed dam.

Cross Creek Watershed Dam Site No. 131, Rossville, Kansas. Project Geotechnical Engineer. Responsible for design of earthen dam across Peanaz Creek. Project involved subsurface exploration, slope stability and seepage analysis and geotechnical engineering recommendations for design, including consolidated undrained, flexible wall permeability, and consolidation testing. 145-foot-high, high hazard, zoned earthfill embankment dam.

Kiewit Engineering Company, Hood Canal Graving Dock Coffer Dam, Port Angeles, Washington. Senior Geotechnical Engineer. Responsible for modeling seepage and slope stability for a temporary cofferdam for a 70-foot-high graving dock gate. Developed instrumentation program for monitoring cofferdam structure during rapid filling and dewatering.

Osage City Dam Phase I and II, Osage City, Kansas. Senior Geotechnical Engineer. Provided engineering evaluation of existing earthen embankment dam and concrete ogee weir. Performed triaxial compression and hydraulic conductivity testing, seepage and stability analysis of existing and proposed rehabilitated sections. Provided geotechnical design recommendations for rehabilitated earthen embankment sections, new floodwall design and new spillway design.

Sacramento Area Flood Control Agency (SAFCA), Natomas Levee Improvement Program (NLIP), Sacramento, California. Principal Geotechnical Engineer. Provided review of numerous seepage and slope stability analyses for 42 miles of levees, five pump stations, 10 miles of new and relocated canals, and evaluation of over four million cubic yards of borrow soils. Developed guidance documents to assist in the development of soil parameters and performance of analyses. Performed peer review of fragility analysis developed by USACE Sacramento District for Sacramento River index points.

St. Charles Mesa Dam Expansion, Pueblo, Colorado. Senior Geotechnical Engineer. Performed slope stability analysis and review of seepage analysis for a raw water storage dam extension. Consulted on the construction of the slurry cutoff wall for seepage reduction and filter criteria.

Tuttle Creek Seismic Rehabilitation Project, Manhattan, Kansas. Off-Site Laboratory Manager. Provided Quality Assurance testing for USACE - Kansas City District for seismic rehabilitation of the Tuttle Creek dam. Laboratory and field testing of deep soil mixing and jet grouting, including determination of cement content of hardened soil-cement. Handled rock and soil triaxial and direct shear testing.

John P. Ballegeer, P.E., P.G.

Geotechnical Engineering Lead

Education

MS, Civil (Geotechnical) Engineering, University of Colorado Denver

BS, Geological Engineering, Colorado School of Mines

Professional Registrations

Professional Engineer, OR No. 83301

Professional Engineer, CO No. 30656

Professional Engineer, KS No. 10294

Professional Engineer, NM No. 19792

Professional Engineer, OH No. 74736

Professional Engineer, HI No. 14376

Professional Engineer, AL No. 32944-E

Professional Affiliations

American Society of Civil Engineers (ASCE)

Association of Environmental and Engineering Geologists (AEG)

Association of State Dam Safety Officials (ASDSO)

United States Society on Dams (USSD)

HDR Tenure

1 year

Industry Tenure

32 years

Professional Experience

As the geotechnical lead on the Scoggins Dam Raise Appraisal Study, John's recent experience with the Cascadia Seismic Zone will facilitate an accurate assessment of the potential risks in this region. He has 32 years of experience leading geotechnical engineering projects for dams and has strong working relationships with the HDR | CCI Team members. He has provided geotechnical engineering, engineering geology and project management for dams, foundations, embankments, excavations, and other major civil works and mining projects. He has planned, directed and performed geotechnical field investigations, laboratory testing programs, instrument installations, geologic mapping, geologic hazards evaluation, construction inspection, and quality assurance testing. He has managed multi-disciplined teams performing engineering evaluations and designs, preparing design drawings and specifications, and providing engineering services during construction.

Select Project Experience

Scoggins Dam Raise Appraisal Study, Clean Water Services, Washington Co., OR. Geotechnical Engineering Lead managing field investigations, engineering evaluations, conceptual-level designs, cost estimates and construction schedules for dam raise alternatives to address dam safety concerns and secure additional water supplies for future needs within the Tualatin Basin. The existing Scoggins dam is a 151-foot-high, 2700-foot-long, zoned earthfill embankment. Alternatives address dam safety issues related to the soft foundation soils and earthquake loads associated with a magnitude 9 subduction zone earthquake, while raising the reservoir surface elevation 40 feet. Alternatives include zoned earthfill, earthfill/rockfill, and RCC dams.

Creekside Irrigation Water Reservoir; Cow Creek Band, Umpqua Indian, Tribe Canyonville, OR. Project Manager managing a multi-discipline team performing the geologic mapping, geotechnical field investigations, laboratory testing, engineering evaluation, and preparation of final design plans and construction specifications for two zoned earthfill/rockfill embankment dams reaching 100 feet high and 700-feet-long. Developed designs for embankments, emergency spillway, outlet works, and instrumentation. Provided engineering services during construction of the facility.

Hidden Dam Seepage Study;USACE, Sacramento District, Madera, CA. John led the characterization of foundation discontinuities to assess seepage concerns at the rolled, zoned earthfill embankment dam. Seepage was first documented shortly after first filling of the reservoir and instrumentation indicated foundation uplift pressures significantly higher than estimated during the design. Several predominant joint sets were identified that intersect the foundation at high angles and transverse to the dam axis. The results of a 3-D stereonet analyses indicated several intersections of joint sets, oriented transverse to the dam, that were likely the pervious pathways for the observed seepage and unusual uplift pressures in the foundation.

Santa Ana Detention Dam Modifications, US Bureau of Reclamation, Sandoval County, NM. Project Manager managing a multi-discipline team performing engineering evaluations and design and preparing final plans and construction

specifications for modifications to the existing 20-foot-high, 6,235-foot-long, homogeneous main embankment dam that was breached following near failure (piping and internal erosion of the foundation) during a flood event in July 1990. In addition to embankment modifications, the design includes replacement of the principal outlet works, a new RCC emergency spillway, and a lowered embankment section to act as a fuseplug. Engineering evaluations included stability and seepage analysis of the embankment with an upstream cutoff to control exit gradients and piping potential.

Jerry Creek Reservoir No. 2 – Ute Water Conservancy District, Collbran, Colorado. Project Manager managing the geologic studies, geotechnical field investigations, laboratory testing, feasibility level geotechnical, hydrologic and hydraulic analyses, feasibility level design and construction cost estimates for the feasibility level design of spillway modifications for enlargement of the existing Jerry Creek Reservoir No. 2, a 135-foot-high, Class I, earth embankment dam.

Gurley Reservoir Dam – Farmers Water Development Company, San Miguel County, Colorado. Project Manager managing the field investigations, laboratory testing, feasibility level geotechnical, hydrologic and hydraulic analyses, feasibility level design and construction cost estimates for the proposed replacement of a portion of the existing embankment dam with a new RCC dam section that would include a new spillway and a new mid-level outlet works. Modifications would increase reservoir storage and outlet discharge capacity at the existing 87-foot-high embankment dam.

Kirkendall Dam and Hunter Reservoir – Ute Water Conservancy District, Mesa County, Colorado. Project Manager managing the geologic studies, geotechnical field investigations, laboratory testing, engineering evaluations, preliminary and final designs to add a new service spillway and raise the existing embankment to a maximum height of 39 feet. The proposed project is complicated by difficult access and a remote location above elevation 10,000 feet.

Rueter Hess Dam and Reservoir – Parker Water & Sanitation District, Douglas County, Colorado. Task Lead responsible for developing, coordinating, and performing geological mapping, geotechnical field investigations, laboratory testing, engineering evaluations and final designs for the 145-foot-high zoned earthfill dam. Design included foundation shear keys to address liquefaction in alluvial foundation soils and embankment buttresses to address residual shear strengths in the weak clay shale foundation.

Sulphur Gulch Dam Feasibility Study – Denver Water, Mesa County, Colorado. Geotechnical Engineer responsible for geologic studies, geotechnical field investigations, laboratory testing, feasibility level designs and cost estimates for the proposed 165-foot-high earth dam on Sulphur Gulch. Dam would impound approximately 16,000 acre-feet of water and is intended to provide additional stream flows in the Colorado River for endangered fish species. Four alternative dam types were evaluated including earthfill, earth/rockfill, concrete-faced rockfill and roller-compacted concrete (RCC). A zoned earthen embankment dam was the selected preferred dam type for feasibility design. However, comparative analyses suggest that either a RCC or combined RCC/earthfill dam may also be cost effective.

Brian Bartle, P.E.

Pipeline Design

Education
Bachelor of Arts, Civil Engineering, Carroll College, Helena MT

Professional Registrations
Professional Engineer – Civil, Oregon, No. 86557PE

Professional Engineer, Washington, No. 41776

Professional Affiliations
American Society of Civil Engineers (ASCE), Associate Member, 2001-2002

American Water Works Association, Member, 2001-Present

American Water Works Association, Pacific Northwest Section, Young Professionals Committee Vice Chair, 2004-2007

HDR Tenure
6 Years

Industry Tenure
13 Years

Professional Experience

Brian's engineering experience comprises a variety of water and wastewater infrastructure projects that include system modeling, and design of large-diameter water transmission lines, water and sewer piping networks in congested urban corridors, pumping stations, and civil site improvements. Brian has served both as a design engineer and project manager on numerous projects, including the design of 16,000LF of 36-inch-diameter steel waterline in Anacortes, Washington that included a horizontal-directional-drill crossing of the Skagit River. In addition to developing the design, Brian completed all the permit applications and easement packages as well. He has also served as a design engineer on the largest rural water distribution system in the U.S., the Oglala Sioux Rural Water System in South Dakota. Brian has completed nearly 800,000LF of water, sewer, and storm pipeline projects.

Select Project Experience

Replacement of Water Transmission Line 2, Phase 8B, City of Everett, WA. HDR provided engineering services for the replacement of Water Transmission Line No. 2, Phase 8B. This project was part of Everett's larger goal to have the entire transmission line replaced by 2024. Brian was the project engineer responsible for design documents for the approximately 5,300LF of 48-inch-diameter steel transmission line replacement along TL2s current alignment from South Lake Stevens Road to Williams Road in Everett.

Transmission Line No. 5 Pile Replacement, City of Everett, WA. Project Engineer. Based upon field reconnaissance by the City and the HDR team, there was evidence of significant slope instability under the exposed pipeline and of pile lateral movement and deformation affecting at least four of the pile bents at the eastern end of the 51-inch-diameter pipeline crossing. HDR investigated the pipeline crossing foundation conditions and pile supports and made a recommendation that rather than trying to repair the pile bents, the approximately 500LF pipeline segment be realigned so that the pipeline could be moved and securely buried in a trench in the adjacent roadway.

Waterline Replacement Project Segment 5 and 6, Anacortes, WA. Project Engineer. Brian assisted in the design, specifications, permitting, easement acquisition, client and sub-coordination, and project management. This project involved the design of 16,600LF of 36-inch welded steel pipe. From this 1,500LF was installed via HDD to cross the Skagit River.

Rural Water Supply System, Oglala Sioux Tribe, SD. Design Engineer for the largest rural water system in the US. Brian modeled more than 150 scenarios using WaterCAD and KY Surge for the design of 360,000LF of pipe. Modeling led to recommendations to improve core pipeline by reducing the number of pump stations and reservoirs. Brian assisted with preparation of bid documents and estimates on several phases of the project, including over 20 miles of 24-inch steel waterline, a 9.5MGD pump station, and both buried and elevated reservoirs. Brian created an O&M manual for the OSRWSS pipeline system. Operating a pipeline was new to the client. The O&M manual documented procedures for items such as valve exercise, appurtenance maintenance, drainage procedures, and interties to other systems.

Transmission Lines 2 and 3 Replacement, Phase 6, City of Everett, WA. Project Engineer. Brian developed the HDD design alternative for an existing elevated pipeline

design. This would have been a dual 48-inch pipeline system of 4,800LF each.

Elwha Fish Hatchery, Lower Elwha Tribe, Port Angeles, WA. Project Engineer. Brian was responsible for designing 6,500LF of a 36-inch raw water transmission pipeline (PVC, HDPE, Ductile Iron, and Steel options). Designed a temporary septic tank system for the hatchery, and assisted with hatchery hydraulic calculations.

Nevitt Road Waterline Extension, Skagit County, Burlington, WA. Project Engineer. This major mobility and safety improvement corridor project widens SR 20 with an additional two lanes and realigns other major arterial streets within the City of Burlington. HDR's work was completed ahead of schedule and under budget. Brian designed approximately 1,500LF of 12-inch watermain to coincide with the roadway revisions.

Nevitt Road Improvement Project, City of Burlington, WA. Project Engineer. This major mobility and safety improvement corridor project widens SR 20 with an additional two lanes and realigns other major arterial streets. HDR's work was completed ahead of schedule and under budget. Brian re-routed approximately 1,000LF of forcemain and added 250LF of gravity sewer main.

244th Watermain Extension, Main to NE 8th Street, Sammamish Plateau Water & Sewer District, WA. Project Engineer. Brian conducted the design for 1,800 LF of new ductile iron waterline and 4,500 LF of appurtenance relocation along an existing waterline. The new waterline included both a buried portion and an aerial crossing suspended beneath a bridge through wetlands. In addition to the waterline work, an existing sewer forcemain was rerouted onto the bridge.

Willamette Supply Routing Study, Tualatin Valley Water District and City of Hillsboro, OR. Project Engineer. Brian provided preliminary design, coordination, and cost estimating. HDR and Jacobs Associates worked closely with TVWD to evaluate the feasibility of collocating a 72-inch water supply pipeline in a proposed Washington County Road project that will extend SW 124th Avenue approximately 2 miles between Tualatin Sherwood road and Tonquin Road. The project identified and assessed the viability of potential pipeline routes between the Willamette River Water Treatment Plant in Wilsonville and Beef Bend Road near King City.

Aurora Corridor Improvements (North 165th Street to North 205th Street), City of Shoreline, WA. Project Engineer. HDR was selected for project management, preliminary and final design, and construction management to enhance and widen the remaining two miles of Aurora Avenue North from N 165th Street to N 205th Street which had yet to be updated in the City of Shoreline's strategic plan to upgrade this transportation corridor. This $105 million project provides bus transit facilities, traffic congestion relief, increased safety for pedestrians and drivers, and enhanced economic development for the community. Brian served as the utility lead and coordinated the water and sewer utility work for the 165th to 185th portion of the project.

130th Avenue NE Asbestos Cement Water Main Replacement, Woodinville Water District, WA. Project Manager. This project provides a crucial upgrade to the District to increase fire flows to the nearby high school, and consists of replacing 2,800 linear feet of 6 and 8-inch asbestos-cement waterline with a new 8-inch ductile iron waterline. HDR provided services for surveying, mapping, engineering design, plan and specification preparation, permit acquisitions, bidding assistance, and construction administration.

Ross William Boulanger
Technical Advisor

Department of Civil & Environmental Engineering,
University of California, Davis

Ross is a geotechnical earthquake engineering professor at U.C. Davis where he directs an internationally renowned center that houses the largest geotechnical centrifuge in the U.S., which is used for static and dynamic testing of soil and soil-structure models. His emphasis is on liquefaction and its remediation, seismic soil-pile-structure interaction, and seismic performance of earth dams and levees. His lab will independently test the samples to confirm the lab findings.

Education
Ph.D. Geotechnical Engineering, University of California, Berkeley, CA
M.S. Geotechnical Engineering, University of California, Berkeley, CA
B.A.Sc. Civil Engineering, University of British Columbia, Vancouver, B. C., Canada

Recent Consulting Assignments
U.S. Department of the Interior, Bureau of Reclamation. Member, Consulting Review Board, **Scoggins Dam**, Tualatin Project, OR

Shimmick\FCC\Impregilo Joint Venture. Member, Technical Advisory Panel for review of design and construction of the main span bridge and approach bridges of the **Gerald Desmond Bridge Project**, Port of Long Beach, Los Angeles, CA

Los Angeles Department of Water and Power. Member, Technical Review and Advisory Panel, **Headworks Reservoir Project**, Los Angeles, CA

California Department of Water Resources, Division of Engineering. Technical support for **seismic evaluation of B. F. Sisk Dam**, CA

U.S. Army Corps of Engineers. Technical Specialist for review of **seismic evaluations for Success Dam**, CA

URS Corporation. Technical review of seismic evaluations for Gatun Dam, Panama

GEI Consultants, Inc. Member of Technical Expert Panel for review of **Delta Seismic Design studies for California Department of Water Resources**, CA

U.S. Army Corps of Engineers. Technical Panelist for review of **seismic evaluations for Isabella Dam**, CA

Awards
Fellow, American Society of Civil Engineers (2012)
Norman Medal, American Society of Civil Engineers (ASCE) (2006)
Outstanding Paper Award, United States Society on Dams (USSD), 25th Annual Conference (2005)

EXHIBIT C

Walter L. Huber Civil Engineering Research Prize, ASCE (2002)
Shamsher Prakash Research Award, SP Foundation (2001)
Arthur Casagrande Professional Development Award, ASCE (1998)
Distinguished Alumni Award, University College of the Cariboo, BC, Canada (1998)
National Science Foundation CAREER Award (1995)

Professional History

Registered Professional Civil Engineer in the State of California (since June 1992)
Director, Center for Geotechnical Modeling, Department of Civil and Environmental Engineering, University of California, Davis, CA (2009 - present)
Professor (2002 - present), Vice-Chair (1998 - 2001), Associate Professor (1998 - 2002) and Assistant Professor (1992 - 1998), Department of Civil and Environmental Engineering, UC Davis, CA
Senior Staff Engineer, Woodward-Clyde Consultants, Oakland, CA (1990 - 1992)
Lecturer, University of California, Berkeley, CA (January 1992 - May 1992)
Lecturer, University of California, Davis, CA (September 1991 - December 1991)
Staff Engineer, Woodward-Clyde Consultants, Oakland, CA (May 1987 - August 1987)

Yousef Bozorgnia, Ph.D., P.E., F.ASCE*
Technical Advisor

Department of Civil Engineering
University of California, Berkeley

Yousef is Executive Director of the Pacific Earthquake Engineering Research Center (PEER) at U.C. Berkeley. He is a recognized authority on earthquake hazards in the U.S. and internationally. He brings research results from the most recent earthquakes in Japan and Chile, which will inform the evaluation of CSZ hazards, and thus the design solutions.

PROFESSIONAL LICENSES AND REGISTRATION

- Registered Professional Civil Engineer (PE) in the State of California.

SELECTED MEMBERSHIP

- *Fellow*, American Society of Civil Engineers (ASCE), 1998-present.
- *National Executive Committee*, ASCE *Technical Council on Lifelines Earthquake Engineering (TCLEE): Member* of Executive Committee 2008-2012; *Chair* of Executive Committee 2010-2011; *Member* of Awards Committee 2012-2013.
- Member, *Commission on Earthquake Hazard, Risk and Strong Ground Motion*, International Association of Seismology and Physics of the Earth's Interior (IASPEI), 2007-present.
- Member, *Advisory Committee, California Integrated Seismic Network (CISN)*, 2007-present
- Member, State of *California Strong-Motion Instrumentation Program*, Earthquake Ground Response Sub-committee, 2004-2012.
- Associate Editor, *Bulletin of Seismological Society of America (BSSA)*, 2007-2010

SELECTED PUBLICATIONS (list of 100 other publications available upon request)

- *Book*: "***Earthquake Engineering: From Engineering Seismology to Performance- Based Engineering***", Yousef Bozorgnia and Vitelmo V. Bertero (Coordinating Editors). CRC Press, June 2004, p.1150.
- "***Engineering characterization of ground motion***", Y.Bozorgnia and K.W. Campbell, **Book Chapter 5**, *Earthquake Engineering: From Engineering Seismology to Performance-Based Engineering*, Bozorgnia and Bertero (Eds.), CRC Press, June 2004.
- ***"Early years of earthquake engineering and its modern goal"***, by V.V.Bertero and Y.Bozorgnia, **Book Chapter 1**, *Earthquake Engineering: From Engineering Seismology to Performance-Based Engineering*, Bozorgnia and Bertero (Eds.), CRC Press, June 2004.

EXHIBIT C

- "*NGA-West2 Campbell-Bozorgnia ground motion model for the horizontal components of PGA, PGV, and 5%-damped elastic pseudo-acceleration response spectra for periods ranging from 0.01 to 10 sec,*" by Kenneth W. Campbell and Yousef Bozorgnia, *Report PEER 2013/06*, Pacific Earthquake Engineering Research Center (PEER), University of California, Berkeley, May 2013.
- "Implications of the M_w9.0 Tohoku-Oki earthquake for ground motion scaling with source, path, and site parameters,"by Jonathan Stewart, Saburoh Midorikawa, Robert Graves, Khatareh Khodaverdi, Tadahiro Kishida, Hiroyuki Miura, Yousef Bozorgnia and Kenneth Campbell, Journal of *Earthquake Spectra*, Vol. **29**(S1), 1-22, March 2013.
- "Comparison of ground motion attributes from 2011 Tohoku-Oki mainshock and two subsequent events," by Tadahiro Kishida1, Jonathan Stewart, Robert Graves, Saburoh Midorikawa, Hiroyuki Miura, Yousef Bozorgnia, and Kenneth Campbell, Proceedings of the *10th International Conference on Urban Earthquake Engineering*, March 1-2, 2013, Tokyo Institute of Technology, Tokyo, Japan.
- "Performance assessment of tall concrete core-wall building designed using two alternative approaches", by T.Y. Yang, J.P. Moehle, Y. Bozorgnia, F. Zareian, and J.W. Wallace, *Journal of Earthquake Engineering & Structural Dynamics*, Vol. **41**, 1515-1531, 2012.

CHRISTOPHER I. CARPENTER, P.E.

Seismic Hazards

Education

2001 B.S. in Civil Engineering, Oregon State University, Corvallis, Oregon
2002 M.S. in Geotechnical Engineering, University of California, Berkeley, California

Registration

Civil Engineer – Oregon, Washington, California

Societies

Member, American Society of Civil Engineers
Member, U.C. Berkeley GeoEngineering Society

Honors

2012 Vice Chair, Geotechnical Engineering Group, ASCE Oregon Section

Professional Career

2002-present Cornforth Consultants, Inc., Portland, Oregon; Associate Engineer

Relevant Experience

Chris' 11-year career has been focused on earthquake engineering in Oregon, and has worked on various dam seismic studies that utilized the Pacific Northwest's constantly evolving earthquake criteria. He participated in the first phase of this project, calculating peak bedrock accelerations for return periods of 1,000; 2,500; and 5,000 years. He has particular expertise in earthquake engineering and has worked on various dam seismic studies dealing with the constantly evolving earthquake criteria in the Pacific Northwest. This level of expertise will assist with the development of right-sized solutions.

Big Creek Dams 2012 Seismic Evaluation, Newport, Oregon. Project Earthquake Engineer for a seismic safety evaluation for Big Creek Dams located near Newport, Oregon. Work tasks included reviewing available information regarding the regional seismicity and potential ground motions at the dam sites. Based on the review of regional seismicity, principal sources were identified that contribute to the seismic hazard based on deterministic and probabilistic methods. Calculated peak bedrock accelerations for return periods of 1,000; 2,500; and 5,000 years. Developed target acceleration response spectra for the primary deterministic seismic sources that contribute to the hazard i.e. crustal and subduction interface and intraslab events. Acceleration time histories for bedrock were selected and scaled to match the target spectra for each deterministic source.

Mt. Tabor Dam No. 5 Seismic Analyses, Portland, Oregon. Seismic hazards were reviewed in 2006 as part of the FERC Part 12 Dam Safety Inspection. The study revealed the need to establish a current understanding of the seismic hazards applicable to the Mt. Tabor facilities. As Project Earthquake Engineer, Mr. Carpenter performed a site-specific seismic hazard evaluation for the project and developed recommendations for ground motions to be utilized for deformation analyses at Mt. Tabor Dam No. 5. He completed seismic crest deformation study for the embankment section at Mt. Tabor Dam No. 5. These

evaluations included performing deformation analyses using procedures developed by Makdisi and Seed in 1978 and a modified Newmark displacement analysis.

Fern Ridge Dam – Phase 2A Seismic Stability, Eugene, Oregon. Project Earthquake Engineer for the U.S. Army Corps of Engineers Phase 2A seismic stability evaluation of an approximately one-mile long embankment dam. Analyzed existing subsurface information and Standard Penetration Test and CPT data to evaluate the liquefaction susceptibility of the foundation soils. In order to support the liquefaction susceptibility evaluation, grain-size analyses were performed and a finite-element model was developed to evaluate the in-situ shear stress.

John Day Dam Seismic Safety Review and Phase I Seismic Stability Evaluation, Columbia River, Washington. Project Earthquake Engineer for a Seismic Safety Review (SSR) and subsequent Phase I seismic evaluation of the Corps of Engineers' John Day Dam. Mr. Carpenter developed site response spectra for simplified analysis of concrete gravity sections, and selected acceleration time histories for embankment deformation and structural analyses. Responsible for geotechnical explorations and instrumentation of embankment dam, completed liquefaction evaluation based on results of new borings, and performed static and seismic stability analyses. Seismic stability analyses were performed using post-liquefaction soil strengths.

Mt. Tabor Dam Potential Failure Mode Analysis, Portland, Oregon. As Project Earthquake Engineer, Mr. Carpenter participated in the Potential Failure Mode Analysis (PFMA) study as part of the FERC Part 12 dam safety review for three reservoir dam embankments located on Mt Tabor in Portland, Oregon. The evaluation consisted of looking at potential failure modes due to storm events and flooding, structural or mechanical failures, seismic events, and slope stability. Compiled all notes and comments and prepared summary report and key findings that resulted from the PFMA session.

Scappoose Reservoir Liquefaction Evaluation, Scappoose, Oregon. Project Engineer in charge of coordination and inspection of 275 vibro-compacted stone columns. Stone columns were constructed as part of ground improvement at the Scappoose Water Treatment Facility for a new 2 MG reservoir. Subsurface investigations revealed that in-place soils may liquefy under seismic ground motions, causing lateral spread and distress to any structures. Stone columns were installed to improve ground conditions and reduce liquefaction potential. The contractor used a dry bottom feed vibro-replacement techniques to construct 275 3-foot diameter stone columns on 8- and 9-foot spacing across the footprint of the tank.

Ashton Dam Seepage Evaluation, Ashton, Idaho. Ashton Dam is a 60-foot high earth and rockfill dam owned and operated by PacifiCorp. Mr. Carpenter was Project Eathquake Engineer responsible for subsurface exploration, insitu testing, and instrument installation and maintenance to assist with seepage and sinkhole evaluations. Installed instrumentation including piezometers and settlement plates to be monitored remotely with data acquisition system. Conducted extensive insitu permeability testing in embankment and foundation to provide data for seepage analyses and groundwater studies. Conducted laboratory testing to determine soil and rock material properties. Performed slope stability studies and embankment design for mitigation measures including stability berms and seepage blankets. Assisted with the preparation of the geotechnical analysis report.

HDR ONE COMPANY | *Many Solutions*

John E. Charlton, P.G.*

Soils Characterization Lead

Education

Master of Science, Geological & Related Sciences, Mississippi State University

Master of Business Admin, Business Administration, Mississippi State University,

Bachelor of Arts, History, Florida State University

Professional Registrations

Registered Professional Geologist, South Carolina, United States, No. 2371

Registered Professional Geologist, Wyoming, United States, No. 3780

Professional Affiliations

Association of Environmental and Engineering Geologists (AEG), Member

Association of State Dam Safety Officials, Member

HDR Tenure

2 Years

Industry Tenure

21 Years

* = *Professional Geologist in another state.*

Professional Experience

Accurate soils characterization will be foundational to an effective solution. John's 21 years with and skill for reviewing regional geologic data for site seismic hazard assessment will be key. He is also skilled with inspecting dam construction of soil, rock fill, and RCC dam sections. He will provide a reliable soils characterization, a role he has held on more than 100 projects including the Rose Hill Dam Reconstruction (SD) and the Bear Creek Dam Rehabilitation (AL)

Select Project Experience

Bear Creek Dam Rehabilitation - Tennessee Valley Authority, Hodges, AL. Senior Geologist. Performed site investigations, foundation inspection, approval and geologic mapping, dewatering system design, and construction oversight for rehabilitation of a high hazard embankment built on karst foundation. Rehabilitation consisted of construction of a backup Roller Compacted Concrete (RCC) structure to prevent loss of the dam during PMF overtopping, and installation of a composite seepage barrier consisting of a two line grout curtain with cutoff wall panels at select locations. Construction cost $31M. Exploration techniques included inclined rock coring, borehole and surface geophysical surveys, and packer testing. John developed a 3D geologic model of the foundation to estimate extent and locations of solution features. The model was used to design a composite grout curtain/cutoff wall seepage barrier for which John performed design and construction oversight. Treatment of the foundation under the varying and challenging conditions employed continuous, 'real time' evaluation of the geologic conditions encountered during each phase of the foundation treatment process to adjust the scope and design of the next step of the rehabilitation. In addition John performed RCC aggregate availability and suitability studies for the RCC mix design.

Rose Hill Dam Reconstruction, South Dakota Game, Fish & Parks. Engineering Geologist. John developed a site exploration program and performed field investigation oversight for an embankment dam that failed due to overtopping. John is developing the site geologic and geotechnical model for the design portion of the project.

Lewisburg Dam - Lewisburg Water and Sewer, Lewisburg, TN. Geologist. Performed site geologic mapping in the abutments of the concrete gravity run of the river dam founded on limestone that was experiencing seepage through one of the abutments. He identified the structural features within the limestone along which karst features existed and identified the seepage paths. The information was used to develop a preliminary dam stability assessment for the client.

Old Columbia Dam - Columbia Power and Water Service, Columbia, TN. Senior Geologist. Performed site geologic mapping and drilling oversight for the concrete gravity run of the river dam founded on limestone. The site investigation was used to identify the fracture sets and stratigraphic section along which karst develop is predominant, and was able to predict minimal need for foundation improvement prior to anchoring. The investigation was used to reduce contractor uncertainty during the bidding process, reducing bid amounts.

Saluda Dam Remediation - South Carolina Electric & Gas Company, Columbia, SC. Geologist. John served as geologist from initial to final construction activities at the Saluda

Dam Remediation which consisted of construction of a 8,000 foot long 240 foot high remedial berm composed of 1.3 million cubic yards of RCC and 3.5 million cubic yards of rock fill section. Construction cost $275M.

Responsible for preparation of geologic maps for regional geologic interpretation and foundation engineering purposes, geologic mapping of slopes and quarry walls, and analysis of geologic data for slope stability assessment. He presented results of the geologic studies to the Federal Energy Regulatory Commission (FERC) and the SCE&G Board of Consultants. John performed construction inspection for foundation approval and dental concrete placement for the 1.3 million cubic yard RCC section foundation, foundation inspection and approval for the rock fill sections, and performed construction oversight and inspection for placement of the RCC and rock fill sections. In addition, he provided design and installation oversight for a dewatering system consisting of over 1,000 soil and rock dewatering wells, and installed over 100 vibrating wire piezometers and inclinometers as part of the stability monitoring program for the existing 190 ft. high, 8,000 ft. long earthen embankment dam.

Conceptual Design of a Nuclear Power Plant Cooling Water Tunnel. Geologist. Researched existing literature and site investigation data to develop a preliminary report of geologic conditions and hazards for the conceptual design of a cooling water tunnel and offshore intake structure for a proposed nuclear power plant as part of the conceptual design team.

Lake Palo Pinto Storage Restoration Project-Turkey Peak Reservoir, TX. Geologist. John assisted in developing a site exploration program and performed field oversight for a proposed composite RCC and embankment dam site to address foundation stability and seepage potential.

Logan Northern Canal EIS, USDA Natural Resources Conservation Service. NRCS, through the Emergency Watershed Protection Program (EWPP), is providing technical and financial assistance to Cache County for the rehabilitation of the northern canal that was rendered inoperable by a slope collapse. The EIS study will include an evaluation of five build alternatives, as well as a no-build alternative. HDR's services also include preparing and implementing the Public Participation Plan.

WWDC Austin and Wall Canals and Wall Reservoir Rehabilitation Project Level II Study, No. 10-15 (Sunrise), Bridger, WY. Senior Geologist. Responsible for completing a geotechnical and hydrologic investigation of Wall Reservoir to identify the cause of the reservoir seepage and to review other areas of dam deficiency.

Bell Bend Nuclear Power Plant, Final Safety Analysis Report - PPL, Berwick, Pennsylvania. Geologist. Worked with the project team to address acceptance review comments from the NRC relating to the submittal of the FSAR. My responsibilities included researching regional geology and revising sections of Chapter 2.5 to comply with the NRC requirements.

Taum Sauk Plant Upper Reservoir Piezometer Installation- Ameren Union Electric Company, Reynolds County, MO. Geologist. Performed quality control for the installation of vibrating wire piezometers in the gallery and downstream of a newly constructed 2.8 million cubic yard RCC dam.

Callaway Nuclear Power Plant, Unit 2, Final Safety Analysis Report - AmerenUE, St Louis, MO. Geologist. Worked with the project team to address acceptance review comments from the NRC relating to submittal of the FSAR. My responsibilities included review and comment resolution for Section 2.5.

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Leandra L. Cleveland

Environmental Permitting

Education

B.S., Environmental Sciences/Studies, Washington State University at Pullman

Professional Registrations

Professional Wetland Scientist, No 1883

Professional Affiliations

National Association of Environmental Professionals, Portland, Member, 2000-Present

Society of Wetland Scientists, Pacific Northwest, Member, 2000-Present

American Planning Association, SW Washington, Member, 2006-Present

American Planning Association, SW Washington, Communications Officer, 2006-2007

American Planning Association, SW Washington, Secretary, 2007-2009

Society of Wetland Scientists, Pacific Northwest, Conference Organizing Committee, 2007-Present

Society of Wetland Scientists, Pacific Northwest, Executive Vice President, 2007-2009

HDR Tenure

8 Years

Industry Tenure

12 Years

Professional Experience

Leandra is a biologist/planner with experience in conducting wetland delineations and function assessments, planning wetland and habitat mitigation/enhancement plans, mitigation monitoring, environmental compliance permitting, and preparing NEPA/SEPA documents. She has assisted understands the complexities of aquatic and terrestrial ecosystems as well as state and federal permitting and regulatory requirements. Her expertise brings an effective framework to support the natural resource goals of the project design and effectively and effectively navigate the permitting process.

Select Project Experience

Gold Ray Dam Removal, Jackson County, OR. Permitting Task Lead. Jackson County, through a grant from NMFS, is proposing to remove the Gold Ray Dam for safety concerns and as part of ongoing restoration efforts to restore fish passage in the Rogue River Basin. HDR is preparing the EA, BA, wetland delineation, hydraulic and sediment modeling, and federal, state, and local permits for the project. Leandra is responsible for the wetland field investigations for the project and overseeing development of the BA. She is a primary author of the EA for NMFS and is developing and leading the permitting effort, including extensive agency coordination. Permits for the project include Clean Water Act Section 404/401 permit, Oregon Removal Fill Permit, In Water Work Variance, ESA Section 7 formal consultation, and Jackson County floodplain permit.

Beaverton Creek South Culvert Design and Permitting, Clean Water Services, Hillsboro, OR. Permitting Task Lead. Project consisted of design and construction to replace three box culverts to reduce localized flooding and to remove known fish barriers for passage to upstream habitat. Project required close coordination with nearby landowners, 3rd-party consultants, and utilities. Leandra coordinated with the project engineers to minimize stream impacts resulting from the replacement culverts. She also prepared the Clean Water Act, Removal/Fill, and Washington County Land Use permits for the project.

Bateman Creek Bridge Replacement & Fish Passage, Oregon Department of Transportation, Balm Grove, OR. Natural Resources Task Lead. As part of the Governor's initiative, ODOT proposed to replace the existing Bateman Creek Bridge to reestablish fish passage between Bateman and Gales Creeks. Leandra completed the permitting acquisition for this fish passage/creek restoration project. Necessary clearances include Section 404/ Removal-Fill, local land use, Section 106, and Endangered Species Act Section 7 Consultation.

Clean Water Services, 87th Avenue/Canyon Road, OR. Permitting. Clean Water Services maintains a sewer line serving a small number of residences along SW 87th Avenue and SW Canyon Lane. Erosion of the streambank and channel has exposed the sewer line. HDR provided engineering services to repair the pipeline corridor in a manner that would prevent the stream from eroding the pipe trench in the future, as well as benefits the stream condition and surrounding vegetation.

Fanno Creek Reconstruction/Rehabilitation, Clean Water Services, OR. Permitting. The District hired HDR to provide hydraulic analysis and design services for the enhancement of Fanno Creek between Hwy 99 and Hall Blvd. The project re-meandered a previously straightened reach and stabilized several highly eroding banks to improve channel function,

floodplain connectivity and aquatic habitat. The project also created new wetlands, integrated backwater and tributaries to Fanno Creek, and replaced invasive vegetation with native plant communities.

Rock Creek Fish Passage, City of Lincoln City, OR. HDR assisted the ODFW to improve access for Chinook salmon, steelhead, coho, cutthroat trout, and lamprey to 45 miles of habitat upstream of the hatchery's diversion dam. Project resulted in creating sorting facilities that segregate hatchery fish from the run of returning adult salmon, so hatchery fish are hauled downstream and recycled through the fishery. As a result, ODFW met current and future management goals related to the Native Fish Conservation Policy.

Tanasbrook Pond & Bronson Creek Enhancement, Clean Water Services, OR. Permitting. The goals of the project include improving the water quality of the existing ponds while at the same time, providing upstream fish passage and maintaining the historic recreation and aesthetic functions of the ponds. Project tasks include development of a dewatering plan, assessment of pond ecology, geotechnical investigation, hydrologic and hydraulic modeling, development of a water budget and development of final project documents, contract specifications, and engineer's cost estimate.

Titan Maritime, New Carissa Wreckage Removal, Coos Bay, OR. Project Manager. HDR prepared the environmental permits for the removal of the New Carissa shipwreck off the Oregon coast. The wreck removal involved both land and ocean operations near critical nesting habitat for snowy plovers and the Dunes National Recreation Area. Leandra was the project manager overseeing the preparation of the Clean Water Act, Oregon Removal/Fill, Endangered Species Act Section 7, Section 106 Concurrence, Department of State Lands Easement, and BLM Right of Way permits for the project.

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Joseph P. Gaby, P.E., S.E.

Structural Engineer

Education

Master of Science, Mechanical Engineering (Solid Mechanics), University of Missouri Rolla

Certificate, Civil/Structural (Infrastructure Renewal), University of Missouri Rolla

Master of Science, Civil Engineering (Geotechnical), University of Colorado Denver

Master of Science, Civil Engineering (Structural), University of Colorado Denver

Bachelor of Science, Civil Engineering (Water Resources), University of Colorado Denver

Associate of Applied Science, Architectural Drafting (Architectural/Structural Drafting), Denver Institute of Technology

Bachelor of Arts, Psychology (Psychology/Business), Pace University

Professional Registrations

Professional Engineer, California, No. C-61529

Professional Engineer, Alaska, No. C-11738

Professional Engineer, British Columbia, Canada, No. 154456

Professional Engineer, Colorado, No. PE 32529

Structural Engineer, Idaho, No. 12089

Professional Engineer, Montana, No. 16617

Structural Engineer, Oregon, No. 75441PE

Structural Engineer, Utah, No. 4807295-2203

Professional Engineer, Washington, No. 41625

Structural Engineer, Wyoming, No. 11705

Structural Engineering Certification Board (SECB), US National Registration, No. 1549-0705

LEED Green Associate, US National Registration, No. 10215271

Professional Experience

Pete has 22 years of providing seismic/structural engineering services for dams and dam-related structures. He has also performed finite element modeling for the design of appurtenances for new construction, rehabilitation, upgrading, and strengthening of dams. His projects include Willow Creek dam Gate Tower Structural Evaluation in Colorado and the San Vicente Dam Raise in California, which involved RCC and was the highest dam raise at that time in the U.S. Pete's skill with dam structural analysis and design will facilitate development of practical designs and accurate cost estimates.

Select Project Experience

Newport Water Treatment Facility Improvements, City of Newport, OR. Structural Engineer. HDR provided predesign and final design, bid support, and inspection services for the expansion of its water treatment facility. The City currently owns and operates a 4 MGD potable water system that was being upgraded to a new membrane water treatment facility capable of treating 6 mgd (expandable to 10 mgd).The total project budget falls just under $20 million.

North Lake Dam and Reservoir, Trinidad, CO. Structural engineer involved with dam safety modifications to improve seepage, embankment stability, and outlet surging problems.

Willow Creek Dam Gate Tower Investigation and Structural Evaluation, Steamboat Springs, CO. Lead structural engineer for an investigation to determine the structural and seismic integrity of the embankment supported gate tower and base structure with attached conduit. A probabilistic and deterministic site-specific seismic study was completed and used for preparing a 3-D finite element model. The scope included the preparation construction documents for structural strengthening.

Bart Lake Powerhouse and Lake Dorothy Tunnel Outlet Works, Alaska Electric Light & Power, Juneau, AK. Project structural engineer for a 14 MW small hydroelectric project located approximately 25 miles southeast of Juneau, Alaska. Design included thrustblocks and rock anchors, as well as the crotch plate of a 60-inch diameter penstock located in a pumphouse along with a 40-inch free-discharge plunger valve and 60-inch diameter metal-seated butterfly valve. QA/QC for the concrete intake structure and trashrack designs.

Gardena Farms Irrigation District, Gardena Farms Diversion Fish Passage, WA. Lead structural engineer for the design of modifications to an existing irrigation diversion facility. The final design incorporated a sediment wasteway at the entrance to the diversion, multiple sluice gates, a new sediment bypass conduit, and a primary sediment bypass gate incorporated into the existing diversion dam.

Barker Dam Outlet Works Modifications, Nederland, CO. Lead structural engineer for the final design of intake shaft, outlet works, penstock, thrust restraints, retaining walls, masonry pump house building, and a stainless steel fixed-cone dissipation hood. The outlet works was a 120-foot deep, 25-foot diameter vertical shaft constructed in the upper left hard rock abutment from which two 48-inch diameter lake taps using micro-tunneling methods will be installed. Preparation of construction documents.

Professional Affiliations

American Society of Civil Engineers (ASCE), Member, 1990-2013

American Concrete Institute, Member, 1994-2014

American Institute of Steel Construction, Member, 1994-2013

Earthquake Engineering and Research Institute, Member, 2001-2013

Chi Epsilon, National Civil Engineering Honor Society, Member, 2005-2018

Structural Engineers Association, Oregon, Member, 2006-2013

Structural Engineers Association, British Columbia, Member, 2008-2013

Association of State Dam Safety Officials, Member, 2010-2014

HDR Tenure

3 Years

Industry Tenure

22 Years

Korty Diversion Project Tainter Gate Ice Damage Assessment and Gate Structure Stability Analysis, Nebraska Public Power District, Lincoln County, NE. Lead structural engineer for the evaluation and design of repairs for three existing tainter gates damaged by ice pressures. Korty Diversion Dam is located on the South Platte River and has a structural height of about 13 feet and a length of 438 feet. The dam has twenty 20 ft by 6 ft tainter gates and three sluice gates. The repairs were designed for in-the-field procedures allowing the gate structures to remain on their supports. Also, a seismic/structural stability analysis was performed on the existing sluice gate structure for the inclusion of a new gate house and removal of an outdated concrete gate-lifting mechanism.

Los Padres Dam Floating Fish Collector, Carmel Valley, CA. Lead structural engineer for the design of a gravity flow based floating surface collector designed to allow safe passage for downstream migrating smolts and kelts past Los Padres Dam. The collector uses a combination of dewatering screens, a bypass conduit and behavioral guidance system to improve survivable passage over that provided by an existing spillway.

McKay Lake Dam, Westminister, CO. Structural engineer responsible for the design of the appurtenant structures.

Green Peter Dam Radial Gate Analysis, Middle Santiam River, USACE Portland District, OR. Structural engineer to perform quality control on the structural design and modifications for a 45-foot wide by 47-foot high radial gate and to ensure all of the existing gates meet current gate design criteria.

Los Padres Dam Fish Passage Assessment and Design, California American Water, Carmel Valley, CA. Lead structural engineer providing design services for an upstream floating surface collector maintained in place by driven steel pipe piles, an innovative physical guidance truss and pipe conveyance structure, concrete vaults, pipe supports and downstream fish bypass outfall structure. HDR prepared and evaluated alternatives associated with the passage of steelhead over Carmel River's Loss Dam.

Mt. Carmel Spillway Replacement, Cavalier County, ND. In-house consultant for the structural design review (drawings and calculations) for the principal spillway replacement.

New Big Cherry Dam, Big Stone Gap, VA. Structural engineer for the structural, seismic and stability design check for the outlet works tower, spillway, training walls, and discharge structure.

Rueter-Hess Reservoir, Parker, CO. Lead structural engineer on the design team for a $35 million, 196-foot-tall earthen dam for a new water-storage reservoir. Overall responsibilities included the structural and seismic design of a 188-foot tall concrete intake tower (mass concrete structure), 2500-foot long double 80 inch steel pipe lined rigid concrete conduit, and a 3-span (80'-80'-80') access bridge including the substructure. A finite element non-linear analysis was completed using Plaxis to design the tower to conduit connection and to investigate the soil-structure interaction of the tower and dam during a seismic event.

San Vicente Dam Raise, San Diego, CA. Lead structural engineer responsible for the seismic and structural design of the 220-foot outlet works tower and associated crest control building attached upstream to an existing 219-foot high concrete gravity dam to be raised by 117 feet to 336-foot high using RCC. This is the highest dam raise to date in the United States. Additional responsibilities included preparation of structural design memoranda, cost estimating, and preparation of contract plans and specifications. Design also included a concrete gate housing and preliminary cofferdam for the low-level outlet works preceding the tower construction.

Standley Lake Dam Modifications, Westminister, CO. Structural engineer responsible for reviewing the seismic design of the retaining walls and labyrinth spillway base slab and piers. Shop drawing review of all structures.

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Richard W. Hannan, P.E.

Technical Expert

Education

Bachelor of Science, Geology, Oregon State University

Bachelor of Science, Civil Engineering, Oregon State University

Professional Registrations

Professional Engineer - Civil, Oregon, No. 09317PE

HDR Tenure

4 Years

Industry Tenure

41 Years

Professional Experience

With 41 years of geotechnical engineering experience in the Pacific Northwest including 34 years at the Portland District Corps of Engineers, Rich knows the solutions that work best for Oregon's various geological conditions. Skilled with the Corps dam safety program, Rich was the lead engineer for the Evaluation and Seepage Remediation of Fern Ridge Dam (OR), seismic assessment of John Day Dam (OR) as well as repairs to Cougar Dam (OR), which were similar in size and considerations to the Upper and Lower Big Creek Dams. Rich will provide continuity from the investments already made, and will aid in developing in a variety of practical options.

Select Project Experience

Newport Water Treatment Facility Improvements, City of Newport, OR. HDR provided predesign and final design, bid support, and inspection services for the expansion of its water treatment facility. The City currently owns and operates a 4 MGD potable water system that was being upgraded to a new membrane water treatment facility capable of treating 6 mgd (expandable to 10 mgd).The total project budget falls just under $20 million.

Columbia River Basin Levee Periodic Inspection Program, USACE Portland District, OR. Served as inspection Team Leader for 17 of the 28 Periodic Inspections of Levees performed for the Portland District Corps of Engineers including the inspection of The Sandy Drainage District, Peninsula Drainage District No. 2, Peninsula Drainage District No.2 and the Scappoose Drainage District. Rich's duties included preparation of Pre-Inspection and Final Inspection Reports, the geotechnical evaluation of the levees and overall team supervision and report preparation for assigned levees. Rich also developed the Levee Design Criteria Package for the Periodic Inspection Program document. The work required the efforts of highly experienced technical experts familiar with Corps of Engineers levee design, and maintenance policy.

Keizer Levee and River Wall, City of Keizer, OR. Geotechnical Engineer/Technical Lead: Rich developed conceptual design and final design, prepared plans and specifications, and provided technical assistance during construction. The design required the raising of the existing levee, construction of a seepage cutoff wall, and construction of a segment of new levee. This work was required in order for the levee to be FEMA certified for 100 year flood protection.

John Day Dam Seismic Safety Review, USACE Portland District, The Dalles, OR. This project involves the reevaluation of seismic criteria for the site and evaluation of the major structures including navigation lock, and lock gates, spillway and spillway gates, non overflow dam, embankment dams, and powerhouse, and recommendations for future analysis and an estimated cost of recommended studies. The work requires the efforts of highly experienced technical experts familiar with Corps seismic policy. As Project Manager, Rich was responsible for brining the best possible team on board, establishing the ITR Team, producing the Quality Control Plan, and preparing draft and final report.

Loon Lake Storage, Stevens Public Utility District, WA. Senior Geotechnical Engineer. Rich prepared a geologic and seismic report, performed site investigations, surface mapping, performed subsurface explorations for the dam and borrow areas, coordinated sample testing, prepared alternative design and cost estimates. Performed preliminary embankment stability

and seepage analysis, evaluated constructability, and provided preliminary construction specifications recommendations. Plans and Specifications will be provided if the project is approved.

John Day Dam Seismic Evaluation, USACE Portland District, OR. This project involves the re-evaluation of seismic criteria for the site and evaluation of the major structures including navigation lock, and lock gates, spillway and spillway gates, non overflow dam, embankment dams, and powerhouse. Recommendations for future analysis and an estimated cost of recommended studies will be provide to USACE. The work requires the efforts of highly experienced technical experts familiar with Corps seismic policy. As Project Manager, responsible to formulate the best possible team for the technical analysis, establishment the ITR Team, development of the Quality Control Plan and project guide for team members, and preparing draft and final report.

Mill Creek Water Storage Feasibility Study, Stevens Public Utility District. HDR will focus on the feasibility of a previously identified storage project in the Mill Creek drainage basin. HDR will conduct preliminary investigations that will include the following: development of baseline hydrology, site survey (local grid), surfacial geotechnical investigations (test pits), soil gradations, initial sizing of spillway and regulating outlets, feasibility of fish passage, preliminary construction cost estimate and coordination with regulatory agencies.

Marysville Ring Levee, USACE, Sacramento, CA. Provided evaluation and design of levee improvements for the 10 sites along the American River. The work included seepage and slope stability analyses; establishing the need for levee remediation; determining the locations for remediation and develop alternative methods of remediation; construction plans and specifications; Design Documentation Report (DDR); identification of relocations including utility relocations; rights-of-way and temporary construction easement requirements; ECIFP report, and formulated an MCACES cost estimate. HDR prepared a Quality Control Plan (QCP) for this project.

Bonneville Dam Spillway and Stilling Basin, USACE Portland District, OR. HDR examined methods to reconfigure the Bonneville Dam stilling basin and spillway to better pass fish and meet project objectives. The spillway and stilling basin needed repairs due to damage caused by erosion. The services provided in this task order include structural, mechanical, electrical, hydraulic, geological, biological and cost engineering considerations.

Lookout Point Dam Preliminary Phase 1 Seismic Safety Evaluation, USACE Portland District, OR. This project involves a Phase I Seismic Evaluation of the concrete spillway monoliths. The work required the efforts of highly experienced technical experts familiar with Corps seismic policy. As Project Manager, responsible for formulation of the best possible team for the technical analysis, establishment the ITR Team, development of the Quality Control Plan and project guide for team members, and preparing draft and final report.

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Leslie F. Harder Jr., P.E.*

Quality Assurance / Quality Control

Education

Doctor of Philosophy, Civil Engineering, University of California at Berkeley

Master of Science, Civil Engineering, University of California Davis

Bachelor of Science, Civil Engineering, University of California Davis

Professional Registrations

Professional Engineer - Civil, California, No. C 30472

Professional Engineer - Geo Technical, California, No. GE 000378

Professional Affiliations

American Society of Civil Engineers (ASCE), Member

Association of State Dam Safety Officials, Member

ASTM International, Member

Earthquake Engineering and Research Institute, Member

International Society for Soil Mechanics and Geotechnical Engineering, Member

United States Society on Dams (USSD), formerly USCOLD, Member

HDR Tenure

5 Years

Industry Tenure

38 Years

* *Professional Engineer in another state*

Professional Experience

Les's national-level expertise with earth dams and levees will provide guidance and review to ensure that practical solutions are delivered. During his 30-year tenure with California's Department of Water Resources, Les helped to develop the state's levee standards, supervised several seismic stability evaluations, and directed several emergency levee repairs. While working for the U.S. Army Corps of Engineers, Les led several post-earthquake reconnaissance studies of the performance of earth structures. He was part of the National Science Foundation team that studied the performance of levees in the New Orleans area following Hurricane Katrina. In 2008, he was appointed to a team to develop and recommend a new national levee safety program.

Select Project Experience

Anderson Dam Seismic Retrofit Planning and Environmental Consultant Services, Santa Clara Valley Water District, CA. Assisted in the development and preparation of planning study documents, including the Problem Definition Report, Planning Study Report, and CEQA/NEPA documents, as well as permitting. The ultimate outcome of the planning services will be to recommend a preferred alternative to: resolve the seismic deficiencies in the dam embankment from the maximum creditable earthquake; resolve and remediate, if necessary, the outlet works for the potential fault rupture risk from a maximum creditable earthquake; and review and revise, as needed, the Probable Maximum Flood (PMF) and routing study to address possible deficiencies with the spillway.

West Sacramento Flood Control Implementation Design. Providing engineering design services for the design, environmental review and permitting, and preparation of Plans, Specifications and Estimates for the Early Implementation Levee Repair Project for the West Sacramento Levee Improvement Program., which may encompass 13,500 feet of levee improvements, including the construction of seepage barriers and/or relief wells along four reaches of the West Sacramento levee system. This project is part of the West Sacramento Levee Improvement Program and has the objective to improve flood protection for residents and businesses in the community by completing levee repairs and providing a 200-year level of protection that meet federal and USACE requirements and receive accreditation from FEMA for a 100-year level of protection.

West Cathedral Canyon East Levee Certification, Riverside, CA. HDR worked with the Riverside County Flood Control & Water Conservation District to complete the evaluation and certification for the West Cathedral Canyon Channel East Levee (approximately 1.7 miles) to meet FEMA's regulatory requirements as identified in Title 44 of the CFR, Section 65.10 (44 CFR 65.10). The evaluation and certification of levees is based on design criteria (freeboard, closures, embankment protection, embankment and foundation stability, settlement and interior drainage), operation plans and criteria (for closures and interior drainage), maintenance plans and criteria and the actual certification requirements (i.e. as-builts, forms, documentation and data).

The HDR team completed the engineering and geotechnical analyses to address the design criteria as required by 44 CFR 65.10, as well as the O&M and as-built requirements. The certification package was completed and submitted to FEMA.

Levee Certification Reviews, and El Dorado County Restudy, FEMA, NV. The purpose of this Task Order is to assist FEMA Region IX with scoping activities and the production of a Countywide Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) text for Elko County, Nevada. HDR will assist in coordinating and conducting a kickoff meeting with the community representatives to discuss the National Flood Insurance Program and Map Modernization Initiative. Once the Preliminary DFIRMs have been completed, the HDR shall mail copies of the preliminary map panels to affected community for a 30-day comment period. HDR will assist in coordinating and conducting a final meeting with community representatives to discuss the revised maps. HDR will then finalize all maps, incorporating recent Letters of Map Change (LOMCs) and minor refinements identified during the comment periods that were not previously incorporated. Once finalized, digital files in the format required by FEMA will be prepared and final deliverables will be submitted to the Map Service Center (MSC).

Levee Inspection TSO 001 JV, Seattle. As part of a joint venture team, HDR performed levee safety Periodic Inspection (PI). The purpose of PIs is to verify proper operation and maintenance, evaluate operational adequacy and structural stability, review design criteria to identify changes, identify features to monitor over time, and improve communication of the overall condition. Inspections included 22 Federal and 10 Non-Federal Levee Systems totaling approximately 55 miles of Washington, Montana and Idaho levees.

Natomas Levee Improvement Program (NLIP) Sacramento River Levee Reaches 1, 2, 4B, and 5A, Sacramento, CA. Provided a drainage study, pre-design, design, environmental documentation, permitting assistance, bid period, and construction support services for reaches 1, 2, 3, 4A and 4B of the Sacramento River levee (east bank) in the Natomas area, which protects a portion of Reclamation District No. 1000 (RD 1000). Levee repairs were needed to retain Federal Emergency Management Agency (FEMA) certification and achieve a 200-year level of flood protection, and included levee crown raising for all reaches, seepage berms (reaches 4A and 4B), and deep cutoff walls (reaches 2 and 3). Redesign of the Garden Highway was required along the project reaches, as well as relocation of utilities and other infrastructure.

American River Common Features - WRDA96 Remaining Sites, USACE – Sacramento, CA. Provided evaluation and design of levee improvements for the 10 sites along the American River. The work includes seepage and slope stability analyses; establishing the need for levee remediation; determining the locations for remediation and develop alternative methods of remediation; construction plans and specifications; Design Documentation Report (DDR); identification of relocations including utility relocations; rights-of-way and temporary construction easement requirements; ECIFP report, and formulate an MCACES cost estimate. HDR also prepared a Quality Control Plan (QCP) for this project.

Marysville Ring Levee, USACE - Sacramento. Geotechnical Engineer. Directing geotechnical tasks related to the design of levee improvements that meet Federal Emergency Management Agency (FEMA) requirements for levee accreditation under the National Flood Insurance Program.

Ventura County, Simi Arroyo Levee Improvements, Moorpark, CA. HDR prepared a retaining wall and flood wall designs for the County of Ventura. Scope of work included designing a three-foot high retaining wall that provides access to the existing sewer manholes at two locations along the stretch of Simi Arroyo that is adjacent to the Science Drive and north of Los Angeles Avenue in Moorpark, CA.

EXHIBIT C

JONASSON CONSULTANTS LLC

COST ESTIMATING AND CONSTRUCTABILITY

From decades of working as a contractor, Carl brings a unique perspective and tricks-of-the trade to constructability reviews and cost estimating. This contractor's perspective will result in a practical design and together construction documents, both of which will benefit keeping the project on budget and schedule. He even brings local experience, having worked with the team to estimate costs on the Scoggins Dam alternatives.

When he was with Wilder Construction Company, Carl managed all civil and structural activities in the Northwest including sponsoring the $20 million NE 40th project on SR520, the $32 million Swamp Creek project on I-405, the $8 million Stillaguamish River Bridge and the $14 million Lakemont Boulevard project, and the $8 million Novelty Bridge project. Carl bid, built and sponsored numerous projects that included most types and sizes of storm, sanitary, sewer, and potable and non-potable waterline piping.

Experience
40 years

Education
BS: Civil Engineering Technology (Construction Engineering Management)

BS: Business Administration

SELECTED PROJECT EXPERIENCE

Scoggins Dam, Oregon. 2007. Cost estimated and construction scheduled 4 alternatives for the raising of the existing dam or for the construction of a replacement dam. Alternates included earthfill dam variants and a roller-compacted concrete dam. Total alternate volume exceeded $2,000,000,000.

Cedar Falls, Washington. 1987. Bid and sponsored the grading portion of this 100 foot + high concrete dam for Seattle City Light. The work involved building a shorter 32 foot high roller compacted dam, and rehabilitating the existing high dam with upstream facing and tainter gates.

Cold Springs Dam, Umatilla, Oregon. 1995. Estimated, bid and sponsored the rehabilitation of this 165-foot high earthen dam, owned by the Bureau of Reclamation.. Raised the earthen dam and added a roller compacted concrete spillway.

Spirit Lake Outlet Works, Washington. 1981. Worked with the Corps of Engineers to develop an estimate for a new outlet works, since the lake was plugged with debris from the eruption of Mt. St. Helens in 1980. Also inspected the sediment retention facility project on the Toutle River, constructed later by Granite Construction.

Long Hollow Dam, CO. 2010. Provided the engineer's estimate for a new earth fill dam located in southwestern Colorado for La Plata Water Conservancy District. The $14M dam is located at the confluence of two small streams and will serve as irrigation water supply.

PGE Reservoir Concrete Spillway, PGE Coal-Fired Plant, Boardman, Oregon. 1979. Project Engineer responsible the construction of the railroad access to the site and observed the construction of the reservoir embankments and concrete spillway construction with dental excavation and cleaning. Ran time studies of the Holland Loader and Caterpillar 772's with double belly dumps loading and hauling "potato dirt" during the excavation and embankment phase of the reservoir work.

Lewiston Levees, Lewiston, Idaho. 1973. Quality Control Engineer, primarily testing materials for acceptance during slurry wall installation after the levees had been embanked.

Folsom Dam Embankment Modifications. 2008. Estimated a portion of the Bureau of Reclamation dam modifications as a consultant for the successful contractor.

Condit Dam Deconstruction, White Salmon, WA. 2009. Provided the engineer's estimate and advised on the deconstruction of an existing concrete gravity dam for PacifiCorps, and the removal of 2,000,000 cy of sediment that had accumulated behind the dam.

Green River Headworks. Estimated, bid and sponsored the City of Tacoma low dam improvements, including the concrete dam ogee raising, and the installation of a grout curtain, a new fish bypass facility, a section of the new Tacoma Second Supply waterline, and a pipe supporting structure over the Green River.

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Nesh Mucibabic, P.E.

Pump Station Design

Education
Pursuing M.B.A.
M.S., Civil Eng.
Postgraduate Courses Hydrotechnical Eng.
B.S., Civil Eng.

Professional Registrations
Professional Engineer - Civil, Oregon, Washington

Professional Affiliations
North American Association of Trenchless Technology
American Water Works Association
Water Environment Federation
American Society of Engineering Managers
American Public Works Association

HDR Tenure
13 Years

Industry Tenure
33 Years

Professional Experience

Nesh is a senior design engineer with extensive experience in civil and hydraulic engineering. In three decades of civil engineering, he has provided designed the pump stations and provided hydraulic modeling, design and construction observation for more than 200 miles of small-, medium-, and large-diameter pipelines for sanitary, stormwater, water, irrigation systems and mining industry. He is well-known for his unique problem-solving skills and advanced experience with water hammer oscillation and protection, hydrology and hydraulics, system optimization, and operations.

Select Project Experience

Three Pump Stations including Wastewater Diversion Pump Station and Forcemain, City of Newport, OR. Nesh provided quality control for the design, construction, and commissioning of three pump stations for Newport, including a wastewater diversion pump station and forcemain tying in to the City's wastewater collection system. The scalable design provided an affordable initial installation planned for ease of future expansion with installation of additional pumps. The project included collection system capacity analysis, forcemain routing / construction methods analysis, hydraulic evaluation / design, and pump station site selection.

Wynooski Pump Station, City of Newberg, OR. Pump Station Hydraulics and Engineering. HDR completed preliminary design of a new off-site raw water pump station for the City of Newberg. The new facility is designed to relieve flows from the existing, overburdened influent pump station. The new facility diverts one of the main plant interceptors before it descends 40 feet to the existing influent pump stations. By taking this approach, the City will eliminate the 40 feet of static head and the station will be easier to maintain due to the fact it is not in a deep ravine that is difficult to access in wet weather. The new station will also be provided with high efficiency VFD driven pumps to best match flows that are seen in the interceptor and avoiding high electrical demand starts and stops seen in constant speed pumps. This project is part of a $44 million upgrade to the City's facilities being managed by HDR.

Sanitary Sewer Intertie #2, Clackamas County WES, OR. HDR conducted a routing study and is currently designing a pump station and force main that will transfer sewage flows from CCSD #1 to new facilities currently under construction at the Tri-City Water Pollution Control Plant in Oregon City. Project activities include a routing study to select the force main alignment, pump station site evaluation, flow analysis of existing wastewater flows available for diversion, and final design of the pump station and pipeline.

Treatment and Conveyance Planning, Clackamas County WES, OR. HDR assisted WES in the preparation of predesign plans for the Kellogg WWTP and for the conveyance system components for several treatment plant options. HDR also provided oversight for solids handling plans.

Rock Creek Pump Station Upgrade, City of Independence, MO. Pump Station Design Engineer. The City was required to expand capacity to pump from its two main interceptors to its wastewater treatment plant to convey storm-influenced peak flows in order to reduce sanitary overflows. The Rock Creek pump station was expanded from 22 MGD to 32 MGD. The existing pump station has two separate wet wells: one with dry-pit, close coupled

centrifugal pumps and a second with mixed-flow propeller pumps. The dry-pit centrifugal pump conveys dry weather flows, while the mixed flow pumps are used to pump to local storage basins for peak flow events. The capacity of the basins is inadequate for the storm-induced flows. In order to expand capacity of the station, a new combination of dry-pit submersibles and higher head mixed-flow pumps was designed so that both wet wells can provide pumping capacity to the treatment plant. The discharge headers for the two systems were modified in order to combine pumps while leaving the capability for remaining mixed-flow pumps to use the existing storage basins in extreme flow conditions.

Sugar Creek Pump Station Upgrade, City of Independence, MO. Pump Station Design Engineer. Part of a program to reduce sanitary overflows, the Sugar Creek pump station was expanded from 9 MGD to 18 MGD. The increase in capacity required replacement of all pumps and addition of a second parallel forcemain. All pumps are equipped with VFDs for more efficient system operation and the parallel forcemains are provided with motorized flow control valves to allow for single- or dual-forcemain operation, depending on flow requirements.

Rock Creek Excess Flow Pump Station, City of Independence, MO. Pump Station Design Engineer. Gravity sewer flows to the City of Independence Rock Creek Pump Station can reach peaks of 68 MGD, while the expanded pump station is only capable of pumping a peak flow of 32 MGD. The excess flow pumping capacity was managed through the addition of a new excess flow pump station and two 10 MG storage tanks. The excess flow pump station has a peak capacity of 36 MGD in order to pump to the two storage tanks. A diversion structure was designed to allow up to 32 MGD flow to continue to the existing pump station while flows above 32 MGD would divert to the excess flow pump station. The self-cleaning style wet well and VFD-driven submersible pumps are all designed to facilitate start up and shut down operation and maintenance due to the infrequent operation expected of this pump station.

Sugar Creek Excess Flow Pump Station, City of Independence, MO. Pump Station Design Engineer. This excess flow pump station has a peak capacity of 25 MGD in order to pump to the two 10 MG storage tanks. A diversion structure (that can be remotely operated) was designed to allow up to 18 MGD flow to continue to the expanded existing pump station while flows above 18 MGD would divert to the excess flow pump station. The self-cleaning style wet well and VFD driven submersible pumps are all designed to facilitate start up and shut down operation and maintenance due to the infrequent operation expected of this pump station.

Wastewater Treatment Plant Repair, Restoration, and Expansion, City of Newberg, OR. Pump Station Design Engineer. HDR is assisting the City of Newberg with the multi-phased, CMGC expansion of their wastewater treatment plant. We reviewed and updated the facility plan to suggest project components and approach, and also developed a predesign report of all facility improvements planned. HDR's breadth of services has equipped us to assist with a variety of efforts including delivering predesign thru construction-phase services for the new secondary clarifier and analyzing flow through three wastewater interceptors that enter the treatment plant.

Tacoma-Cascade Pipeline, Bellevue, WA. Design Engineer. Nesh served as a design engineer for refinement of a pipeline alignment and preliminary design of the 10-mile, 42-inch transmission main between the cities of Kent and Renton. He was instrumental in laying the pipeline at optimal locations within the existing streets and highways, and even walked the entire alignment during the planning stage. He provided the final design of the three-mile-long pipeline section. The overall project involved the design of a buried water supply pipeline and ancillary features to connect the Tacoma Water Second Supply Pipeline to the Bellevue to Issaquah Pipeline.

CORNFORTH CONSULTANTS

WADE N. OSBORNE, P.E.

Construction

Education

2004 M.S. in Geotechnical Engineering, University of Texas at Austin, Austin, Texas
2002 B.S. in Civil Engineering, Oregon State University, Corvallis, Oregon

Registration

Civil Engineer – Oregon, California

Societies

Member, American Society of Civil Engineers
Member, ADSC: International Association of Foundation Drilling

Professional Career

2010-present Cornforth Consultants, Inc., Portland, Oregon; Project Engineer
2008-2010 Terrane Consultants Ltd., Tauranga, New Zealand; Staff Engineer
2004-2008 Cornforth Consultants, Inc., Portland, Oregon; Staff Engineer

Relevant Experience

The City will want an experienced eye performing construction observation when the Big Creek dam repairs are being constructed. Wade's combination of construction observation and geotechnical training make him the ideal candidate. His recent projects include the Soda Springs Dam Fish Passage at Toketee Falls (OR) and Willamette Falls Dam Flow Control Structure in West Linn (OR).

Construction Control, Port Westward Generating Plant, Clatskanie, Oregon. Portland General Electric built a 400 MW generating facility at a site on the banks of the Columbia River which contained liquefiable sandy soils. Mr. Osborne was Field Construction Engineer during the installation of 4,000 stone columns to mitigate the potential for liquefaction. He was responsible for maintaining detailed construction logs and daily field reports.

Willamette Falls Dam North Fish Bypass Construction Assistance, West Linn, Oregon. Mr. Osborne was Project Geotechnical Engineer assisting Portland General Electric during the construction of drilled piers for a juvenile fish bypass structure at the Sullivan Power Plant. Work tasks included providing construction observation during the drilling of piers from a floating barge with a 24-inch diameter, ODEX hammer into basalt bedrock. Observed the placement and grouting of 18-inch steel pipe piles used as piers for the bypass structure. Prepared daily field repots.

Rockfall Mitigation, J.C. Boyle Hydroelectric Project, Klamath Falls, Oregon. Project Engineer for the emergency mitigation of a major rockfall event that damaged a section of the concrete flume side wall at J.C. Boyle Dam. The resultant spillage from the rockfall caused considerable erosion to the slope below the flume and created a debris fan at the toe of the slope. Emergency reconstruction of the flume and the down slope embankment was completed immediately, but additional construction efforts were needed to mitigate for future rockfall events from above the flume. Mr. Osborne assisted with construction control services for the mitigation of potential rockfall from above the flume and final construction that covered

flume repairs and rockfall mitigation work completed since the initial rockfall event.

The Dalles Dam Fish Spillwall, The Dalles, Oregon. Project Geotechnical Engineer responsible for over-water investigation and insitu testing to characterize foundation conditions for a proposed spillwall rock foundation. Completed extensive drilling, sampling, and logging of rock core along the proposed spillwall alignment. Performed laboratory testing and insitu permeability tests to evaluate benefits and feasibility of foundation grouting. Analyzed bearing capacity and settlement of spillwall rock foundation. Analyzed local stability of rock tiedown anchors. Prepared geotechnical data report and assisted with preparation of plans and specifications for bid package. Assisted with engineering during construction by reviewing contractor submittals and providing comments.

Faraday Diversion Right Abutment Slide, Estacada, Oregon. Project Geotechnical Engineer responsible for coordinating the subsurface investigation and installation of ground water monitoring equipment for the design for a tied-back retaining wall for Portland General Electric. Mr. Osborne provided construction observation and on-site quality assurance for the drilled soldier pile and hollow-core anchor installation. Performed ground anchor proof and performance testing.

Soda Springs Dam Fish Passage, Toketee Falls, Oregon. Project Geotechnical Engineer for fish passage facilities at an existing hydroelectric dam owned by PacifiCorp. Performed laboratory testing to determine soil and rock properties necessary for foundation design. Completed slope stability studies to determine design loads for permanent soldier pile & tieback retaining walls. Assisted with design of rock foundations, spread footings, and deep foundations. Key design considerations included bearing capacity and settlement for different foundation types.

Willamette Falls Dam Flow Control Structure, West Linn, Oregon. Mr. Osborne was Project Engineer providing construction observation of drilled piers and rock anchors for a flow control structure on the Willamette River for Portland General Electric. Piers were drilled into basalt using a 16-inch diameter, down-hole hammer from a floating barge. Rock anchors were drilled using an air-track rig to secure a steel coffer dam structure for construction of a rubber inflatable dam. Other work tasks included providing assessments of bearing capacity and lateral load capacity for building foundations.

Lemolo Canal Flume 12 Erosion Failure, Toketee, Oregon. Mr. Osborne was Project Geotechnical Engineer on a project to develop mitigation concepts to repair the erosion damage and reestablish the access road that occurred after a flume failure at PacifiCorp's Lemolo Canal. PacifiCorp selected a mitigation option that involved backfilling the scour zone and reconstructing the access road with crushed rock and riprap using a concrete stemwall at the base of the scour zone. Mr. Osborne assisted with on-site construction observation services during the work.

HDR ONE COMPANY | *Many Solutions*

Elena Sossenkina, P.E.*

Risk Assessment

Education
M.S., Mechanical Engineering and Applied Mathematics, Moscow State University, St. Petersburg, Russia

Professional Registrations
Professional Engineer, Colorado, No. PE-44417

Professional Affiliations
Association of State Dam Safety Officials, Member
United States Society on Dams, Member

HDR Tenure
2 Years

Industry Tenure
16 Years

** Professional Engineer in another state*

Professional Experience

Elena has more than 14 years of experience with dam and levee projects. Her expertise includes geotechnical investigations of complex sites, risk assessment, slope stability and seepage analyses, geotechnical instrumentation, cost estimating and scheduling. Her strong math education in combination with geotechnical experience gives her the ability to apply state-of-the-art technologies to find an efficient solution. Elena is an active member of ASDSO and USSD and has participated in FERC workshops on dam surveillance and monitoring. Her strong math education combined with geotechnical experience gives her ability to apply risk analysis methods to a wide range of engineering problems.

Having worked on the first phase of this project, her familiarity with the site and stakeholders' priorities will assist with evaluating risks.

Select Project Experience

Upper and Lower Big Creek Dams Preliminary Geotechnical Investigation and Seismic Evaluation, City of Newport, OR. Risk Assessment. HDR provided evaluation, modeling, and geotechnical services for the Upper and Lower Big Creek Dams for the City of Newport. HDR provided an evaluation of both dams and their seismic stability in the event of an earthquake based on samples that were collected.

Copano Beds- Facility 204 Risk Assessment, Sherwin Alumina Company, TX. Lead risk analysis engineer. Copano Beds is a bauxite (red mud) disposal and storage facility owned and operated by Sherwin Alumina. The Beds consist of four impoundments contained by 15 to 25 foot-high earthen embankment perimeter levees and ranging in size from 700 to 1,200 acres in plan. In response to a failure of a bauxite impoundment at the Ajkai Timfldgyr alumina plant in western Hungary on October 4, 2010 Sherwin Alumina has initiated a baseline risk assessment of the facility. The purpose of this study is to evaluate the potential failure risks and associated economic, environmental, social, loss of life and regulatory consequences of a failure of the facility under normal operating conditions and under unusual/extreme loading such as a flood or a hurricane. Elena is a lead risk analysis engineer for the project.

FERC Part 12 Inspections, Xcel Energy, CO. Independent consultant for the Part 12 dam safety inspections for Tacoma, Ames, Lower and Upper Cabin Creek, and Georgetown hydropower projects. The inspected projects include zoned rockfill dams, homogeneous earth embankments, and earth and rockfill-filled timber structures ranging in age from 40 to 110-years and varying in height from 10 to 65 feet. Role as defined by the new FERC Part 12 process (Chapter 14 of Federal Engineering Guidelines), includes detailed visual inspection of project works, assessment of potential failure modes and dam safety review. In addition to dams, the inspection included diversion and conveyance structures, spillways, outlet works and powerhouses. Additional services included preparation of the Supporting Technical Information Document for the Lower Cabin Creek hydropower project.

Saluda Dam, Columbia, S.C. Saluda Dam is a 75-year-old, 200-foot-high semi-hydraulic fill embankment dam that was upgraded to comply with current FERC regulations. Elena prepared preliminary cost estimates and participated in technical evaluation of remedial alternatives, which included deep soil mixing, jet grouting, RCC dam, and a rockfill berm construction. She also developed an excavation stability monitoring plan and served as the

monitoring coordinator, supervising this $6 million instrumentation program. Supervising a team of 15 field engineers and technicians, Elena was responsible for real-time data acquisition, analysis and interpretation of measurements and visual observations to ensure safety of the dam during construction.

Copano Beds- Facility 204 Risk Assessment, Phase 1, Sherwin Alumina Company, Rockport, TX. Lead Risk Analysis Engineer. Copano Beds is a bauxite (red mud) disposal and storage facility owned and operated by Sherwin Alumina. The Beds consist of four impoundments contained by 15 to 25 foot-high earthen embankment perimeter levees and ranging in size from 700 to 200,000 acres in plan. In response to a failure of a bauxite impoundment at the Ajkai Timfoldgyar alumina plant in western Hungary on October 4, 2010 Sherwin Alumina has initiated a baseline risk assessment of their facility. The purpose of this study is to evaluate the potential failure risks and associated economic, environmental, social, loss of life and regulatory consequences of a failure of the facility under normal operating conditions and under unusual/extreme loading such as a flood or a hurricane. Elena is a lead risk analysis engineer for the project.

Hill Dam Reconstruction, South Dakota Game, Fish & Parks, Rose. Following a breach of the dam, provided engineering components including site investigation with survey and soil borings, hydraulic modeling with spillway capacity designs, and preliminary design of a new earthen dam and spillway based on NRCS methods.

WWDC Austin and Wall Canals and Wall Reservoir Rehabilitation Project Level II Study, No. 10-15 (Sunrise), Bridger, WY. Geotechnical. HDR is completing a geotechnical and hydrologic investigation of Wall Reservoir to identify the cause of the reservoir seepage and to review other areas of dam deficiency. HDR is also completing water rights services and assisting with the grant application to the salinity control program.

Logan Northern Canal EIS, USDA Natural Resources Conservation Service. NRCS, through the Emergency Watershed Protection Program (EWPP), is providing technical and financial assistance to Cache County for the rehabilitation of the northern canal that was rendered inoperable by a slope collapse. The EIS study will include an evaluation of five build alternatives, as well as a no-build alternative. HDR's services also include preparing and implementing the Public Participation Plan.

Wilber Watershed Dam Design, USDA Natural Resources Conservation Service. HDR is providing planning, design, and construction inspection services for a new floodwater retarding structure to be located outside the corporate limits of the City of Wilber, NE, to reduce flooding and flood related hazards and damages. The structure will meet NRCS High-Hazard dam criteria.

Requested Considerations

As requested in the RFQ, we have reviewed the draft engineering services agreement and respectfully request the opportunity to discuss some minor revisions. Requested changes include those noted below. They are similar to the modifications that were made for our current contract with the City. We look forward to continuing our partnership with you on this next phase of the dam efforts.

Page 13, Item C.1). Confidential Information

"…(f) is independently developed by employees or agents of Engineer who can be shown to have had no access to the Confidential Information; or (g) is required to be disclosed by law, subpoena or other court order."

Page 15, Item 7.B. Indemnity

"…hold harmless and indemnify the City, its officers, agents and employees from all claims, suits, or actions ~~relating to~~to the extent caused by the alleged negligent or otherwise wrongful acts or omissions of Engineer or its subcontractors,…"

Page 15, Item 7.C. Indemnity

"…expenses incidental to the investigation and defense thereof, ~~arising out of~~to the extent caused by the professional negligent acts, errors or omissions of Engineer or its subcontractors…"

Page 16, Item 7. Indemnity

E. Third Party Indemnification: To the full extent permitted by law, Owner hereby agrees to defend, hold harmless and indemnify Engineer, its officers, employees, agents and subconsultants from and against all third party claims, damages, losses, liabilities, expenses and costs, arising out of or resulting from the Engineer's performance of its services under this Agreement, not withstanding any other indemnifications granted by Engineer to Owner under this Agreement.

Page 16, Item 8.B. Professional Liability

"…omission or any negligent acts. Combined single limit per ~~occurrance~~ claim shall not be less than…"

Page 22, Item 27. Complete Agreement

"This Agreement and any exhibit(s) hereto and any and all Task Orders executed by the parties and the ~~RFQ and Response dated _____~~ Scope of Services constitute the entire agreement between the parties…"

"Exhibit C – ~~Engineer of Record RFQ and Engineer's Proposal~~Scope of Services"

<No additional support material has been provided.>

EXHIBIT C

CERTIFICATE OF LIABILITY INSURANCE

6/1/2014

DATE (MM/DD/YYYY): 6/18/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Lockton Companies, LLC-1 Kansas City
444 W. 47th Street, Suite 900
Kansas City MO 64112-1906
(816) 960-9000

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:

INSURED
1014392 HDR ENGINEERING, INC.
8404 INDIAN HILLS DRIVE
OMAHA, NE 68114-4049

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Hartford Fire Insurance Company	19682
INSURER B: St. Paul Fire and Marine Insurance Company	24767
INSURER C: Sentinel Insurance Company, Ltd.	11000
INSURER D: Zurich American Insurance Company	16535
INSURER E:	
INSURER F:	

COVERAGES HDRIN01 CERTIFICATE NUMBER: 12403124 REVISION NUMBER: XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X CONTRACTUAL LIAB GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT X LOC	Y	Y	37CSEQU0950	6/1/2013	6/1/2014	EACH OCCURRENCE	$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
							GENERAL AGGREGATE	$ 2,000,000
							PRODUCTS - COMP/OP AGG	$ 2,000,000
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS / SCHEDULED AUTOS X HIRED AUTOS / X NON-OWNED AUTOS	N	N	37CSEQU0951 (AOS) 37CSEQU0952 (HI) 37MCPQU1160 (MA)	6/1/2013 6/1/2013 6/1/2013	6/1/2014 6/1/2014 6/1/2014		$
A							COMBINED SINGLE LIMIT (Ea accident)	$ 2,000,000
A							BODILY INJURY (Per person)	$ XXXXXXX
							BODILY INJURY (Per accident)	$ XXXXXXX
							PROPERTY DAMAGE (Per accident)	$ XXXXXXX
B	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DED / RETENTION $	N	N	ZUP-10R64084-13-NF (EXCLUDES PROF. LIAB)	6/1/2013	6/1/2014		$ XXXXXXX
							EACH OCCURRENCE	$ 1,000,000
							AGGREGATE	$ 1,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	Y	91WEOH1000 (AOS) 91WBOH1760 (HI)	7/1/2013 7/1/2013	7/1/2014 7/1/2014		$ XXXXXXX
C							X WC STATU-TORY LIMITS / OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
D	ARCH & ENG PROFESSIONAL LIABILITY	N	N	EOC9260026-06	6/1/2013	6/1/2014	PER CLAIM: $2,000,000 AGGREGATE: $2,000,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES /(Attach ACORD 101, Additional Remarks Schedule, if more space is required)

RE: NEWPORT DAM CONSULTANT OF RECORD. THE CITY OF NEWPORT, ITS OFFICERS, DIRECTORS, AND EMPLOYEES ARE NAMED AS ADDITIONAL INSURED ON GENERAL LIABILITY AS PER WRITTEN CONTRACT, ON A PRIMARY, NON-CONTRIBUTORY BASIS. WAIVER OF SUBROGATION APPLIES WHERE ALLOWABLE BY LAW.

CERTIFICATE HOLDER

12403124

CITY OF NEWPORT
169 SW COAST HWY
NEWPORT OR 97365

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Brad J Foster

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EXHIBIT C

OP ID: JMC

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 01/07/13

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PRODUCER
ACEC/MARSH
701 Market St., Ste. 1100
St. Louis, MO 63101
Sharon L. Zach

800-338-1391
888-621-3173

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:
PRODUCER CUSTOMER ID #: CORNF-1

INSURED
Cornforth Consultants Inc.
10250 S.W. Greenburg Road
Portland, OR 97223

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Hartford Insurance Company	22357
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

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INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X CROSS LIABILITY X SEVERAB. OF INT. GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC			84SBWCG4222 PROFESSIONAL LIAB EXCL	11/01/12	11/01/13	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 2,000,000 $ 2,000,000 $ 10,000 $ 2,000,000 $ 4,000,000 $ 4,000,000 $
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS			84UEGNS5013	11/01/12	11/01/13	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $ $ $
A	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DEDUCTIBLE X RETENTION $ 10,000			84SBWCG4222	11/01/12	11/01/13	EACH OCCURRENCE AGGREGATE	$ 1,000,000 $ 1,000,000 $ $
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		84WBGKE2654	11/01/12	11/01/13	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
RE: Job #

CERTIFICATE HOLDER

CITYOF

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 1/03/2013

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PRODUCER
Kibble & Prentice, a USI Co PR
601 Union Street, Suite 1000
Seattle, WA 98101

CONTACT NAME:
PHONE (A/C. No. Ext): 206 441-6300 FAX (A/C. No): 610-362-8528
E-MAIL ADDRESS: pl.certrequest@kpcom.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Hudson Insurance Company	25054
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Cornforth Consultants, Inc.
10250 SW Greensburg Rd Ste 111
Portland, OR 97223-5460

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY							
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$
	CLAIMS-MADE / OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$
	POLICY / PRO-JECT / LOC						PRODUCTS - COMP/OP AGG	$
								$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS / NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB / OCCUR						EACH OCCURRENCE	$
	EXCESS LIAB / CLAIMS-MADE						AGGREGATE	$
	DED / RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						WC STATU-TORY LIMITS / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					E.L. EACH ACCIDENT	$
							E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
A	Professional Liability			AEE7255402	11/01/2012	11/01/2013	$1,000,000 per claim $2,000,000 annl aggr.	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
RE: Project No. .

CERTIFICATE HOLDER

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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