

INTRODUCED: July 26, 2021

AN ORDINANCE No. 2021-221

To authorize the Chief Administrative Officer, for and on behalf of the City of Richmond, to execute a Contract for Donated Goods and Services between the City of Richmond and Abernethy Schwartz Partners, LLC, doing business as BlueConduit, for the purpose of accepting lead service line statistical modeling and support services valued at approximately \$100,000.00 to assist the City's lead service line removal program.

Patrons – Mayor Stoney

Approved as to form and legality
by the City Attorney

PUBLIC HEARING: SEP 27 2021 AT 6 P.M.

THE CITY OF RICHMOND HEREBY ORDAINS:

§ 1. That the Chief Administrative Officer, for and on behalf of the City of Richmond, be and is hereby authorized to execute a Contract for Donated Goods and Services between the City of Richmond and Abernethy Schwartz Partners, LLC, doing business as BlueConduit, for the purpose of accepting lead service line statistical modeling and support services valued at approximately \$100,000.00 to assist the City's lead service line removal program. The Contract

AYES: 9 NOES: 0 ABSTAIN: _____

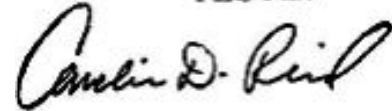
ADOPTED: SEP 27 2021 REJECTED: _____ STRICKEN: _____

for Donated Goods and Services shall be approved as to form by the City Attorney and shall be substantially in the form of the document attached to this ordinance.

§ 2. This ordinance shall be in force and effect upon adoption.

A TRUE COPY:

TESTE:

A handwritten signature in cursive script, appearing to read "Camille D. Rind".

City Clerk



CITY OF RICHMOND

INTRACITY CORRESPONDENCE

Received**JUN 30 2021**Office of the
Chief Administrative Officer**O&R REQUEST**

DATE: June 30, 2021 **EDITION** Final 1.0

TO: The Honorable Members of City Council

THROUGH: The Honorable Levar M. Stoney, Mayor *LM Stoney*

THROUGH: Lincoln Saunders, Acting Chief Administrative Officer *LS*

THROUGH: Robert C. Steidel, Deputy Chief Administrative Officer – Operations *Robert C Steidel*

THROUGH: Sheila White, Director of Finance *Sheila White*

THROUGH: Jason May, Acting Director Budget & Strategic Planning *Jason May*

THROUGH: Alfred Scott, Interim Director of Public Utilities *AS*

FROM: Rosemary H. Green, Deputy Department Director, Senior – Public Utilities *RHG 06-30-21*

RE: Lead Service Lines Predictive Modeling – BlueConduit Grant Opportunity

ORD. OR RES. No. _____

PURPOSE: To authorize the City's Acting Chief Administrative Officer to accept a gift of goods and services valued at approximately \$100,000 from BlueConduit and to execute an Agreement with BlueConduit for these good and services. Such goods and services include creation of a statistical model that will predict the most likely locations of lead service lines and deliverables derived from the statistical model such as a prioritized replacement list and a public facing interactive map. The statistical model and related goods and services provided by BlueConduit will allow the City to comply with the pending EPA revisions to the Lead and Copper Rule (LCR) and to accelerate our lead service line replacement program. The first requirement of the pending LCR is for the City to develop a lead service line inventory. The second is to develop a program to replace all lead service lines.

REASON: BlueConduit is being provided grant funding from Google.org to further advance their machine learning tools to help diverse socio-economic communities identify where their lead service lines are located. BlueConduit would like to pilot this program in Richmond and use information gathered from this engagement to help BlueConduit develop an application and evaluation criteria for future community participants. The costs associated with the BlueConduit deliverables are fully covered by this Google.org grant. Due to the estimated value of this effort, an ordinance is necessary for the Acting CAO to accept this gift.

RECOMMENDATION: It is recommended that the City accept this gift.

BACKGROUND: The pending revisions to the US EPA LCR will require communities to complete an inventory of all lead service lines and to have a plan in place to replace 3% of lead service lines each year when 10% of sampling results are above 15 parts per billion. Although Richmond is currently well below this trigger level, the City is committed to removing all lead service lines from its water system as well as providing assistance to private property owners to do the same. DPU has been proactively replacing lead service lines since the early 1990's and also provides corrosion control treatment of the drinking water systems. These efforts have contributed to the low level of lead in the City's drinking water.

In 2018, the Department of Public Utilities (DPU) expanded its replacement program to include providing grant reimbursements to private property owners when they replaced their lead service lines. This grant program has been funded by the Virginia Department of Health, Office of Drinking Water. Through May 2021, reimbursements have been provided for over 269 private property lead service line replacements.

Despite these continuous efforts at lead service line replacements, DPU estimates that there are still over 12,000 active lead service lines. The location of most of these lead service lines is not defined. This grant from BlueConduit will allow DPU to target its lead service line replacement program to those properties with the highest probability of finding lead service lines thereby accelerating the replacement program and reducing costs by minimizing excavations on properties that do not contain lead service lines. Current application of this technology in other municipalities has achieved a 75% or higher accuracy rate. Timely completion of this inventory will also position the City well to aggressively spend any Infrastructure Recovery grants that may be made available for the removal of lead service lines.

The project does not have a specific timeframe for completion but BlueConduit is ready to start work as soon as they receive authorization to do so from the City. The schedule will be based upon the following set of actions/deliverables:

- Richmond will provide BlueConduit with available source data and information about service line records; construction records; water consumption; and other pertinent pipeline information.
- Richmond will make appropriate staff available to attend meetings and provide feedback about data and findings as well as share general knowledge about the water system and utility.
- Richmond will allow BlueConduit to reference this project in future marketing materials following review and approval of such by the City.
- BlueConduit will conduct public record searches for additional pertinent information
- BlueConduit will provide a recommended **Inspection List** of up to 100 homes to help build a baseline for development of the statistical model.
- BlueConduit will develop a **Prioritized Replacement List** providing an analysis predicting parcel level line material(s) within the Richmond water system
- BlueConduit will provide strategic consulting and advisory services to Richmond throughout the project
- An **Interactive Map** showing the known service line materials data that city residents and other stakeholders can access.

FISCAL IMPACT / COST: None.

FISCAL IMPLICATIONS: None.

BUDGET AMENDMENT NECESSARY: No

REVENUE TO CITY: N/A

DESIRED EFFECTIVE DATE: Upon adoption.

REQUESTED INTRODUCTION DATE: July 26, 2021

CITY COUNCIL PUBLIC HEARING DATE: September 13, 2021

REQUESTED AGENDA: Consent.

RECOMMENDED COUNCIL COMMITTEE: Finance & Economic Development Committee

CONSIDERATION BY OTHER GOVERNMENTAL ENTITIES: N/A

AFFECTED AGENCIES: Department of Public Utilities

RELATIONSHIP TO EXISTING ORD. OR RES.: None.

REQUIRED CHANGES TO WORK PROGRAM(S): None.

ATTACHMENTS: BlueConduit Contract for Donated Goods and Services

STAFF: Steve Morgan, DPU; Jonathan Cosby, DPU

CONTRACT FOR DONATED GOODS AND SERVICES

This Contract, dated this _____ day of _____, 2021, between the City of Richmond, a municipal corporation and political subdivision of the Commonwealth of Virginia (the "City"), and Abernethy Schwartz Partners, LLC d/b/a BlueConduit, a Michigan domestic limited liability company ("BlueConduit"), is binding among and between these parties as of the date of the City's final signature.

WHEREAS, BlueConduit desires to donate to the City certain lead service line modeling and support services valued at approximately \$100,000.00;

WHEREAS, by Ordinance No. _____, adopted _____, 2021, the City's Chief Administrative Officer is authorized to accept the donation of lead service line modeling and support services valued at approximately \$100,000.00 from BlueConduit for the purpose of assisting the City's lead service line removal program; and

WHEREAS, the City and BlueConduit desire to execute this Contract to document the donation of the lead service line modeling and support services from BlueConduit to the City and to set forth the terms and conditions governing the lead service line modeling and support services;

THEREFORE, in consideration of the Recitals set forth above and good and valuable consideration as set forth below, the parties agree as follows:

1. **Scope of the Contract.** BlueConduit shall provide the goods and services to the City as set forth in the Contract Documents enumerated in section 2 below.
2. **Contract Documents.** This Contract shall consist only of the following Contract Documents, listed in order of precedence from highest to lowest:
 - A. This Contract for Donated Goods and Services between the City and BlueConduit
 - B. The BlueConduit Master Service and License Agreement, attached hereto as Exhibit A.
 - C. The BlueConduit Grant Opportunity Richmond, VA, attached hereto as Exhibit B.

All of these documents are incorporated herein by reference.

IN WITNESS WHEREOF, the parties hereto on the date written above have executed this Contract.

For ABERNETHY SCHWARTZ PARTNERS, LLC: For the CITY:

By: _____
Name: _____ Date _____
Its: _____

By: _____
Lincoln Saunders Date _____
Acting Chief Administrative Officer

APPROVED AS TO FORM:

Assistant City Attorney Date _____

Exhibit A**MASTER SERVICE AND LICENSE AGREEMENT**

By and Between: City of Richmond, Virginia ("Customer")	And: Abernethy Schwartz Partners, LLC d/b/a BlueConduit ("BlueConduit")
Customer Address: City of Richmond Public Utilities	BlueConduit Address: PO Box 7209
Attn: Stephen Morgan 400 Richmond Highway Richmond, VA 23224	Ann Arbor, MI 48107
Customer Phone: 804.646.8522	BlueConduit Phone: 248.252.4358
Customer Email: stephen.morgan@richmondgov.com	BlueConduit Email: andy@BlueConduit.com

1. **Purpose.** This Master Service and License Agreement (this "Agreement") sets forth the terms and conditions under which BlueConduit will provide Services and/or Deliverables to Customer, as specified in a Statement of Work attached hereto as Exhibit A (an "SOW"), and license the Work Product to Customer (as detailed below). This Agreement is effective on the date last signed (the "Effective Date"). The parties agree as follows:

2. **Definitions.**

"Background Materials" means the Development Improvements and any of BlueConduit's proprietary methodologies, intellectual property, trade secrets or internal strategies, hardware, software, tools, data, reports, drawings, systems, know-how, technology, and designs whether existing as of the Effective Date or developed by BlueConduit during the term of this Agreement as an improvement to, or derivative work of, the licensed intellectual property or any of the foregoing.

"Confidential Information" means information that may include, but is not limited to, Background Materials, technology, procedures, protocols, specifications, customer information, product information, proposed business arrangements, methods of operation and compilations of data.

"Deliverables" mean work product that may include, but is not limited to all strategies, documents, summaries, reports, analyses, studies, artwork, drawings, information, designs, templates, layouts, files, text, graphics and/or other products or materials to be delivered by BlueConduit to Customer in accordance with an SOW other than Background Materials.

"Development Improvement" means any new discovery, invention, development, method, report, modification, improvement and/or other similar or related information (whether or not patentable or reduced to practice) and any

copyrightable work, trademark, trade secret or other intellectual property rights created by BlueConduit conceived or developed during the term of the Agreement that are developed from BlueConduit's Background Materials pursuant to an SOW.

"Services" means the services which Customer contracts BlueConduit to perform in accordance with an SOW, which services may include, without limitation, consulting, coding, content creation, training, support, or other services.

"Pre-existing Materials" means the intellectual property owned by Customer prior to the Effective Date of this Agreement.

1. Services and Deliverables - In General.

1.1 BlueConduit shall perform Services and provide Deliverables as designated in an SOW. Each SOW shall contain such additional terms and conditions that BlueConduit and Customer may agree upon for the specific Services and Deliverables being provided under the SOW. For any SOW to hereafter be a part of this Agreement is must first be signed by both parties.

1.2 Customer and BlueConduit will each dedicate a project leader to interface with the other party under each SOW. Each project manager will have appropriate decision making power related to all aspects of that party's performance under the applicable SOW. Each party should direct all SOW-related communications to the other party through the appropriate project manager. Customer's project manager shall be responsible for ensuring appropriate resources are provided to BlueConduit personnel to facilitate delivery of the Deliverables and/or Services.

1.3 During the term of any SOW, Customer reserves the right to revise the Services and/or Deliverables, or the time frames associated with them. If Customer elects to make such revisions, the parties will reach agreement on an equitable adjustment to the time frames, or Services or Deliverables that will then be memorialized in a new SOW. If no agreement is reached, they shall continue under the terms of the applicable SOW without any change to the initially agreed Services and/or Deliverables.

1.4 BlueConduit is free to provide software, services, content and/or products to other entities so long as those activities do not violate a term of this Agreement and any SOW. BlueConduit may use subcontractors in providing Services and/or the delivery of Deliverables to Customer.

2. Customer Obligations and Responsibilities.

2.1 During the term of this Agreement, Customer shall: (a) provide BlueConduit with all necessary access to Customer's personnel, and materials; and (b) obtain any consent required from a third party to permit BlueConduit to access and/or use that third party's IT systems, data, and/or proprietary material in Customer's possession and control in order for BlueConduit to perform its obligations under this Agreement and SOW.

2.2 Customer agrees that the delivery of Deliverables and the performance of Services under SOW are time sensitive. In order for BlueConduit to perform as requested, Customer hereby agrees to promptly respond to all communications initiated by BlueConduit in a timely manner. Customer's failure to be responsive to BlueConduit's personnel will negatively impact BlueConduit's ability to deliver the Deliverables and perform the Services.

2.3 Should Customer fail to perform all of its obligations and responsibilities under this Agreement, BlueConduit shall receive an appropriate extension of time to provide the Services and/or Deliverables under this Agreement or shall be relieved from performance of the Services and/or delivery of the Deliverables, in BlueConduit's sole discretion, if such Services and/or Deliverables were time sensitive. Further, in the event of Customer's failure to comply with any warranty under this Agreement, BlueConduit shall not be held responsible or liable for any resulting delay in providing Deliverables under this Agreement.

3. BlueConduit's Warranties.

3.1 BlueConduit warrants that all Deliverables provided to Customer shall be original work of BlueConduit and/or that BlueConduit has or will have acquired all rights necessary to fulfill its obligations, and to transfer or grant Customer the rights, set forth in this Agreement.

3.2 BlueConduit warrants that all Services shall be carried out in a diligent, prompt, and professional manner by individuals with the necessary knowledge, skill and training to provide such Services.

3.3 BlueConduit warrants that all Deliverables shall be provided in the timeframes set forth in the SOW, provided Customer has timely, accurately and completely complied with its obligations under such SOW.

3.4 EXCEPT AS EXPRESSLY PROVIDED IN THIS AGREEMENT AND/OR SOW, BLUECONDUIT DISCLAIMS AND CUSTOMER HEREBY WAIVES ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR USE.

4. **Acceptance.** Unless otherwise provided in SOW, the Services and/or Deliverables are deemed accepted fourteen (14) calendar days after delivery or performance unless, within that time (the "Acceptance Period"), Customer provides written notice to BlueConduit that the Services rendered or Deliverables delivered were not in substantial conformance with agreed to specifications. If Customer provides such written notice to BlueConduit, BlueConduit will use commercially reasonable efforts to, at its sole option, repair, correct, re-perform or replace the Deliverable and/or Services within a reasonable time of its receipt of the notice.

5. **Ownership.**

5.1 Upon Customer's receipt of Services rendered and Deliverables delivered, all work product other than Background Materials created only for Customer (collectively, the "Work Product") shall be the property of Customer, and BlueConduit hereby assigns all rights, title, and interests in and to the Deliverables to Customer.

5.2 If any Background Materials are integrated into and necessary to use the Deliverables in the form delivered, BlueConduit shall grant to Customer a revocable, non-transferrable, non-sublicensable license to use the Background Materials solely in connection with use of the Deliverables as intended. If any Pre-existing Materials are incorporated into the Work Product, Customer shall maintain all rights, title, and interests in the Pre-existing Materials. Nothing in this Agreement assigns to BlueConduit any of Customer's Pre-existing Materials. Additionally, BlueConduit retains a paid up, royalty-free, sublicensable, transferrable license to use the Deliverables for its internal purposes, including to assist in the refinement and enhancement of its Background Materials and Pre-existing Materials.

5.3 Work Product shall not include any Background Materials, or other intellectual property before the date of this Agreement or any SOW or outside of the scope of SOW. Nothing in this Agreement assigns to Customer any of BlueConduit's Background Materials. To the extent that, by operation of law, Customer owns any intellectual property rights in such Background Materials, Customer hereby assigns to BlueConduit all rights, title and interest in such Background Materials.

6. **Confidentiality.**

6.1 During this Agreement, each party may have access to information that is considered confidential by the other. Confidential Information must be marked or identified as "confidential" by the disclosing party, unless the information should reasonably be understood by the receiving party to be confidential or proprietary under the circumstances.

6.2 Customer agrees that none of its personnel will reproduce or otherwise imitate the proprietary materials of BlueConduit. All of BlueConduit's Services are delivered using proprietary methods and unauthorized use of BlueConduit's proprietary materials constitutes a material breach of this Agreement that entitles BlueConduit to seek injunctive relief.

6.3 Each party shall use the other's Confidential Information only for the purposes of this Agreement and/or SOW. Each party shall maintain the confidentiality of the other party's Confidential Information in the same manner in which it protects its own Confidential Information of like kind, but in no event shall either party take less than reasonable precautions to prevent the unauthorized disclosure or use of the other party's Confidential Information. Neither party shall export, disseminate or otherwise transfer, in writing, orally and/or electronically, the other party's Confidential Information outside of the United States.

6.4 Each party is permitted to disclose the other party's Confidential Information to its employees, contractors and other third parties ("Recipients") on a need to know basis only, provided that such Recipients have contractual or legal confidentiality obligations to that party no less stringent than those contained in this Agreement. Each party shall be and remain fully liable and responsible for its Recipients' unauthorized disclosure or use of the other party's Confidential Information.

6.5 Each party is permitted to disclose the other party's Confidential Information as legally required in response to a court order, subpoena, freedom of information request, administrative proceeding and/or similar legal process; provided that it gives the other party reasonable notice of the request, and an opportunity to defend and/or attempt to limit or prevent the disclosure of its Confidential Information.

6.6 The confidentiality provisions of this Agreement do not apply to information that is or becomes generally available or known to the public through no act or omission of the receiving party; was received lawfully from a third party through no breach of any obligation of confidentiality owed to the disclosing party; or created by a party independently of its access to or use of the other party's Confidential Information.

6.7 Upon termination of this Agreement, each party shall return or destroy the other party's Confidential Information and shall not use the other party's Confidential Information for its own, or any third party's, benefit. The provisions of this Section 6 shall survive termination of this Agreement for so long as the Confidential Information remains confidential.

6.8 Notwithstanding the foregoing, BlueConduit's delivery of Deliverables and performance of Services under this Agreement shall not restrict in any way BlueConduit's right to create, develop, distribute, commercialize or deliver competing product or services that may compete with those commercialized by Customer. Notwithstanding any other term in this Agreement, Customer grants to BlueConduit a nonexclusive, worldwide, irrevocable, paid up, royalty-free, sublicensable, transferrable license to use any aggregated, anonymized information gathered in connection with the Services for commercial development and business related purposes.

7. Term and Termination.

7.1 This Agreement shall be effective from the Effective Date until it is terminated in accordance with the provisions of this Agreement ("Term").

7.2 The SOW and/or this Agreement may be terminated by either party for cause if the other party commits a material breach of this Agreement and/or the SOW, the non-breaching party provides the breaching party with notice specifying the breach in reasonable detail (the "Breach Notice"), and the breaching party fails to cure such breach within thirty (30) days of its receipt of the Breach Notice. A three (3) month notice must be given to terminate with cause. Notice cannot be given before three (3) months after the Effective Date of the Agreement.

7.3 The SOW and/or this Agreement may be terminated by either party for convenience if notice is provided ninety (90) days prior to termination.

7.4 Subject to the terms of this Agreement, all provisions of this Agreement relating to ownership, limitations of liability, confidentiality and indemnification shall survive termination of this Agreement.

8. Indemnification.

8.1 Except to the extent Customer is obligated to indemnify BlueConduit hereunder, BlueConduit shall defend, at its sole expense, any third party claim, demand or suit against Customer ("Claim") alleging and/or arising out of the following, and shall indemnify and hold Customer harmless from and against any and all losses, liabilities, damages, fines, penalties, costs, expenses and/or fees (including reasonable attorneys' fees) (collectively, "Losses") incurred by, or awarded or assessed against, Customer in connection with the Claim, or reached through a negotiated settlement of the Claim that BlueConduit, its employees, or subcontractors were grossly negligent or committed an intentional act that caused injury to a person or damage to property.

8.2 BlueConduit will have no obligation to indemnify Customer to the extent a Claim for infringement would not have arisen but for (i) Customer's or any third party's unauthorized use, misuse or modification of the Deliverable; or (ii) Customer's failure to perform its obligations or the warranties specified in this Agreement and/or any SOW.

9. **Independent Contractor Relationship.** The relationship between Customer and BlueConduit is that of independent contractor. Nothing in this Agreement shall be construed as creating a relationship between Customer and BlueConduit of joint venturers, partners, employer-employee, or agent. Neither party has the authority to create any obligations for the other, or to bind the other to any representation or document.

10. General.

10.1 This Agreement includes the terms and conditions of this Agreement, SOWs and change orders entered into by the parties. The provisions of the various Agreement documents shall, to the extent possible, be interpreted so as supplement each other and avoid any conflict between them.

10.2 This Agreement may not be modified except by a writing signed by both parties. Except as expressly provided herein, the remedies accorded the parties under this Agreement are cumulative and in addition to those provided by law, in equity or elsewhere in this Agreement.

10.3 Any waiver of a party's right or remedy related to this Agreement must be in writing, signed by that party to be effective. No waiver shall be implied from a failure of either party to exercise a right or remedy. In addition, no waiver of a party's right or remedy will affect the other provisions of this Agreement.

10.4 Neither party shall be responsible or liable for any delay or failure in performing its obligations under this Agreement if such delay or failure is the direct result of causes outside of that party's reasonable control, including, without limitation, power outages, closure of Customer's facility or facilities, accidents, strikes, fires, war or acts of God; provided that such party uses best efforts to resume performance of its obligations as soon as practically possible unless this Agreement or an SOW is otherwise terminated pursuant to the terms of this Agreement.

10.5 This Agreement shall be governed by the laws of the Commonwealth of Virginia. The parties agree that any litigation arising between the parties in relation to this Agreement shall be initiated and maintained in the Circuit Court of the City of Richmond, Virginia.

10.6 If any provision of this Agreement and/or an SOW is held by a court of competent jurisdiction to be invalid or unenforceable, such provision will be enforced to the fullest extent that it is valid and enforceable under applicable law. All other provisions of this Agreement shall remain in full force and effect.

10.7 All notices must be in writing and sent to the individual who executed this Agreement on the other party's behalf, either by hand delivery; messenger; certified mail, return receipt requested; overnight courier; or by e-mail (with a confirming copy by regular mail) and shall be effective when received by such party at the address listed herein or other address provided in writing.

10.8 Neither party may assign this Agreement or any SOW, in whole or in part, without the other party's prior express written consent, which shall not be unreasonably withheld or delayed; provided, however that either party may assign this Agreement or any SOW to a successor-in-interest or to a purchaser of substantially all of its assets or equity. Any



attempted assignment without such consent shall be void. This Agreement will be binding upon and will inure to the benefit of the parties and their respective successors and assigns.

10.9 BlueConduit may refer to Customer as a BlueConduit client on its website and in marketing materials. Any other use would be subject to Customer's prior review and written consent, which may be withheld in Customer's sole discretion.

AGREED AND ACCEPTED:

Customer

Name: _____

Title: _____

Date: _____

Signature: _____

BlueConduit

Name: _____

Title: _____

Date: _____

Signature: _____

Exhibit A**STATEMENT OF WORK #1**

This Statement of Work ("SOW") is being issued under the terms of the Master Service and License Agreement between us (the "Agreement"). The terms of the Agreement and this SOW specifically replace any previously issued proposal. Capitalized terms used but not defined in this SOW have the meanings given to them in the Agreement.

Services Details:

- BlueConduit Grant Opportunity Richmond, VA, marked as Exhibit B

Deliverables:

- BlueConduit Grant Opportunity Richmond, VA, marked as Exhibit B

Work Product:

- BlueConduit Grant Opportunity Richmond, VA, marked as Exhibit B

Software:

- BlueConduit Grant Opportunity Richmond, VA, marked as Exhibit B



BlueConduit Grant Opportunity Richmond, VA

Rosemary Green
Senior Deputy Director
Richmond, Virginia

Phone: (804) 646-8517
Email: rosemary.green@richmondgov.com

Hi Rosemary,

I am sending you this letter as follow up to our recent conversations about the opportunity for Richmond to be a participant community in the Google.org grant program. Google.org is providing grant funding to BlueConduit to further advance our machine learning tools to help diverse socio-economic communities identify where their lead service lines are located. **The costs associated with the BlueConduit deliverables are fully covered by this grant.** Richmond will choose how to use these deliverables as it develops its Lead Service Line Replacement Program.

Below, I have summarized what BlueConduit does, the proposed Google.org grant opportunity, and Richmond's role.

- BlueConduit Overview
- How Statistical Modeling Works
- BlueConduit Grant Opportunity
- Cost to Richmond

BlueConduit Overview

BlueConduit is a water analytics consulting company that has developed cutting-edge, predictive machine learning methods to locate lead service lines (LSL), empowering local officials with the information to efficiently remove those pipes. Our model enables utilities to focus their resources on digging where the lead is and accelerating the removal of this significant health concern and save millions of dollars in avoided digs. Our commitment to transparency in our methodology fosters trust and collaboration with customers and stakeholders.

BlueConduit is the only group to demonstrate statistical modeling field success as measured by accelerated lead mitigation, improved project management, and reduced total spending. This combined with the Recommended Inspection List further reduces ambiguity around the unknown population of service lines. Consequently, this rigorous statistical approach regularly produces hit rate accuracy exceeding 75%, most recently approaching 90%.

With our strong linkage to leading edge academic research, we are continually refining our market application approach. Based upon recent advances in the team's academic work, we have introduced "active learning" into our model. Active learning identifies what you do not know and quickly reduces that uncertainty. This results in improved model accuracy in

identifying the addresses with LSLs and which service lines to inspect to reduce the most uncertainty.

BlueConduit is transparent in our partnerships with municipalities and utility/engineering companies by interpreting and explaining what is behind the LSL predictions and “Prioritized Replacement List”. This transparency also allows municipalities to communicate health information and best practices to the communities they serve.

Our passion for social mission continues to drive the actions of the company. This enables us to successfully partner with foundations like The Rockefeller Foundation, Google.org, and with local governments, state agencies, legislative policy makers, and industry associations.

We recognize that every water system is different and that there are other factors that can influence lead service line project prioritization, including logistical constraints and socio-economic concerns. Our customer-centric approach provides great flexibility on deliverables to adapt to your needs.

Since 2016, BlueConduit has inventoried more than 500,000 service lines across more than 50 municipalities in the United States and Canada. Those service lines provide water to more than 1,000,000 residents.

How Statistical Modeling Works

Replacing lead service lines is a public health and infrastructure priority. The EPA estimates that there are between six to ten million LSLs in the United States¹ with AWWA estimating that it could cost up to \$30 billion to replace them.² Additionally, the Robert Wood Johnson Foundation and The Pew Charitable Trust report that removing LSLs from homes of children born in 2018 would protect more than 350,000 children and yield more than \$2.7 billion in future benefits.³ The use of statistical modeling to identify and inventory of LSLs has already had significant positive impacts. BlueConduit's model is integral to the identification, and removal, of LSLs in many cities, including:

Flint, Michigan
Trenton, New Jersey
Large NJ Utility (>25 towns)

Toledo, Ohio
Benton Harbor, Michigan

Detroit, Michigan
Halifax, Nova Scotia

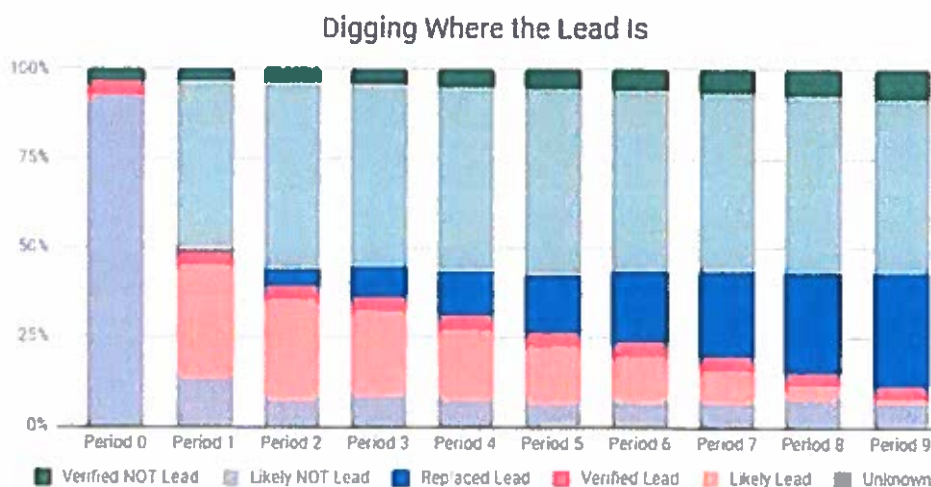
¹ <https://www.epa.gov/ground-water-and-drinking-water/lead-service-line-replacement>

² <https://www.waterworld.com/drinking-water/article/16204674/awwa-publishes-lead-service-line-analysis>

³ <https://www.pewtrusts.org/en/research-and-analysis/reports/2017/08/10/policies-to-prevent-and-respond-to-childhood-lead-exposure>

When identifying which LSLs to inspect and replace, a statistical modeling approach is measurably more efficient than other methods. The data from the field shows that using statistical modeling improves the accuracy of service line inventories and the efficiency of replacement programs, as measured by hit-rate and cost-per-line-replacement. When using a statistical model to guide replacements, Flint's dollars-spent-per-line-replacement of \$6,085 was approximately one-fourth the amount spent when a statistical model was not used to direct replacements. That method ultimately required \$23,844 for every lead line replaced.⁴ Using simulations, we have found that when other heuristics for selecting homes are used, such as relying on building age and water sample results, their performance is significantly lower than modern statistical modeling methods.

Statistical models use information that is known (e.g., location, year built, etc.) to make a prediction about something that is not known with certainty (e.g., SL material). The model "trains" over time to assign a likelihood of a given parcel having a lead SL for all parcels with "Unknown" SL materials. These parcels are represented by the gray "Unknown" area in the stacked bars in the graph to the right. Using known, verified information, the statistical model is regularly refined and



updates likelihoods, moving these parcels from "Unknown" to "Likely Not Lead" and "Likely Lead". It is these parcel-level likelihoods that help municipalities "dig where the lead is"- saving money, time, and eliminating a significant negative environmental health impact.

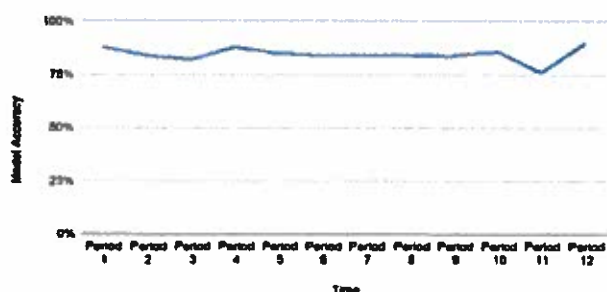
Specific to LSLs, statistical modeling supports:

- More accurate service line inventory and identification
- The creation of realistic operation and capital budgets
- Improved program management

⁴ Webb, Jared et al. "Getting the Lead Out: Data Science and Water Service Lines in Flint." Bloomberg Data for Good Exchange. New York, NY (2019).

- The development of community engagement and communication tools
- Compliance to regulatory requirements

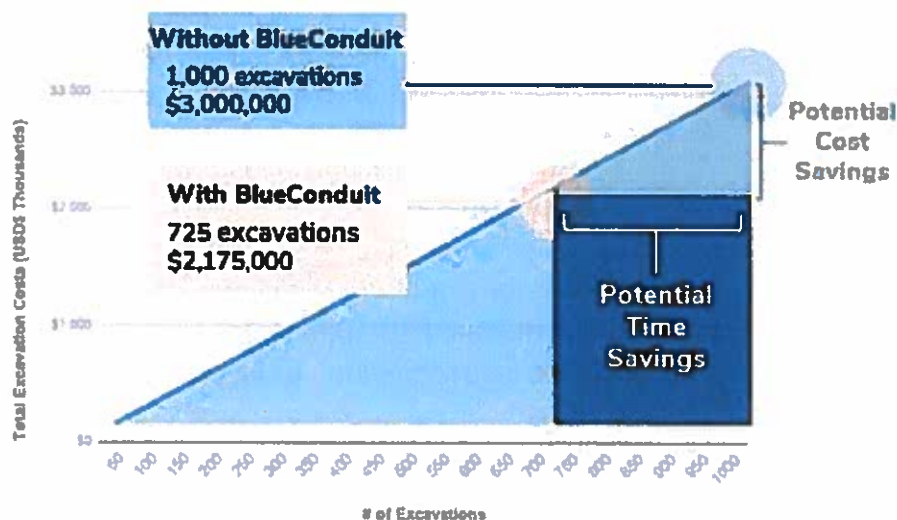
Based upon our work with a current BlueConduit municipal partner, the graph to the left



describes predictive performance over time, obtaining an accuracy level regularly exceeding 75% on homes recommended by the model. The municipal partner had previously relied on historical records and other heuristics resulting in a success rate of below 60%. This led to a more than 30% increase in the number of harmful lead pipes replaced at the same cost.

The accuracy of this model drives three primary public health savings:

- The ability to quickly identify those parcels most likely to have a LSL and proactively engage in community outreach. Additionally, municipalities can adopt a water filter distribution program to reduce potential lead exposure before any excavation begins.
- When addressing the "Unknowns", using a conservative 70% statistical model accuracy rate compared to a 50% coin flip baseline, the statistical model could generate savings in excess of 25%. If you were to target replacing 500 service points in a given time frame, the statistical model would have you excavate 725 sites while the baseline model would





have you excavate 1,000 sites, avoiding 275 excavations. At an estimated cost per excavation of \$3,000⁵, the statistical model could save \$825,000 (28.5%).

- It is important to emphasize that cities save time as well as money when they can avoid the 275 unneeded excavations, accelerating the removal of LSLs in the community.

BlueConduit Grant Opportunity

BlueConduit has received a grant from Google's non-profit group, [Google.org](https://www.google.org/), to identify communities that have LSLs and are represented by a diverse socio-economic population. With this grant, BlueConduit will work with Richmond, Virginia to develop their initial service line material inventory. This inventory could then be used by Richmond to meet the upcoming revised US EPA Lead and Copper Rule requirements.

The project does not have a specific timeframe for completion. It is based upon the following set of actions/deliverables:

- Richmond will provide BlueConduit with available source data and information. This data/information can include, but is not limited to:
 - Recently verified service line records
 - Historical water service line records (ie, maps, work slips/cards)
 - Taxable parcel records (year built, land size, value, zoning, etc.)
 - Construction records (if available)
 - Water bills (if available)
 - Richmond is responsible for the validity of the raw data provided to BlueConduit.
- BlueConduit will conduct a public search for other pertinent information that could be used in the development of the Richmond statistical model.
- Richmond will make the appropriate staff available to attend meetings and provide feedback about data and findings as well as share general knowledge about the water system and Utility.
- BlueConduit will provide:
 - Recommended Inspection List- BlueConduit will generate a random list of homes for Richmond to conduct initial inspections. This inspection will provide a baseline for development of the statistical model. The number of homes included in the Recommended Inspection List will depend on factors determined by

⁵ https://madison.com/wsi/news/local/officials-replacing-lead-pipe-worth-the-cost-whatever-it-is/article_c6bed78d-a6e5-5ebb-b0d6-0fab28ca90ca.html



BlueConduit and jointly approved by Richmond and BlueConduit. It is anticipated that this Recommended Inspection List could include ~100 parcels.

- Depending upon the information provided by Richmond, these inspections may not need to be conducted.
- **These inspections are not required to participate in the program nor required to generate parcel level service line material information (below).** These inspections would only improve the accuracy of the model's parcel-by-parcel output.
- Prioritized Replacement List- BlueConduit will provide an analysis predicting parcel level service line material(s) within the Richmond water system.
- Provide strategic consulting and advisory services to Richmond during to the project to review the outputs and support any planning initiatives.
- Interactive Map showing the known service line materials data. Here is a sample map that was created as part of the Flint, MI project; [Flint, MI Service Line Material Map](#). This map will be maintained through the project.

Other

- As Richmond will be one of the first communities to participate in this grant program, there is no application/review process. One of our requirements for the grant program is to develop an application and evaluation criteria for future community participants. We may ask Richmond for input and to review any proposed application at the conclusion of the project.
- At the conclusion of the project, Richmond will be provided a copy of the information generated and presented during the project. If Richmond is interested in continuing the project beyond this initial scope, a separate commercial agreement will need to be developed and executed.
- After the conclusion of the project, BlueConduit will continue to have access to all information provided and collected in the development and running of the Richmond statistical model.
- Richmond grants permission to BlueConduit and Google.org to include this project in future marketing materials. Richmond will review and approve any marketing materials prior to it being released.

Cost to Richmond



Through the duration of this project Richmond will not have any billable expenses from BlueConduit or Google.org. **The costs associated with the BlueConduit deliverables identified above will be fully covered by this grant.**

After reviewing this information, we can arrange for a meeting that includes Richmond, BlueConduit, and Google.org to address any additional questions or concerns you may have.

Prior to our talking, please let me know if you have any questions.

We look forward to working with the Richmond team.

Regards,

Digitally signed by Andy

Andy Rosenblatt

Rosenblatt
Date: 2021.06.23 15:41:29 -04'00'

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