

Firm Qualifications

Road to 2024:

**Water Service Line Inventory,
Identification, and Lead Service Line
Replacement**

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About Us

MSK Engineers is a Vermont-based multidisciplinary civil engineering consulting firm that has offered professional services within the public, nonprofit, and private sectors for over 30 years. We specialize in supporting our clients throughout all stages of the infrastructure development process that accompany revitalization and redevelopment. Our areas of expertise include:

- Civil Site
- Construction Administration
- Environmental Remediation
- Geotechnical Engineering
- Lead & Copper Rule Compliance
- Permitting & Planning
- Stormwater & Wastewater
- Survey & Mapping
- Transportation & Traffic Engineering
- Water Systems

Through our technical solutions and civic engagement, we advance the infrastructure that helps communities thrive by keeping people safe, healthy, and connected.

Our Team

Headquartered in the historic train station in Bennington, VT, we also support a hybrid work environment for staff with multiple offices in VT, currently serving clients in VT, NY, and CO. Our staff bring decades of experience from a variety of disciplines, allowing us to provide high-quality and innovative service to our clients. We cultivate a creative, flexible, and rewarding place to work by investing in our people. We laugh a lot.

Partnership

Our portfolio of projects and the clients we serve reflect our commitment to safeguarding public trust and enhancing the vibrancy of our towns and surrounding regions. Some of our recent collaborations include:

- Lead service line inventory, identification & replacement, currently partnered with the:
 - Town of Bennington
 - Champlain Water District
 - Town of Colchester
 - Village of Jericho
 - Shelburne Water Department
 - Town of Milton
- Municipal water line extension, Town of Bennington
- Water System design and permitting, Okemo Mountain
- Water main replacements and system upgrades, Bennington various locations
- Wastewater and stormwater design, Shires Public Housing and Lake Paran Village, Bennington
- Stormwater redesign and roadway improvements, Head Start Childcare Center
- Stormwater design and site development, Southwestern Vermont Medical Center

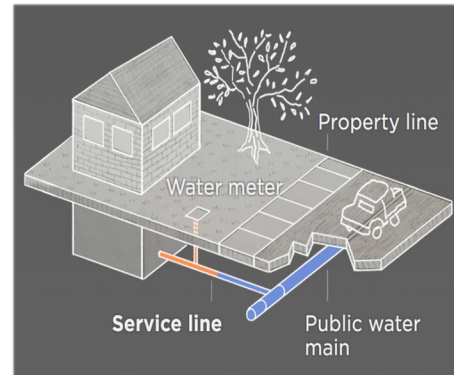
Overview: Service Line Identification

The Lead and Copper Rule Revisions

Service lines are pipes that connect individual buildings to drinking water distribution mains, which are typically located in streets or rights-of-ways. According to VTDEC guidance, service lines constructed prior to July 1, 1989 may be comprised of lead pipe. Lead is a neurotoxin that poses a public health risk, especially for children and pregnant women. These lead service lines, when present, can be a significant source of lead exposure.

In December 2021, the United States Environmental Protection Agency (USEPA) published federal Lead and Copper Rule Revisions (LCRR). These new regulations require every community water system in the country to prepare a service line (SL) inventory and lead service line (LSL) replacement plan prior to **October 2024**.

The service line inventory must classify pipe materials for the entirety of every service line connected to each water system's distribution piping, regardless of service line ownership, and each line must be classified as lead, not lead, or unknown pipe materials. The Vermont Department of Environmental Conservation (VTDEC) has published guidance directing public community water systems to prepare service line inventories using data obtained from records reviews and observations of pipe materials at service line building entrances.



Funding

Through the bipartisan infrastructure law congress has allocated federal funding to identify service line materials and replace lead service lines throughout the country. Vermont's drinking water state revolving loan fund will receive \$28 million of this funding every year over the next five years and will make this money available to Vermont communities through the annual intended use plan (IUP). This loan will be subsidized through principal forgiveness for up to 100% of the loan amount by the DWSRF program. MSK has significant experience assisting towns with securing subsidized funding through the Vermont DWSRF. We helped the Town of Bennington secure \$11 million in federal funds (as a loan with 100% principal forgiveness) from the DWSRF for a lead service line replacement project, and routinely provide assistance in preparing and submitting loan applications and supporting documents as required by the DWSRF program.

Our Approach

Through our work with the Town of Bennington over the past 6 years MSK has emerged as Vermont's leaders in identification of service lines and replacement of lead service lines. This experience has made us uniquely qualified to assist Vermont communities in preparing service line inventories and attaining compliance with the LCRR. We are the first in the nation to implement a stepwise approach to service line identification that leverages multiple techniques to accurately identify materials in a cost-effective manner; our customer outreach program has a 93% response rate, and our stepwise approach has been 98% effective at identifying lead in service lines.

Our engineers have also developed data management systems to collect, organize, track, and analyze information gathered during record reviews, basement observations of pipe materials, and analysis of water quality samples. We also procure project funding and manage the financial, administrative, and technical aspects from the initial scoping study phase through construction completion.

We have been leveraging our public engagement and data management experiences from the Town of Bennington's lead service line replacement project to prepare SL inventories for communities across Vermont. We plan to collaborate with you to employ a variety of outreach methods to raise your community members' awareness and engagement with this project. Such methods include direct mailings, social media postings, and door-to-door canvassing. We plan to provide water system customers with opportunities to self-perform service line observations and directly upload photographs and observation data to the project database.

PHASE 1: Inventory



Records Review

We review and digitize available records to establish known lead, not-lead, and unknown service lines throughout the water system.



Data Management

We select a data and project management approach for each water system. This can range from an automated database to a simple spreadsheet.



Inventory and Reporting

We develop an inventory of service line materials for submission by 2024, and communication materials to provide those results to the public.



Replacement Planning

We develop an LSL replacement plan for submission to the state. We identify and secure available funding to support your identification and replacement program.

PHASE 2: Identification



Benchmarking & Validation

Every system is different. We complete a pilot study to configure water sampling, assess the accuracy of records, and investigate other challenges before embarking on the project.



Public Outreach

We develop a variety of methods to help homeowners engage with identification and replacement work.



Stepwise Identification

We worked with EPA ORD to establish a stepwise approach that is 98% accurate, non-invasive, and has saved 75% of costs compared to test excavations in other water systems. See details in the diagram below.

PHASE 3: Replacement



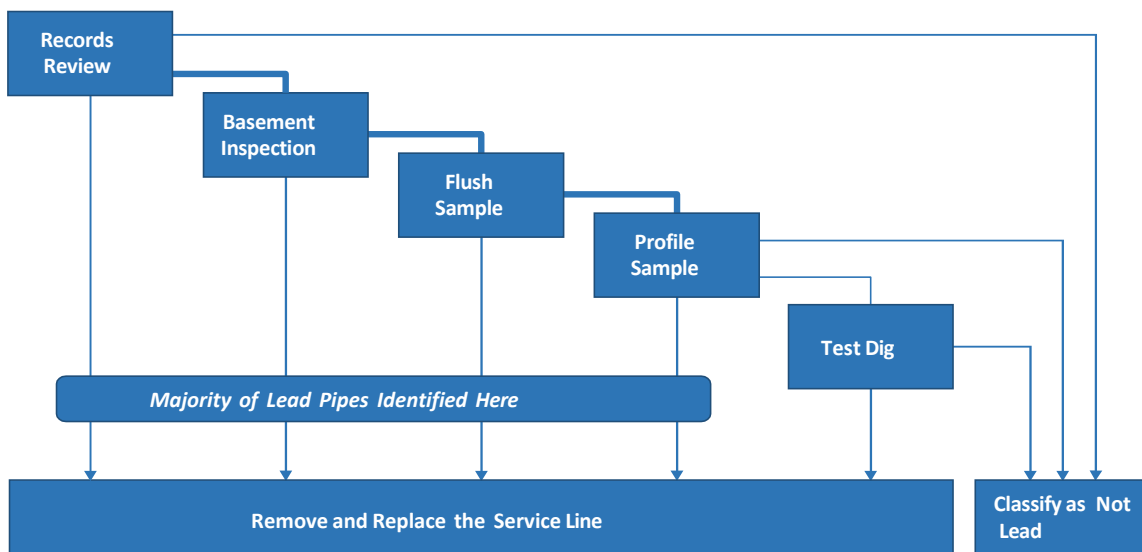
Design, Permitting, & Construction

As a full-service engineering firm, we carry the project from inventory all the way through to replacement.

Stepwise LSL Identification

MSK collaborated with the EPA Office of Research and Development to craft this modified stepwise approach to identify lead service lines. This approach has proven to be **98% accurate** at identifying lead service lines, based on a pilot study of 140 connections. This included 18 sites with copper pipe entering the foundation, but a portion of lead pipe further down the service line.

We have also found this approach to be over 50% less expensive than relying on test excavations alone.



Public Outreach

Lead service line identification projects present unique challenges, not the least being engagement with each individual property owner. We collaborate with our clients to develop and implement customer engagement strategies that fit their communities. For small communities, these strategies typically include direct mailings, emails, meeting discussions, and door-to-door canvassing. For larger communities, additional outreach methods including development of interactive websites and service line inventory maps, social media postings, and public service announcements to raise awareness of and participation in the project.




We work to minimize tasks required of the homeowner wherever possible. To date, we routinely achieve response rates of **80-100%**. Some examples of methods we currently use to engage the public include:

- **Initial notification letter** notifying homeowners of the SL inventory requirement, and that dates are being scheduled for door-to-door SL observations in their neighborhood.
- **Self-observation by response form** enables homeowners to locate and measure their own service lines, instead of scheduling inspections. Using plumbing diameters, the general location of the kitchen tap, and geospatial analyses, we can prepare custom water sampling kits for delivery to a property with zero contact.
- **QR codes on print materials** allow homeowners to schedule an inspection online after receiving paper outreach materials, without having to search for a website or type in a URL. We also provide instructions to enable residents to perform their own service line observation and upload info and photos directly to the project database.

Self-Observation Instructions

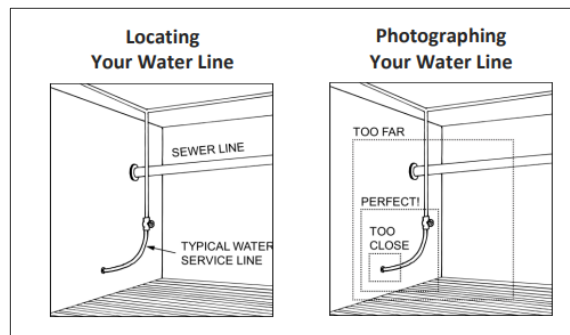
Instead of having MSK Engineers observe your water service line, you may complete a self-observation using the instructions below.

1. Scan the QR code to reach the online form.
(To scan the code: open a smartphone camera, focus on the code, then click the link that appears.)
2. Locate where your water service line enters the building. In most buildings it is a small pipe (less than 2") entering at or below knee-level.
3. Complete the fields in the online form, including taking a photograph of the service line. Then click submit.



<https://airtable.com/shrCdNS4p8mu17nGd>

If you are unable to complete any of these steps, please allow MSK to complete a pipe observation.



- **Postcards** to enable scheduling inspection appointments. Taking inspiration from COVID-vaccination scheduling, we developed methods to schedule on-site inspections using a return postcard. Homeowners select their preferred times and days and receive an appointment confirmation with the option to reschedule.
- **Door-to-door canvassing;** mailings and other methods typically account for 50-70% of our outreach response. The rest is achieved with a door-to-door campaign.
- **Telephone** outreach to landlords and businesses.
- **Social media campaigns** in partnership with the town. We collaborate with communications staff at the utility and other local partners to craft the message and assist as many homeowners as possible with engaging in the program.
- **Door hangers** with instructions for self-observation.



[Utility Name]
Water Service Line
Inventory Project
[\[utility webpage\]](#)

WE MISSED YOU!

MSK Engineers, a state contractor, arrived at this property to observe your water line, but was unable to reach a resident.

- **Web site** hosted by the Town which provides a portal for:
 - Ongoing communications and updates
 - Lead education resources
 - Summaries of project results, including a web map to provide public access to records for each SL connection
 - A real-time calendar for homeowners to schedule observations

Project Schedule

The project is divided into five contract areas. Use the web map to see below for the estimated dates when work will start for each contract area. Challenges or delays may cause these dates to change, especially for Contract 4.

Contract 1	
Final Observations and Water Sampling	Complete
Survey, Design, and Permitting	Complete
Construction	Complete
Contract 2	
Final Observations and Water Sampling	Complete
Survey, Design, and Permitting	Complete
Construction	Complete
Contract 3	
Final Observations and Water Sampling	Complete
Survey, Design, and Permitting	In Progress
Construction	Expected Su
Contract 4	

Examples of other outreach materials that we use can be found in **Appendix 2**.

Industry Expertise

Through our experiences on the Bennington Lead Service Line Replacement Project, we have developed unique technical expertise in implementing methodical approaches and are sharing our expertise across the industry, both within Vermont and at national conferences.

- We are currently collaborating with USEPA-ORD (Office of Research and Development) on a peer-reviewed paper about service line identification techniques that we plan to submit for publication in March 2023.
- We have presented our SL identification techniques at various industry events throughout 2022 including USEPA's 19th annual small systems workshop in Cincinnati, OH; the Vermont ACEC Annual Environmental Protection Technical Workshop in South Burlington, VT; and the NEWWA Annual Membership Meeting in Quincy MA.
- In collaboration with Vermont Rural Water Association, MSK provided two training courses to VT-certified drinking water operators that focused on the requirements of USEPA's LCR Revisions, available methods, and approaches to developing SL inventories and LSL Replacement Plans, and our experiences with these approaches in Bennington. See Appendix 1 for references to additional media and industry technical expertise.

Relevant Experience

1) Town of Bennington, VT

SL Inventory, Identification & Replacement

The Town of Bennington VT has been actively managing the presence of lead service lines (LSLs) in its water system since the mid-20th century. MSK Engineers has been executing a comprehensive SL identification and LSL replacement project for the town since 2017. The project includes records review, visual observations, flush water sampling, sequential profile water sampling, design, permitting, and replacement, all at no cost to property owners. We helped the Town of Bennington secure \$11 million in federal funds from the Vermont Drinking Water State Revolving Loan Fund (DWSRF). This fully reimbursable loan has allowed us to conduct outreach, identification, design, and construction at no cost to homeowners.

Combined Service Line Inventory and Asset Management Effort

In 2018, MSK compiled historic records, publicly available GIS data, grand list information, site surveys, and maintenance information to develop an inventory of water service lines in the system. This inventory revealed approximately 40% of the town's 3,800 service connections to be "lead" or "lead status unknown."

We combined this effort with an asset management grant to develop a GIS inventory of all water system infrastructure. This information was used to populate an asset management system, transforming daily maintenance for the utility. This effort also preserved institutional knowledge that was about to be lost as several senior operators retired.

MSK also developed a page for the town website summarizing the results of the project, including a web map to provide public access to records for each service connection (www.benningtonvt.org/lead).

Project Dates: 2017–present
(currently active)

Project Total: \$11 million
(100% subsidy from the VT DWSRF)

Contact: Stuart Hurd, Town
Manager shurd@benningtonvt.org
802.442.103



THE BENNINGTON LEAD REPLACEMENT PROJECT

Town of Bennington, VT
www.benningtonvt.org/lead

The Bennington Lead Replacement Project

5 years of engagement	15,000 people	93% outreach response rate.
3,800 connections	40% were Lead or Unknown	1,454 inspections

(2) Champlain Water District, Burlington, VT

SL Inventory Development

MSK is currently supporting the Lake Champlain Water District in the development of service line inventories for four public community water systems in Colchester. At present our services include providing technical assistance and direction in support of records reviews, customer outreach, and collection of SL observations at each connection served by each water system

Service line inventories are scheduled to be prepared in early 2023.

Project Dates: May 2022 – present
(currently active)

Project Total: \$272k

Contact: Jay Nadeau
Distribution Division Director
Champlain Water District
802-497-7195

(3) VT DEC Small Water Systems

SL Inventories and LSL Replacement Plans

MSK has contracted with the Vermont Department of Environmental Conservation to prepare service line inventories and lead service line replacement plans as a direct technical assistance service to ten very small public community water systems as assigned by VRDEC. MSK is performing these projects in accordance with VTDEC guidance for preparing service line inventories and LCRR requirements for lead service line replacement plans.

Our service line inventory related activities include coordination meetings with water system representatives; records reviews; outreach to water system customers, property owners, and residents; and observation of service line pipe materials at building entrances. To date we have completed service line inventories for two systems and are planning to complete inventories for the remaining nine systems by June 1, 2023.

Project Dates: Dec 2022 – present
(currently active)

Project Total: \$200,000

Contact: Bruce King, PE, Supervisor
Sustainable Infrastructure
VT Agency of Natural Resources
Bruce.King@vermont.gov
802-497-7195

(4) Town of Milton, VT

SL Inventory and LSL Replacement Plan

MSK is working with the Town of Milton to prepare a service line inventory and lead service line replacement plan for its municipal water system, which includes approximately 2,500 service connections.

We are in the initial planning and coordination phase of this project and are planning to submit a DWSRF planning loan application next month.

Project Dates: Dec 2022–present
(currently active)

Project Total: TBD
(2,500 service connections)

Contact: Don Turner
Town Manager
(802) 891-8021

(5) Town of Hinesburg, VT

SL Inventory and LSL Replacement Plan

MSK is working with the Town of Hinesburg to prepare a service line inventory and lead service line replacement plan for its municipal water system, which includes approximately 905 service connections.

A planning loan application has been submitted to the Vermont DWSRF program; we are planning to schedule a project kickoff meeting in March 2023.

Project Dates: Dec 2022–present
(currently active)

Project Total: \$100,000

Contact: Joy Dubin Grossman
Assistant Town Manager
802-482-4207

(6) Shelburne, VT Water Department

Database Development and Management

MSK is working with the Town of Shelburne to prepare a service line inventory and lead service line replacement plan for the town's water department, which includes approximately 2600 service connections. MSK's services include developing a data management system, reviewing available records and permit files, and supporting the town's meter replacement contractor with completing service line observations and uploading information to the project database. MSK is performing this project in accordance with VTDEC guidance for preparing service line inventories and LCRR requirements for lead service line replacement plans.

Project Dates: Feb 2023–present
(currently active)

Project Total: \$120,000

Contact: Bart Sherman
Water Superintendent
Town of Shelburne
802-985-5122
bsherman@shelburnevt.org

(7) Village of Jericho, VT Water System

SL Inventories and LSL Replacement Plans

MSK has contracted with the Village of Jericho to prepare a service line inventory and lead service line replacement plan for the village's public community water system that provides drinking water service to .575 residential and commercial service connections. MSK is performing this project in accordance with VTDEC guidance for preparing service line inventories and LCRR requirements for lead service line replacement plans.

Our service line inventory related activities include coordination meetings with water system representatives; records reviews; outreach to water system customers, property owners, and residents; and observation of service line pipe materials at building entrances. To date we have completed service line inventories for two systems and are planning to complete inventories for the remaining nine systems by June 1, 2024.

Project Dates: Jan 2023–present
(currently active)

Project Total: \$72,178

Contact: Donna

Our Team

Our project team has been supervising the inventory and identification of lead service lines since 2017. We'd like to introduce the principal staff members who currently play key roles to support our program:



PATRICK SMART, P.E.
Senior Engineer, Environmental Engineering
Project Lead & Key Point of Contact

As project lead on the Bennington LSL replacement project, Pat currently oversees coordination of records reviews, site visits, sampling events, customer outreach, and customer notification letters; development of engineering reports; design review, and oversight of all sampling and data collection. Pat is also the primary project lead and coordinator with VTDEC in the preparation of SL inventories and LSL replacement plans for 11 community water systems throughout Vermont.

He is currently collaborating with USEPA-ORD (Office of Research and Development) on preparing a peer-reviewed paper that is planned for publication in 2023.

Years with MSK: 2

Education & Certifications:

- MS, Environmental Science & Engineering *Colorado School of Mines*
- BS, Environmental Engineering *University of New Hampshire–Durham*
- Registered Professional Engineer, VT, NY, & CO



JASON DOLMETSCH, P.E.
President

Jay's leadership was initially responsible for accepting the challenge of lead service line remediation in partnership with the Town of Bennington. He supports our LSL program in maintaining key client relationships, cultivating new strategic opportunities, and support the quality of our work and the professional development of MSK's staff with ongoing technical guidance and mentorship.

Years with MSK: 23

Education & Certifications:

- BS, Civil Engineering *Rensselaer Polytechnic Institute*
- Registered Professional Engineer, VT, NY & CT



LIAM MCRAE, P.E.
Technician, Project Lead

Liam has supervised outreach and operations for lead service line replacement projects since 2018. He draws on a unique combination of backgrounds, including GIS, data management, environmental justice, natural sciences, and health education to craft effective projects and public outreach campaigns.

Years with MSK: 7

Education:

- BA, *Bennington College, Bennington VT*



NICHOLAS RATZER
Project Manager

Nicholas currently supports our lead program with project management, billing, contracts, design, and construction administration.

Years with MSK: 5

Education & Certifications:

- BS, Civil Engineering *New Mexico State University*
- OSHA training
- NETTCP Certified



MICHAEL MAZZU

Engineer

Mike supports the team in the field performing records reviews, visual inspections, door-to-door outreach, and administrative tasks.

Years with MSK: 2

Education:

- BS, Civil Engineering
University of Massachusetts Amherst



JUSTIN D'AMOUR

Technician

Justin combines his knowledge of software and GIS systems to help improve the lead team's overall workflow in the areas of:

- Lead service line inspection
- Processing filled and returned Lead sample kits
- Handling lead results data entry and mail
- Data management & door to door outreach for the Bennington lead project

Years with MSK: 1

Education:

- BS, Computer Engineering
- MS, Software Engineering,
Vermont Technical College



ETHAN LOVELAND

Technician

As part of our Survey team, Ethan plays a key role in the lead team day-to-day operations, including:

- Observation of SL pipes in basements
- Drafting and designing existing conditions plans
- Performing survey for existing homes, roads, sidewalks, landmarks, water, and electrical utilities
- Aide in distribution and recollection of sampling kits
- Logging and analyzing results of property information and laboratory data

Years with MSK: 2

Education & Certifications:

- BS, Natural Resource Management *SUNY-ESF Syracuse, NY*
- AAS, Environmental & Natural Resource Conservation, *SUNY-ESF Ranger School Wanakena NY*



BRIANNA SULLIVAN

Technician

Brianna supports the day-to-day operations of the lead program. Responsibilities include:

- Developing design drawings, proposed conditions plans, design basis reports
- Data analysis & data management
- Outreach letters, mailings, door-to-door follow-up visits, property owner calls, sampling & inspections

Years with MSK: 2

Education & Certifications:

- BS, Civil Engineering
Wentworth Institute of Technology, MA
- OSHA-10 certified



AUBREY FERRIS
Technician

Aubrey contributes to multiple civil and environmental engineering projects at MSK, specifically in the lead service line replacement plan project. Current responsibilities include:

- Historical records review & assessment of town property cards to determine build date of homes
- Managing community homes mailing list
- Creating reports for VTDEC
- Managing outreach letters to residents in small water system communities for door-to-door inspections

Years with MSK: 1

Education & Certifications:

- BS, Civil Engineering,
University of Vermont



JASON HAYDEN
Field Technician

Jason plays a key role in our field work for the Bennington project. Current responsibilities include:

- Researching VTDEC records
- Reviewing contract and construction documents
- Performing service line inspections
- Compiling data and writing reports
- Communications with water system managers

Years with MSK: 1

Certifications:

Multiple inspection certifications in Alaska

Appendix 1 | Technical Expertise and Media

Technical Expertise

Throughout 2022, MSK presented our expertise on service line (SL) identification and replacement methods at various industry events including:

- USEPA 19th Annual Small Systems Workshop, *Cincinnati, Ohio*
- Vermont ACEC Annual Environmental Protection Technical Workshop, *South Burlington, VT*
- NEWWA Annual Membership Meeting, *Quincy MA*

Development and Optimization of a Systematic Approach to Identifying Lead Service Lines

Pending

We are collaborating with USEPA-ORD (Office of Research and Development) on preparing a peer-reviewed paper that we plan to submit for publication in March 2023.

Engineering Decision-Making and Its Impacts on Public Health

April 2022, Rensselaer Polytechnic Institute (RPI)

Jason Dolmestch, P.E., President of MSK Engineers delivered a talk for RPI students and faculty on seeking out environmental justice work in the civil engineering profession.

Lead Service Line Identification, Inventory, and Replacement

January 18, 2022, and April 5, 2022, VT Rural Water Association

MSK delivered a 3-hour operator training course facilitated by Vermont Rural Water Association, led by Patrick Smart and Liam McRae of MSK Engineers. Discussion focused on the requirements of LCRR, techniques available to inventory and identify SL pipe materials, methods for engaging the public, and the stepwise approach used to identify SLs in Bennington.

Lead Remediation and Asset Management in Bennington, VT

June 4, 2019, VT Rural Water Association

MSK delivered two 3-hour courses for VT Rural Water Association members on completing records reviews and on-site inspections for LSL identification. This included a segment on how MSK and the Town of Bennington combined initiatives to populate a new asset management system, transforming daily maintenance for the utility.

Media

VT DIGGER, Jan 08, 2023: Lead water pipes in 300 Bennington homes have been replaced in pioneering project

MSK's work on this multimillion-dollar project has put Bennington ahead of the curve compared with the rest of the state. [Read it here.](#)

BENNINGTON BANNER, March 21, 2022: MSK wins \$25K to identify lead water pipes, will lead to skilled jobs

Our work in identifying and replacing lead drinking water lines won the company the \$25,000 Lever Challenge prize to assist with the costs of business innovation. [Read it here.](#)

VICE NEWS, June 23, 2021: The Bennington Lead Service Line Replacement Project

VICE featured our Bennington Lead Replacement Project as a success story alongside the city of Chicago in a segment on lead service lines in the United States. [Read it here.](#)

VT DIGGER, September 3, 2021: Bennington receives \$11 million to extract last remaining lead water pipes

In August 2020, MSK helped the Town of Bennington obtain a one-time transfer of \$11 million in fully reimbursable loans through the State of Vermont's Drinking Water State Revolving Fund, a nationally significant award at that time. [Read it here.](#)

PROMO VIDEO: Our Bennington Story

A video piece illustrating the success of the Bennington Lead Replacement Project. [Read it here.](#)

Appendix 2 | Outreach Material Samples

- **Initial notification letter** (used for SB FD1)
- **Self-observation instructions** (used for Jericho East)
- **Return postcard** (used for Bennington)
- **One page response form** (used for Bennington)
- **Door hanger** (used for VT DEC small systems)
- **Screenshots** from the Bennington town website

Initial notification letter

January 4, 2023

Job # 1396-002 Service Line Inventory and Replacement Plan

Lee Ann Banks
Jericho East Homeowners' Association

Re: Small Systems Inventory – Jericho East Homeowners Association Water System

Dear Lee Ann,

MSK Engineers has contracted with the Vermont Department of Environmental Conservation (VTDEC) to prepare service line inventories for selected very small community water systems, including the Jericho East Homeowners Association water system. Service lines are pipes that connect individual buildings to drinking water distribution mains. This is in accordance with new regulations passed in December 2021 by the United States Environmental Protection Agency (USEPA), requiring every community water system in the country to prepare a service line inventory by October 2024. The service line inventory must classify pipe materials for every service line connected to the water system.

[Published guidance](#) from VTDEC requires service line inventories to be prepared based on review of available records and basement observations of service line pipe materials. Accordingly, we will need to access buildings served by the water system to observe these pipes and complete this work if no records of the pipe materials are available.

Per our previous discussions, MSK plans to complete door-to-door service line observations, tentatively scheduled for early February. We will conduct or assist with outreach to individual homeowners in coordination with you once final dates are set.

Please do not hesitate to contact me if you have any questions or concerns. We are excited to work with you on this project.

Sincerely,



Patrick Smart, P.E., Senior Engineer
MSK Engineers
(802) 447-1402 x 127
psmart@mskeng.com

Self-observation instructions

Self-Observation Instructions

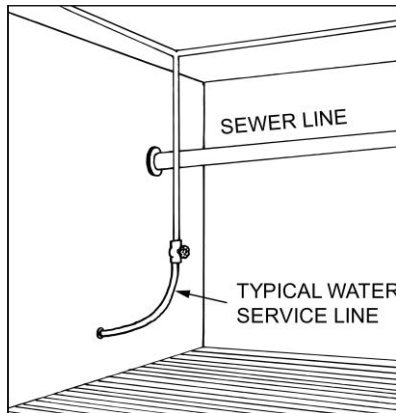
Instead of having MSK Engineers observe your water service line, you may complete a self-observation using the instructions below.

1. Scan the QR code to reach the online form.
(To scan the code: open a smartphone camera, focus on the code, then click the link that appears.)
2. Locate where your water service line enters the building. In most buildings it is a small pipe (less than 2") entering at or below knee-level.
3. Complete the fields in the online form, including taking a photograph of the service line. Then click submit.

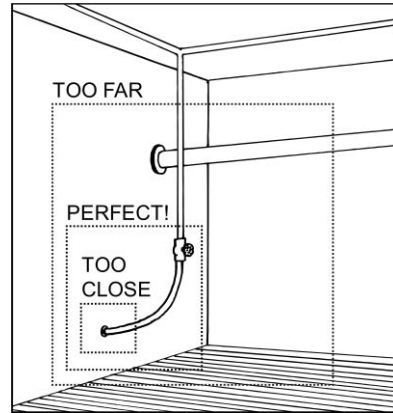


If you are unable to complete any of these steps, please allow MSK to complete a pipe observation.

Locating Your Water Line



Photographing Your Water Line



Return postcard



THE BENNINGTON LEAD REPLACEMENT PROJECT

Town of Bennington, VT

www.benningtonvt.org/lead

1. RESPONSE TYPE (please check one):

- I am interested in a free service line inspection and service line replacement if necessary, or I am unsure about my service line materials.
- The service line installed at this building is copper, plastic, or ductile iron pipe (skip section 4).
- The service line has already been completely replaced with copper, plastic, or ductile iron pipe (skip section 4).

2. STREET ADDRESS: _____

3. CONTACT INFORMATION:

Primary Contact Name: _____

Phone (cell): _____

Email: _____

4. SCHEDULING:

Please check your preferred days and times for a 30-minute water line inspection. We will schedule an inspection and send you a confirmation message by text and/or email. This confirmation message will include an option to choose a different date or time if needed.

- 8-10am 10-12pm 12-2pm 2-4pm 4-6pm
- Monday Tuesday Wednesday Thursday Friday



MSK
ENGINEERS

PO Box 139
Bennington, VT 05201

One page response form



■ Property Information

I am interested in a **free** lead service line replacement. (After receiving this form, MSK will drop off a water sampling kit on the front step.)

This property is not served by a lead service line, or the line has already been replaced.

Street Address

Primary Contact Information

Name

Phone

Email

I have a water filtration system installed at this location.

■ Service Line Size

Please choose one of the following options.

I know the diameter of my service line.

1/2" 3/4" 1"

I can measure my service line.

To measure your service line, cut the ruler from the bottom of this form. Locate where your water service line enters the building (small 1/2-1" pipe; see diagram 1). Wrap the ruler around the outside of the pipe close to where it enters the basement wall. Write the measurement below.

Service line circumference _____

I can't locate my service line.

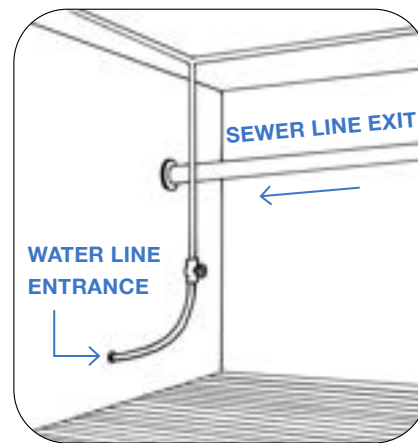


DIAGRAM 1

■ Location of Water Line, Sewer Line, and Kitchen Tap

1. Mark the general location of the kitchen on the diagram below. This will allow us to estimate the length of plumbing between the tap and the service line.

2. If possible, locate where your water service line enters the building (small 1/2-1" pipe; see diagram 1). Mark the general location on diagram 2, below.

3. If possible, locate where your sewer line exits the building (large 4-6" pipe; see diagram 1). Mark the general location on diagram 2, below.

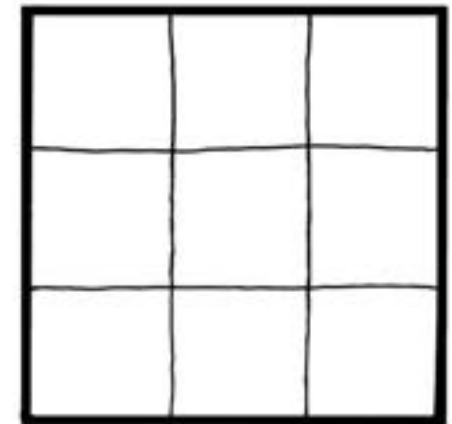
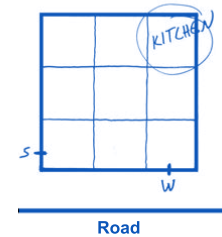
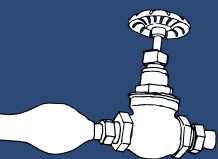


DIAGRAM 2.
Sample scenario (above) and fill-in grid (right)

ROAD



Door hanger



[Utility Name]
Water Service Line
Inventory Project
[utility webpage]

WE MISSED YOU!

MSK Engineers, a state contractor, arrived at this property to observe your water line, but was unable to reach a resident.

We will be conducting a 2nd round of door-to-door water line observations on the dates below.

[MONTH X - X]
between 3pm and 8pm

Please be available during this time to allow MSK to locate and observe your water line. *OR*, you may...

1. Submit a photograph of your water line instead (see reverse).
2. Call MSK to schedule a time for an observation.

MSK
ENGINEERS

802-447-1402, Ext. 123
aferris@mskeng.com
150 Depot St, Bennington, VT 05201

See Reverse for Self-Observation Instructions

Other Information About the Project:

Your water utility has been selected by the State of Vermont to receive a water service line inventory prepared by a state contractor, MSK Engineers. This inventory must classify the pipe material for each water service line in the water system. Water service lines are the pipes that connect individual buildings to drinking water mains.

This effort is in accordance with new regulations passed in December 2021 by the United States Environmental Protection Agency (USEPA). Inventories must be completed before October 2024.

Instead of having MSK observe your water line, you may submit a photo of your water pipe using the instructions below.

1. Scan this QR code to reach the online form.

To scan the code: open a smartphone camera, focus on the code, then click the link that appears.



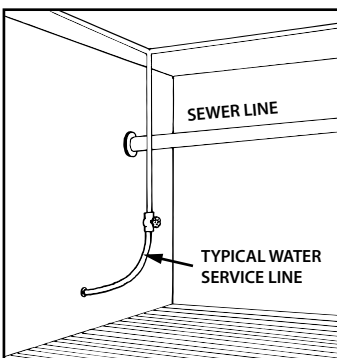
2. Locate where your water line enters the building.

In most buildings, the water service line is a small pipe (less than 2") entering at or below knee-level.

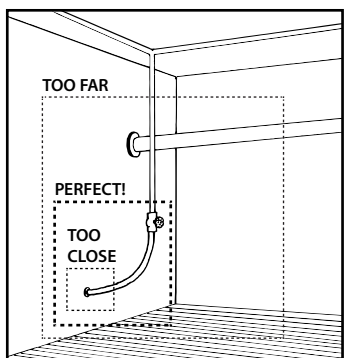
3. Complete the online form and click submit.

This includes taking a photograph of the water service line. We will send you the results via mail.

Locating Your Water Line



Photographing Your Water Line



If you are unable to complete any of these steps, please allow MSK to complete a pipe observation.

Web Site

You are here: Home / Departments / Departments of Public Works / Water Resources Division / The Bennington Lead Service Line Replacement Project

The Bennington Lead Service Line Replacement Project

Summary

In 2017, the Town of Bennington commenced a multiphase project to replace lead service lines throughout the water system. Service lines are drinking water pipes that run from a public water main into a building.

The Bennington Lead Replacement Project is divided into five contract areas. See the [project schedule below](#) for information about when to expect replacements and for recommendations about [what to do in the meantime](#). Use the [web map](#) to view information about your property, including which contract area it may be in.

This project is funded by a grant from the State of Vermont and comes at no cost to homeowners or residents. The goal of this project is to identify and replace as many lead service lines in Bennington as possible, to extent that funding is available. These replacements cannot be guaranteed until construction begins.

Contents:

- [Choose an Inspection Time](#)
- [Contact MSK Engineers](#)
- [Project Schedule](#)
- [How to Read Sampling Results](#)
- [What to Do While Waiting for Replacement](#)
 - [Where to Find a Certified Water Filter](#)
 - [How to Flush the Tap](#)
- [Web Map](#)
- [Other Information About Lead](#)

Choose an Inspection Time

We are conducting basement inspections and water sampling in all Contract areas. Use the link below to choose an appointment time.

<https://calendly.com/benningtonlead/inspection>

An inspector from MSK Engineers will observe the pipe material in the basement and draw a water sample using new methods developed in 2020. If this sampling indicates the presence of a lead pipe, we will plan to replace the service line at no cost to the homeowner.

Contact MSK Engineers

If you have questions about the project, please contact MSK by phone or email. Feel free to call anytime between 8 AM and 8 PM.

Liam McRae
MSK Engineers
802-447-1402, Ext. 123
lmrae@mskeng.com

Project Schedule

The project is divided into five contract areas. Use the [web map](#) to see which contract area your property may be in.

How to Read Sampling Results

What the Units Mean

Lead sampling results for the Bennington Lead Replacement Project are delivered in **micrograms per liter (ug/L)**, also known as parts per billion. The results will include a number followed by one or two decimal places, for example, 2.5 ug/L.

The laboratory detection limit is 1 ug/L. A result of <1 ug/L means that that sample did not detect any lead.

You may have received results from other testing programs in **milligrams per liter (mg/L)**, also known as parts per million. Results would include a zero followed by three or four decimal places, for example, 0.0025 mg/L. It is important not to get these confused with micrograms per liter. Results in milligrams per liter can look deceptively small.

How Much is "Safe"?

The EPA and State of Vermont Maximum Contaminant Level Goal (MCLG) for lead is 0 ug/L. This means that any detectable lead is above the MCLG and considered a health risk. The only "safe" test results would be no lead detected (<1 ug/L). However, even these results could reflect seasonal variations or other conditions that temporarily reduce lead concentrations in drinking water.

See [below](#) for two actions you can take to reduce lead concentrations in drinking water. These methods can help, but the best course of action is to remove the lead material. For this reason, the Bennington Lead Replacement Project aims to remove and replace lead service lines entirely.

Other Sources of Lead

You may see lead detections in the first few sampling results even though your letter from the Town of Bennington says the service line is probably not made of lead. These detections are most likely from [lead solder](#) or [brass fixtures](#), not a lead service line. To reduce the impact of these plumbing components, see below for a list of certified water filters and instructions on how to flush the tap. These methods can help reduce lead in drinking water. However, the most effective method is to replace the lead components entirely.

What to Do While Waiting for Replacement

Approximately 40% of service lines in the Bennington water system are classified as Lead or Unknown. The Bennington Lead Replacement Project was initially estimated to take up to ten years to complete. When the Town secured \$11 million in grant funding, that estimate was cut in half. However, this is still a significant amount of time for families to wait. Two steps you can take to reduce lead in drinking water while waiting for an inspection or a replacement include maintaining a certified water filter and flushing the tap.

Where to Find a Certified Water Filter

Using a filter will not remove 100% of lead from drinking water, but it can reduce lead levels substantially. It is important to search for a filter that is certified to the ANSI or NSF-53 standard to remove lead. For example, the standard filter cartridges from Brita or PUR will not reliably remove lead from drinking water. However, the Brita Longlast and PUR PLUS cartridges will. These cartridges are both certified to the NSF-53 standard to remove lead. Remember: a water filter will not work unless it is maintained. You must replace filter cartridges, clean the filter, or whatever steps the instructions specify for the filter to work.

Below are two links to lists of filters that are certified to the NSF-53 standard to remove lead from drinking water. The first link is from NSF. These products are certified by NSF directly. The second list is from the Water Quality Association (WQA). These filters are certified by WQA to the NSF-53 standard to remove lead.

NSF Product Search Page: <https://info.nsf.org/Certified/DWTU/>

1. Under Product Standard, choose NSF-53.
2. Choose a product type like faucet mount or pour-through [water pitcher].
3. Under Reduction Claim choose Lead Reduction.
4. Click Search

WQA certified filters list: <https://www.wqa.org/Find-Products#/keyword/?categories=5&claims=48>

How to Flush the Tap

Lead gets into drinking water through surface contact. The longer the water sits in contact with a lead-containing pipe or fixture, the more lead leaches in. This includes brass fixtures, like faucets. Even if a faucet looks silver or chrome, it may be brass underneath. Brass installed before 2011 can contain as much as 8% lead.



Liam McRae

Lead Service Line Inspection

 30 min

Please choose a date and time for an inspection. An inspector from MSK Engineers will observe the pipe in the basement and collect a water sample for laboratory analysis. If you have questions or would like to discuss other details, please contact:

Liam McRae

MSK Engineers

802-447-1402 Ext. 123

lmcrae@mskeng.com

Select a Date & Time



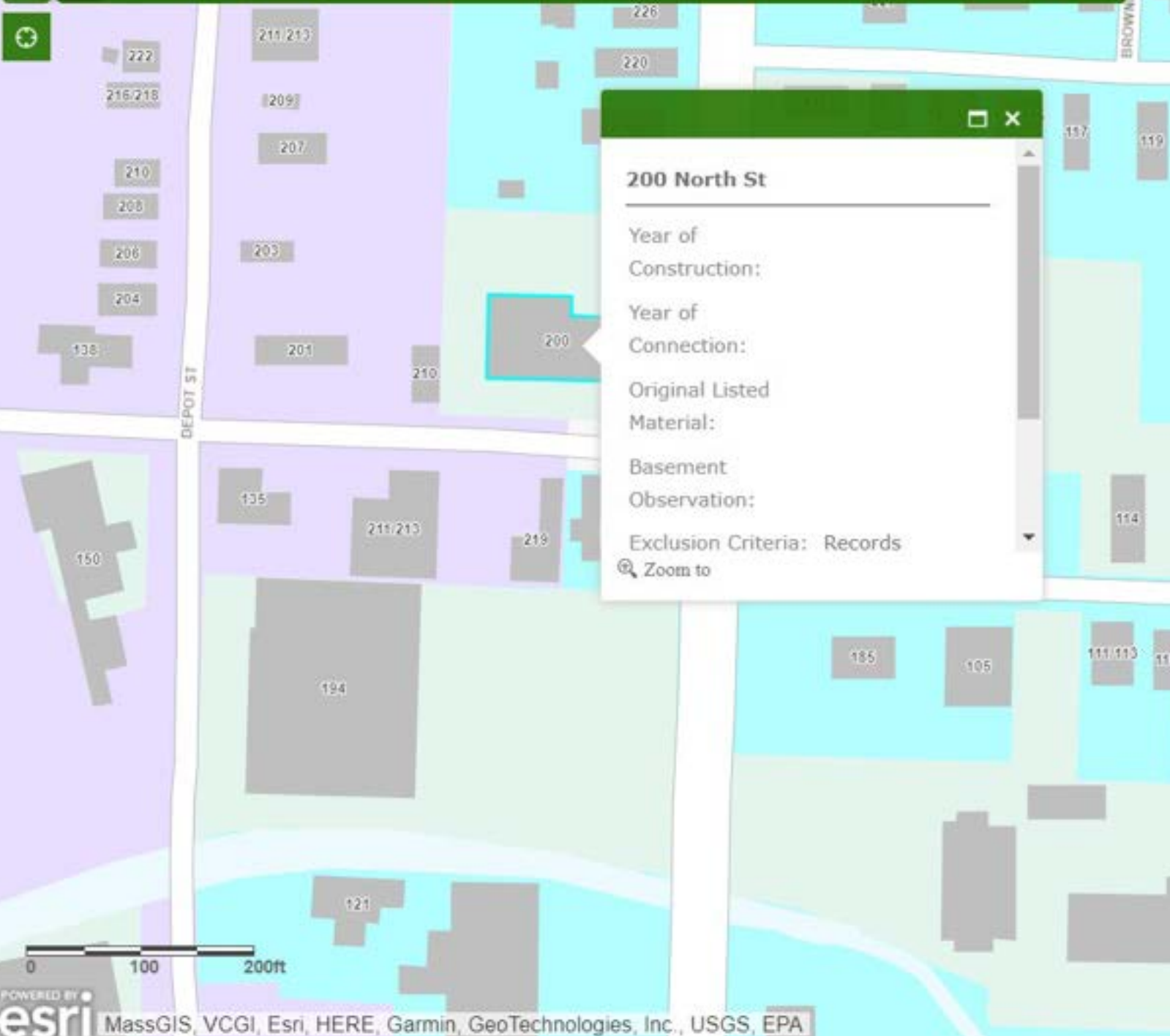
March 2023



SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Time zone

 Eastern Time - US & Canada (2:55pm) ▾



Project Schedule

The project is divided into five contract areas. Use the web map to see which contract area your property may be in.

See below for the estimated dates when work will start for each contract area. All the dates listed are estimates only. New challenges or delays may cause these dates to change, especially given the impacts of the COVID-19 pandemic.

Contract 1	
Final Observations and Water Sampling	Complete
Survey, Design, and Permitting	Complete
Construction	Complete
Contract 2	
Final Observations and Water Sampling	Complete
Survey, Design, and Permitting	Complete
Construction	Complete
Contract 3	
Final Observations and Water Sampling	Complete
Survey, Design, and Permitting	In Progress
Construction	Expected Summer 2022
Contract 4	
Final Observations and Water Sampling	In Progress
Survey, Design, and Permitting	In Progress
Construction	Expected Spring 2023
Contract 5	
Final Observations and Water Sampling	In Progress
Survey, Design, and Permitting	In Progress
Construction	Expected Summer 2023

It is not too late to sign up for replacement!

Even if work has been completed for your area, we can still add your property to the extent that funding is available. Please

Appendix 3 | Leadership Team Resumes



MR. SMART is a senior engineer at MSK. He has more than 15 years of experience in environmental engineering and is responsible for guiding MSK's environmental engineering practice.

Experience

2+ with this firm
11 with other firms

Education

MS, Environmental Science & Engineering
Colorado School of Mines Golden, CO

BS, Environmental Engineering
*University of New Hampshire
Durham, NH*

Selected Certifications

Registered Professional Engineer
New York | Vermont | Colorado

Safety

- HAZWOPER 40-hour training
- OSHA-10 construction safety

WATER SYSTEMS:

2020-2023 | Bennington Lead Replacement Project, DEC Inventory Assistance for Small Water Systems

Multiple locations in VT

- As the Bennington Lead Replacement Project Lead, Pat oversees all records review, observations, water sampling, and data analysis, as well as public outreach, development of engineering reports, design, permitting, and execution of LSL replacements.
- Currently the primary project lead in coordination with VTDEC to prepare service line inventories and lead service line replacement plans for community water systems throughout Vermont. Currently working with 11 community systems under this project, which commenced in December 2024, including:
 - Champlain Water District, Burlington, VT
 - VT DEC Small Water Systems
 - Town of Milton, VT
 - Town of Hinesburg, VT
 - Shelburne, VT Water Department
 - Village of Jericho, VT Water System
- Recently completed two service line inventories for South Burlington Fire District 1 and Lyman Meadows Water Systems.
- Currently collaborating with USEPA-ORD (Office of Research and Development) on preparing a peer-reviewed paper that is planned for publication in 2023.

2017-2018 | Municipal Water Line Extension

Bennington, VT

- Provided technical review and regulation of the expansion of Bennington Water Department's service to provide municipal drinking water to properties with on-site water supplies that were contaminated with PFOA and PFAS.
- Provided direction, technical review, and established permit Conditions to ensure expansion maintained compliance with the MRDL Rule, DBP-Stage 2 Rule, Federal LCRR, and the RTCR.

2019-2020 | State PFAs Response Plan

Montpelier, VT

- Provided technical assistance to development of the public Drinking water program's PFAS Response Plan, which establishes and actions to be taken if samples collected from a public system exceed the state MCLs for PFAS.

2019-2020 | Water Supply Rule

Montpelier, VT

- Assisted with development of the Vermont Water Supply Rule, revised in March 2020, which established regulations for PFAS, including a MCL, monitoring requirements, requirements, and technical design standards for treatment technologies to remove PFAS from drinking water.

2009 | Interstate Brick

Salt Lake City, UT

- Designed and executed a laboratory testing program to identify water treatment technologies capable of removing arsenic and mercury from an industrial water source.
- Developed a full-scale design for a system based on the laboratory results.
- Directed system startup and verification testing, managed client relationships, and provided technical support during initial water treatment system operations.

WASTEWATER SYSTEMS:

2004–2010 | Summary of Work

Manchester, NH & Denver, CO

- Conducted preliminary evaluation, design, construction, performance testing, startup, and operations of wastewater treatment processes to remove biological oxygen demand, total suspended solids, ammonia, chemical oxygen demand, metals, acidity, radionuclides, volatile organic compounds, and petroleum compounds using physical, chemical, and biological unit operations.
- Experience included permitting for direct discharges through the U.S. EPA's National Pollutant Discharge Elimination System and for discharges to a sanitary sewer collection system through an industrial pretreatment permit program.
- Treatment experiences include the management of water quality constituents associated with municipal wastewater— biological oxygen demand, total suspended solids, ammonia—through typical treatment unit operations, including physical treatment for screening, primary settling, biological treatment, and disinfection treatment, including chlorination.
- Managed dichlorination following disinfection treatment.



MR. MCRAE has supervised outreach and operations for lead service line replacement projects since 2018. He draws on a unique combination of backgrounds, including GIS, data management, environmental justice, natural sciences, and health education to craft effective projects and public outreach campaigns.

Experience

7 with this firm

Education

*BA, Bennington College
Bennington, VT*

WATER SYSTEMS:

2022-2023 | VT DEC Inventory Assistance for Small Water Systems

Various Locations

- Developed or edited budgets, timelines, database templates, and outreach campaign materials for use in assisting small water systems with developing water line inventories.

2020-2023 | Bennington Lead Replacement Project

Bennington, VT

- Supervised outreach, on-site inspections, water sampling, design, and data management for 3,800 sites. Refined public outreach methods to achieve participation rates of 85-100% in five consecutive contract areas.
- Collaborated with US EPA to establish a stepwise approach that was shown to be 98% effective at identifying lead service lines, while reducing costs by half compared to test digging alone.

2019-2020 | Lead Step II Design Loan

Bennington, VT

- Developed and executed a basement observation program for the water system.
- Collaboratively developed an outreach strategy which increased participation rates from 5% to 55% initially, and higher in subsequent projects.

2018-2019 | Lead Service Line Mapping Grant

Bennington, VT

- Developed a GIS inventory of all water system assets. Used this inventory to populate a new, digital asset management system for the Department of Public Works.
- Completed GIS analyses to identify street segments with both high concentrations of lead service lines and upcoming maintenance.
- Developed public outreach materials, a web page and web map, and a lead service line replacement plan for the water system.

2017-2018 | Municipal Water Line Extension

Bennington, VT

- Assisted design, cost-estimating, and construction observation for connecting properties with PFOA contaminated wells to the municipal water system.
- Supervised pre-and post-connection water sampling lead and the completion of state WWPWS permit-exemption certificates.

2017-2018 | South End Water Line Upgrades

Bennington, VT

- Assisted with construction observation, cost estimating, and permitting.
-

TRANSPORTATION:

2019 | Dorset Mixed-Use Paths

Dorset, Vt

- Developed design plans and conceptual alternatives for a mixed-use pedestrian path and sidewalk improvements.

2019 | Benmont Active Transportation Corridor

Bennington, VT

- Completed cost estimates for a mixed-use pedestrian/bike path.

2018 | Ninja Mixed-Use Path

Bennington, VT

- Completed plan sheets and application documents for right-of-way easements along a mixed-use pedestrian path.
 - Assisted with soils assessments and test excavations along the route.
-

STORMWATER MANAGEMENT:

2019 | Spring Center at the Bennington Recreation Center

Bennington, VT

- Completed design plans and stormwater permit application documents for the proposed building addition.

2019 | Lake Paran Village

Shaftsbury, VT

- Assisted with the development of grading design plans.

2019 | Northside Drive Self-Storage

Bennington, VT

- Developed conceptual plans and flood-risk base maps for a 52,000 square foot self-storage facility.



MR. RATZER joined MSK in 2016 as a construction inspector and field survey crew member and. He is currently responsible for project management in the field and in the office, and he regularly provides opinions of probable cost for projects entering the construction phase. He is working toward his P.E. certification in the state of Vermont.

Experience

7 with this firm

1 with other firms

Education

BS, Civil Engineering

New Mexico State University,

Las Cruces, NM

Selected Certifications

Engineer-in-Training

10-hour OSHA training

NETTCP certified:

- *HMA paving inspection*

- *Soils and aggregate inspection*

Water Systems Experience:

2020-2023 | Bennington Lead Replacement Project, DEC Inventory Assistance for Small Water Systems

Various Locations

- Currently supports our lead services team with regulatory permitting, project management, billing, contracts, design, and construction administration.

2017-2018 | Municipal Water Line Extension

Bennington, VT

- Conducted preliminary site investigations and oversaw design of waterline systems within VTrans road corridors for \$30M, 3-year water line expansion in response to PFOA contamination of aquifer.
- Coordinated with VTrans District 1 engineers on design and permitting requirements for roadway reconstruction, including work within VTrans limited access corridors.
- Coordinated the delineation and survey of wetlands within the project limits. Cleared the project site for potential impacts to endangered species and archaeological sites.
- Responsible for the oversight and training of seasonal construction observers to ensure compliance with engineered drawings and specifications.
- Conducted inspection of transverse road directional drilling to install HDPE water main sleeving. During unsuccessful drill attempts, coordinated with VTrans officials on the installation of water main sleeves via open cut across state highways.
- Inspected the installation of flowable fill and asphalt on both concrete and asphalt roadways during the reconstruction of the open cut installations.
- Actively collected load tickets and inspected truck asphalt deliveries for temperature, site time, and visual indicators of asphalt deficiencies.
- Coordinated with Vtrans on construction within limited access rights-of-way and procured necessary permits for work within roadway and limited-access corridors.
- Monitored contractors' adherence to Erosion Prevention and Sediment Control plans during construction near protected waters of the state and after significant storm events

2021 | Okemo Trailside Fire Protection Line

- Water System design and permitting for a fire protection system on a mountainside rural area fed via a surface water pond.

Wastewater Systems Experience:

2016 - 2020 | County Street Sewer Extension & Road Improvements

Bennington, VT

- Project managed the emergency replacement of approximately 1460 linear feet of actively failing 15-inch vitrified clay pipe with 24-inch PVC sewer main along County Street and Benmont Avenue in the Town of Bennington, Vermont. The sewer line serves close to half of the town's residents and businesses.
- Oversaw bypass pumping of large volumes of sewage while maintaining traffic flows.
- Accommodated for winter months due to its emergency nature, requiring tight project timelines for repaving requirements of high traffic roads.
- Oversaw the design of horizontal and vertical roadway and sidewalk improvements which required construction phase coordination and design change orders.

Corey Drive Pump Station

North Bennington, VT

- Reviewed submittals and provided technical oversight of the installation of a dual wastewater pump system, pressure transducer control switches, and the associated pressure-rated sewer main for a system designed to pump wastewater from a local neighborhood to the existing municipal sewer system.
- Oversaw the removal of existing sewer service lines and a portion of the main and associated rerouting of existing sewer service lines.

Manchester Knoll Sewer Line Repair

Manchester, VT

- Oversaw construction and technical communication with both the lead design engineer and contractor for an existing sewer main with multiple sags and an inadequate line pitch that had produced history of mechanical flushing.
- Provided a high level of care in construction oversight, due to tight elevation constraints between apartment sewer line required elevations and the existing town sewer, which allowed only a 0.6% slope in the design and a maximum excavation depth of 16 feet.
- Worked closely with the contractor to ensure that all parties were aware of the required slope and the necessity of installing the main within the extremely low tolerance limits.
- Oversaw intermediate checks during the construction process to ensure the contractor was installing the system correctly.



MR. DOLMETSCH, a civil engineer by training and profession, stepped into his role as MSK's president following more than 15 years of engineering and project management experience, including the design, permitting, and construction observation of water, stormwater, transportation, and wastewater infrastructure projects. Mr. Dolmetsch maintains key client relationships, cultivates new opportunities, and supports the quality of our work and the professional development of MSK's staff with ongoing technical guidance and mentorship.

YEARS' EXPERIENCE

26 with this firm

EDUCATION

BS, Civil Engineering

Rensselaer Polytechnic Institute, Troy, NY

SELECTED CERTIFICATIONS

Registered Professional Engineer

Vermont | New York | Connecticut

INDUSTRY MEMBERSHIPS

American Council of Engineering Companies

Green Mountain Water Association

New England Water Works Association

Southwestern Vermont Chamber Of Commerce

VT Rural Water Association

American Society of Civil Engineers

American Water Works Association

PROJECT EXPERIENCE

■ Water Systems

MUNICIPAL WATER LINE EXTENSION | BENNINGTON, VT

Provides company leadership and oversight on a \$25MM municipal water line expansion project as the prime consultant for the Town of Bennington. Work supervised includes engineering design services, surveying, and construction administration. Provides primary leadership in project development as well as client management, client service, and client communications across two phases of the multiyear project.

NORTHSIDE DRIVE IMPROVEMENTS | BENNINGTON, VT

Wrote a preliminary engineering report to assess project feasibility, developed conceptual and final engineering designs incorporating project phasing over 5 seasons, oversaw all bidding, and conducted construction administration for all phases.

LEAD SERVICE LINE REPLACEMENT PROJECT | BENNINGTON, VT

Responsible for initial project development. Engineer of record for mapping conducted under initial grant and for mapping, testing, and outreach under subsequent project development grants. Provides overall project leadership and guidance.

SOUTH END WATER LINE UPGRADES | BENNINGTON, VT

Conducted initial feasibility study, developed financing solutions, completed all phases of design, obtained all necessary permits, and carried out construction administration for phases 1 and 2. Provides oversight and guidance for current construction.

POST-IRENE RECONSTRUCTION | BENNINGTON, VT

Reconstructed the intake valve at the town's surface water supply. Designed and observed construction of an aerial water line crossing and 600 linear feet of new water main following the blowout of 2 sections during Tropical Storm Irene. Coordinated with FEMA and assisted client with complete reimbursement for all emergency engineering and construction work.

■ Transportation

** = VTrans Municipal Assistance Bureau Projects*

ROADWAY REALIGNMENT SCOPING STUDY | WHITINGHAM, VT *

Oversaw project management and providing project leadership for VTrans Municipal Assistance Bureau scoping study in a flood-prone village center in Whitingham, VT.

FRANKLIN LANE WOONERF | BENNINGTON, VT *

Collaborated on a VTrans Municipal Assistance Bureau scoping study for a "shared street" in a public right-of-way currently functioning as a parking lot access road. Developed a design for a plaza area with lighting upgrades, new signage, and surface improvements

JASON
DOLMETSCH, P.E.

to the roadway.

BENMONT ACTIVE TRANSPORTATION CORRIDOR | BENNINGTON, VT *

Oversaw the design of new active transportation corridor. Worked within the limits of the existing right-of-way to (1) create bike/pedestrian access without seeking easements and (2) add parking to southern portion of the existing right-of-way. Oversaw design of interventions to increase vegetative buffers between the path and the road and additional green space to improve stormwater infiltration. Developed conceptual and alternative designs.

KOCHER DRIVE MIXED-USE PATH | BENNINGTON, VT *

Completed conceptual design. Assisted the client with right-of-way development in the VTrans limited access highway area. Obtained state and local permits for impacts within the Furnace Brook floodplain.

NINJA MIXED-USED PATH | BENNINGTON, VT *

Collaborated on a scoping study and developed conceptual and final design documents for 2.12-mile shared-use path. Coordinated applications for river corridor and floodplain construction permits. Worked with subconsultant and state officials to develop corridor management line. Responsible for the final design and permitting of the town construction portion of the Ninja Path between Bennington College entrance and Hannaford Plaza. Oversaw the categorical exclusion process for a temporary pathway through the Route 279 VTrans right-of-way. Worked with VTrans to design intersection modifications at a high-crash intersection.

WILLOWBROOK-APPLEGATE PEDESTRIAN PATH | BENNINGTON, VT *

Collaborated on a VTrans Municipal Assistance Bureau scoping study and contributed to the conceptual design for new pedestrian pathway. Developed a new right-of-way through wetlands in collaboration with county officials. Assisted with wetlands permitting process. Coordinated with U.S. Army Corps and Vermont Agency of Natural Resources. Developed a final path alignment that meets US DOJ 2010 ADA standards for accessible design, as well as state regulations for safe and energy-efficient lighting.

■ Wastewater Systems

BANK STREET PUMP STATION

Project engineer: Designed new pump station. Managed client coordination, permitting process, and construction administration.

COREY DRIVE PUMP STATION

Project engineer: Designed updated pump station and rerouted wastewater line for improved residential access. Managed client coordination and permitting.

SOUTHERN VERMONT COLLEGE LINE EXTENSION

Designed 765 linear feet of new wastewater line, obtained wastewater permits, and managed construction administration for the line extension. Designed, managed bidding for, and oversaw construction of approximately 3,000 linear feet of replacement wastewater line.

MANCHESTER KNOLL SEWER LINE REPAIR

Engineer of record: oversaw the design and permitting process for 234 linear feet of replacement wastewater line.

**JASON
DOLMETSCH, P.E.**

CAMBRIDGE, NY, FREIGHT YARD

Assisted with the application for and management of a \$200,000 Environmental Facilities Corporation grant the Community Partnership received for an 8,000 GPD decentralized system installed at the freight yard.

HOOSAC SCHOOL COMMUNITY WASTEWATER SYSTEM

Designed single-pass, sand-filter, direct-discharge community wastewater system with UV disinfection treating 6,500 GPD. Oversaw construction.

■ **Stormwater Management**

TOWN GARAGE STORMWATER SCOPING STUDY | CASTLETON, VT

Overseeing project management and providing overall project leadership for stormwater scoping study.

SHAFTSBURY TOWN GARAGE | SHAFTSBURY, VT

Developed project budget and conceptual designs and oversaw design development, including site grading and utility connections, for a new transfer station, a highway garage, a salt shed, a pole barn for municipal equipment storage, a salt/sand pile, a parking lot, and a fuel storage site. Obtained multiple permits and conducted percolation tests for a new wastewater system. Developed site stormwater master plan.

SVMC CAMPUS IMPROVEMENTS | BENNINGTON, VT

Provided stormwater site balancing to manage an additional 0.28 acres of impervious surface and associated stormwater runoff produced by a new central heating building and parking area serving SVMC's main campus. Modified an existing detention basin to allow for the treatment of new runoff and designed a grass swale to convey sheet flow into the basin, limiting erosion downslope of the outfall and managing sediment deposition and pollutant loading into a tributary of the Walloomsac River. Secured a Vermont stormwater discharge permit for the project.

MONUMENT VIEW APARTMENTS | BENNINGTON, VT

Oversaw site development and stormwater infrastructure redesign for affordable housing infill development project. Provided permitting services, including stormwater discharge permitting and Act 250 review. Participated in public permitting hearings. Coordinated with project partners on the 6-year, \$73 million project, which was fully leased a month ahead of schedule.

LAKE PARAN VILLAGE | SHAFTSBURY, VT

Led project development for a \$7.2 million affordable housing project adding 22 units on 6.5 acres, of which 1.8 acres will be permanently preserved. Assisted client through the permitting process and Act 250 review. Oversaw the design of site access and circulation for pedestrians and vehicles, utility connections, and stormwater management. Engaged in outreach in response to local concerns regarding development and construction impacts and championed the project's benefits, including the creation of value for working families and local employers, the addition of density in an existing developed area, and the provision of equitable community access to resources.

SOUTHERN VERMONT COLLEGE | BENNINGTON, VT

Developed and oversaw construction of stormwater master plan associated with new campus dormitory. Managed all stormwater permitting.

JASON
DOLMETSCH, P.E.

■ Geotechnical

WATER STREET ROAD REHABILITATION | VILLAGE OF NORTH BENNINGTON, VT

Provided lead engineering services on a collapsed stone wall abutting Route 67A and inside the flood zone of Paran Creek in North Bennington, Vermont. Utilized ground-penetrating radar to assess subsurface conditions subtending the roadway and failed wall. Determined that wall bulging and collapse was caused by the transport of fine sediments and the subsequent development of subsurface voids, which increased the load of Route 67A on the wall. Completed a slope stability assessment and developed two alternatives—stabilization with soil nails and site regrading to a 3:1 slope—and the chosen solution, the construction of a keyed-in, boulder-stacked wall. Contracted with a third party to conduct floodplain impact analysis of the proposed solution, which showed that no residential properties would be impacted by the anticipated 100-year floodway increase of 0.1 feet. Presented floodplain impacts to the North Bennington Development Review Board and received approval for construction. Oversaw construction administration services.

PROPOSED WASTE SOILS EMBANKMENT, ROUTE 279 | BENNINGTON, VT

As the lead consultant on the design and construction of a municipal water system expansion in the Town of Bennington, developed a soil disposal proposal for PFOA-contaminated soils removed during water line installation on behalf of the Town of Bennington. The proposal would have significantly reduced the town's waste soil removal and remediation costs, and resolved regulatory difficulties related to transportation of these soils out of the area, through the construction of an embankment that would have stored 20,000 cubic yards of waste soils on a public right-of-way adjacent to Route 279 in Bennington, a volume representing almost 40 percent of the total waste soil generated by the waterline project. To assess project feasibility, contracted with geotechnical engineers to conduct a stability analysis along the right-of-way's existing embankment. Successfully completed a NEPA Environmental Impact Statement for the proposed soil disposal and storage plan. Conducted public meetings and provided education to the public to address public health concerns. Worked with VTrans to secure agency support for proposal.


Appendix 4 | Recent Promotional Collateral

Water Service Line Inventories

Road to 2024

Do a Scoping Study

- 1. Planning**
 - Conduct records review
 - Select potential ID methods
 - Select representative sites
- 2. Execution**
 - Conduct outreach
 - Conduct all ID methods at each property
- 3. Results**
 - Assess the reliability of records
 - Select methods for stepwise approach



Develop a Preliminary Inventory

Develop Stepwise Approach to ID Pipes

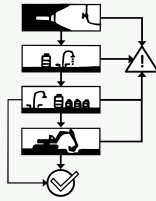
Write a Replacement Plan

2024
Submit Inventory & Replacement Plan

Identify Unknowns, Update Inventory, Replace LSLs

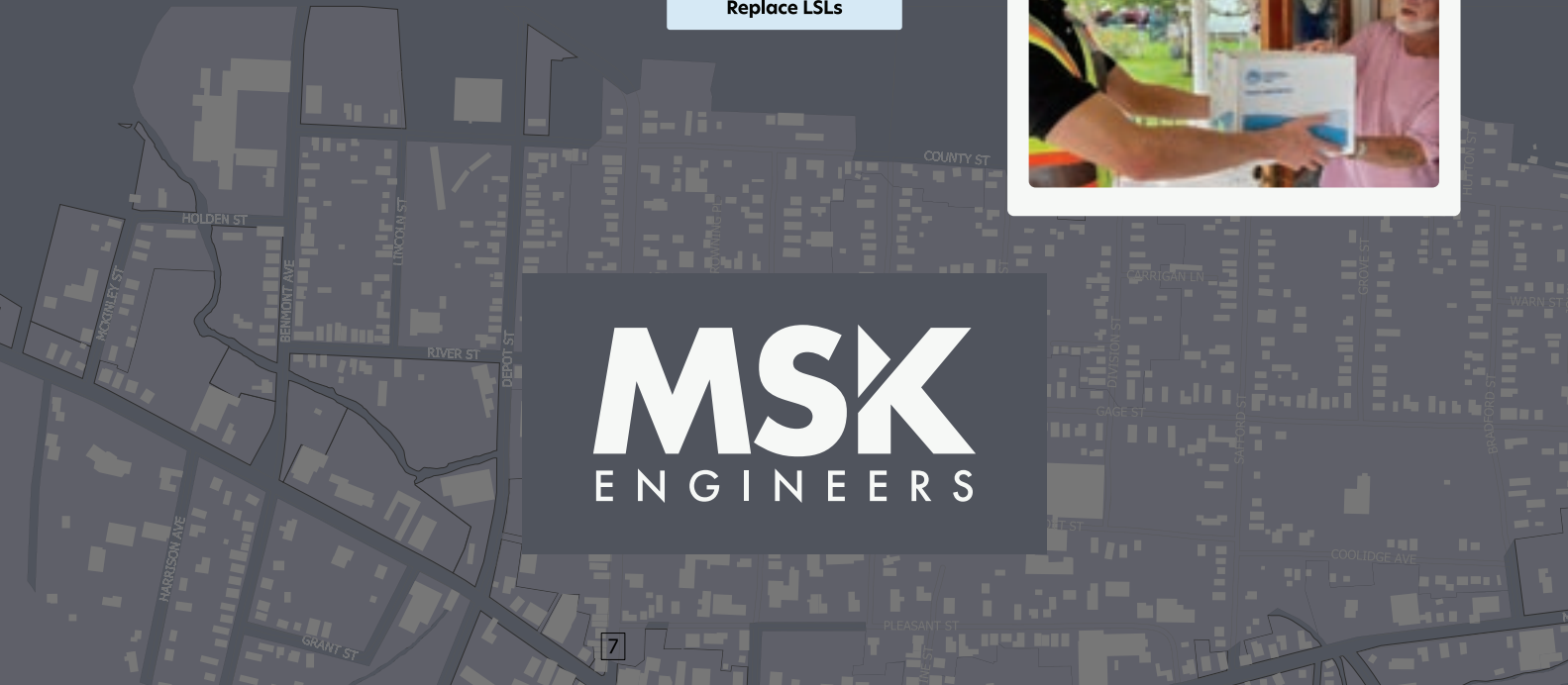
Use Multiple Identification Methods

- No one method is 100% accurate
- Combining methods can increase accuracy and reduce costs
- We use multiple identification methods to achieve **98% accuracy, reduce costs up to 60%**



Plan a Customer Outreach Strategy

- These projects require homeowner participation
- Purposeful outreach and customer engagement is key to project success
- Our approach to outreach, crafted over 5 years, routinely achieves **80-100% response**



MSK

ENGINEERS



Lead Service Line Replacement Program



PHASE 1: Inventory



Records Review

We review and digitize available records to establish known lead, not-lead, and unknown service lines throughout the water system.



Data Management

We select a data and project management approach for each water system. This can range from an automated database to a simple spreadsheet.



Inventory and Reporting

We develop an inventory of service line materials for submission by 2024, and communication materials to provide those results to the public.



Replacement Planning

We develop a Lead Service Line Replacement Plan for submission to the state. We identify and secure available funding to support your identification and replacement program.

PHASE 2: Identification



Benchmarking & Validation

Every system is different. We complete a pilot study to configure water sampling, assess the accuracy of records, and investigate other challenges before embarking on the project.



Public Outreach

We develop a variety of methods to help homeowners engage with identification and replacement work. Details on back.



Stepwise Identification

We worked with EPA ORD to establish a stepwise approach that is **98% accurate**, non-invasive, and has **saved 75% of costs** compared to test excavations in other water systems. Details on back.

PHASE 3: Replacement



Design, Permitting, & Construction

We are a full-service engineering firm. We will carry a project from inventory through to replacement.

The Bennington Lead Replacement Project

5

years of engagement

15,000

people

93%

outreach response rate

3,800

connections

40%

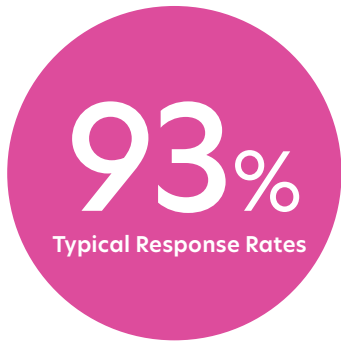
were Lead or Unknown

1,454

inspections



Our Outreach Methodology



Scheduling by Return Postcard: Taking inspiration from COVID-vaccination scheduling, we developed methods to schedule on-site inspections using a return postcard. Homeowners select their preferred times and days and receive an appointment confirmation with the option to reschedule.

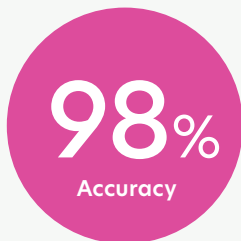
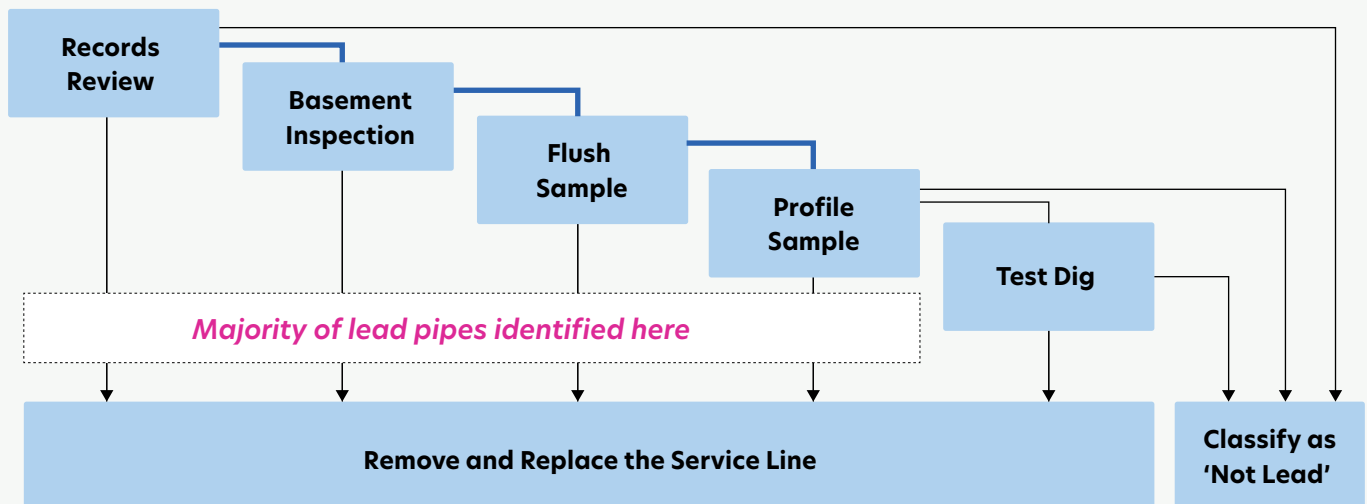
Self-Inspections by Response Form: During COVID lockdown, we asked homeowners to locate and measure their own service lines, instead of scheduling inspections. Using plumbing diameters, the general location of the kitchen tap, and geospatial analyses, we can prepare custom water sampling kits for delivery to a property with zero contact.

Door-to-door canvassing: Mailings and other methods typically account for 50-70% of our outreach response. The rest is achieved with a door-to-door campaign.

Social Media: We collaborate with communications staff at the utility and other local partners to craft the message and assist as many homeowners as possible with engaging in the program.

Digital options on print materials: We use QR codes to allow homeowners to schedule an inspection online after receiving paper outreach materials, without having to search for a website or type in a URL.

Applying a Stepwise Approach



We worked with EPA ORD to apply a stepwise approach and sequential profile sampling at scale.

- Layer methods to increase accuracy: 98% accurate in a study of 140 properties
- Minimize digging: relying on sampling reduced the need to excavate in the downtown area

Reduce costs: This approach, proved to be 75% less expensive than completing test excavations in the same area, where LSLs we're known to be present but largely unknown.

