

Clean Data, Clean Water

A new approach for utilities to find lead, equitably engage their community, and comply with federal regulations

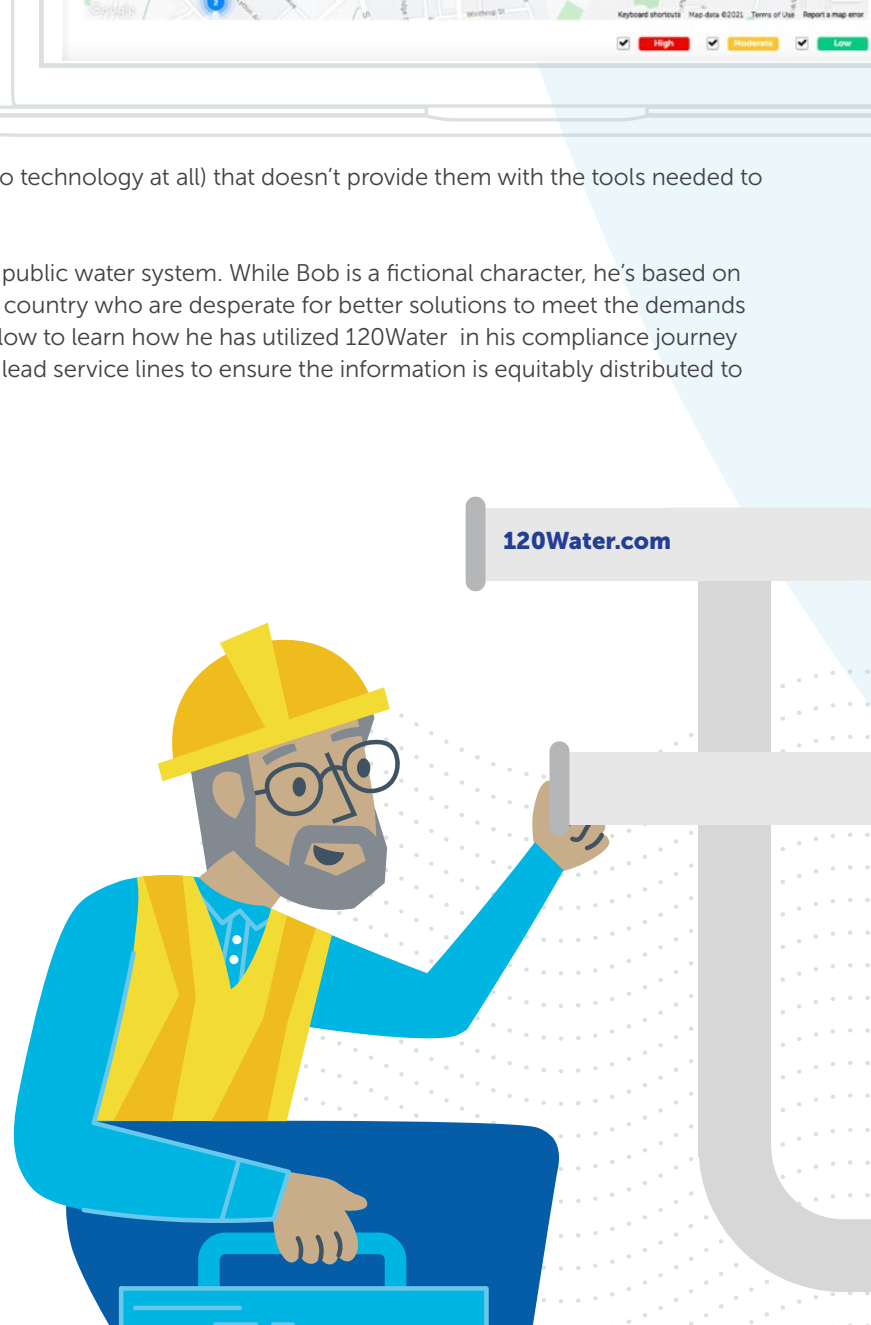
New federal regulations called the Lead and Copper Rule Revisions are requiring, among other things, water utilities to identify and map lead service lines and share this information with the public.

The recent Infrastructure Bill has also provided over \$55 Billion in funding to help find and accelerate the removal of lead service lines on both the public and private side of the meter.

The requirements and complexity of the new regulations are going to impose even more burden to already resource-strained water utilities across the country. Many of whom lack modern systems and technology needed to collect, aggregate, and share actionable data. The requirements will also put a very public spotlight on water quality issues in all communities making the need to communicate and share information to all community stakeholders mission critical.

They're often working with old technology (or no technology at all) that doesn't provide them with the tools needed to collect, aggregate, and share actionable data.

The following story is about Bob, a director of a public water system. While Bob is a fictional character, he's based on the thousands of water utility leaders across the country who are desperate for better solutions to meet the demands of the new regulations. Follow Bob's journey below to learn how he has utilized 120Water in his compliance journey including: inventory development and mapping lead service lines to ensure the information is equitably distributed to community and customer stakeholders.



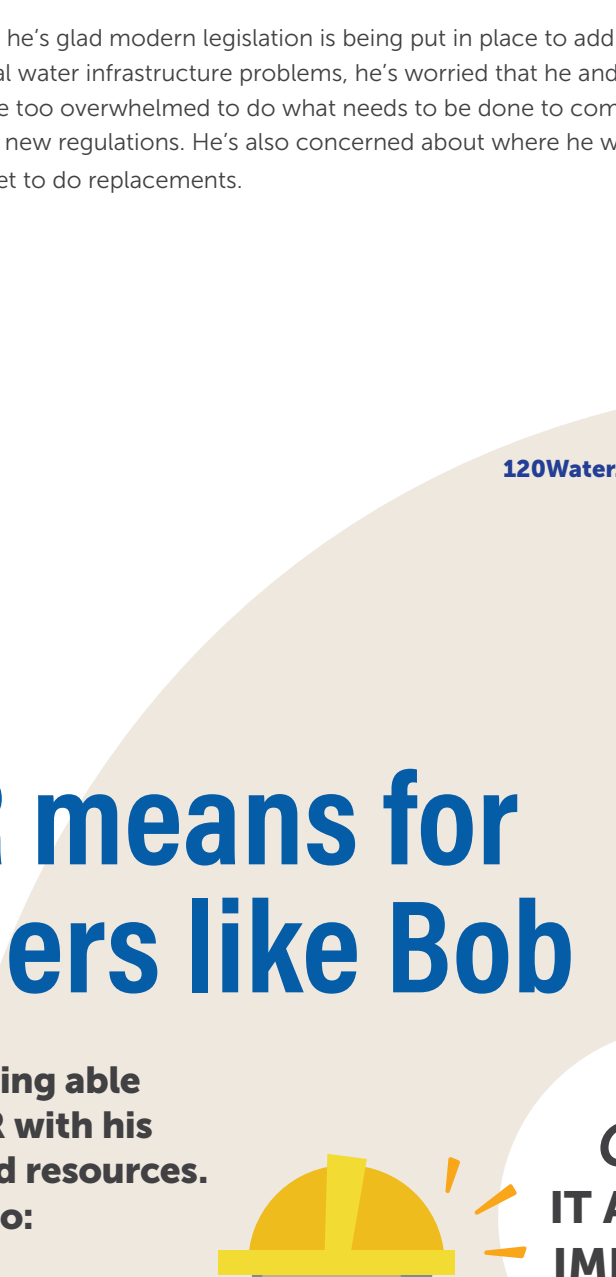
Meet Bob

Bob is the director of his local public water system.

He got into water utility work 20 years ago because he cares about his community and protecting public health.

Bob started his career laying water pipes and working in the field.

Bob knows better than most how much work it takes to ensure a community has access to clean, safe water and he's seen the increasing burdens that have been put on local utilities that don't have the resources in place to handle new requirements.



What keeps Bob up at night?

Bob is particularly concerned about the new Lead and Copper Rule Revisions (LCRR) and the emphasis put on the identification and replacement of both public and private lead service lines in his distribution system.

While he's glad modern legislation is being put in place to address critical water infrastructure problems, he's worried that he and his team will be too overwhelmed to do what needs to be done to comply with these new regulations. He's also concerned about where he will find the budget to do replacements.

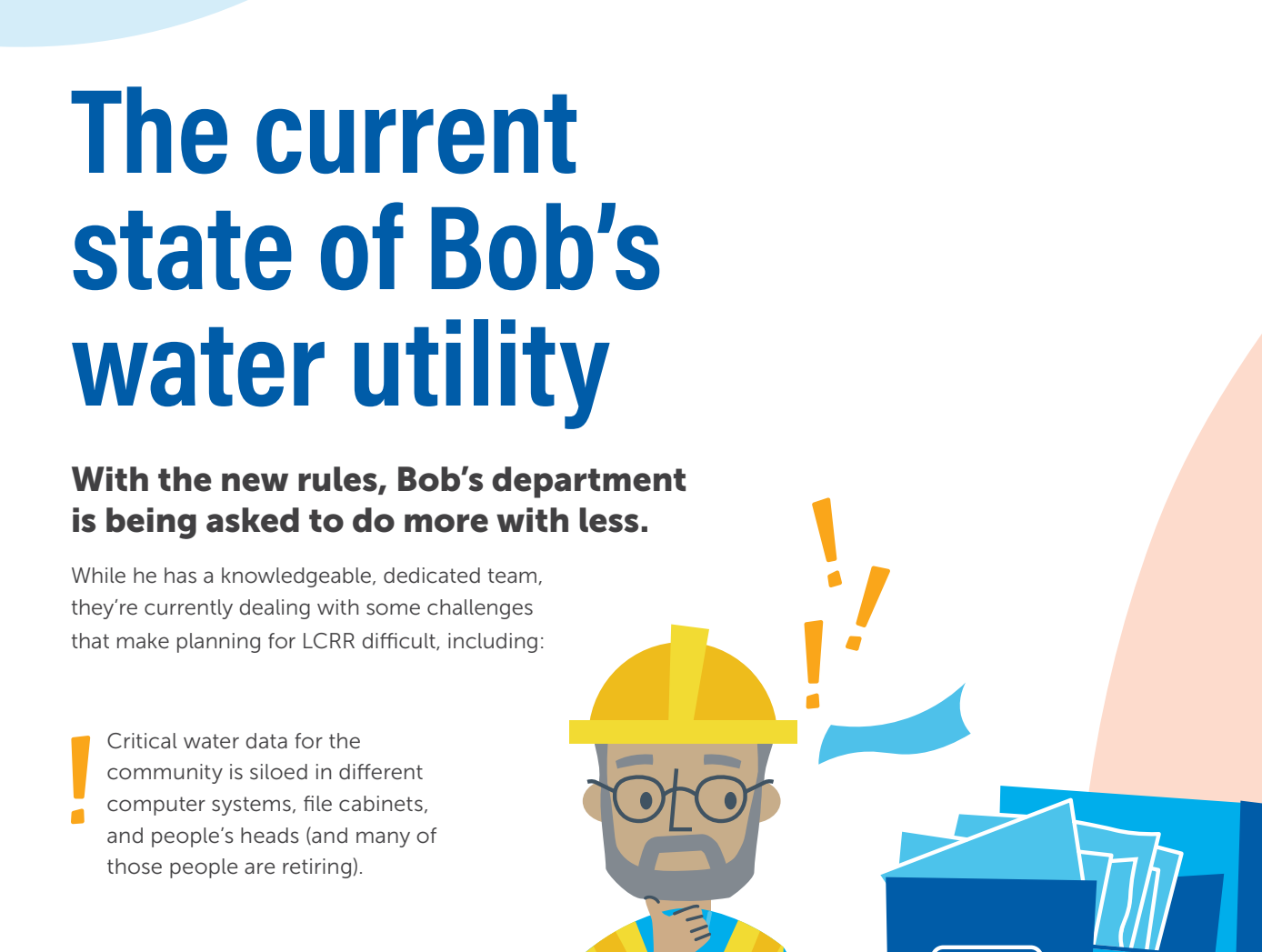
What LCRR means for utility leaders like Bob

Bob is most worried about being able to meet the demands of LCRR with his department's limited time and resources. He knows his team will have to:

- Manage resource planning
- Identify all the lead service lines in their service area.
- Map the service lines and make the information easy to understand and publicly available.
- Communicate with the public on lead sampling results, lead service line replacement status updates, health info on lead in drinking water, and more.

GOSH, IT ALL SEEMS IMPOSSIBLE.

It all seems impossible.

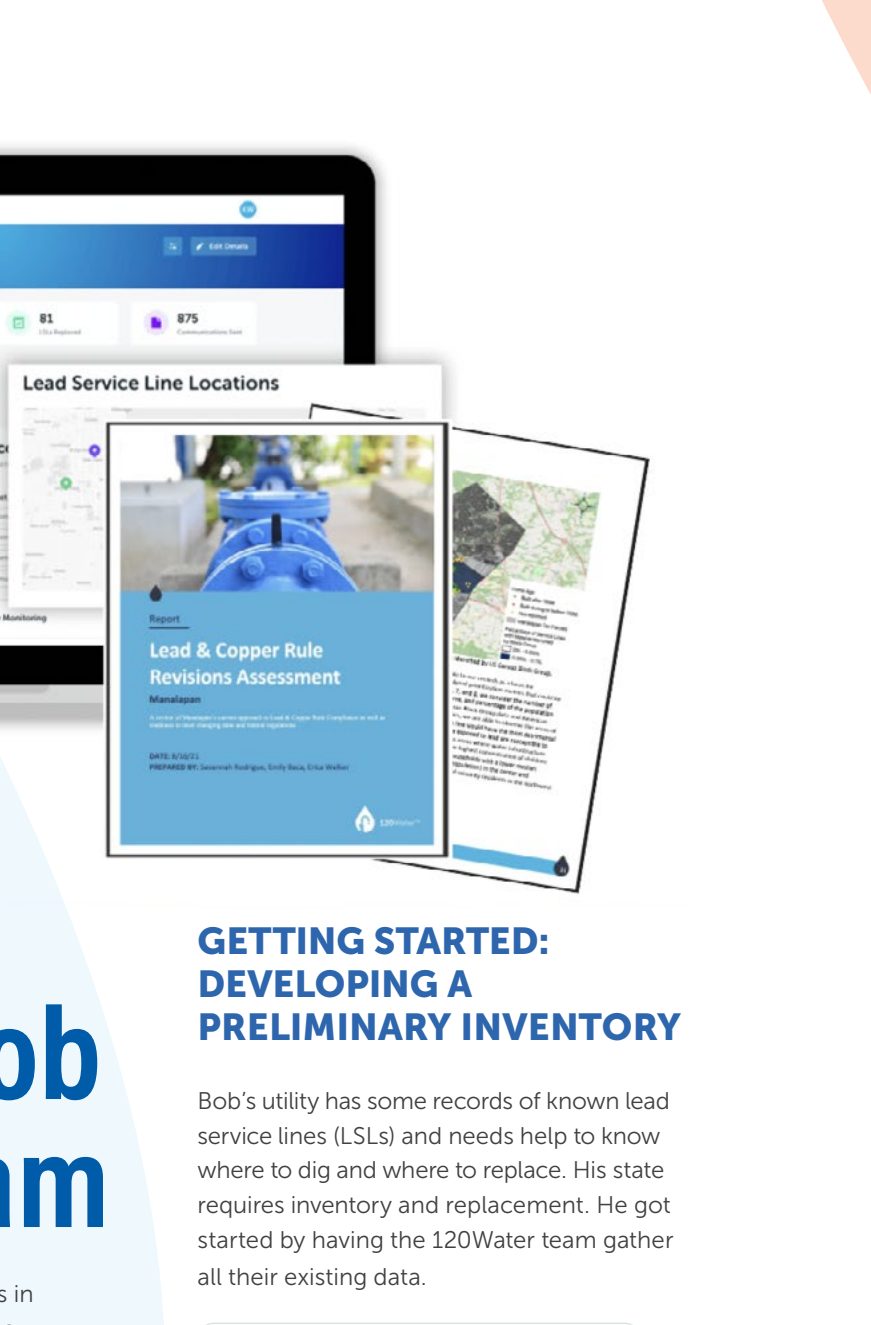


The current state of Bob's water utility

With the new rules, Bob's department is being asked to do more with less.

While he has a knowledgeable, dedicated team, they're currently dealing with some challenges that make planning for LCRR difficult, including:

- Critical water data for the community is stored in different computer systems, file cabinets, and people's heads (and many of those people are retiring).
- The team has to do manual workarounds to verify service line materials, send sampling results letters to customers, and educate the public. Nothing is automated, so these processes take a lot of time.



There is hope for Bob and his team

Bob is looking for help to meet new regulations in a way that is efficient, cost-effective, and easy to implement. He knows he'll need the right technology to make that happen.

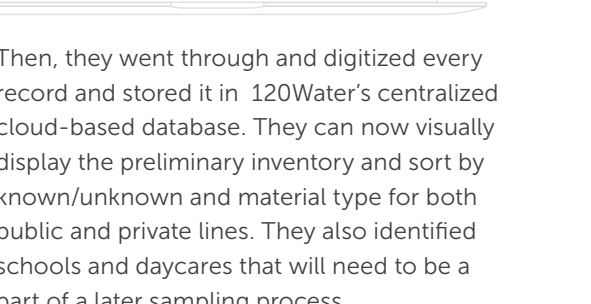
Bob finds a set of innovative solutions from 120Water that will help him achieve compliance, engage with the community, and protect public health.

Now as he starts his lead service line inventory, mapping, and communication plans, he has confidence that he's not only doing what is required, but setting up his utility for long-term success and good public standing.

Bob works with the 120Water Funding Services team to identify and secure funding for his project before they even get started, easing the burden on the utility. Because this service helps identify pockets of funds specifically targeted for underrepresented communities, Bob can sleep better at night knowing that **he won't have to raise rates.**

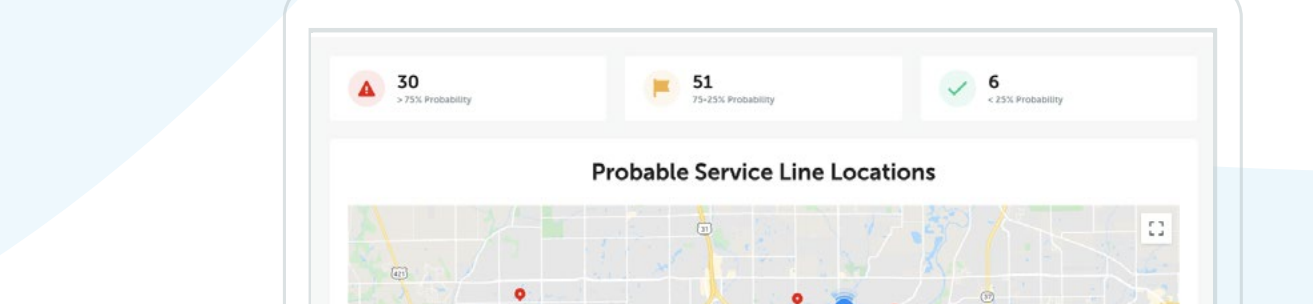
GETTING STARTED: DEVELOPING A PRELIMINARY INVENTORY

Bob's utility has some records of known lead service lines (LSLs) and needs help to know where to dig and where to replace. His state requires inventory and replacement. He got started by having the 120Water team gather all their existing data.



**Note: Bob seamlessly applies all their relevant ArcGIS data with an Esri Connector.*

Then, they went through and digitized every record and stored it in 120Water's centralized cloud-based database. They can now visually display the preliminary inventory and sort by known/unknown and material type for both public and private lines. They also identified schools and daycares that will need to be a part of a later sampling process.



PREDICTIVE MODELING

Predictive modeling is a mathematically-driven and statistically validated way to find lead regardless of socioeconomic conditions, making it a truly unbiased method of finding areas of lead.

Once the initial inventory is verified, Bob and his team get to work building their verification plan with the help of 120Water's advanced machine learning and predictive modeling.

120Water's Lead Service Line Probability finder is a machine learning algorithm used to accurately predict which unknown service lines are made of lead in the distribution network.

They input all their existing data and the model returns a percentage chance that there is lead in the service line (for both the public and private side) for an individual address.

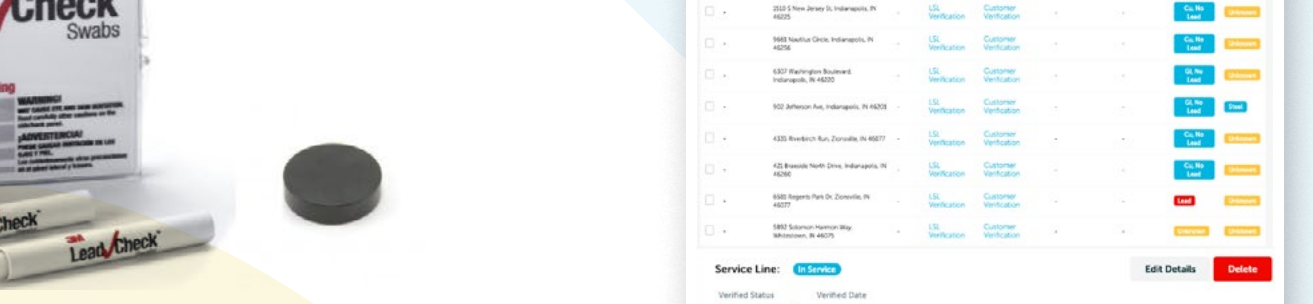
The 120Water team then analyzes those results and proposes a verification plan to Bob. Without this predictive tool, Bob and his team would be spending thousands of hours digging holes in the ground to verify every single unknown service line. This is not something they would have had the time or money to do.

By leveraging 120Water's team of static scientists with water quality experience, they see results immediately and are given expert guidance on where to dig first, with a high level of probability.

As Bob and his team perform verifications and the materials are digitally updated, the model is continuously being re-run, always increasing in accuracy and confidence resulting in an up-to-date verified inventory that serves all the demographics of his community in an equitable way.

**Note: Other predictive modeling processes in water take a more static approach, providing a snapshot in time of the probability of lead. This is troublesome for utilities and should be reconsidered.*

[CLICK HERE FOR MORE DETAILS](#)



VERIFICATION

Now that the data is living in one centralized cloud based database, Bob can send his field crew out to validate the 120Water predictions.

Bob schedules, monitors and reports on verification efforts all through the 120Water platform.

And the field crew is able to digitally upload service line material information from the field, easily adding photos and notes.

The real time ability to add and inventory and asset information saves Bob and his field crews hundreds of hours of time!

In addition to potholing and having field techs verify materials during other projects, Bob and his team need a way to verify private-side service line inventory in a way that is **fast, affordable and simple.**

They're now also automatically sending lead check swab kits and customer survey postcards to all of their customers without manually going any of the heavy lifting.

These are delivered automatically, with clear instructions, and are equipped with simple ways to digitally submit results. This saves Bob and his team countless hours and dollars.

Through all of these verification efforts Bob is delighted that the 120Water Probability Finder was able to predict with greater than 70% accuracy, saving his utility hundreds of thousands of dollars in labor and blind digs in order to verify lead service line material types.

[CLICK HERE FOR VERIFICATION WORKFLOW EXAMPLES](#)

PUBLIC TRANSPARENT DASHBOARD

Now that Bob and his team have used modern technology to develop their service line inventory, he is feeling confident and eager to make that information publicly available.

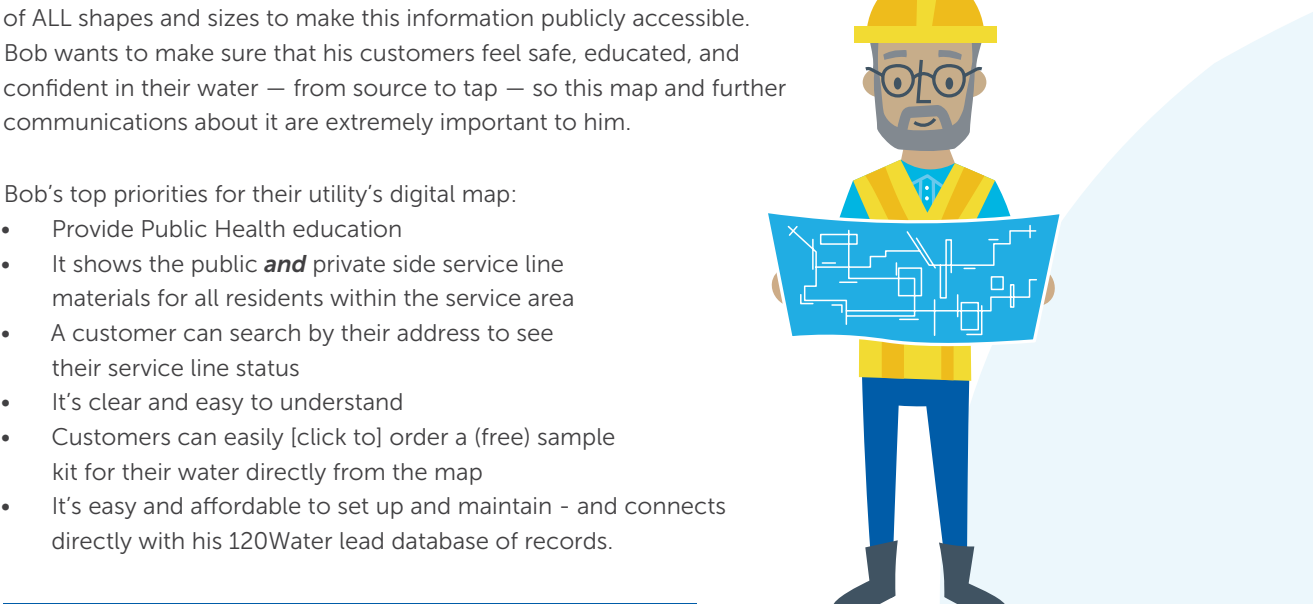
According to the LCRR, utilities above a certain size must have a publicly accessible and searchable database; however it's best practice for utilities of ALL shapes and sizes to make this information publicly accessible. Bob wants to make sure that his customers feel safe, educated, and confident in their water — from source to tap — so this map and further communications about it are extremely important to him.

Bob's top priorities for their utility's digital map:

- Provide Public Health education
- It shows the public and private side service line materials for all residents within the service area
- A customer can search by their address to see their service line status
- It's clear and easy to understand
- Customers can easily (click to) order a (free) sample kit for their water directly from the map
- It's easy and affordable to set up and maintain - and connects directly with his 120Water lead database or records.

The communication between the utility and its residents is now:

- Informative
- Easy to understand
- Actionable
- Available in the resident's language



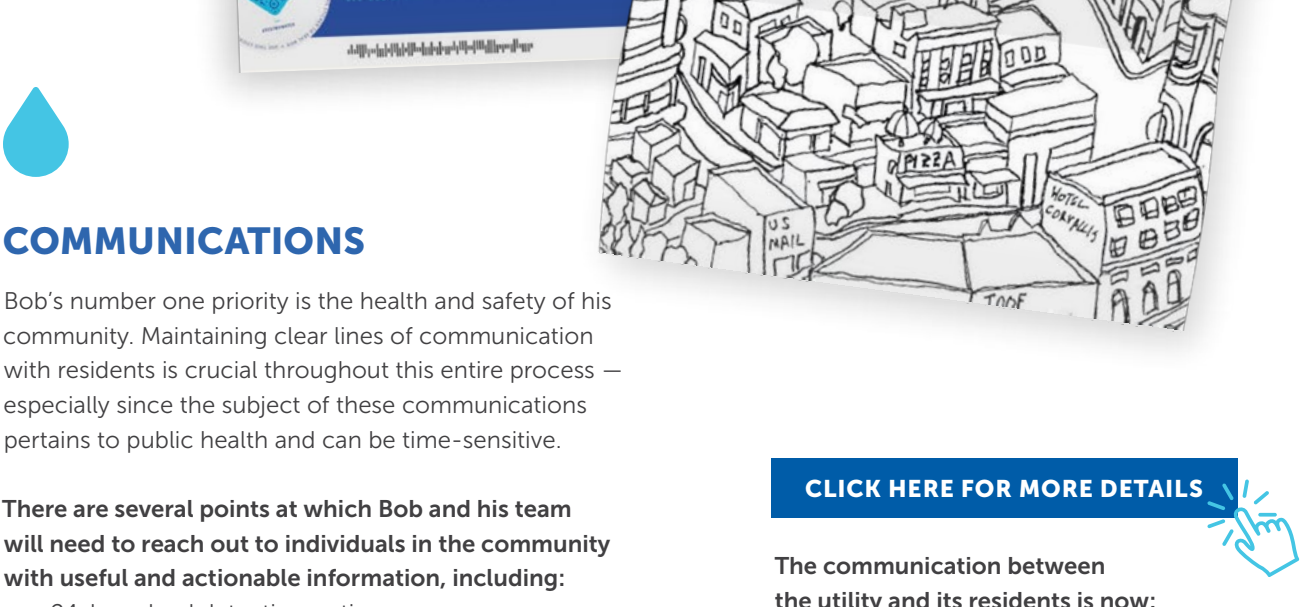
COMMUNICATIONS

Bob's number one priority is the health and safety of his community. Maintaining clear lines of communication with residents is crucial throughout this entire process — especially since the subject of these communications pertains to public health and can be time-sensitive.

There are several points at which Bob and his team will need to react to individuals in the community with useful and actionable information, including:

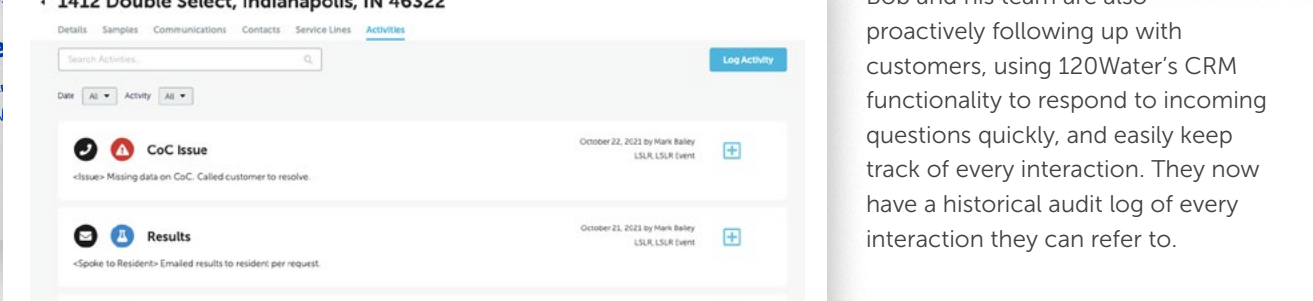
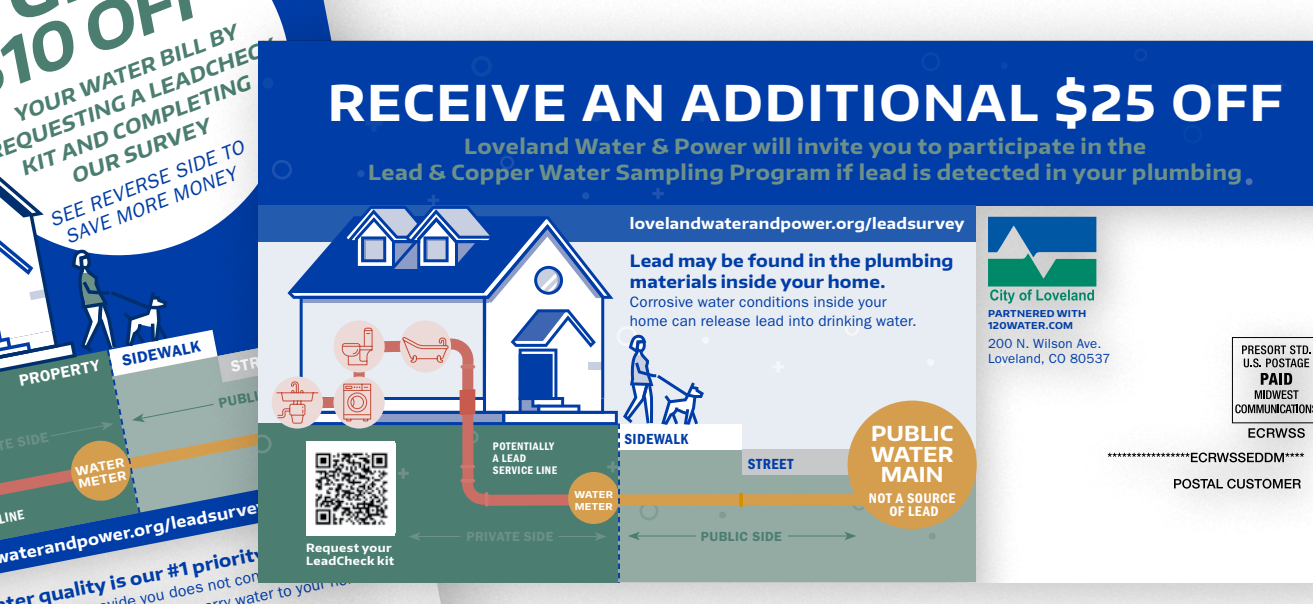
- 24-hour lead detection notices
- To inform residents about a replacement process
- Receiving permission for field verifications
- Any information that goes with sampling kits or pitcher filters

Bob utilizes the 120Water communications module to plan and send letters, emails, and SMS alerts to customers. The 120Water team also designed compelling postcards and other communications for his customers and community stakeholders.



Ensuring successful water programs for future generations

Bob has now future-proofed his utility, allowing for the most important data to be digitally managed and easily accessible for years to come. Having centralized access to the right information, for the right person, at the right time.



Bob and his team are also proactively following up with customers, using 120Water's CRM functionality to respond to incoming questions quickly, and easily keep track of every interaction. They now have a historical audit log of every interaction they can refer to.

