

Drinking Water and Groundwater Protection Division

SERVICE LINE INVENTORIES

Contents

Background	2
Lead in Plumbing	2
Single Building Inventory Instructions	2
Single Building System Examples	3
Multi-Building Inventory Instructions	6
Multi-Building System Examples	7
Non-Potable Inventory Instructions	10
Non-Potable Service Line Examples	11
Resources to Identify Service Line Materials and Information	13
Service Line Information	14
Service Line Change in Ownership	15
Locational Information	15
How to Identify Latitude & Longitude	15
Use of Multiple Sheets in the Excel Workbook	17

Background

The federal Lead and Copper Rule Revisions (LCRR) require every Community and Non-Transient Non-Community public drinking water system to develop a service line inventory for all connections within a system.

Inventories are intended to be living documents and will need to be updated based on changes that occur as service lines are identified and/or replaced throughout the system. As unknowns are identified or as service lines are replaced, the system must be diligent about updating the inventory.

There are three inventory templates: the single-building, multi-building, and non-potable template. The non-potable inventory template applies when connections to buildings provide water for reasons other than drinking water.

Lead in Plumbing

The amount of lead allowed in plumbing infrastructure has changed over time. Lead service lines were prohibited from use in Vermont after July 1, 1989. If a water system can confirm that the service line was installed after this date, it cannot be lead. So, if you do not know the material of a service line, but can confirm that it was installed after July 1, 1989, then provide that information (month/day/year or at least the year of the installation).

Even if a system was constructed after July 1, 1989, **the system still needs an inventory** to document and substantiate the information to be submitted to the EPA. **There is no “waiver” from the LCRR requirement to complete the service line inventory.**

When present, a connector/gooseneck/pigtail may connect the water main to the service line. Sometimes, gooseneck also connects the service line to the meter inside the building. A gooseneck/pigtail is defined as being less than 2-feet in length. Goosenecks and pigtails are **not** considered service lines, but if they are confirmed to be lead, there is a place in the inventory to document their presence. Systems must identify whether the gooseneck/pigtail is lead or not.

Note: the presence of a lead gooseneck/pigtail is **not** considered to be a lead service line. Also, lead goosenecks/pigtails that are or were formerly upstream of galvanized pipes **do not** categorize that galvanized pipe as “requiring replacement”.

Single Building Inventory Instructions

The inventory prompts users for a lot of information. Every service line gets its own row in the document. For a single building inventory, it is unlikely that the system will utilize more than one row of the document. If the connection has a non-potable service (such as for process water or a designated fire protection system separate from the drinking water service), the system must list those entries on the non-potable inventory and submit both completed documents.

You don't need to input data into *every* column to have an approvable inventory. The columns requiring information are identified as "required" in the instructions portion of the inventory template, the column headings have red text and an asterisk, and when you start entering an address, the required cells are highlighted orange until they are filled in. Inventories with incomplete information in the "required" columns will not be approved.

Although the other columns are not necessary to have an approvable inventory, they may be needed for future compliance with other parts of the rule. It is **strongly** recommended that all columns in the form be completed to make future rule compliance easier.

Most of the columns include a drop-down menu to make the inventory process more efficient. If a column does not have a drop-down menu, then type in the information necessary to satisfy that portion.

Single Building System Examples

If you are developing an inventory for a system such as a school or condominium that is under one "roof" with no other satellite or accessory buildings, [use the DEC's Single Building Inventory in Excel.](#)

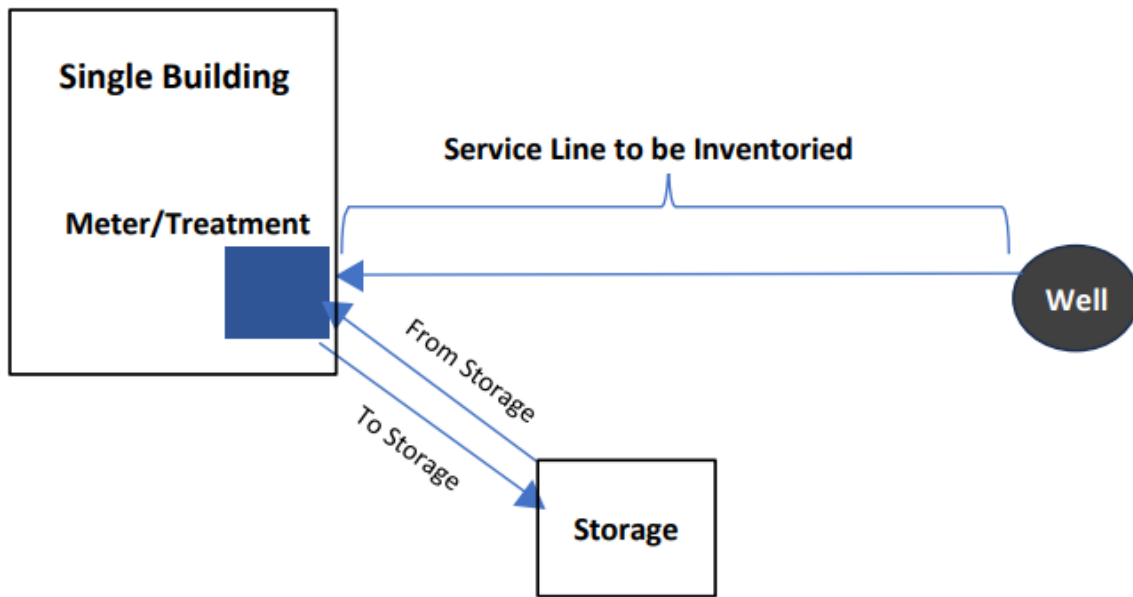
Systems must identify the material(s) supplying water from the water source into the building inlet.

Two single building inventory scenarios are described below:

Scenario 1:

A well supply line goes into a building, through a meter, through treatment (if applicable) then to the storage tank. Since we need to know what is connecting the source to the building inlet, the service line inventory should identify the material of the supply pipe between the well and the meter. See Figure 1.

Figure 1



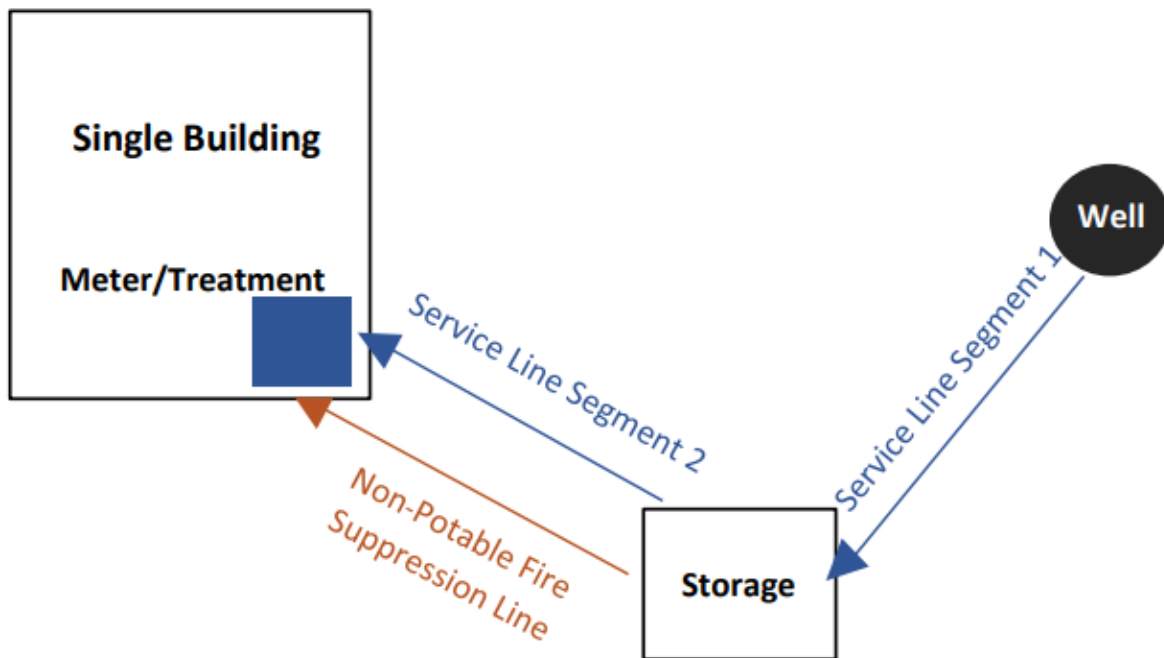
Scenario 2:

A water line (segment 1) leaves a well and connects to a buried storage tank, then another line (segment 2) leaves the storage tank and connects to a building, where it goes through a meter, maybe through treatment, and then branches off to serve the building.

1. You will need to identify the materials for segment 1 and segment 2 (this does not mean that there are two service lines). The inventory template will ask you to provide the “Current building service line material 1” in column K, which in this case is designated for segment 1, and “Current building service line material 2” in column L which is designated for segment 2.

If the storage tank also has a designated fire protection or process water line (orange line labeled “Non-Potable Fire Suppression” in Figure 2 below), the system will also need to identify the material and complete a Non-Potable inventory for this line. In this case, the system would provide two inventories, each with one row completed. See Figure 2 below.

Figure 2



Multi-Building Inventory Instructions

[Download the Multi-Building Inventory on the Lead and Copper Rule Revisions webpage \(DEC.Vermont.gov\).](https://dec.vermont.gov)

The inventory prompts users for a lot of information. Every service line gets its own row in the document. If a connection has multiple services, they all need to be provided with some distinguishing information. If the connection has a non-potable service (such as for process water or a designated fire protection system separate from the drinking water service) the system must list those entries on the “non-potable” document and submit **both** completed documents.

You don’t need to input data into *every* column to have an approvable inventory. The columns requiring information are identified as “required” in the instructions portion of the inventory template, the column headings have red text and an asterisk, and when you start entering an address, the required cells are highlighted orange until they are filled in. Inventories with incomplete information in the “required” columns will not be approved.

Although the other columns are not necessary to have an approvable inventory, they may be needed for future compliance with other parts of the rule. It is *strongly* recommended that all columns in the form be completed to make future rule compliance easier.

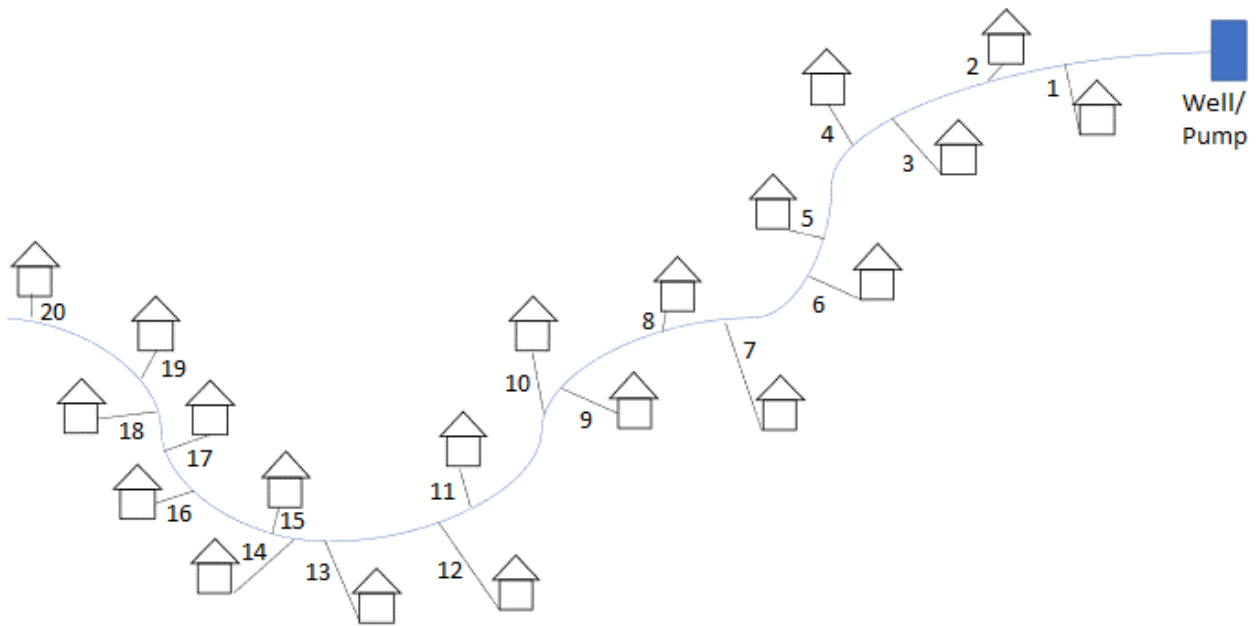
Most of the columns include a drop-down menu to make the inventory process more time efficient. If a column does not have a drop-down menu, then type in the information necessary to satisfy that portion.

Some water systems do not own portions of service lines at all. In the drop-down menus there are options for either “N/A Customer owns 100% of service line” – to be used when the system does not own any part of the service line and “N/A System owns 100% of service line” to be used when the customer does not own any part of the service line.

Multi-Building System Examples

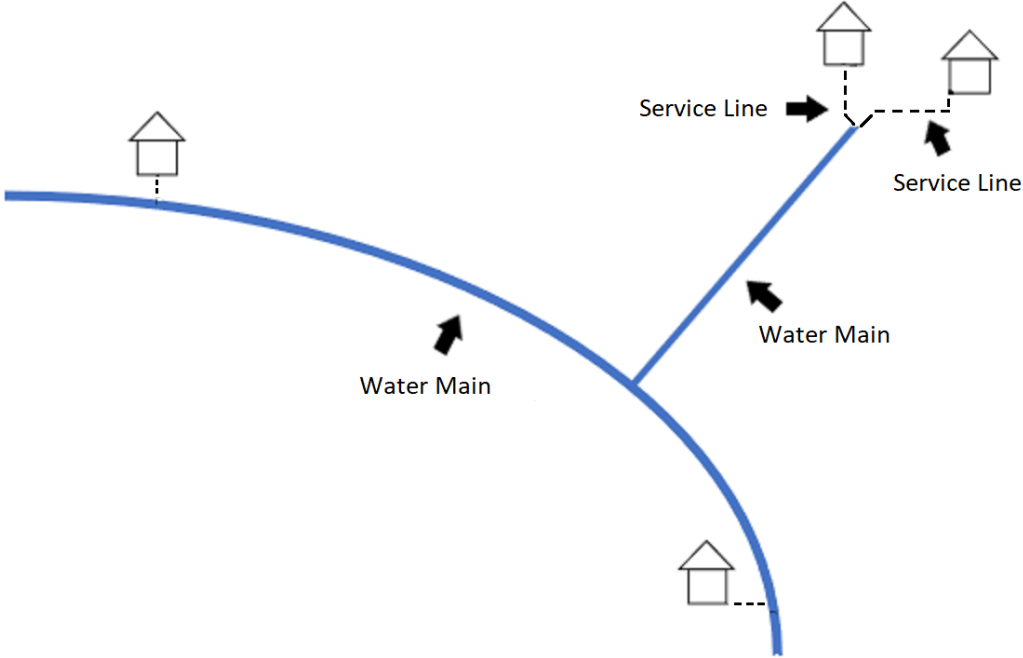
Systems such as fire districts, homeowners' associations, municipalities, or schools with accessory buildings with water service (like a town hall or the library, etc.) are required to identify the composition of the piping that connects the water main to the building/structure (see Figure 3 below, lines 1-20 are service lines to be inventoried). For the purposes of the inventories, a water main is a pipe that serves more than one connection. The service line serves only one connection.

Figure 3



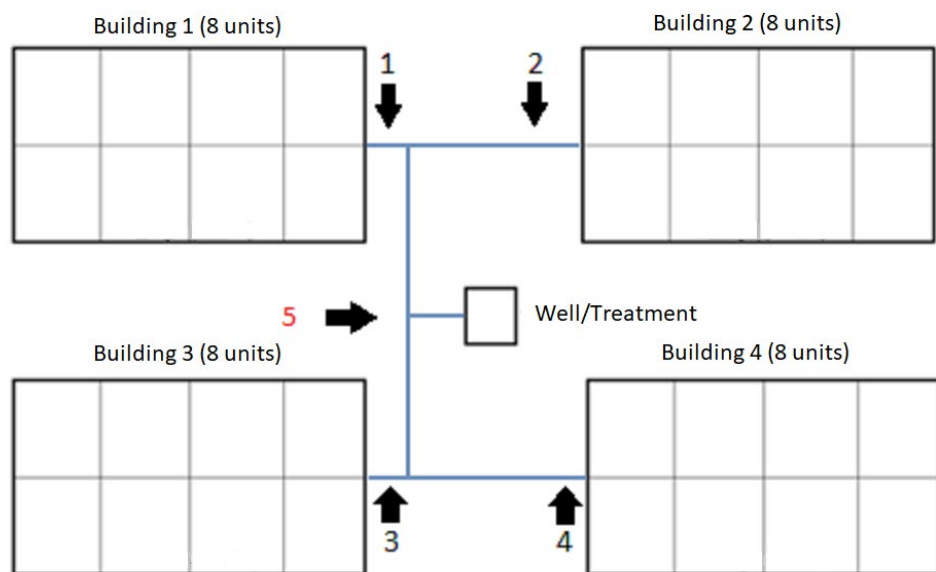
There are no “shared service lines” allowed in the inventory. If a system has a pipe that supplies water to multiple connections, that pipe is regarded as a water main for the purpose of the inventory; the service line is only considered to be the pipe that comes after the split/Tee to serve each respective connection. In Figure 4 below, the service lines are the dotted black lines after the tee/Y off the water main, each going to only a single building.

Figure 4



If there is a multiple building system and each building contains multiple units, such as condominiums or townhomes, identify the piping material connecting each **building** to the rest of the system to the building inlet, or the first internal valve or tee within the building. The inventory does **not** include internal plumbing once it branches off to serve uses within the building. Referring to Figure 5 below, the system would identify lines #1, 2, 3, and 4, coming from the well/treatment house as service lines and not the distribution main, #5 (which is distribution). None of the building's internal plumbing is considered part of the inventory.

Figure 5



Non-Potable Inventory Instructions

The purpose of this inventory is to identify non-potable service lines that provide water for reasons other than drinking water. There is a **separate template for non-potable connections**. , Use the [Non-Potable Inventory found on the Lead and Copper Rule Revisions webpage \(DEC.Vermont.gov\)](https://DEC.Vermont.gov).

If a Non-Potable inventory is completed for a water system, you will be prompted to upload this template at the same time as the Single Building or Multiple Building inventory that was created for the system. When submitting a completed inventory in ANR Online, you will be asked “Was a Non-Potable Inventory also completed?”, click “Yes”, then you will be prompted to upload the Non-Potable spreadsheet for the water system.

The Non-Potable template is similar to the Multiple Building template, and will prompt you to provide the same information pertaining to the water system such as the WSID, E911 address, Property SPAN, etc. In addition, column “F” will provide a drop-down box to indicate the type of “Non-Potable Use” the service line is designated for. If the drop-down box does not have the type of use you are looking for, please click “Other” and provide additional details about the line in the comment box on the “Intro and Summary” sheet.

You don’t need to input data into *every* column to have an approvable inventory. The columns requiring information are identified as “required” in the instructions portion of the inventory template, the column headings have red text and an asterisk, and when you start entering an address, the required cells are highlighted orange until they are filled in. Inventories with incomplete information in the “required” columns will not be approved.

Although the other columns are not necessary to have an approvable inventory, they may be needed for future compliance with other parts of the rule. It is *strongly* recommended that all columns in the form be completed to make future rule compliance easier.

Most of the columns include a drop-down menu to make the inventory process more efficient. If a column does not have a drop-down menu, then type in the information necessary to satisfy that portion.

The inventory form prompts you to enter the installation date for the service line. If you do not know the exact day, put the **month and year** or **just the year** it was installed. While the date is not required to have an approvable inventory, it will be needed to create the sampling plan later and it is in the system’s best interest to provide a date. It can also help to identify if unknown lines were installed before or after the Vermont lead plumbing ban of July 1, 1989. When entering dates, use the following format: MM/DD/YYYY, for example: 07/04/1776 or just the year 1776 if that is all you know. If the service line has been replaced, enter the replacement date, not the date of the original installation.

Non-Potable Service Line Examples

Listed below are some of the types of non-potable lines that may be encountered:

- Fire protection;
- Irrigation;
- Industrial; or
- Flushing toilets.

A non-potable service line must receive water from the same source that feeds the potable line, which could be directly from the well or from storage.

Figure 6 shows a non-potable fire suppression line, in orange, leaving storage and going to the building and maybe into a meter, but may or may not go into treatment. In this case a Single Building template would be completed for the Potable Service Line Segment 1 and Potable Service Line Segment 2. Then a Non-Potable template would be completed for the Non-Potable Fire Suppression Line, in column "F" of the spreadsheet for "Non-potable Use" you would choose "Fire Protection" from the drop-box.

Figure 6

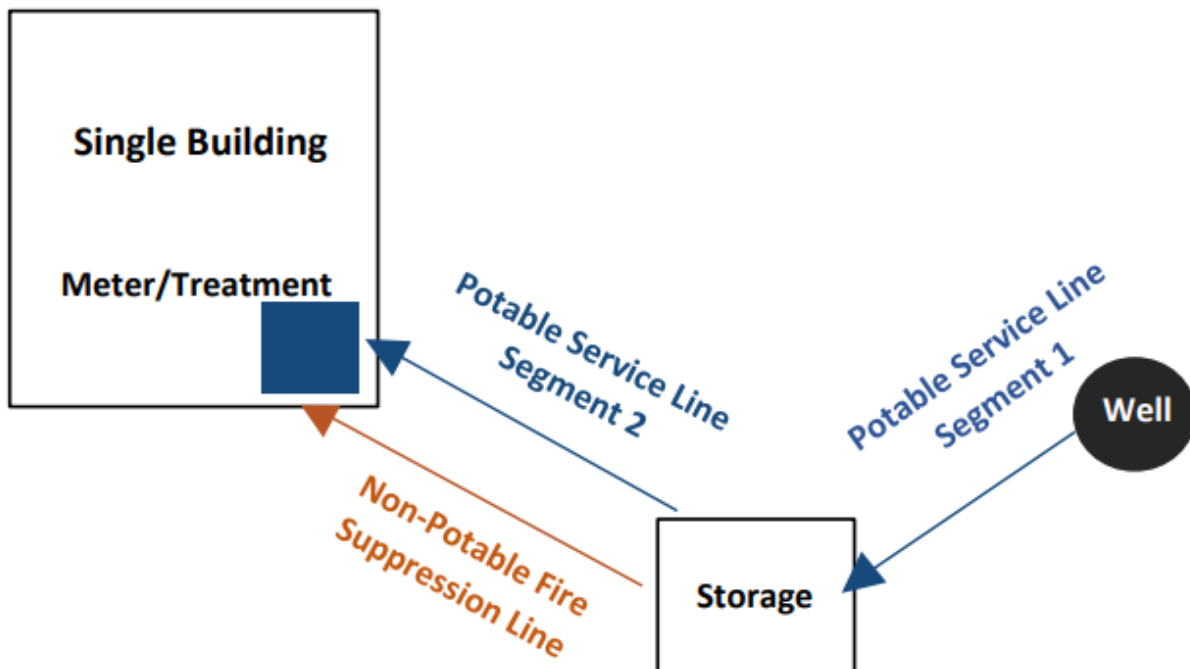
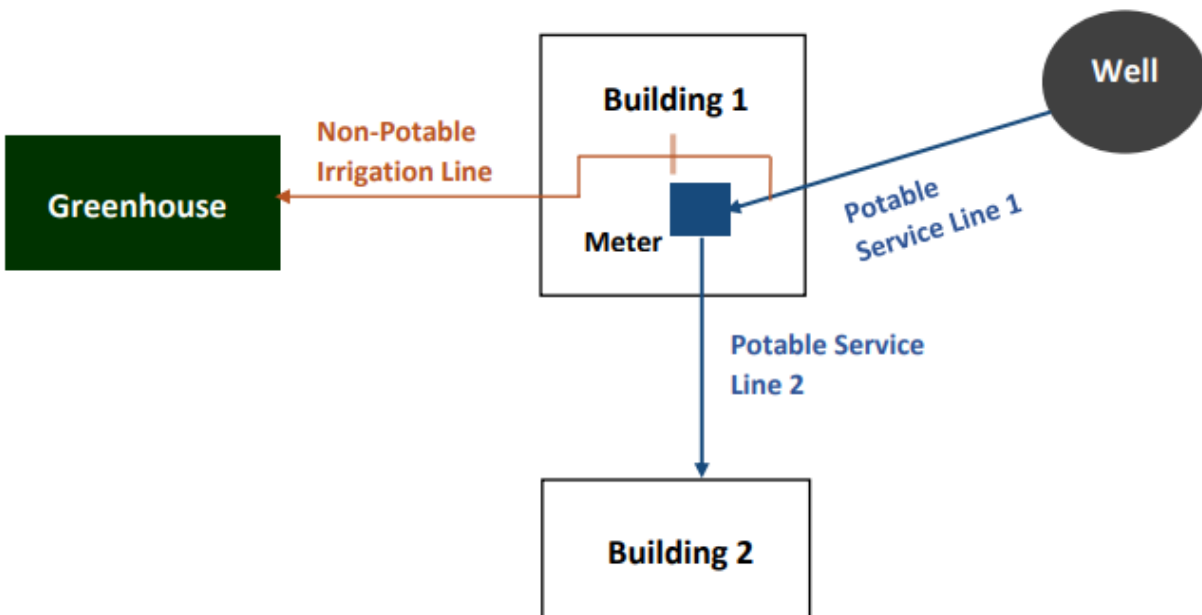


Figure 7 shows another possible scenario, if a potable line leaves a well and enters a building, then a new line branches off to serves a greenhouse for irrigation purposes. In this case you would use the Multi-Building Template to inventory the Potable Service Line 1 that enters Building 1, and the Potable Service Line 2 that enter building 2. You would also complete a Non-Potable Template to inventory the Non-Potable Irrigation Line that feeds the greenhouse, in column “F” for “Non-potable Use” you would choose “Irrigation” from the drop-box.

Figure 7



It is possible that a water system does not own any portion of the non-potable line at all. In the drop-down menus there are options for either “N/A Customer owns 100% of service line” – to be used when the system does not own any part of the service line and “N/A System owns 100% of service line” to be used when the customer does not own any part of the service line.

Resources to Identify Service Line Materials and Information

The inventory has drop-down options to describe the source of information used to identify the material for each connection. Each of the nine options are listed below with a few examples.

1. Water System Maps/Drawings: as-built record drawings, distribution system maps, other maps or drawing believed to be accurate and complete.
2. Local/State Permits: Act 250 permits, wastewater system and potable water supply permits, building permits, etc.
3. Asset Management Plan: plans identifying the equipment, their materials, age, etc.
4. Water System/Municipal Records: tie cards, meter inspection records, lister information, other records believed to be accurate and correct.
5. Visual Inspection – Water System: visual inspection by water system personnel or personnel contracted by the State or water system. Information/photographs verified by system personnel.
6. Visual Inspection – Other: visual inspection from plumbers, homeowners, or other non-system personnel.
7. Swab Test: using swabs to test the metal of the pipe for lead content.
8. Local Codes/Regulations: codes or by-laws prohibiting lead or requiring certain materials after a certain date.
9. Other: other resources believed to be accurate and complete.

Most of the service line materials in the drop-down menu are self-explanatory. The Lead and Copper Rule Revisions introduced the term: “Galvanized Requiring Replacement”, or GRR. Galvanized Requiring Replacement is either (1) galvanized lines that are confirmed to be, or at any point have been, downstream of a lead line or (2) galvanized lines that are downstream of unknown lines or whose history is unknown. If it cannot be certified that the lines are/have not been downstream of lead at any point, they are considered “Galvanized Requiring Replacement”. The sheet will automatically flag service lines that are Galvanized Requiring Replacement based on the information provided for each row.

Historic water quality samples **cannot** be used to identify whether the service line is lead. The DWGPD may approve a sampling framework on a system-by-system basis to use water quality sampling to help identify lines identified as “unknown”, but this is not required to complete the inventory.

If the system uses multiple sources to identify the service line material, which is expected, rely on the weight of the evidence. If original permits and purchase orders identify the line as being lead but an interview of previous staff say they haven’t seen lead in that neighborhood, weigh

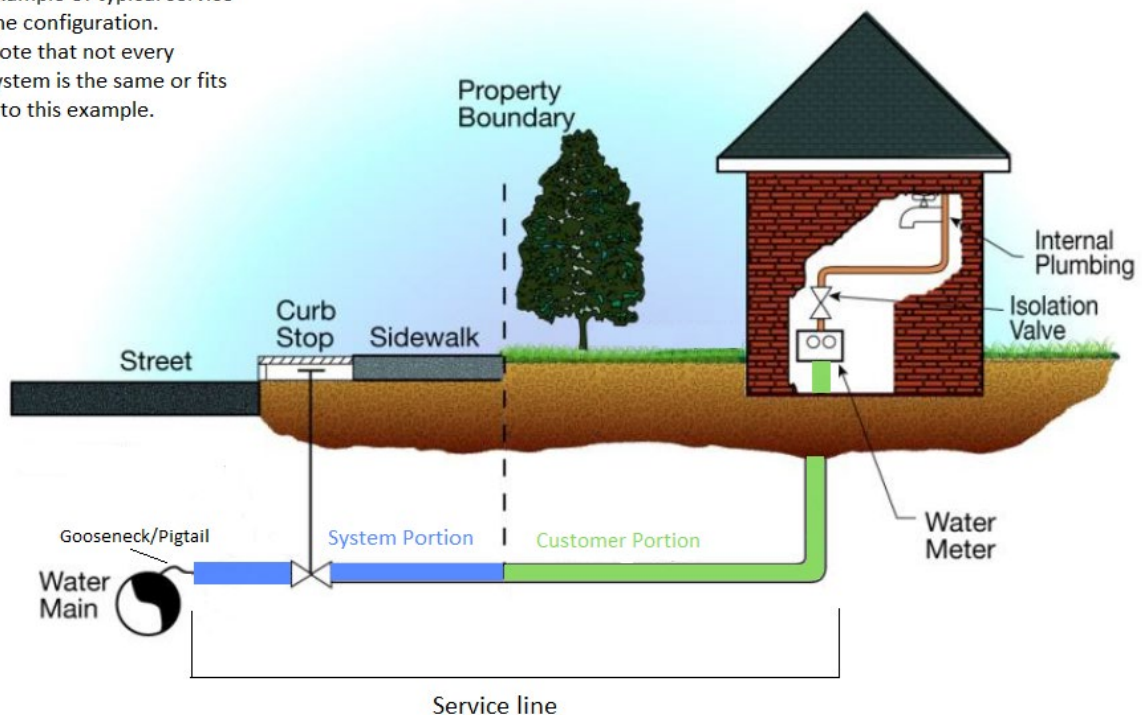
those resources and the information provided. When in doubt due to not enough information or conflicting information, choose to answer on the side of “unknown” if there is no clear material identified.

Service Line Information

The material(s) for the entirety of the service line may not be known, but systems are required to exhaust resources to identify as much as they can. The multi-building inventory template has space to put one material type for the system portion and one material type for the customer portion. If either portion contains lead, identify that portion as lead. If there is no lead, but there is galvanized that was previously downstream of lead, or if it is unknown whether it was ever downstream of lead, mark the material as galvanized iron/steel. If there is no lead or galvanized, identify the material comprising the longest portion. Figure 8 below shows the components and service line portions for most (but not all) water system distribution systems.

Figure 8

Example of typical service line configuration. Note that not every system is the same or fits into this example.



Service Line Change in Ownership

In most circumstances, the ownership of the service line changes as the line travels onto/across private property. All aspects of the service line must be accounted for (see more about the portions of service lines below). Figure 8 shows which portions of the service line must be inventoried.

The portions of the service line in Figure 8 are color-coded and labeled in the template document to match the diagram above. The blue is the system portion; the green is the customer portion. The point of change in ownership and portion of line may be different based on your system.

Systems need to identify whether the gooseneck/pigtail is lead or not.

Locational Information

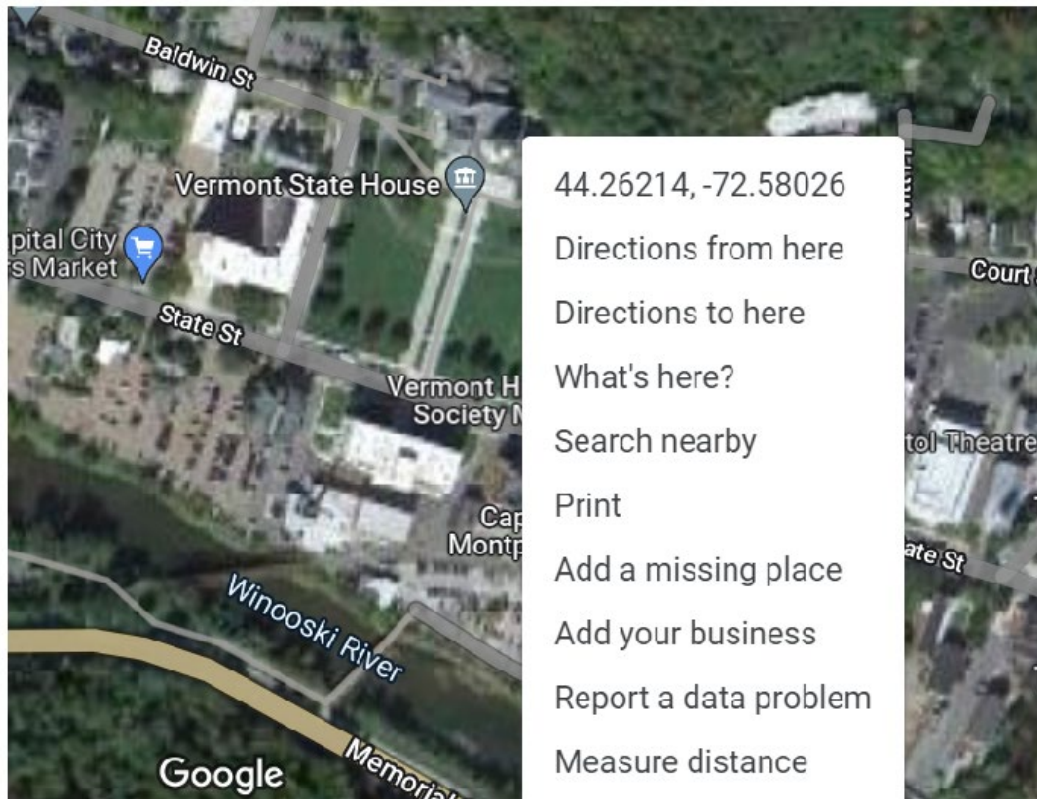
Every connection served by the water system is required to be identified on the inventory and have a means of providing identifying information. The full E-911 address is always required, while latitude and longitude of the building and where it connects to the water main are not required but encouraged. The preference is to provide both the E-911 address and the latitude and longitude as listed on the form. **Do not put the resident/owner/tenant name** since this information may change over time. The property SPAN number is required information, and we have provided a column to enter the SPAN to keep things clear if/when systems need to update their inventories in the future. SPAN can be located at [Vermont's Department of Taxes SPAN Finder website \(Tax.Vermont.gov\)](https://tax.vermont.gov/finder).

How to Identify Latitude & Longitude

The latitude and longitude should be identified down to at least **4 decimal places**. An easy way to identify the latitude and longitude of a location is to access an online mapping program such as Google Maps. In Google Maps, "right clicking" with the right mouse button on the location will provide the latitude and longitude. It is also possible to use a mobile app such as Apple Maps to identify latitude/longitude by "dropping" a pin on the location you wish to get coordinates for and then opening the "details" of that pin. Be careful to write the latitude and longitude down completely and correctly. The longitude **must** contain the minus sign [-] before the number.

Figure 9 shows the results for clicking the right button of the mouse on the Vermont State House on Google Maps. The latitude is 44.26214 and the longitude is -72.58026.

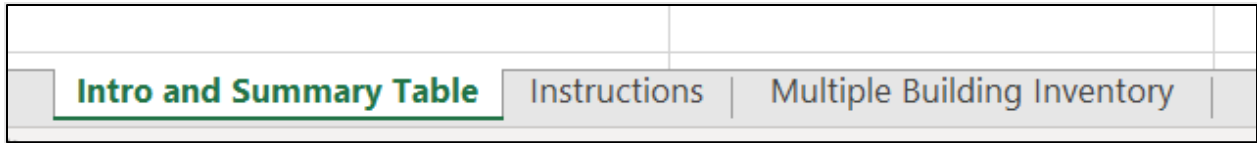
Figure 9



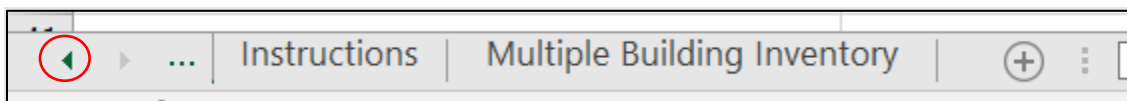
Latitudes in Vermont should be between 42.7 and 45.1. Longitudes should be between -73.5 and -71.2. If the numbers diverge from these ranges, the location will not register as being located within Vermont. The inventory document will flag an error if a number is entered outside of this range.

Use of Multiple Sheets in the Excel Workbook

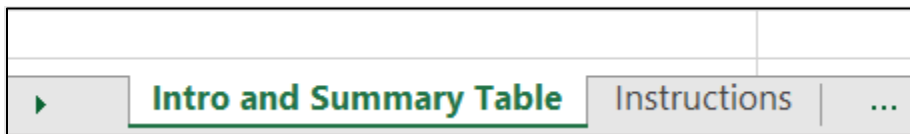
There are three spreadsheet tabs in the inventory workbook, as shown below: “Intro and Summary Table”, “Instructions”, and “Multiple Building Inventory”. Start with the “Intro and Summary Table” tab and work your way to the right.



If the “Intro and Summary” sheet is not available, click the small arrow at the bottom left of the spreadsheet to switch between the spreadsheets:



Then you should see the “Intro and Summary Table” tab:



Enter the WSID and the water system name on the top row of the “Intro and Summary Table” sheet. Once the inventory is completed, be sure to enter the date and the name of the person(s) that completed the inventory. Because the system will need to make updates to the inventory, the date is very important. If you have information behind some of the resources or other comments that would be helpful for the reviewer to understand why something was completed the way it was, you can use the optional comment box. This is especially helpful if you select “Other” for the source of information used to identify the service line material(s).

Disregard the information at the bottom of the “Intro and Summary Table”, it will fill in automatically as you work through the inventory.

Inventory Instructions

The “Instructions” sheet has cell-by-cell instructions for how to complete the inventory. It also identifies the required portions of the inventory. Most of this information is provided in this guidance document. More training materials are available on the DEC’s Lead and Copper Rule Revisions webpage should you require additional assistance in completing the inventory.