VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DRINKING WATER AND GROUNDWATER PROTECTION

GUIDANCE

SERVICE LINE INVENTORIES

27 January 2025

1 Background

The federal Lead and Copper Rule Revisions (LCRR) require every Community and Non-Transient Non-Community (NTNC) 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 water system must be diligent about updating the inventory.

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

On November 30, 2023, the U.S. Environmental Protection Agency (EPA) published a draft rule entitled the Lead & Copper Rule Improvements (LCRI). The EPA expects the LCRI to be finalized and enforceable before October 16, 2024. The draft LCRI rule included changes to service line inventory requirements. When the EPA officially finalizes the LCRI, Vermont's Department of Environmental Conservation (DEC) will revise this guidance document accordingly.

2 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, the material of a service line is unknown, but the water system 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 water 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, "bull horns" also connect 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".

2.1 Galvanized Requiring Replacement

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 worksheet will automatically flag service lines that are Galvanized Requiring Replacement based on the information provided for each row.

3 Inventory Instructions

The inventory prompts users for a lot of information. However, a user does not 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.

Every service line gets its own row in the document. When a user starts 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 the user to enter the installation date for the service line. If the exact day is unknown, input the **month and year** or **just the year** it was installed. While the installation 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. This information 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 that is known. If the service line has been replaced, enter the replacement date, not the date of the original installation.

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, including recorded videos, are available on the DEC’s Lead and Copper Rule Revisions webpage.

4 Single Building Inventory Instructions

If developing an inventory for a system such as a school, condominium, or other building that is under one "roof" with no other satellite or accessory buildings, use DEC's Single Building Inventory in Excel.

Systems must identify the material(s) supplying water from the water source into the building inlet. 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), then the system must list those entries on the non-potable inventory. In this case, the water system submits both a single building inventory and a non-potable inventory.

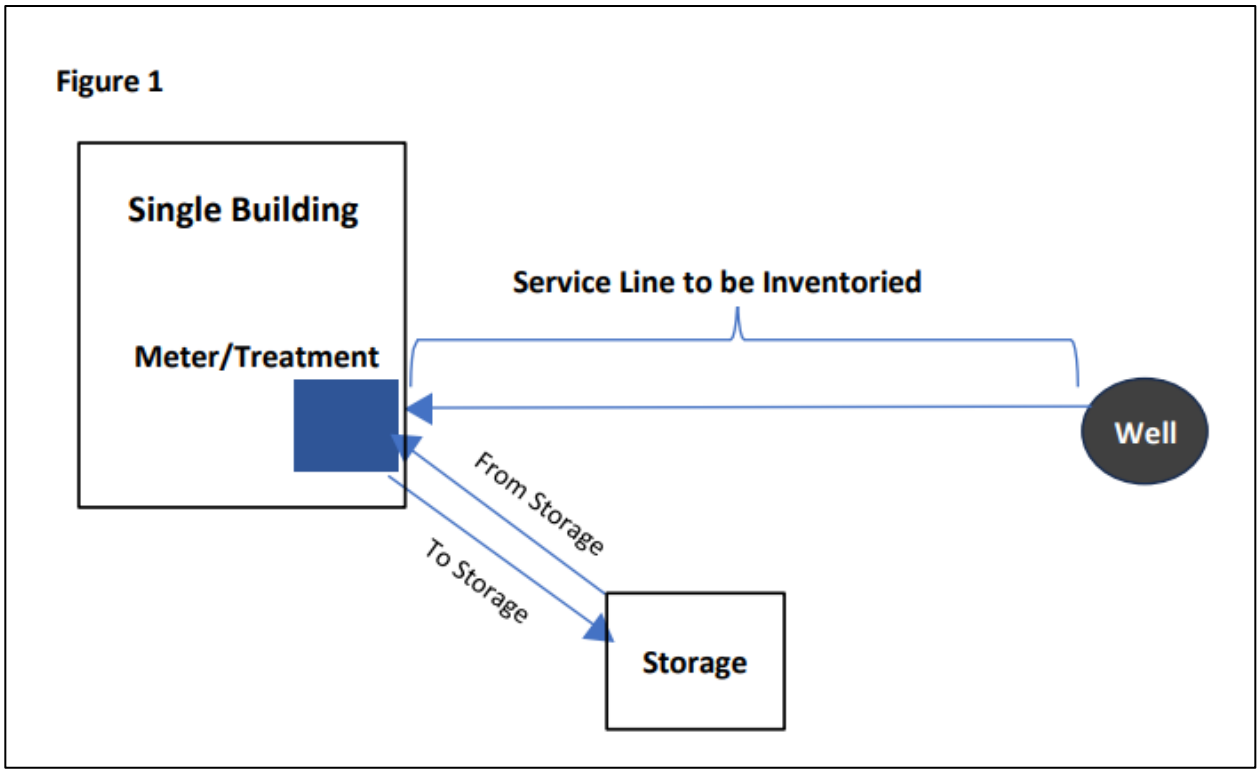
4.1 Single Building System Examples

Two single-building inventory scenarios are described in the following sections.

Example 1

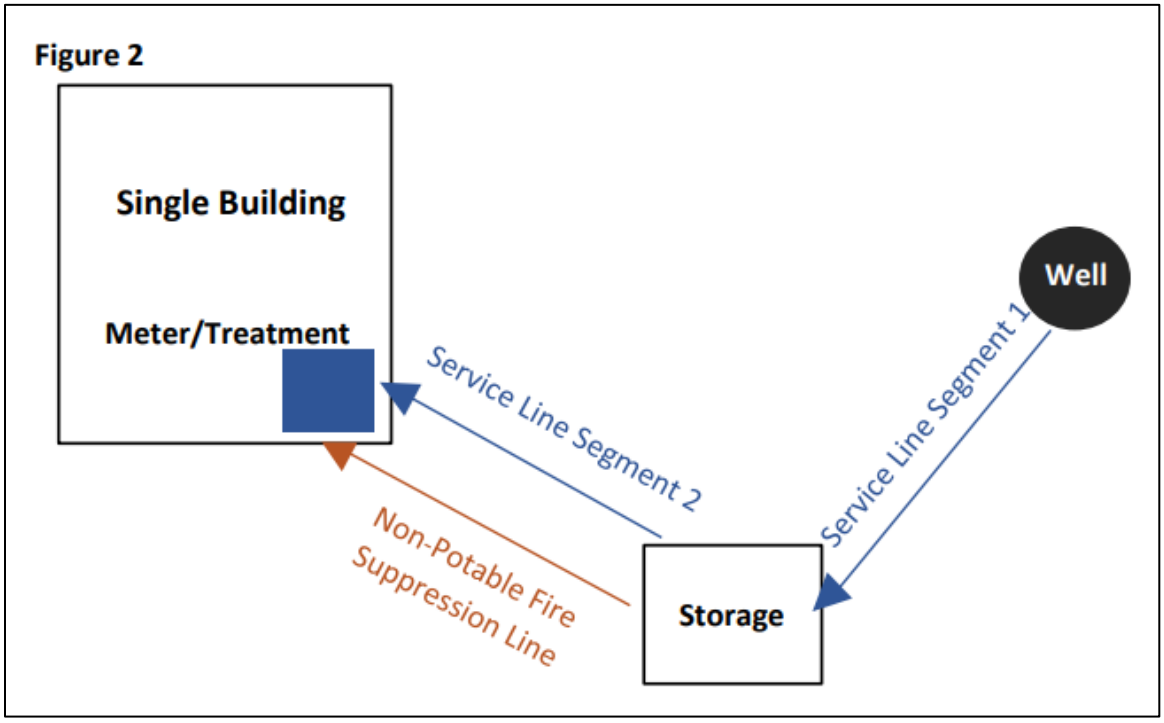
A well supply line goes into a building, through a meter, through treatment (if applicable) then to the storage tank. The service line inventory should identify the material of the supply pipe between the well and the meter. See Figure 1.

Figure 1



Example 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, possibly through treatment, and then branches off to serve the building. See Figure 2.



For this example, identify the materials for segment 1 and segment 2 in the appropriate columns (see table below). Identifying two (2) material segments does not equate to two (2) distinct service lines.

Service Line Material Entries for Single Building Inventories

Single Building Inventory Template Revision Date	**"Current building service line segment 1"**	**"Current building service line segment 2"**
July 10, 2023 and earlier	Worksheet Column K	Worksheet Column L
May 6, 2024 and later	Worksheet Column L	Worksheet Column M

If the storage tank also has a designated fire protection or process water line (orange line labeled "Non-Potable Fire Suppression" in Figure 2), then 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.

5 Multi-Building Inventory Instructions

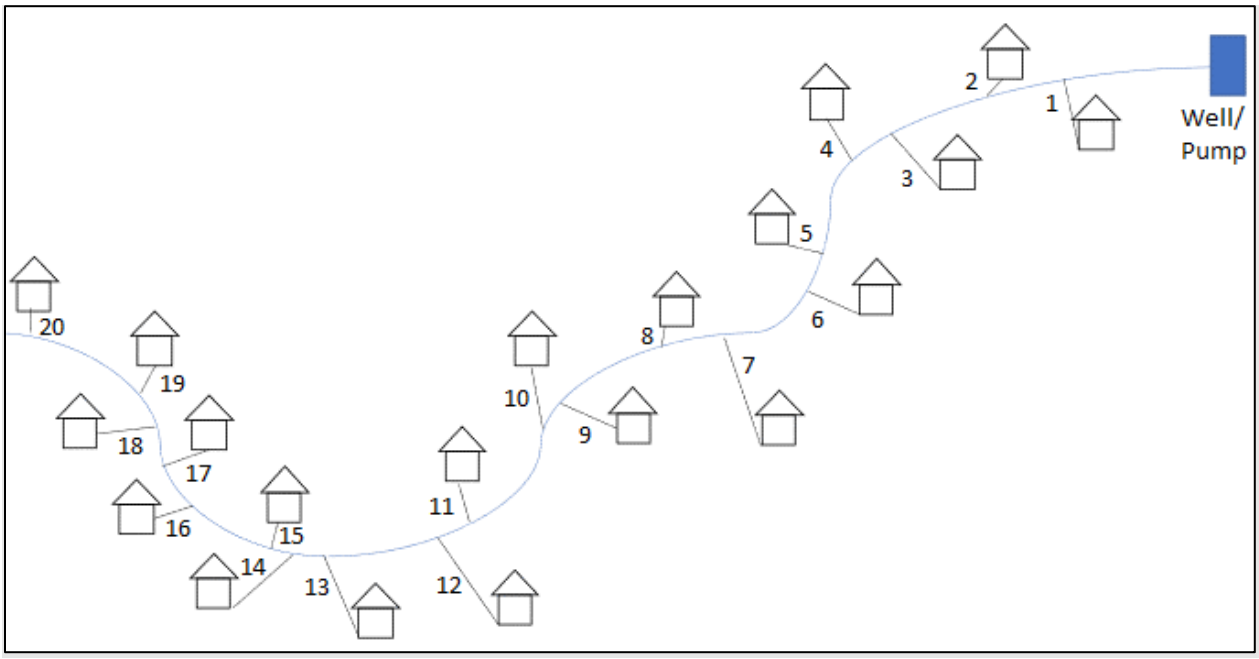
[Download the Multi-Building Inventory on the Lead and Copper Rule Revisions webpage (DEC.Vermont.gov).]

Many community water systems divide ownership of the service line at the curb stop or another location. The materials of both the water system-owned and customer-owned portions of the service line must be included in the inventory. The drop-down menus of the multi-building inventory provide options to indicate ownership of each portion of the service line.

5.1 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).

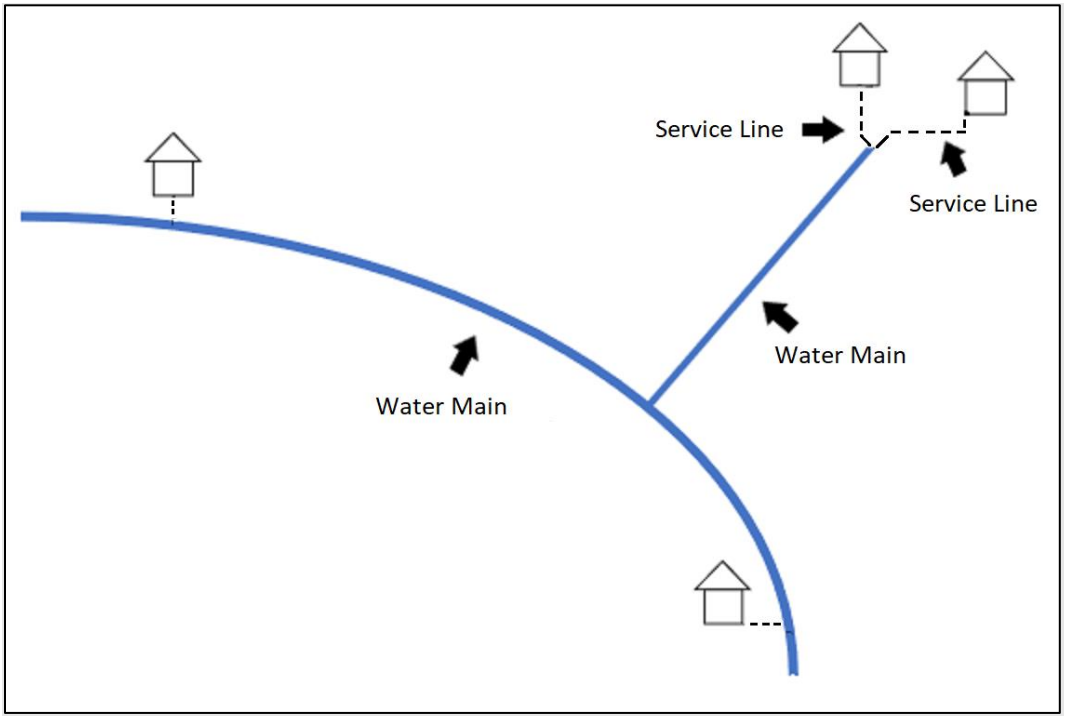
Figure 3



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. 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.

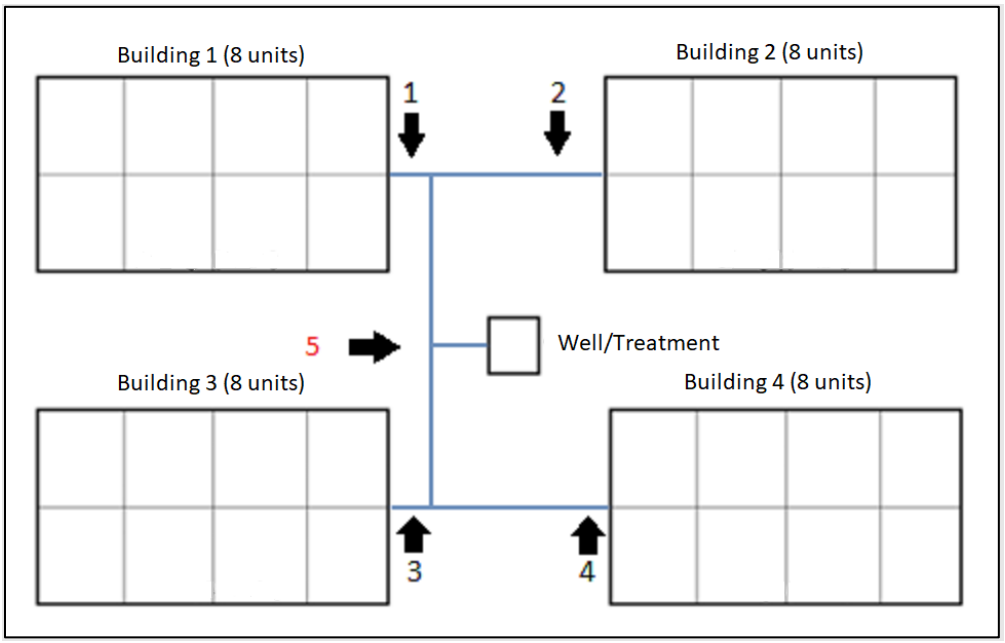
Figure 4



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.

In the example illustrated in Figure 5 below, the system must identify lines #1, 2, 3, and 4 as service lines. Line #5 is considered a distribution main and is not inventoried as a service line. The buildings' internal plumbing are not service lines.

Figure 5



6 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).

If a Non-Potable Inventory is completed for a water system, upload the non-potable inventory 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, the submitter will be asked "Was a Non-Potable Inventory also completed?", click "Yes", then follow the prompts to upload the Non-Potable workbook for the water system.

While completing the Non-Potable inventory, the non-potable use of the service line must be selected. See the table below for which column to navigate to.

Non-potable Use for Non-Potable Inventory Template

Template Revision Date	"Non-potable Use"
September 19, 2023 and earlier	Worksheet Column F
May 6, 2024 and later	Worksheet Column G

Types of non-potable uses include fire protection, irrigation, industrial, and flushing toilets. If the drop-down box does not have the type of use needed, select "Other" and provide additional details about the line's use in the comment box on the "Intro and Summary" sheet.

6.1 Non-Potable Service Line Examples

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

Figure 6 shows a non-potable fire suppression line, in red-orange, leaving storage and entering a building. In this example, a Single Building template must be completed for the Potable Service Line Segment 1 and Potable Service Line Segment 2. Then a Non-Potable template must be completed for the Non-Potable Fire Suppression Line. In the "Non-potable Use" column, the user selects "Fire Protection" from the drop-box.

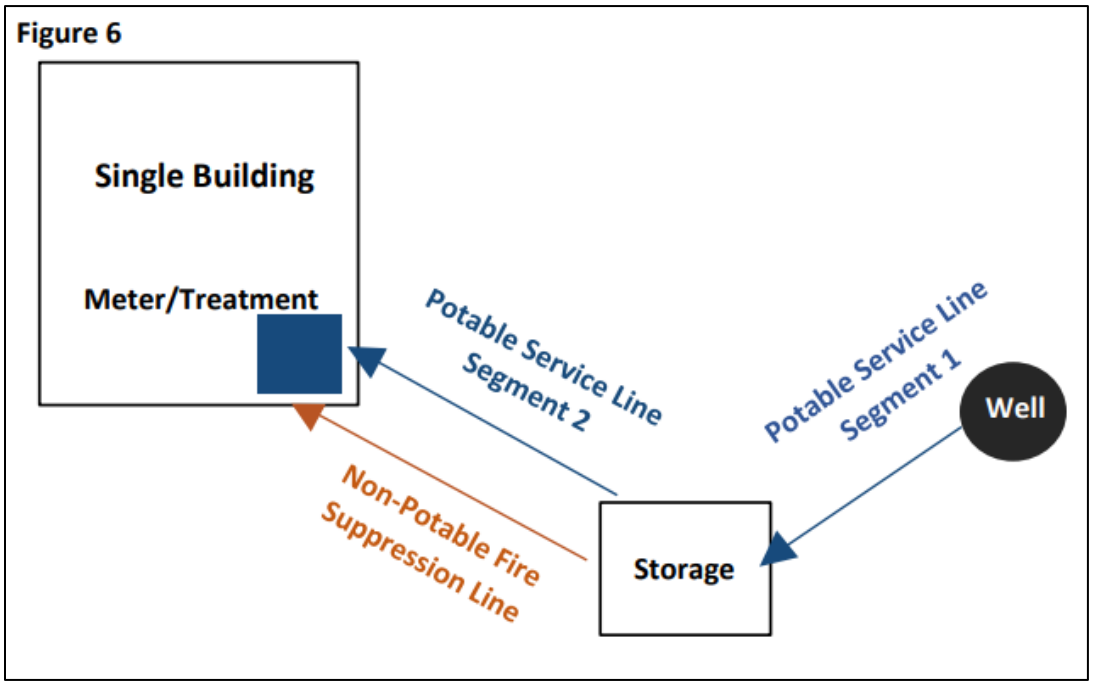
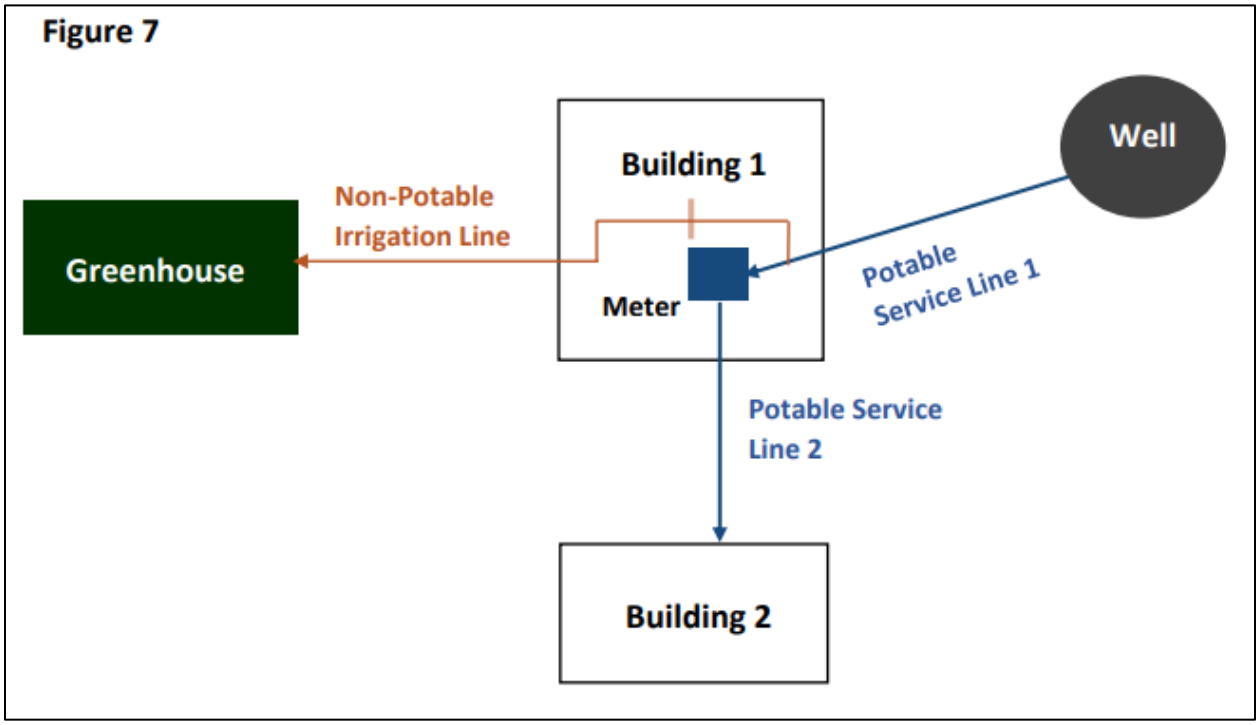


Figure 7 shows another possible scenario. A potable line leaves a well and enters a building, then a new line branches off to serve a greenhouse for irrigation purposes. In this case the Multi-Building Template is used to inventory the Potable Service Line 1 that enters Building 1 as well as the Potable Service Line 2 that enter building 2. The water system also needs to complete a Non-Potable Template to inventory the Non-Potable Irrigation Line that supplies the greenhouse. For “Non-potable Use”, the user would select “Irrigation” from the drop-box menu.



7 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. Water Quality Sampling: the water system must have DWGPD approval before implementing this method.
10. Unknown Material – No Source: when the current line material is unknown, select this option as the source used to identify the line material.
11. Other – Source Reported in Summary: other resources believed by the water system to be accurate and complete.

Historic water quality samples **may not** be used to identify whether the service line is lead. The DWGPD must approve the water system's sampling framework before the water system implements water sampling as a method to determine service line materials. This review process will be reviewed 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 **initial** service line inventory. Contact ANR.SLI@vermont.gov for more information regarding water sampling requirements.

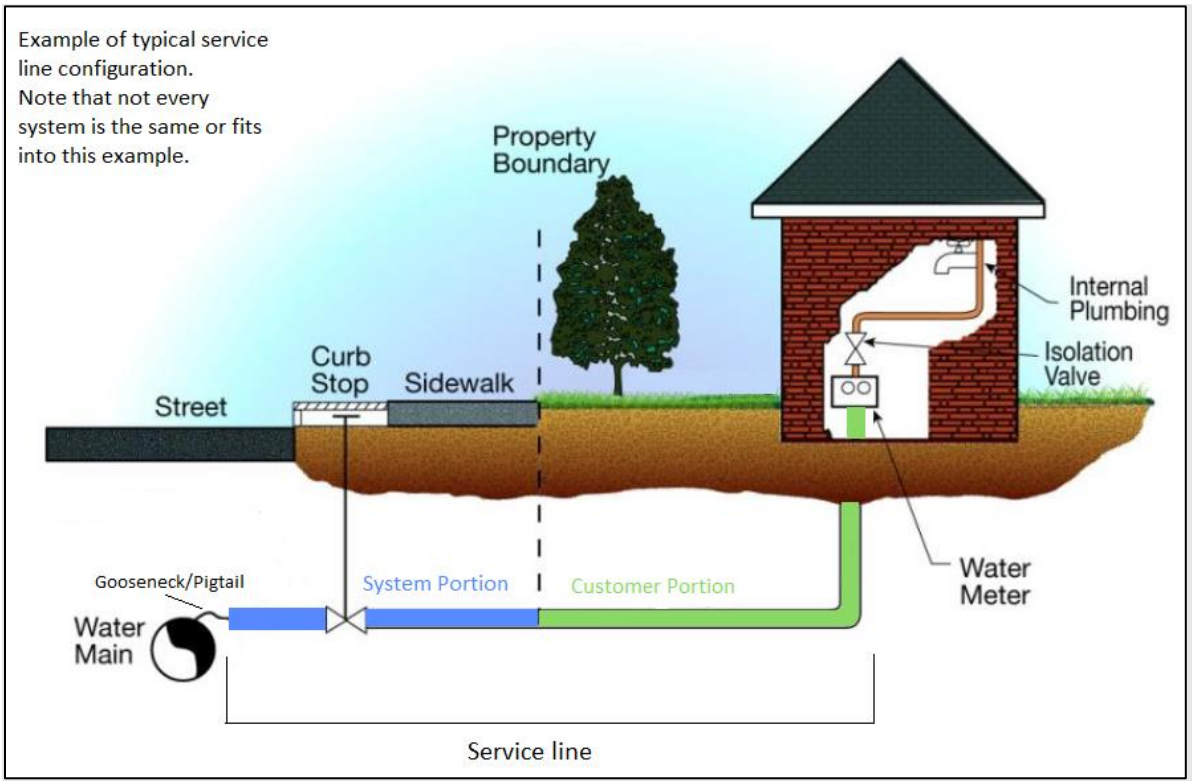
If the system uses multiple sources to identify the service line material, which is expected, rely on the weight of the evidence. If original permits and purchase orders identify the line as being lead but an interview of pervious staff say they haven't seen lead in that neighborhood, weigh those resources and the information provided. When in doubt due to lack of information or conflicting information, select "unknown" for the service line material if there is no clear material identified.

8 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 provides the option to input a 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 a galvanized service line that was previously downstream of a lead service line, or if it is unknown whether it was ever downstream of lead, mark the material as galvanized iron/steel. If there is no lead nor galvanized, identify the material comprising the longest portion of the service line. Figure 8 below shows the components and service line portions for most (but not all) water system distribution systems.

Figure 8



9 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 portions of line vary from system to system.

It is possible that a service line's ownership is not split. 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.

10 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's name*** since this information may change over time.

The property SPAN number is required information. SPAN can be located at Vermont's Department of Taxes SPAN Finder website (Tax.Vermont.gov). If the SPAN is not accessible via the Department of Taxes' website, then contact the municipal clerk for the property's SPAN.

A unique identifier is required when multiple service lines are connected to the same address. For example: 123 School St (northwest service line), or 123 School St (service line from storage tank).

For properties/addresses with multiple buildings, a unique identifier must be included in to identify each building, for example "Unit A," "House", or "Garage/Workshop." The unique identifier should not include business names nor color of buildings.

Unique Identifiers for all Inventory Templates

Inventory Template Revision Date	Required columns
Before May 6, 2024	Worksheet Columns A-E
May 6, 2024, or after	Worksheet Columns B-F

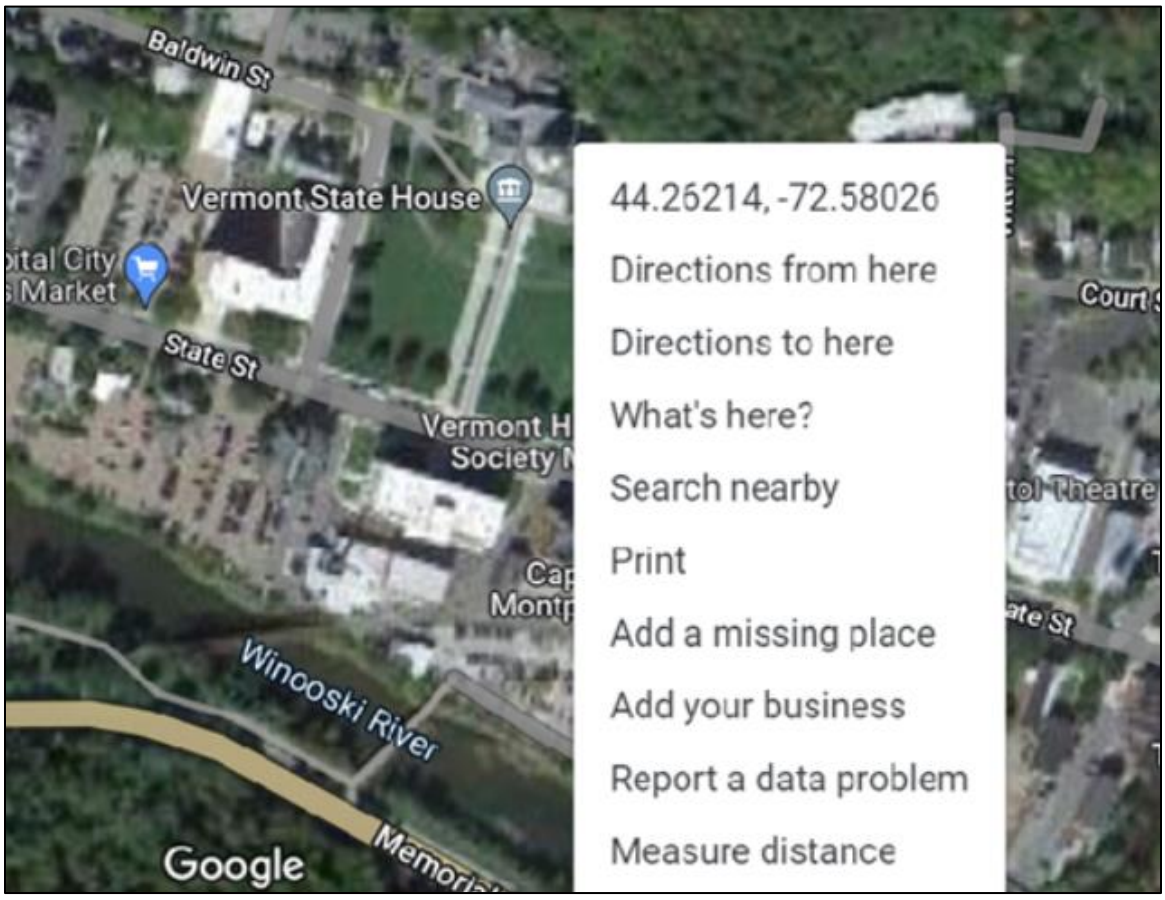
11 How to Identify Latitude & Longitude

The latitude and longitude should be identified to at least **4 decimal places** and inputted in decimal degree format (not degree-minute-second format). 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 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

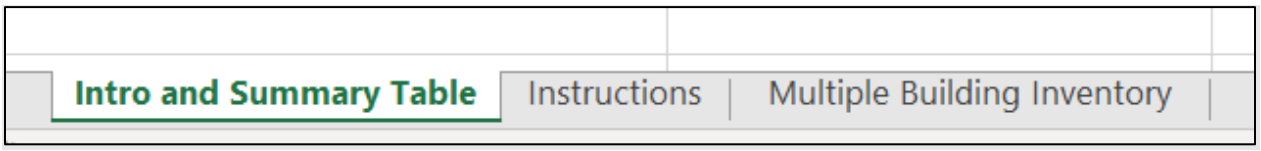


Latitudes in Vermont should be between 42.7° and 45.1°. Longitudes should be between -73.5° and -71.2°. If the numbers diverge from these ranges, the location will not register as being located within Vermont. The inventory file will flag an error if a number is entered outside of this range.

There are many commercial geographic information services available. Reference to a particular brand or product in this guidance is not equivalent to an endorsement by the State of Vermont.

12 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”. The user can start with the “Intro and Summary Table” tab and work their 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:

The user 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. The comment box in the “Intro and Summary Table” should be used if the user has additional information they would like to share that would be helpful for the reviewer to understand how the inventory was completed or explain the resources used. This is especially helpful if the user selects “Other” for the source of information used to identify the service line material(s).

Disregard the information box at the bottom of the “Intro and Summary Table”, it will fill in automatically as the inventory is developed.