# (KID) Kearns Improvement District Non-Lead Submittal

# Written Statement on Lead and Galvanized Pipe Findings in the Kearns Improvement District

The Kearns Improvement District (KID) is committed to ensuring the safety and quality of the drinking water supplied to our community. As part of our ongoing efforts to monitor and improve water quality, we have conducted extensive inspections and reviews of the water mains and service lines within the district. This report outlines our findings, confirming that we have not identified any lead or galvanized pipes requiring replacement in our water system.

Kearns Improvement District encompasses the area formerly known as Camp Kearns which was established as an Air Force replacement center during World War II and peaked with a population of 50,000. Later in 1955 the sewer and water utilities merged into Kearns Utilities. In 1957 Kearns Improvement District was formed and began servicing 3,100 connections to over 14,500 connections today and growing currently serving a population of 56,000 residents within the Kearns township and portions of the surrounding West Valley City, Taylorsville City, and West Jordan City.

Kearns Improvement District takes this responsibility very seriously concerning the EPA's mandated Lead and Copper Rule. KID has invested in and created a two-minute informational video in English and Spanish to provide additional information regarding our efforts. This video can be viewed at the link KID - Lead and Copper - English (youtube.com). Information was provided about these efforts at our community events at KID booths, updates were given each month at the Kearns District Council meetings and at the Kearns Metro Community Council meetings.

The District conducted a thorough review and inspection process of our water system, and has not found any lead or galvanized pipes requiring replacement within the District. The District has identified of its 14,618 connections, copper accounted for 14,236 connections or 95% of all service lines within the District (utility/customer), 341 connections or 2.3% are classified as Polyethylene pipe, and the remaining 640 or 4.4% are classified as Galvanized pipe not requiring replacement. This conclusion is based on comprehensive records review, GIS data collection, exploratory and visual inspections, and analysis as detailed below.

The District has dedicated a large number of resources to investigate, inspect, analyze, and prepare a report of our water system findings for the Utah Department of Environmental Quality. There were several employees that participated in reviewing documents, updating the GIS data system, performing exploratory and visual surveys in the field using equipment to excavate, expose and inspect the water service laterals.

Kearns Improvement District first reviewed historical construction documents and records to identify the type of material used for each water service lateral. The District then performed random sample visual inspections for the unknown water services. This was completed by the KID's operators incorporating the Survey app 123 to accurately collect and track the data.

The District also chose to conduct a public survey with our customers to identify the type of pipe material for the water service line extending into the home from the water meter. This included KID delivering over 8,700 Spanish/English door tags to select areas in question, requesting the home or business owner to provide information and photographs of the water service lines as they entered the facility. This was accomplished through the use of a QR code and App to submit the information and photos to KID. KID received responses from 603 customers, with553 submitting accurate data and information regarding the water service material, with a photo to confirm the type of water service lateral.

All the data from the historical documents, inspections in the field, and surveys from the customer were all incorporated into a GIS file system to track, maintain, and provide the customers the ability to review the results of the study. On KID's website a customer can look up what type of material their water service includes. KID has also adopted standard operating procedures to continue to enter data collected from field investigations during new construction. Additional details of each these investigatory steps are provided as follows:

# **Methodology:**

#### 1. Historical Construction Document Review

Our team reviewed historical construction documents to verify the materials used in the initial installation of water service lines. These documents, dating back to January 1956, consistently indicated that service lines were installed using (3/4") three-fourths inch" copper pipes. This historical data provided a solid foundation for understanding the original materials used in our water infrastructure. The total number of service lines that the district did not know what type of water service line material for homes was 8,927 services. The district has knowledge that the original water lines were constructed from the main to the meter and from the meter to the home at the same time. The district was able to perform random meter pit inspections without prior approval from the Division.

## 2. Inspections at Meter Pits

We conducted a random sample of meter pit inspections to verify the materials used in service lines within the district between the water main and the meter and from the meter to the home:

- **Sample Size**: 368-meter pit inspections were conducted to achieve a 95% confidence level based on the number of unknown service lines originally identified within the district based on the values represented in **Appendix A** of the <u>Lead Service Line Inventory Guidance from the Utah Department of Environmental Quality and Drinking Water</u>.
- **Selection Process**: Locations were randomly selected using a Python script, excluding houses where water service line saddles had been replaced in recent years, as those materials were already documented. To further narrow down our target area, parcel data was used to identify all houses within the district built prior to 1990. Houses built 1990 and after were excluded from the selection process.

- **Inspection Process**: Inspections involved verifying the pipe materials from the meter pit using a hydro-evacuation machine to vacuum up debris and expose the pipe material coming into the meter box and going to the house. Maintenance workers documented the findings using ArcGIS Field Maps with photos for each meter box inspected. All inspected sites confirmed the use of, non-lead materials.

# 3. Lead and Copper Door Tag Pipe Material Survey

To gather current information on the materials within customers' homes, we initiated a door tag survey:

- **Distribution**: Approximately 8,700 door tags were distributed between March and May of 2024 to homes built before 1990, identified using GIS parcel data from the Utah Automated Geographic Reference Center (UGRC).
- **Survey Collection**: Residents were encouraged to participate by completing an online survey via a QR code, with a \$10 bill credit offered as an incentive.
- **Results**: The door tag survey closed on May 31<sup>st</sup>, 2024. Out of 603 responses, 553 were accepted and verified. The data collected confirmed the absence of lead and galvanized pipes requiring replacement.

# 4. GIS Mapping and Data Verification

All data collected from the surveys and inspections were uploaded into our existing GIS system:

- **Mapping**: GPS coordinates of inspected and surveyed sites were mapped to provide a visual representation of the district's water service line materials.
- **Verification**: The mapped data was cross-checked with historical records to ensure accuracy. The comprehensive GIS mapping confirmed the absence of lead and galvanized pipes requiring replacement.

#### Conclusion

Based on the review and the inspection processes described above, the Kearns Improvement District has not identified any lead pipes or galvanized pipes requiring replacement within our water system. Our commitment to ensuring safe drinking water for our community remains steadfast, and we will continue to monitor and verify the integrity of our water infrastructure regularly.

# Reviewing Historical Construction Documents Workflow

The Kearns Improvement District undertook a detailed review of historical construction documents to verify the original installation materials of water service lines in various

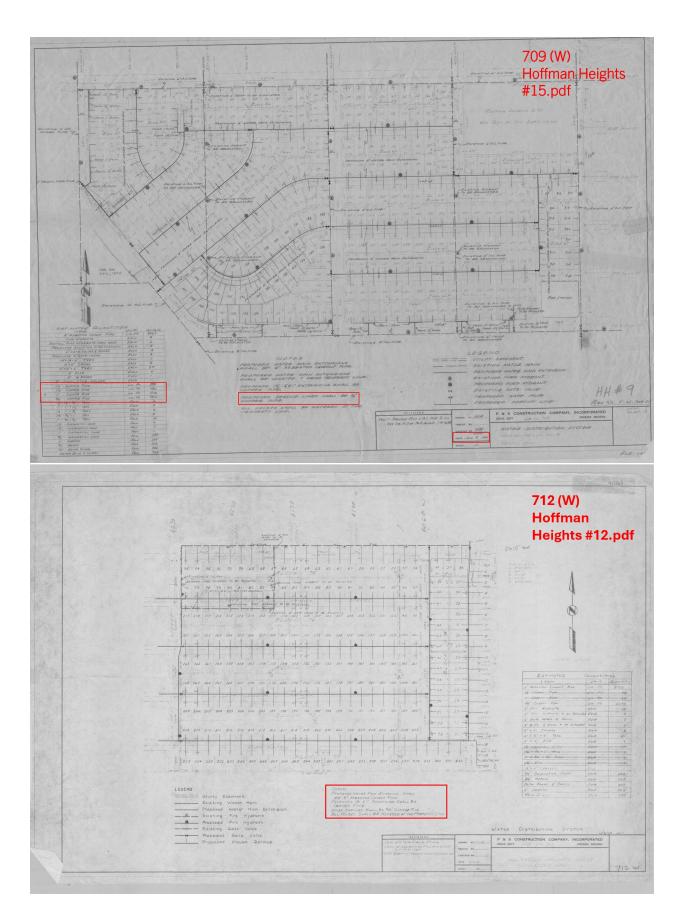
neighborhoods. This report outlines the objectives, methodology, and outcomes of this review, focusing on the verification of copper pipes as specified in historical records.

The primary objective of this project was to review and verify historical construction documents to confirm the original installation of copper pipes in service lines for homes built before 1990. This verification is crucial for maintaining accurate records and ensuring the health and safety of residents by identifying potential lead and copper contamination risks.

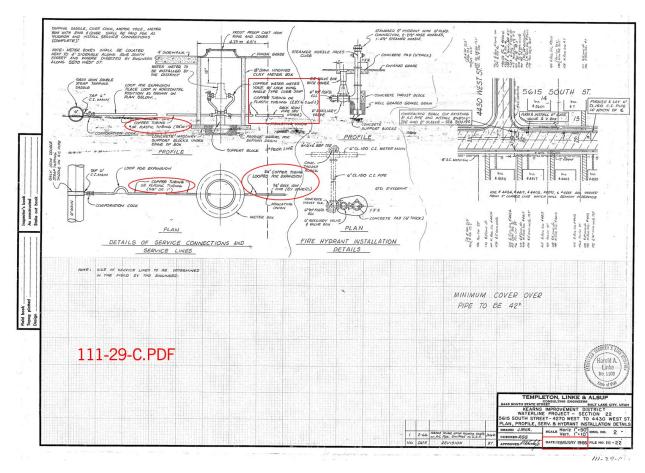
Historical construction documents provide valuable insights into the materials and methods used during the initial installation of water service lines. For this project, the review focused on documents indicating that service lines were installed using (3/4") three-fourths inch copper pipes, as specified in neighborhood drawings dating back to January 1956.

The review process began by identifying historical construction documents relevant to neighborhoods within the district. These documents included detailed drawings and specifications from various periods, highlighting the installation materials used.

Each identified document was carefully reviewed to extract information about the service line materials. Particular attention was paid to specifications on the drawing indicating the use of 3/4" copper pipes. An example is shown below with specific sections of the drawing outlined in red, "all proposed service lines shall be 3/4" copper pipe."

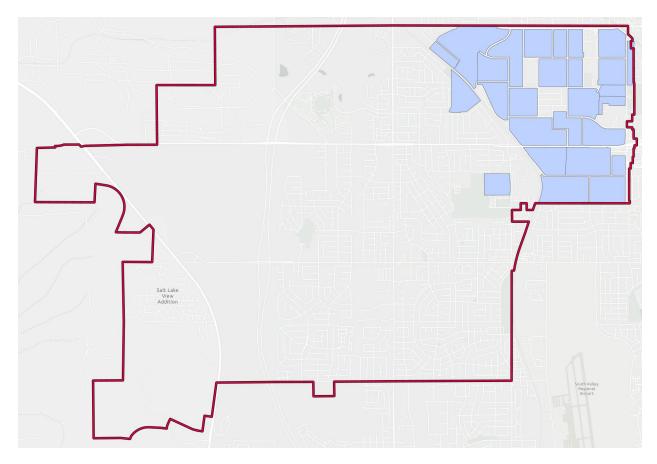


Page 5 of 23



The verified information was then mapped to provide a visual representation of the neighborhoods with documented copper pipe installations. The map included blue polygons representing areas where documentation confirmed the original installation of copper pipes. This visualization helped in easily identifying and verifying these locations.

The review of historical construction documents confirmed the original installation of copper pipes in several neighborhoods within the district. The mapped data, represented by blue polygons, provided a clear visual confirmation of these findings.



This project demonstrated the importance of historical document review in maintaining accurate and reliable records of water service line materials. The verified information will aid in the district's ongoing efforts to ensure the safety and quality of the community's water supply.

By verifying the original installation materials, the Kearns Improvement District can better assess and mitigate potential risks associated with lead and copper contamination..

Kearns Improvement District This project demonstrated the importance of historical document review in maintaining accurate and reliable records of water service line materials. The verified information will aid in the district's ongoing efforts to ensure the safety and quality of the community's water supply.

# KID Lead and Copper Door Tag Pipe Material Survey Workflow

The Kearns Improvement District initiated a comprehensive project to identify the types of pipe materials within customers' homes. This initiative was driven by the need to update and ensure the safety of the community's drinking water by identifying potential sources of lead and copper contamination. This report details the objectives, methodology, and outcomes of the project, as well as the engagement strategies employed to maximize community participation.

The primary objective of this project was to gather detailed information about the pipe materials used in homes built before 1990. This data was essential for verifying and updating information previously found in historical construction drawings of these subdivisions. It allowed us to refresh our records, considering that some homes might have replaced their service lines due to aging infrastructure.

Lead in drinking water pose significant health risks, especially to young children and pregnant women. Lead can enter drinking water when service pipes that contain lead corrode, particularly where the water has high acidity or low mineral content.

To inform and engage residents, the Kearns Improvement District designed clear and informative door tags. These door tags included:

<u>Purpose</u>: To help ensure safe drinking water in our community, we asked customers to provide us with photos of the pipe material within their home. 8,700 door tags were delivered by the KID maintenance staff between March and May 2024. The survey closed May 31<sup>st</sup>, 2024.

**QR Code**: A convenient link to the Survey123 online survey, allowing residents to participate easily using their smartphones or tablets. The door tags and survey instructions were provided in English and Spanish.

<u>Incentive</u>: Information about a \$10 bill credit as a reward for completing the survey, designed to encourage higher participation rates.

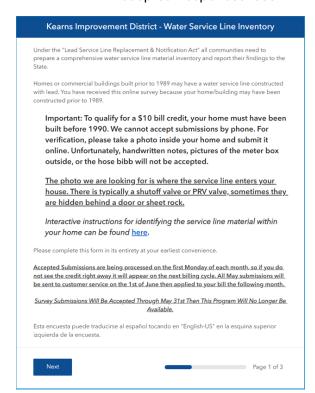


The Survey123 platform collected responses from residents who scanned the QR code and completed the survey. The platform's user-friendly interface ensured that residents could easily provide the necessary information about their pipe materials. The results were as follows:

• Total Door Tags Delivered Within the Community: ~ 8900

• Total Responses: 603

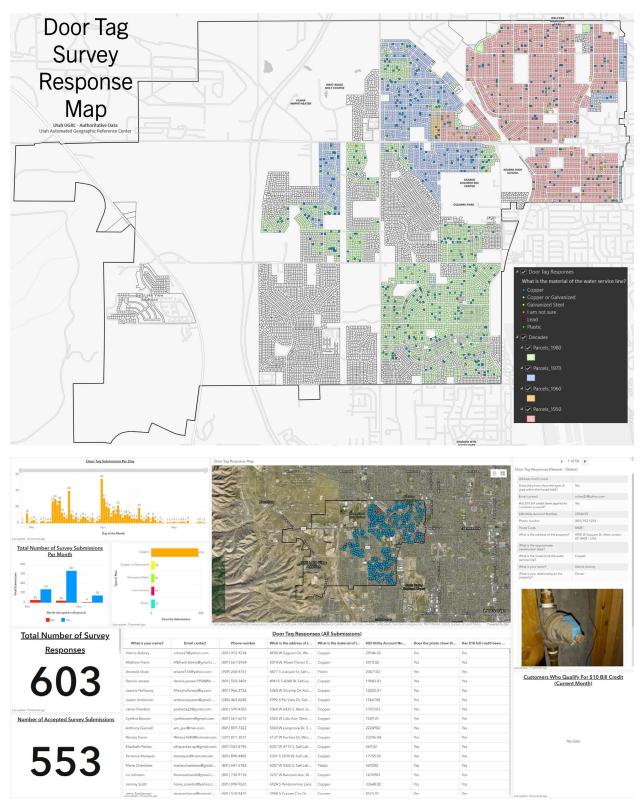
Accepted Responses: 553



# Total Number of Survey Submissions Per Month



Responses were automatically mapped and reviewed for completeness and accuracy, with 553 responses accepted for use in the project.



Submissions were reviewed through the online dashboard to ensure the customer provided adequate information and to ensure they were located within the district boundary. Whenever a submission did not include an appropriate photo or when the pipe material could not be verified, the Kearns Improvement District reached out to the customer via email with further instructions. This follow-up process ensured that accurate and complete data was collected for the project.

The initiative successfully collected valuable data about the pipe materials used in the community. This information is crucial for updating the lead and copper pipe records, helping the district to prioritize areas for pipe replacement and other mitigation efforts.

The project demonstrated effective community engagement and the use of modern technology to gather important data. The incentive of a \$10 bill credit proved successful in encouraging participation, resulting in a considerable number of responses. This data will aid in the district's ongoing efforts to ensure the safety and quality of the community's water supply.

# Inspections at Meter Pit Workflow

The Kearns Improvement District conducted a series of meter pit inspections to verify the pipe materials used in the first and second portions of the service lines in houses built prior to 1990. This section details the objectives, methodology, and outcomes of the project, including the use of statistical sampling and modern technology to ensure accurate and reliable data.

The primary objective of this project was to verify historical construction drawings and confirm the pipe materials used in service lines for homes built before 1990. This information is crucial for updating records and ensuring the health and safety of residents by identifying potential lead and copper contamination risks.

Meter pits serve as an accessible point for inspecting the service line pipes. This inspection can cover both the portion of the service line from the main to the meter and from the meter to the building. Accurate identification of pipe materials in these sections is essential for assessing potential contamination and planning necessary replacements or upgrades.

To achieve a statistically significant sample, KID conducted a random sample of 368-meter pit inspections. This sample size was chosen to achieve a 95% confidence level, ensuring high statistical confidence in the results. The random inspection locations were selected using a Python script, which randomly chose the appropriate number of locations, also providing a map of these locations.

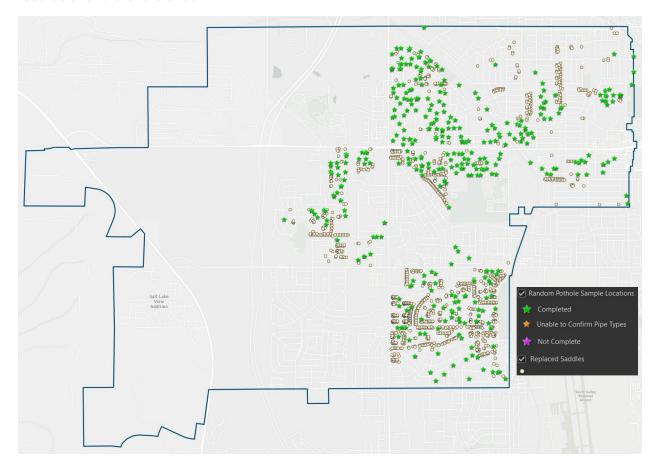
```
Created on Tue Aug 7th 08:47:17 2023
@author: rterry
import random
import arcpy
# Replace 'path/to/water_meters.shp' with the actual path to your shapefile water_meters_path = "path/to/water_meters.shp"
total_features = int(arcpy.GetCount_management(water_meters_path)[0])
  arcpy.AddMessage(f"Error: Not enough water meter points. Requires at least 365, found {total_features}")
  selected_features = []
  # Randomly select 365 features (without replacement) using reservoir sampling
  for i in range(365):
    random_index = random.randint(0, total_features - i - 1)
     with arcpy.da.SearchCursor(water_meters_path, ["OID@"]) as cursor:
       for row in cursor:
         if row[0] == random_index:
           selected_features.append(row[0])
    arcpy.SelectLayerByAttribute_management(water_meters_path, "NEW_SELECTION", f"OBJECTID IN ({','.join(str(x) for x in selected_features)})") arcpy.AddMessage(f"Successfully selected {len(selected_features)} random water meter points")
    arcpy.AddMessage("No features were selected (possible duplicate random selections)")
```

Locations that had their water service line saddles replaced or subdivisions where we have historical construction drawings were excluded from the sample pool, as the type of pipe on the utility side was already documented.

Inspections were conducted at the selected meter pit locations. The inspection process involved:

**Verifying Pipe Materials:** Inspecting the pipe material from the meter pit to the house to confirm the types of materials used.

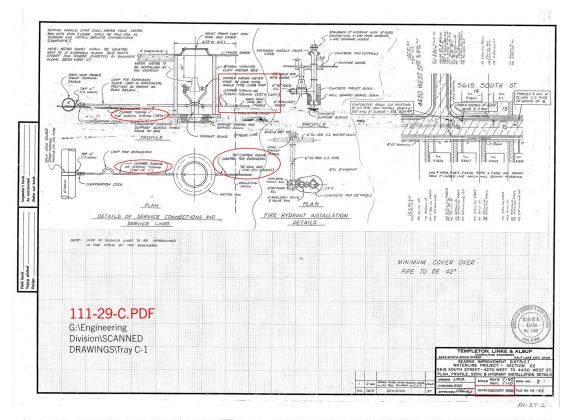
**Photo Documentation**: Taking photos of the inspected pipes to serve as verification for our records and future reference.

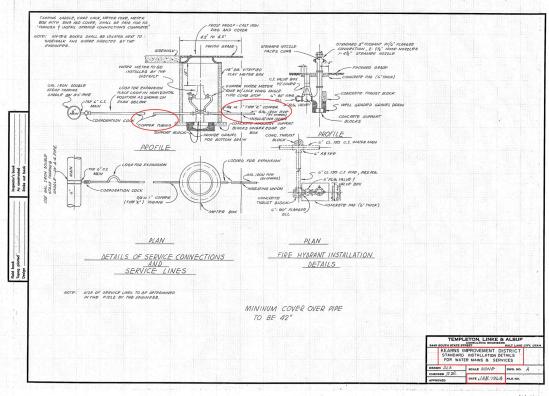


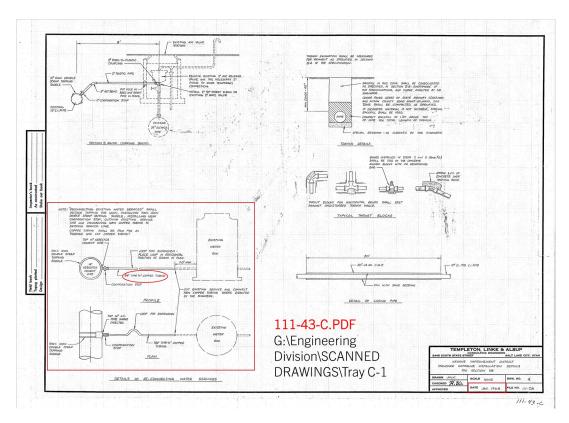
The green stars represent the location of each random pothole investigation, while the tan dots represent the locations of replaced saddles within the district.







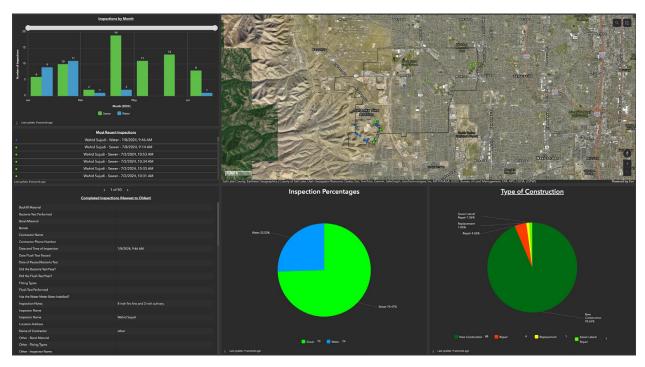


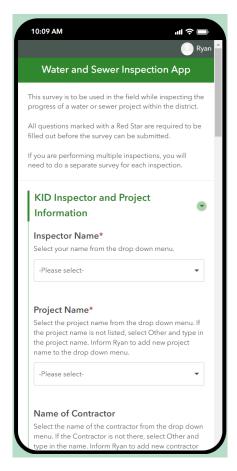


The inspections provided valuable data that verified the accuracy of historical construction drawings and updated the records for homes built before 1990. This process ensured that KID could identify and address any potential lead and copper contamination risks more effectively.

# Standard Operating Procedure for Collecting GPS Coordinates on Newly Installed Water Meters and Uploading into GIS System

This SOP outlines the steps for collecting GPS coordinates of newly installed water meters and sewer and water lateral inspections and how KID uploads this data into the GIS system. Accurate GPS data ensures that the location of water meters is precisely recorded for maintenance, management, and future reference. All inspection data is monitored through an ArcGIS Online Dashboard which displays data collected from the mobile Survey123 application.





This procedure applies to all personnel involved in the installation, inspection, and maintenance of water and sewer infrastructure within the Kearns Improvement District.

# Responsibilities

- **GIS Technicians**: Responsible for collecting and uploading newly installed water meter GPS data into the GIS system.
- **Supervisors**: Ensure compliance with the SOP and verify data accuracy through ArcGIS Online Dashboards.

# **Equipment and Tools**

- GPS device (Trimble R12i rod and Trimble TCS5 handheld receiver)
- GIS software (ArcGIS Pro)
- iOS or Android tablets or phones used to access Field Maps and Survey 123 for data collection.

# Preparation

- 1. Ensure that the GPS device is fully charged and functional.
- 2. Verify that the GPS device has the necessary accuracy settings enabled (preferably within 1-3 meters).

3. Ensure that all relevant details (e.g., water meter ID, installation address) are ready for documentation.

# **Collecting GPS Coordinates**

- 1. Turn on the GPS device and wait for it to acquire a satellite signal.
- 2. Navigate to the newly installed water meter.
- 3. Record the GPS coordinates:
- Place survey rod on the center of the water meter.
- Record the latitude and longitude coordinates displayed on the GPS device.
- Ensure that the accuracy of reading is within the acceptable range.
- 4. Document the GPS coordinates along with the water meter ID and installation address:
  - Enter the details into a data recording sheet or digital application.
  - Double-check the entries for accuracy.

# **Uploading GPS Data to GIS System**

- 1. Transfer the GPS data:
- Connect the GPS device to a computer if necessary.
- Download the recorded GPS coordinates and corresponding details.
- 2. Format the data:
  - Ensure the data is in a compatible format for the GIS software (e.g., CSV, shapefile).
- Verify that the data includes necessary fields such as latitude, longitude, water meter ID, and installation address.
- 3. Upload the data into the GIS system:
  - Open the GIS software.
  - Import the formatted data into the appropriate GIS layer.
- 4. Verify the uploaded data:
  - Cross-check the uploaded data with the original records to ensure accuracy.
  - Make any necessary corrections to the GIS data.

# **Data Review and Quality Control**

- 1. Review the uploaded GPS data for completeness and accuracy.
- 2. Conduct periodic audits of sample entries to ensure ongoing data integrity.

3. Address any discrepancies by revisiting the water meter location and re-recording the GPS coordinates if necessary.

# **Documentation and Records**

- Maintain records of all GPS coordinates collected and uploaded.
- Store data recording sheets or digital entries securely.
- Keep a log of any discrepancies and resolutions.

# **Customer Access to Service Line Data**

In our ongoing commitment to transparency and customer service, the Kearns Improvement District has made its internal GIS Service Line data accessible to the public. By transforming our internal data into an easy-to-use web map, we empower our customers to access important information about their water service lines directly from our website.

## Web Map Features

## • Simplified GIS Service Line Data:

A simplified version of the Kearns Improvement District's internal GIS Service Line data has been transformed into a user-friendly web map. This public-facing map provides a comprehensive view of all currently installed water meters throughout the district, ensuring our customers have access to the most up-to-date information.

# • Public Access and Usability:

The web map is designed with user convenience in mind. Customers can easily search for their address and view information about their specific water service line. This tool is intended to enhance customer understanding and engagement with their water service infrastructure.

# How to Use the Web Map

#### 1. Visit Our Website:

Navigate to the <u>Kearns Improvement District's website</u> at and click on the Lead & Copper Tab.

# 2. Access the Web Map:

On the homepage, locate the button at the top that says, "Lead & Copper." Click on this link to open the <u>Lead and Copper Information page</u>. Here you will find a link to the interactive Lead & Copper web map.

#### 3. Search for Your Address:

Use the search bar located at the top of the web map interface. Enter your address and press Enter. The map will zoom in to your specific location.

### 4. View Service Line Information:

Click on the point representing your address on the map. A pop-up window will appear, displaying general information regarding the service line to your house. This may include:

- Type of service line material
- o Year Structure Built
- Source of Data



# **Benefits of the Web Map**

# Transparency:

By providing access to detailed service line data, the Kearns Improvement District ensures transparency and builds trust with our customers. This initiative demonstrates our commitment to keeping the public informed about their water service infrastructure.

# • Empowerment:

Customers can take an active role in understanding their water service lines. This knowledge can help them make informed decisions about maintenance, potential upgrades, and water usage.

#### • Convenience:

The web map offers a convenient way for customers to access important information without needing to contact the district directly. This self-service tool is available 24/7, providing flexibility for users to obtain information at their convenience.

The Kearns Improvement District's public web map is designed to enhance customer engagement and transparency. By providing easy access to service line data, we aim to foster a better understanding of our water service infrastructure and ensure our community remains informed and empowered.

# **Anecdotal Evidence**

I, Robert L. Lutz, started with Kearns Improvement District in March 2001. During my experience working in the field and in my current management position as Operations Manager (since September 2014), I have never encountered lead service lines. Neither myself nor my crews have found any evidence of lead pigtails or lead service lines within the district. All connections observed have been copper pipe from the water main to the meter pit. The pipe from the meter to the house is typically copper, though some customers have galvanized service lines from the meter pit to the home. Our district proactively replaces water saddle connections to minimize leaks and property damage. Additionally, a review of maintenance and repair records, along with staff knowledge, indicates no evidence of lead service lines or goosenecks installed within the district prior to 1989.

Additionally, the Kearns Improvement District certifies all service lines, both at the customerowned and the system-owned service line, have been determined through an evidence-based record, method, or technique to be "Non-Lead" and have not identified any "Lead" or "Galvanized Requiring Replacement" or "Lead Status Unknown" service lines as defined below:

- "Lead" means where all or a portion of the service line is lead.
- "Galvanized Requiring Replacement" means a galvanized service line that is known to have been downstream from a lead service line in the past or is unknown to have been downstream of a lead service line currently or in the past.
- "Lead Status Unknown" means a service line material that is not known to be lead, galvanized requiring replacement, or non-lead.

Furthermore, a record listing each service line, including its material and the verification method used to determine the material of each line, is available for the Division's review upon request.

Robert L. Lutz

Operations Manager – Kearns Improvement District

Water Distributor Operator 21539