

[TO BE SENT VIA EMAIL]

From: Virginia Tech
To: <Name & Email Address>
Subject: Collection and Compilation of Water Pipeline Field Performance Data

<Logo in Header of email>

Dear <First Name> <Last Name>,

Virginia Tech would like to thank you for participating in a new survey titled “Collection and Compilation of Water Pipeline Field Performance Data.” This survey is being conducted on behalf of the Bureau of Reclamation (Reclamation) to collect high quality field performance data on pipeline reliability for water pipelines (potable, raw, and reuse water) of different materials, including cast iron, ductile iron, pretensioned concrete, reinforced concrete, steel, thermoplastic, and prestressed concrete. This project will aid in the development of a national Pipeline Infrastructure Database (PIPEiD) capable of efficiently and securely storing the collected data, conducting performance analysis, and conducting life-cycle economic analysis of water pipeline infrastructure and systems. PIPEiD will help advance the understanding of water pipeline performance parameters and the development of reliable models and tools. We would like to collect data from your facility pertaining to water pipes (potable, raw, reuse). The data can be securely uploaded online (see below for details) or can be sent by USB/Disk copy via mail (see address below).

Your participation is completely voluntary and we anticipate that many facilities will have a data analyst perform this activity. This research study is being conducted by Virginia Tech on behalf of Reclamation, and is federally supported research (**OMB Control Number: 1006-XXXX, expires MM/DD/YYYY**).

Please plan to upload pipe related data and information within 60 days of receipt of this email. Please refer to attached Appendix “A” for the requested data and information.

Access to documents and electronic files is restricted to the research staffs at Virginia Tech, and Reclamation. Prior to sharing this data with Reclamation, the Virginia Tech team will substitute unique identifiers for specific facility names to protect respondent privacy. Shared documents and electronic files are secured by complying with all export control regulations of the United States applicable to the technical data and information involved.

Instructions for Uploading Data

You can upload the data in any digital format although the preferred formats are GIS Shape Files, Access Database, MS Excel, Geo-database. Please refer to attached Appendix “B” for the data and information upload protocol.

Instructions for Sending Data and Information via Mail

Send DISC/USB copies via mail to the following address:

Dr. Sunil Sinha

Professor, The Charles E. Via Department of Civil and Environmental Engineering

200 Patton Hall, Mail Code: 0105

750 Drillfield Drive, Blacksburg, VA 24061

If you need assistance, please contact Dr. Sunil Sinha at (540) 231-9420, or ssinha@vt.edu.

We immensely appreciate your participation in the survey.

Sincerely,

~~~~~

Dr. Sunil Sinha, Professor and Director

The Charles E. Via Department of Civil and Environmental Engineering

Sustainable Water Infrastructure Management (SWIM) Center

VIRGINIA TECH

200 Patton Hall, Mail Code: 0105

750 Drillfield Drive, Blacksburg, VA 24061

Phone: 540-231-9420 | Fax: 540-231-7532 | Email: [ssinha@vt.edu](mailto:ssinha@vt.edu)

**Paperwork Reduction Act:** The purpose of this survey is to collect high-quality field data on the performance of water pipelines of different materials. The reporting burden for this survey is estimated to average 150 minutes, which includes the time for initial decision, introductory webinar, reviewing instructions, and completing and uploading the data. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. Please direct comments regarding the burden estimate or any other aspect of this survey to the Principal Investigator, Dr. Sunil Sinha, Professor and Director, 200 Patton Hall, 750 Drillfield Drive, Blacksburg, VA 24060.

**Privacy Act Statement:** No Privacy Act information is being collected.

## Appendix “A”

**Please submit pipe related data and information. See below for the requested information.**

| No | Data Point                                                                            | Unit                            | Brief Justification                                                                                                                                   |
|----|---------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Pipe Segment Identifier (node to node, joint to joint, length)                        | ID/Feet                         | Data will come from various sources in addition to utilities. Pipe ID is necessary to match externally acquired data to specific portions of the pipe |
| 2  | Pipe Manufacturing Year, Installation Year, and Specifications                        | Year/Record                     | Pipe made at different times and specifications perform differently                                                                                   |
| 3  | Pipe Material, Manufacturing Class, Wall Thickness, Wire Type, Others                 | Type/Class/Inches               | Pipe material and other manufacturing parameters affect performance                                                                                   |
| 4  | Pipe Diameter (internal, external, nominal pipe size)                                 | Inches                          | Different pipe sizes perform and fail differently                                                                                                     |
| 5  | Pipe Lining (type, material, installation year)                                       | Type/Year                       | Type and specification of lining affect the performance of pipe                                                                                       |
| 6  | Pipe Coating (type, material, installation year, bonded or unbonded)                  | Type/Year                       | Coating of pipe will have affect on the performance                                                                                                   |
| 7  | Pipe Hydraulics (flow type, flow rate, pressure)                                      | Type, Ft/Sec, PSI               | Pipe hydraulics may affect the performance deterioration rate                                                                                         |
| 8  | Break/Leak/Repair event (type, date, location, cause, length of service outage)       | Type/Date/ID/Location           | Number of pipeline failures will be used to analyze the performance of different types of metallic pipe                                               |
| 9  | Soil Characteristics (type, resistivity, pH, chloride, sulphide, corrosivity)         | Type/Ω - cm/pH/Level            | Soil may be corrosive or contain solvents that cause pipe deterioration                                                                               |
| 10 | Corrosion Mitigation (type, continuous, limits, installation, condition)              | Type/Year/Grade                 | Use of corrosion mitigation system will affect corrosion rate                                                                                         |
| 11 | Internal Water Parameters (type, quality, pH, chloride, sulphide, temperature, other) | Type/pH/Level/°F                | Water properties may affect the internal condition of pipe                                                                                            |
| 12 | Pipe Joint, Bedding and Backfill (type, material, method)                             | Type/Material/Method            | Improper joint, bedding or backfill materials may cause failure                                                                                       |
| 13 | Environmental Factors (frost penetration, ground water, tidal influences)             | Yes/No, Level                   | Various external environments affect pipe performance                                                                                                 |
| 14 | Operation and Maintenance Factors (stray currents, dissimilar materials, others)      | Type, Yes/No                    | Presence of stray currents or dissimilar metals may cause corrosion                                                                                   |
| 15 | Pipe Characteristics (accessibility, redundancy, location, conservation zones)        | Type, Yes/No                    | Characteristics of pipe affecting the ease of maintenance and renewal                                                                                 |
| 16 | Pipe Depth, Ground Cover, and Loading                                                 | Feet/Type/Gradient/ADT          | Pipe depth and ground cover affect pipe loading and deterioration rate                                                                                |
| 17 | Pipe Condition Monitoring System (type, installation year)                            | Type/Year                       | Presence of condition monitoring system may affect the pipeline's service life                                                                        |
| 18 | Inspection Records (type, reason, technology, date, defects, deposit, etc.)           | Type/Date/Location/Level        | Inspection records may provide additional information about pipeline failures including cause                                                         |
| 19 | Renewal (repair/rehabilitation/replacement records)                                   | Records                         | Renewal events may indicate pipeline failures                                                                                                         |
| 20 | Third Party Damage (other utility failure, construction, tapping)                     | Yes/No, Type                    | If any damage is caused to pipe due to third parties                                                                                                  |
| 21 | Life Cycle Costs                                                                      |                                 | Life cycle costs needed for economic data analysis                                                                                                    |
|    | a. Initial Costs (design, easements, permits, right-of-way)                           | \$                              | All costs incurred before installation                                                                                                                |
|    | b. Installation Costs (equipment, material, labor, insurance, traffic, others)        | \$                              | Costs incurred in the installation of the pipe                                                                                                        |
|    | c. Operation & Maintenance Costs (condition assessment, maintenance activities)       | \$                              | Costs incurred in the operation and maintenance of pipe                                                                                               |
|    | d. Renewal Engineering Costs (repair, rehabilitation and replacement activities)      | \$                              | Costs incurred in performing renewal activities                                                                                                       |
|    | e. Consequence of Failure Costs (economic, environmental, social)                     | \$                              | Costs associated with impact of failure                                                                                                               |
| 22 | <b>Please upload readily available pipe performance data in preferable formats</b>    | <b>GIS, Access, Excel, etc.</b> | Utility may have additional data and information for analysis                                                                                         |

### Description of the parameters in the Table:

Numbers 1 to 8 are needed to determine the pipeline physical/structural parameters.

Numbers 9 to 14 are needed to determine the pipeline environmental/operational characteristics.

Numbers 15 to 18 are needed to determine the pipeline condition/assessment characteristics.

Numbers 19 – 20 are needed to determine the repair/rehab/replacement characteristics.

Number 21 (a to e) is needed to determine the pipeline life cycle economic/cost characteristics.

Number 22 is needed so that data saved in widely used electronic formats will be uploaded if easily available to the pipe utility

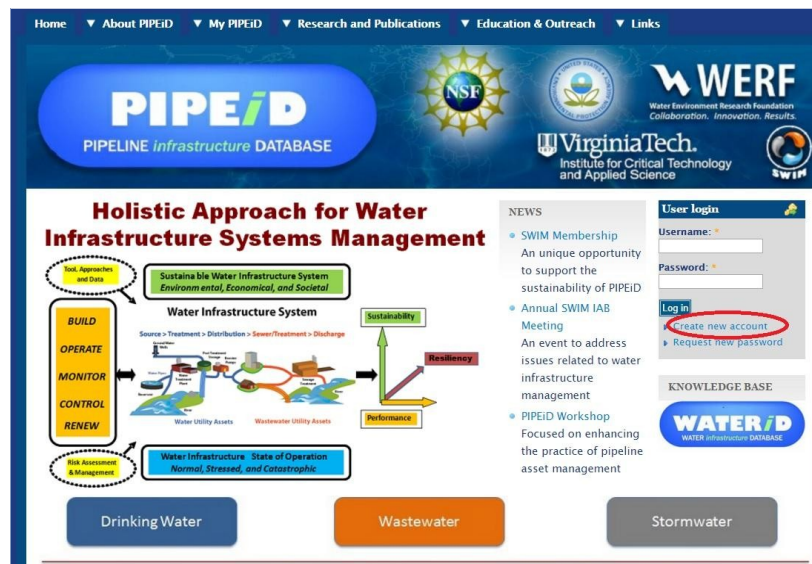
## Appendix “B”

To securely send your data to Virginia Tech, please use the following steps:

### 1. User Registration

The data can be submitted by visiting [www.pipeid.org](http://www.pipeid.org). A new account should be created prior to data submission. The ‘Create new account’ tab in the ‘User login’ section of the Home page will redirect the user to the ‘User Account’ page to create a new account (Fig. 1). The required account information should be entered in the ‘User Account’ page. Please click the ‘Create new account’ button at the end of the page to submit user registration. Subsequently, the user will receive an email upon approval of registration. Please follow the instructions in the email to setup a password for the PIPEiD database.

Fig. 1: Create New Account



The screenshot displays the PIPEiD website interface. At the top, there is a navigation menu with links for Home, About PIPEiD, My PIPEiD, Research and Publications, Education & Outreach, and Links. The main header features the PIPEiD logo (PIPELINE infrastructure DATABASE) and logos for NSF, WERF (Water Environment Research Foundation), and Virginia Tech (Institute for Critical Technology and Applied Science). The central content area is titled 'Holistic Approach for Water Infrastructure Systems Management' and includes a diagram of a water infrastructure system with components like 'Water Utility Assets' and 'Wastewater Utility Assets'. To the right, there is a 'User login' section with fields for Username and Password, and a 'Log in' button. A red circle highlights the 'create new account' link below the 'Log in' button. Below the login section is a 'KNOWLEDGE BASE' section with a 'WATER iD' logo. At the bottom, there are three buttons for 'Drinking Water', 'Wastewater', and 'Stormwater'.

### 2. Data and Information Upload.

After registering on the PIPEiD website, please follow the directions on the website for uploading your data. This will include the following steps.

- Click the ‘Upload’ tab under the ‘My PIPEiD’ tab to upload the data and information.
- The ‘Upload’ tab will redirect the user to the ‘Create Upload’ page (Fig. 2).
- Enter the Utility Name in the ‘Title’ section.

- Enter in the name and the contact number of the person to contact for additional information in the 'Contact Name' and 'Contact Phone' sections respectively.
- Click the 'Choose File' button to select the file to upload from your system. Compress your files before uploading them. Each compressed file size should not exceed 500MB.
- Click the 'Upload' button upon selecting the file. Multiple files can be uploaded by clicking the 'Add another item' button. Add another item after uploading the previous file.
- Click the 'Save' button at the bottom of the page after uploading all the files from your utilities.

Fig. 2: Data Upload Page

Home About PIPEiD My PIPEiD Research and Publications Education & Outreach Links

**PIPEiD**  
PIPELINE Infrastructure DATABASE

NSF

WERF  
Water Environment Research Foundation  
Collaboration. Innovation. Results.

VirginiaTech.  
Institute for Critical Technology and Applied Science

SWIM

YOU ARE HERE: [Create content](#) / [Create Upload](#)

## Create Upload

Title: \*

Contact Name: \*

Contact Phone: \*

**UPLOAD FILES:**

Choose File No file chosen Upload  
Maximum file size: 500 MB

please compress (zip, rar etc.) your files before uploading  
[Add another item](#)

Location

Body: [Split summary at cursor](#)

- Web page addresses and e-mail addresses turn into links automatically.
- Allowed HTML tags: <a> <em> <strong> <cite> <code> <ul> <ol> <li> <dl> <dt> <dd> <img> <h1> <h2> <h3>
- Lines and paragraphs break automatically.

[More information about formatting options](#)

Save Preview

**PIPEIDTEST**

- My account
- Create content
  - Bid Information
  - Forum topic
  - Funding Opportunities
  - Group post
  - Library Submission
  - Management and Tool Profile
  - Models and Tools Profile
  - Organization Profile
  - Product Qualification Submittal Packages
  - Profile
  - Reference Document
  - Technology and Service Provider Case Study
  - Technology or Product Profile