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VIA E-MAIL

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Re: Collection and Compilation of Water Pipeline Field Performance Data

Dear Mr. Sears:

The Ductile Iron Pipe Research Association and its members (hereinafter “DIPRA”) recognize the hard work that the United States Bureau of Reclamation (“Reclamation”), the Water Research Foundation and Battelle Memorial Institute (“Battelle”) have done to devise the proposed study and survey instrument. We appreciate this opportunity to provide our comments.

Executive Summary

The performance of polyethylene-encased ductile iron pipe has been a significant matter of disagreement between DIPRA and Reclamation for almost ten years. Based on the data available and its successful use throughout this country, we do not believe that a survey or study is necessary to demonstrate that Reclamation should allow the use of ductile iron pipe with polyethylene encasement in all soil environments.

Given this history, we believe that it is imperative that there are no ambiguities about the survey and/or study, including the purpose, scope and who will be doing the work associated with the project. As discussed below, we believe that there are significant questions about these aspects of the study, and others, that must be answered before DIPRA or any other party can provide informed comments.

We also believe strongly that Reclamation should not be involved in this study in any capacity. For this study to have practical value, there cannot be any actual or apparent bias, and Reclamation’s history with this issue creates serious concerns.

It is important that all standards that will be used, and key definitions are provided for comment. For example, it is important to know how corrosion-related failures are defined and will be evaluated given the propensity for mischaracterization and/or contributing/causal factors.

To ensure that these concerns are addressed, we respectfully request that a new comment period is provided to allow DIPRA and other interested parties to respond to the clarifying information

and/or a revised study/survey. It is important for the concerns discussed below to be addressed because of the potential harm that could result to DIPRA and other entities.

Overview of Topics Addressed in the Comments

As discussed in more detail below, our comments focus generally on the following areas: (1) the need for additional information and clarifications to allow for informed comments; (2) the need for an extension of the comment period after the additional information is provided; (3) the purpose of the study appears unclear, as it is described differently in several documents; (4) it is unclear who will be doing various aspects of the study; (5) Reclamation should not be involved in this study in any capacity; (6) Reclamation's involvement undermines the practical use of the study; (7) Reclamation's involvement also threatens the privacy of the information provided, creating the potential for harm to respondents, DIPRA and other entities subject to the proposed study and survey; (8) Reclamation has sufficient data to allow the use of ductile iron pipe with polyethylene encasement in all soil environments, thereby eliminating the need for the study to gather data regarding ductile iron pipe performance; (9) Reclamation's proposed reliability standard and corrosion protection recommendations are unreasonable; (10) the study and survey fail to address economics, cost-effectiveness and life-cycle costs as required by Congress; and (11) there are several additional ways to enhance the quality, usefulness and clarity of the information to be collected.

General Recommendations for the Study and Survey

In addition, there are several recommendations that we have for the survey instrument and the study generally:

- The purpose and scope of the study/survey must be clarified
- Who will be doing the work on the study/survey needs to be clarified
- Reclamation should not be involved with the study in any capacity
- The survey/study is not necessary to demonstrate the effectiveness of ductile iron pipe with polyethylene encasement
- The respondents should be able to provide their standards for determining the performance/viability of a pipeline
- The respondents should be able to evaluate any proposed standards or measures of performance
- The survey should have a list of key terms and definitions
- The respondents should be able to evaluate the key terms and definitions
- The survey should provide a list of mitigating factors for any breaks/leaks/failures

- Economic considerations must be included in the survey
 - Important to determine a practical reliability standard
 - Congress seems to require it as part of the survey and study
- The survey needs to be able to capture uniform and consistent information
- The survey should evaluate the performance of properly-installed, maintained and performing pipe materials and methods of corrosion protection
- The survey needs to eliminate leaks/breaks/failures that occurred in the past but would not occur now
- There need to be checks on the front and back end to ensure that problems are not misreported or mischaracterized
- Maintenance and inspection information is relevant
- The sample methodology needs to be available for comment
- The survey needs to clarify the pipe materials covered and ensure there is consistency in the types of pipe compared among pipe materials (i.e. only consider transmission pipes if certain pipe materials are considered)
- The respondents should be able to express their satisfaction with a particular pipe material and method of corrosion control
- There are a few additional technical points made in the comments

Background and History of DIPRA

For nearly a century, DIPRA has provided the resources, tools, and support for utilities, water professionals and communities to deliver clean, safe drinking water to millions of American families reliably and affordably.

We are a recognized leader in educating water professionals and the public on the financial, technical, and health benefits of SMaRT-certified ductile iron pipe. Our member companies are also good stewards of the environment, as ductile iron pipe is made of recycled ferritic scrap iron and steel and is 100% recyclable. Iron pipe is the most prevalent water pipe in use in the United States, and ductile iron pipe is the longest-lasting pipe material, providing an average expected service life of 100 years or more.

DIPRA member companies are located across this country, providing thousands of jobs and contributing to their communities. While they may have different names and locations, they

share a commitment to produce and deliver the finest quality water and wastewater pipe material in the world, at the greatest possible value.

Clarifications Needed to be Able to Comment on the Study

DIPRA respectfully requests that Reclamation clarify several important issues related to the study and survey, and following the clarification, extend the formal comment period.

It is extremely difficult to comment on the proposed survey because of conflicting information available about the purpose and process for the study. The study is addressed in at least four documents: (1) the *Federal Register Notice* dated February 26, 2014; (2) the survey instrument that Reclamation provided upon request; (3) fiscal years 2012-2014 Appropriations; and (4) Reclamation's *Report to House and Senate Appropriations Committees: Buried Metallic Pipe*, February 2014. ("*Reclamation Report to Appropriations Committees*")

Purpose of the Study

The purpose of the study is characterized as follows:

- *The Federal Register*: "the Bureau of Reclamation has obtained the services of an outside entity to survey water facilities and collect water data on water pipeline corrosion related failures. The information requested is required to comply with a request from Congress for the Bureau of Reclamation to assemble data on pipeline reliability for specific types of pipes."
- The survey instrument: "This research study is being conducted by Battelle Memorial Institute on behalf of the Bureau of Reclamation and the Water Research Foundation to collect high-quality field data on the performance of water pipelines of different materials. The ultimate project objective is to develop an easily accessible database on water pipeline material performance and supporting future studies and analyses of the performance of water infrastructure system pipe materials."
- Appropriations language – Fiscal Year 2014, Consolidated Appropriations Act, Section 203(a): "Until such time as the pipeline reliability study . . . is completed and any necessary changes are made to the Technical Memorandum"
 - Fiscal year 2014, Consolidated Appropriations Act, Explanatory Statement, General provisions – Department of Interior: "If the analysis on pipeline reliability suggests that changes to the Technical Memorandum . . . are appropriate, Reclamation is directed to update the memorandum."
- *Reclamation Report to Appropriations Committees*: "Reclamation agrees the collection of additional performance data recommended by the National Academies of Science will be beneficial as the agency seeks to refine its technical position in an updated [Technical Memorandum]."

The documents suggest very different purposes, ranging from establishing a water database for future studies to surveying corrosion related failures to determining whether Reclamation's Technical Memorandum needs to be revised. Understanding the purpose and scope of the study and survey is essential to provide meaningful comments.

It is also important for respondents to have a complete and accurate description of all facets of the study, including but not limited to the survey. The comments that follow are an attempt to address many issues, but we will necessarily omit potential comments given the number of hypothetical questions that could arise given the various purposes provided for the study.

Below are the descriptions of the purpose of the study from the sources quoted above with a series of questions (in brackets and italics) embedded within and followed by comments:

- *The Federal Register*: “The Bureau of Reclamation has obtained the services of an outside entity [*which entity*] to survey water facilities [*just facilities or also water professionals, such as engineers?*] and collect water data [*What type of data?*] on water pipeline corrosion related [*internal corrosion, external corrosion or both?; how do you define and quantify a corrosion related failure – by percentage cause, other method?*] failures [*how do you define a failure?*]. The information requested is required to comply with a request from Congress for the Bureau of Reclamation to assemble data on pipeline reliability for specific types of pipes.”
 - Comment: While the notice focuses on failures, the survey asks for break/leak information – a leak appears to be very different from a failure, and a break could be different than a failure
- The survey instrument: “This research study is being conducted by Battelle Memorial Institute [*implies Battelle is responsible for the entire study*] on behalf of the Bureau of Reclamation and the Water Research Foundation to collect [*from whom?*] high-quality [*what is the criteria to determine if the data is high-quality?*] field data [*what qualifies as field data; failures only?*] on the performance [*how do you define performance – service life; environmental factors – pumping costs, recyclability of the materials; life cycle costs?*] of water pipelines of different materials [*which materials?*]. The ultimate project objective is to develop [*who will develop?*] an easily accessible [*how do you define; accessible by whom?*] database on water pipeline material performance and supporting future studies [*by whom; what type of studies?*] and analyses [*by whom; what type of analyses?*] of the performance of water infrastructure system pipe materials.”
 - Comment: As described above, the study appears to have a different and much broader purpose than the study referenced in the appropriations language, the *Report to the Appropriation Committee* and the *Federal Register* notice.
 - Comment: There is no mention of the Technical Memorandum or other limits on the data to be collected.

- The draft email to water utilities states: “Your water utility was identified [*by whom; using what criteria; what is the sampling methodology?*] . . .as a utility that would have high-quality field data on the performance of water pipelines of different materials [*is the survey seeking data on all or certain pipe materials?*].”
- Comment: The survey does not seem to limit the pipe materials surveyed.
- “If it is determined [*by whom?*] that you have high-quality water pipeline performance data, we will email you. . .[which] will allow you to upload that data in any format you choose.” [*this would seem to make it very difficult, if not impossible, to standardize the content of the data provided*]
- Comment: This seems to describe an ongoing project instead of a limited, finite project.
- Appropriations language – Fiscal Year 2014, Consolidated Appropriations Act, Section 203(a): “Until such time as the pipeline reliability study . . .is completed and any necessary changes are made to the Technical Memorandum”
 - Fiscal year 2014, Consolidated Appropriations Act, Explanatory Statement, General provisions – Department of Interior: “If the analysis on pipeline reliability suggests that changes to the Technical Memorandum . . . are appropriate, Reclamation is directed to update the memorandum.”
 - Comment: The focus appears to be on gathering data for the purpose of evaluating the Technical Memorandum.
- Reclamation *Report to Appropriations Committees*: “Reclamation agrees the collection of additional performance data recommended by the National Academies of Science will be beneficial as the agency seeks to refine its technical position in an updated TM.”
 - Comment: The focus appears to be on gathering data for the purpose of evaluating the Technical Memorandum.

As outlined above, there are numerous questions that must be answered for DIPRA or another party to be able to comment meaningfully on the proposed scope and purpose of the study. Potential respondents also may not be able to understand or may misunderstand the purpose and scope of the study and survey.

Process for the Study

It is also important to be able to determine who will be doing the study. The documents discussed above differ on this as well:

- *Federal Register*: “the Bureau of Reclamation has obtained the services of an outside entity to survey water facilities and collect data on water pipeline corrosion related failures.”

- Comment: The notice implies that the outside entity will do all work associated with the survey and study.
- The survey instrument: “This research study is being conducted by Battelle Memorial Institute on behalf of the Bureau of Reclamation and the Water Research Foundation. . .”
 - Comment: The survey instrument clearly states that Battelle is doing the study.
- Fiscal year 2014, Consolidated Appropriations Act, Explanatory Statement, General provisions – Department of Interior: “Concerns persist regarding the appearance of bias in the efforts to comply with the fiscal year 2012 joint explanatory statement requirement regarding the assembly and analysis of data on pipeline reliability. Therefore, Reclamation is directed to ensure that these efforts are conducted by an appropriate independent third-party.”
 - Comment: The language clearly requires a third-party, not Reclamation, to assemble and analyze the data.
- Reclamation *Report to Appropriations Committees*: “The scope of the agreement is for the WaterRF to collect buried metallic pipeline reliability data for all types of pipe specified in Table 2 of the TM and to assist Reclamation in its analysis of the data.”
 - “Reclamation will evaluate the collected data, calculated failure rates, and life cycle costs to inform its decision on a suitable reliability standard. . .”
 - Comment: Reclamation will analyze the data.

Based on these documents, there appears to be disagreement about who will be responsible for the study. This information must be clear to any entity reviewing the *Federal Register* notice and the survey instrument to be able to provide meaningful comments and/or to decide whether to participate in the study. If the focus of the study is the Technical Memorandum, respondents should be provided an opportunity to comment on whether the technical recommendations contained therein are appropriate based on technical and economic considerations.

As discussed in detail later, Reclamation has provided evolving standards and disparate treatment of different pipe materials and methods of corrosion protection. Given this history, it is imperative that the purpose and which entities will be performing the study and survey are clear before the study begins.

Based on the questions raised above because of conflicting information and the discussion that follows, it is impossible to provide informed comments on:

- “Whether the proposed collection of information is necessary for the proper performance of our functions, including whether the information will have practical use”; or
- “Ways to enhance the quality, usefulness, and clarity of the information to be collected.”

Therefore, additional information is needed, and the notice and comment period should be extended once this information becomes available.

Background on TM/Survey

We will not provide the full history of this issue or all of our concerns in these comments, but we believe it is important to provide context for our comments and concerns. Similarly, we are not providing copies of documents that Reclamation already has and are discussed in these comments.

In 2004, the Bureau of Reclamation issued Technical Memorandum No. 8140-CC-2004-1 (the "Technical Memorandum"), which addresses the corrosion control that Reclamation requires for buried metallic water pipelines on Reclamation projects. Reclamation changed more than twenty years of practice to require bonded dielectric coatings, instead of polyethylene encasement, as the corrosion protection for ductile iron pipe in what Reclamation defines as "highly corrosive soils" ($\leq 2,000$ ohm-cm).

DIPRA immediately objected and continues to object for numerous reasons, including, but not limited to, that the Technical Memorandum: did not follow required legal and internal Reclamation processes in its development; is being improperly treated as a requirement; is contrary to established practices in the U.S. waterworks industry and consensus national standards from the American Water Works Association ("AWWA"); is contrary to Reclamation's more than 20 years of "good experience" with ductile iron pipe and polyethylene encasement; is contrary to common practice in the water works industry; ignores the technical differences between ductile iron pipe and other metallic pipe; is inconsistent with DIPRA's technical recommendations; and imposes unnecessary costs without benefits.

The Development of the Technical Memorandum Violated the Paperwork Reduction Act

Reclamation conducted a survey of utilities as part of the development of the Technical Memorandum. Contrary to the requirements of the Paperwork Reduction Act of 1995, Reclamation did not submit that survey to the Office of Management and Budget ("OMB") or provide an opportunity for public notice and comment. DIPRA would have commented on that survey if it had been given an opportunity to do so, as we believe that the improper collection and analysis of data and an incomplete review process can harm our industry.

We believe the Technical Memorandum is a fatally-flawed document—both procedurally and substantively. We will not discuss all of those reasons in this document, but the failure to follow the Paperwork Reduction Act shows the disregard for process and fairness that has been a consistent pattern with this issue. The failure to follow the Paperwork Reduction Act should be fatal to the continued implementation of the Technical Memorandum and require its withdrawal.

Reclamation Should Not Be Involved in this Study

Without discussing all of our objections and the entire history of this issue, it is important to emphasize that Reclamation has used different standards for different pipe materials and methods of corrosion control and has provided changing standards of reliability.

Rather than list all of the instances of disparate treatment, we believe that one example demonstrates: (1) the unequal standards that Reclamation imposes on different materials and methods of corrosion control; (2) the importance of a well-crafted survey to ensure that data is not collected in a way that can lead to misinterpretation; (3) the importance of prohibiting Reclamation from collecting, accessing or analyzing this data; and (4) Reclamation continues to defend this disparate treatment, thereby raising concerns about it occurring in the future.

Disparate Treatment of Different Pipe Materials

Reclamation has conducted a “life cycle analysis” comparing different pipe materials that shows ductile iron pipe failing at a rate 190 times higher than steel pipe and ductile iron pipe repairs costing 374 times more¹. This data was and is inconsistent with numerous studies, including data in the Technical Memorandum and AWWA’s *Buried No Longer* report. Nevertheless, Reclamation presented the analysis as definitive and has cited that life cycle analysis without any caveats.

Given this clearly incorrect information, a member of Congress requested the underlying data and assumptions for that life cycle analysis. When Reclamation provided that information, it disclosed the following data used to calculate its ductile iron *water* pipe failure rate:

- “*actual failure data*” from a single ductile iron water pipeline (emphasis added)
- The pipeline was carrying *water*
- The project was in *corrosive soils*
- The *corrosion protection system was not working as designed*

Instead of using comparable information, Reclamation used the following to calculate its steel *water* pipe failure rate:

- A subset of the US Department of Transportation, Office of Pipeline Safety’s oil and gas dataset covering only “significant incidents” – *aggregate data*
- The pipelines were carrying *oil and gas*

¹ This is the failure rate after Reclamation rounded up the steel pipe failure number from 0.55 failures per 100 miles in 50 years to 1.0 failure per 100 miles in 50 years. “Reclamation estimated 190 failures for a 100 mile reach of [ductile iron] pipe in 50 years”, resulting in a failure rate for ductile iron pipe that is 345 times greater than steel pipe before the rounding. The failure rate was not apparent in the original life cycle analysis but was provided to Congress with the underlying data assumptions.

- The pipelines were in soils of *unknown corrosivity*
- There is no indication that the corrosion protection systems were not operating as designed

The following chart summarizes the different assumptions used for this life cycle analysis:

	Ductile Iron Pipe	Steel Pipe
Data Points	One Project	Aggregate data of “significant incidents” (subset of DOT all oil and gas pipeline incidents)
Type of pipeline	Water	Oil and gas
Corrosion Protection Working	No	Unknown
Corrosive Soils	Yes	Unknown
Subject to Federal Oil and Gas Pipeline Regulations	No	Yes

When any member of the public views this data as presented, none of this vital information is disclosed. An engineer designing a project could review the life cycle analysis, and if he did not have other background knowledge on the issue, could take this analysis as definitive.

In its response to Congress, Reclamation finally acknowledged: “Since these [ductile iron] pipelines were not under active cathodic protection, the failure rates from the pipelines may or may not represent the performance of ductile iron pipe with an active cathodic protection system.”

In the same letter as the life cycle analysis, Reclamation dismissed failures of steel water pipe on a project because: “as stated in those reports, the origins of the corrosion issues on that pipeline were associated with mortar lining issues (*i.e.*, corrosion initiating on the inside of the pipe wall) and the improper installation of the bonding straps at pipe joints, resulting in an ineffective cathodic protection system. Thus, the corrosion issues on that pipeline do not appear to be related to the performance of the bonded dielectric coating.”

In both cases, the cathodic protection system was not operating effectively, but Reclamation did not disclose in its letter or analysis that the cathodic protection system was not working in the ductile iron pipeline. Moreover, Reclamation did not disclose the other vital assumptions and data points that it used and which would understandably lead to significantly higher failures rates for ductile iron pipe.

Reclamation not only failed to disclose the information, but it took identical circumstances – a cathodic protection system that was not operating properly – and used those circumstances to further justify its position. For steel pipe, the failures were dismissed as irrelevant. For ductile iron pipe, the failures served as a proxy for the performance of ductile iron pipe generally.

Putting aside the issue of treating the materials differently, it is difficult to imagine why Reclamation would use a single data point as a proxy for the performance of ductile iron pipe generally, especially when more data was readily available. This would seem to be comparable to the Federal Aviation Administration using a single plane crash to extrapolate the performance of planes in general or the performance of a single airline. When coupled with the use of aggregate data as a basis of comparison with a single data point, this analysis is even more troubling.

In Reclamation's February 2014 Report to the Appropriations Committees, Reclamation stated that its "Technical Services Center will use the data and analyses developed under the RFP and develop life cycle cost analyses to compare buried metallic pipe cost effectiveness." Understandably, Reclamation's intention to develop another life cycle analysis is of great concern to DIPRA given the harm that can occur when improper data and inconsistent assumptions are used.

Even more troubling, Reclamation has continued to defend this analysis, thereby raising the serious concern that Reclamation believes this methodology and type of analysis have technical merit and will be used in the future.

Comparison of Different Methods of Corrosion Protection

Reclamation has provided very different standards for the evaluation of different methods of corrosion protection. As discussed above, Reclamation stated that the failure of a pipeline with a bonded coating was not indicative of the performance of bonded coatings because the cathodic protection was not working. When the same problem occurred on a pipeline with polyethylene encasement, Reclamation used that failure as a proxy for the performance of ductile iron pipe with polyethylene encasement.

Listed below are additional examples of the disparate treatment:

	Bonded Coatings	Polyethylene Encasement and Cathodic Protection
Reclamation's Experience	None	<ul style="list-style-type: none"> • More than 20 years • Invested at least \$100 million in taxpayer money • At least 330 miles of ductile iron pipe
Reclamation's Characterization of that Experience	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • "Good" • "Reclamation is confident that the designs for steel and ductile iron pipe, with their corresponding corrosion protection, are technically sufficient and will provide a quality product."
Data Required	<ul style="list-style-type: none"> • No "specific data" 	<ul style="list-style-type: none"> • Requested all of the data in DIPRA's database
Data Received	<ul style="list-style-type: none"> • No "specific data" 	<ul style="list-style-type: none"> • Numerous studies showing ductile iron with polyethylene encasement exceeds Reclamation's 50 year service life • More than 20 years of Reclamation's own "good experience"
Standard for Evaluating data	<ul style="list-style-type: none"> • "Technically feasible" 	<ul style="list-style-type: none"> • Higher now than in 1984 – when Reclamation first allowed the use of polyethylene encasement

Congress Has Expressed Concerns About Reclamation's Activities

Congress initially requested this study in the Fiscal Year 2012 Consolidated Appropriations Act because “the conferees are concerned that Reclamation’s use of this memorandum may be holding different materials to different standards of reliability and increasing project costs unnecessarily.”

In Fiscal Year 2013, the House Appropriations Committee reiterated the above concerns and stated: “the Committee is concerned that Reclamation is not taking all appropriate steps to avoid bias or the appearance of predetermined outcomes in the assembly and analysis of data on pipeline reliability required in fiscal year 2012, especially in light of persistent concerns regarding this issue. Reclamation is directed to engage a neutral third party to collect and analyze this data. The Committee reiterates the fiscal year 2012 direction that this effort includes an analysis of the economics, cost-effectiveness, and life-cycle costs associated with the various materials under evaluation.”

Due to additional concerns, Congress included the following language in the Fiscal Year 2014 Consolidated Appropriations Act, Energy and Water Explanatory Statement: “Concerns persist regarding the appearance of bias in the efforts to comply with the fiscal year 2012 joint explanatory statement requirement regarding the assembly and analysis of data on pipeline reliability. Therefore, Reclamation is directed to ensure that these efforts are conducted by an appropriate independent third-party. Concerns also have been raised that Reclamation may be requiring different reliability standards for different pipe materials.”

Reclamation's Involvement Creates Risks for Survey Respondents and the Materials Being Studied

Nonprofit organizations, such as the American Water Works Association (“AWWA”), routinely conduct surveys and other studies. For these studies, the organizations generally protect the underlying data from public disclosure if the entity providing the data wishes to keep the data private (absent a legal action or other extraordinary circumstance).

The survey instrument recognizes this issue and concern: “**Privacy:** Your name and facility name will not appear in our results. Access to documents and electronic files is restricted to the research staffs at Battelle, the Water Research Foundation, and the Bureau of Reclamation who are working on the study. However, there is a possibility that a request for the data could be made under the Freedom of Information Act.”

Since Reclamation is involved in the study, the data may be made public. This could chill the provision of helpful information and expose the pipe materials included in the survey to harm. For example, if the study captures a list of leaks/breaks/failures, without regard for whether this information is relevant, a competing material or other party that does not share the interests of the materials being studied could misuse or mischaracterize the data for improper purposes. Since Congress has indicated that Reclamation should not collect or analyze the data, there is no

reason for Reclamation officials to have access to the data or for there to be other involvement that may make the data subject to a Freedom of Information Act (“FOIA”) request.

If the information could be subject to a FOIA request, it is imperative that the purpose of the survey, the roles of the parties, the standards for evaluating data, and the relevance of data are clear at the outset, which is not the case. This information should be made available for public notice and comment.

Reclamation Has Ignored Conclusions That Do Not Support Its Positions

Reclamation has also been selective in its characterization of and response to third-party reviews depending on the materials and corrosion protection system used. Reclamation has stated that the National Academies of Science “conclude[d] that Reclamation’s current technical position on this issue is sound.” While we disagree vehemently with the improper process, flawed methodology and illogical conclusions of the National Academies of Science study, including its use of oil and gas data as a performance benchmark, the NAS concluded that “it is not possible to ensure that [ductile iron pipe with bonded dielectric coatings and cathodic protection] will provide corrosion protection for a service life of 50 years. This is particularly true in view of the fact that the benchmark of meeting the reliability of the gas pipelines is a high standard.”

Despite the NAS’ rejection of the ability of ductile iron pipe with bonded dielectric coatings to meet the “high” gas standard, Reclamation continues to allow this method of corrosion protection. By comparison, Reclamation has touted the NAS’ conclusion that ductile iron pipe with polyethylene encasement could not meet this “high standard” and has used it to justify the Technical Memorandum. The NAS study also noted that Reclamation does not have and has not required data on the performance of the other materials in the Technical Memorandum to demonstrate that they can meet Reclamation’s service life.

The same pattern is continuing for Reclamation’s proposed reliability standard. As discussed in detail below, Reclamation disregarded the NAS’ conclusion regarding its zero failure standard being unachievable and is now using that standard for this study.

In its *Report to the Appropriations Committees*, Reclamation writes: “Based on the results of the WaterRF study and subsequent data analysis, Reclamation will develop an updated TM – informed by both the results of that study and other data that has been developed since 2004. Reclamation *Report to Appropriations Committees*. For almost ten years, Reclamation has justified the Technical Memorandum. From the statement above, this study will not be definitive. Unfortunately, based on the past efforts to justify its position, we fear that this process is ultimately headed for a pre-determined outcome if Reclamation is involved.

The Survey and Study Are Not Necessary to Show Ductile Iron Pipe with Polyethylene Encasement Should Be Allowed in All Soil Environments

We do not believe that the study or the survey is necessary to demonstrate that ductile iron pipe can meet Reclamation’s mission to provide water resources in an environmentally and economically sound manner or can meet Reclamation’s 50 year service life. DIPRA has provided substantial data and other materials to Reclamation. These comments will not

summarize all of the data or include all of that information as Exhibits, but we wanted to highlight a few key facts.

	Failures per Mile per Year	Failures per Mile in 50 Years	Miles for 1 Failures in 50 Years	
Steel Water Pipe (NAS data)	0.000085	0.04264	23.4	(1 failure in 50 years for every 23.4 miles of steel pipe)
Ductile Iron Water Pipe (NAS data)	0.00037	0.01850	54.1	(1 failure in 50 years for every 54.1 miles of ductile iron pipe)
Steel Oil/Gas Pipe (DOT data)	0.00004	0.00220	454.5	(1 significant incident in 50 years for 455 miles – the Reclamation Threshold used in the NAS report)

The chart above shows that even using the flawed methodology of the National Academies of Science report, ductile iron pipe carrying water outperforms steel pipe carrying water. Reclamation has received this data numerous times, and to our knowledge, has never refuted it. This data, on its own, justifies the revision of the Technical Memorandum to allow ductile iron pipe with polyethylene encasement in all soil environments and eliminates the need for the study to evaluate ductile iron pipe.

This data is consistent with *AWWA's Buried No Longer* report, which is “the most comprehensive picture of the nation’s water pipe inventory ever assembled” and which shows modern ductile iron pipe is the longest lasting pipe material on the market today. The *Buried No Longer* report shows that ductile iron pipe can meet Reclamation’s 50 year service life.

As outlined below, Reclamation’s own statements demonstrate that ductile iron pipe meets its service life requirements:

- Reclamation repeatedly defended the use of ductile iron pipe with polyethylene encasement prior to the abrupt change in 2004.
- In the Technical Memorandum, Reclamation acknowledged that it never had experienced a failure on any ductile iron pipe on a Reclamation-designed project or on a project for which Reclamation had an oversight responsibility.
- Even after implementing the Technical Memorandum, Reclamation has characterized its experience with ductile iron pipe with polyethylene encasement as “good”.
- Reclamation has acknowledged that the empirical evidence shows that ductile iron pipe with polyethylene encasement and cathodic protection can meet Reclamation’s 50 year service life: “. . . . we acknowledge that empirical data collected by DIPRA does tend to support the contention that cathodic protection with PE on ductile iron pipe is good enough even in corrosive soils . . .”

In addition to the AWWA national consensus standard, the overwhelming data available shows that ductile iron pipe with polyethylene encasement can meet Reclamation's 50 year service life.

Reclamation's Reliability Standard is Not Reasonable

In the Fiscal Year 2014 Consolidated Appropriations Act, Congress required Reclamation to "report to the Committees no later than 30 days after enactment of this Act as to the reliability standards that are being utilized for the analysis required by the fiscal year 2012 joint explanatory statement."

In response, "Reclamation has identified a target performance level of zero external corrosion induced leaks/ruptures/failures which would require the pipeline to be taken out of service during the minimum service life (i.e. 50 years) for the pipelines Reclamation designs and/or funds. Reclamation believes that the target performance level is reasonable in light of the types of pipelines that it typically constructs, but *one which may not always be achieved due to a variety of factors including unseen imperfections and the number of variables involved with pipe installation in the field.*" (emphasis added). *Reclamation Report to Appropriations Committees.*

We believe that Reclamation's standard of reliability is not reasonable and is outside of the mainstream of the engineering community. The National Academies of Science agreed that Reclamation's standard of reliability is not reasonable: "the committee continues to maintain that no pipeline can be engineered to provide a probability of failure that is exactly zero for any specified period of time. That probability can be vanishingly small leading to extensive data showing no failures, but the probability can never be exactly zero."

After the NAS rejected Reclamation's zero-failure standard, Reclamation told the NAS Committee that a reliability standard based on the performance of federally-regulated oil and gas pipelines in soils of unknown corrosivity would be an appropriate benchmark of performance for Reclamation water pipelines. Reclamation provided this data because it did not have data showing the performance of steel water pipe in "highly corrosive" soils. This standard, which is less stringent than the zero-failure standard, led to a failure rate of .000044 failures/mile/year, which equals one external corrosive leak/rupture/failure on a 450-mile pipeline over 50 years. Reclamation has now returned to its original standard of zero failures.

If Reclamation's reliability standard is used, the survey should allow respondents to comment upon whether Reclamation's standard of reliability is reasonable and allow respondents to provide their own standard of reliability or pipeline viability, if they have one. If they have their own standard of reliability, it would be relevant to provide an opportunity for respondents to discuss the performance and economic factors that form the basis of their reliability standard.

Reclamation's Reliability Standard is Open-Ended and Could Lead to the Selective Use of Data

Reclamation recognizes that there may be circumstances that do not allow a pipeline to achieve the zero-failure standard but does not list those circumstances: "Reclamation believes that the target performance level is reasonable in light of the types of pipelines that it typically constructs, but *one which may not always be achieved due to a variety of factors including*

unseen imperfections and the number of variables involved with pipe installation in the field.” (emphasis added). *Reclamation Report to Appropriations Committees.*

We do not believe that Reclamation should set the standard of reliability for the analysis, but that the standard should be derived by an independent third-party based on of common practice in the U.S. water works industry. However, if Reclamation’s reliability standard is used, it is imperative that Reclamation provide a complete list of mitigating factors that may justify a pipeline’s failure to meet its zero-failure standard. This is important to ensure that these factors can be subject to public comment and for respondents to ensure that they can select mitigating factors so that only relevant data is considered.

In addition, Reclamation indicates that it is only concerned with failures that require a pipeline to be taken out of service. If Reclamation’s standard is used, the survey should require respondents to answer whether the leak/failure required the pipeline to be taken out of service. Reclamation has used a subset of the DOT oil and gas data instead of the dataset including all failures, lending further credence to this approach. Under this scenario, any failure that does not lead to a disruption in service is irrelevant.

As demonstrated above and reiterated in the Congressional language, concerns persist about the appearance of bias and the unequal treatment of different materials. Without a clear standard in place, an entity could selectively determine which “failures” to count. In addition, respondents may provide sensitive failure data which may be irrelevant to the study but subject to a FOIA request. Therefore, these factors must be clear on the front end if Reclamation’s standard of reliability is going to be considered.

Reclamation’s reliability standard also appears to be fluid: “Reclamation will evaluate the collected data, calculated failure rates, and life cycles costs to inform its decision on a suitable reliability standard (upper bound of acceptable probability of failure) which balances proactive considerations (e.g. actual/achievable pipe performance and life cycle cost considerations) with a project’s risk tolerance. The results of this evaluation will be documented in the updated TM.” *Reclamation Report to Appropriations Committees.*

From this description, Reclamation appears to be analyzing the data and potentially developing another reliability standard. If Reclamation establishes another reliability standard, it should be subject to notice and comment and a separate survey process.

There Must Be Clear Guidance About the Definitions and Standards to be Used

Given these concerns, there must be very clear guidance provided in the survey instrument and any other relevant documents so that those wishing to comment and potential respondents will:

- Know the purpose and scope of the study
- Know who will be conducting the work
- Know the standards of evaluation

- Be able to evaluate the proposed standards (i.e. what factors are involved in pipeline reliability)
- Be able to provide their own standards
- Have a list of all key terms and definitions (i.e. what is a failure)
- Be able to evaluate the proposed key terms and definitions
- Have a list of mitigating factors for any breaks/leaks/failures reported
- Have a list of mitigating or other causal factors for any “corrosion-related” breaks/leaks/failures reported

A Practical Reliability Standard Cannot Be Determined without Economic Considerations

Congress has recognized the importance of this study to consider economics, cost-effectiveness and life cycle costs, as all water professionals must evaluate these factors. Reclamation also must consider economic factors as part of its mission: “The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.”

Water pipeline investments, like other federal investments, are not made in a vacuum. Purchasing and asset management decisions, such as when to repair and replace pipelines, are important decisions, especially now given the fiscal restraints that governments at all levels face. Unfortunately, when dealing with the Technical Memorandum, Reclamation’s policies and statements indicate an apparent disregard for its mission to act in an “economically sound” manner: “Reclamation will follow the Technical Memorandum regardless of what any particular life-cycle cost analysis might show.”

The survey, therefore, needs to first capture how respondents measure the reliability of their pipelines, including the economics, cost-effectiveness and life-cycle costs associated with these decisions. Considering these factors and the asset management practices of the respondents will help inform whether Reclamation’s reliability standard is reasonable and help determine an appropriate reliability standard for Reclamation projects. Determining how respondents measure reliability seems to be a step that is required before focusing on a particular methodology, such as failures.

The importance of these economic factors help to demonstrate the unreasonableness of Reclamation’s zero failure standard. Reclamation’s standard would deem a pipeline to violate its reliability standard if it had to be taken out of service for an external corrosion leak/break/failure once in 50 years. Of course, the fact that an interruption in service might occur does not, on its own, indicate that a pipeline has failed to meet reasonable reliability standards. Numerous factors, including the time of the interruption(s), the repair and other costs associated with the interruption(s) and the amounts budgeted for repair, maintenance and replacement will determine the appropriate course of action.

When it comes time to invest in a new pipeline, the entity will consider economic costs. Entities may also consider environmental, health and other factors. All of the decisions require balancing numerous factors because of the limited funds available for water infrastructure investment. Reclamation's zero failure standard fails to take into account these fiscal limitations. The absence of these factors in the survey seems to require the re-drafting of the survey to include these factors.

The Survey Should Encourage Consistency and Uniformity

The survey does not seem to provide a framework for respondents to provide uniform and consistent information. Based on the examples provided, if a respondent has data that meets a certain threshold, it can then upload the data in any manner that it would like. Without a method to ensure uniformity in response, the data will vary greatly.

The Survey Should Evaluate the Performance of Properly-Installed, Maintained and Performing Pipe and Methods of Corrosion

As described above, Reclamation has dismissed failures that are due to installation and other errors and has acknowledged in its zero failure standard that there are other reasons, unrelated to the performance of the pipe or the method of corrosion control, for failures. Regardless whether Reclamation's reliability standard is used, the survey must be able to control for installation errors and other factors that may lead to a leak or failure but that are not reflective of the performance of properly-installed and maintained modern pipelines and methods of corrosion. The goal of the survey should not be to count leaks/breaks/failures to show past performance but to be able to predict current/future performance.

The survey needs to be able to eliminate leaks/breaks/failures in the past that would not occur now or in the future. There are numerous factors that could explain these past failures, including but not limited to:

- Installation errors
- Maintenance issues
- Old technologies, such as leadite joints or lead caulked joints
- Practices that have been modified so that the leak/break/failure would not occur now

Characterizing Leaks/Breaks/Failures

The survey needs to define key terms and provide options for respondents to select certain types of breaks so that there is some uniformity. It is important for "corrosion-related" leaks/breaks/failures to be defined to understand how the survey will evaluate the information. Multiple factors may be the cause of a particular failure, and the survey should provide a method to identify and rank the relative importance of concurrent causes of a leak or failure. This is

especially important when dealing with potential corrosion-related problems where installation, maintenance or other issues may be the actual cause of the problem.

When dealing with labeling failures, it is important that there are checks in place on the front and back ends of the survey. This is often challenging because many utility records are not complete enough to capture this information. This is particularly important in potential corrosion-related failures where installation, maintenance or other factors may be the cause of a “corrosion-related failure.”

These factors include but are not limited to:

- Installation problems with the pipe and/or corrosion protection
- Soil type and/or soil conditions
 - It is important to know the soil conditions in specific areas of a pipe line
- Environmental conditions
 - Frost depth, etc.,
- Other contributing factors
 - Road reconstruction may create impacts

As described above, it is very challenging for utilities to characterize accurately the cause of a failure, particularly corrosion, in many cases. Many times repairs are made without evaluating the cause. The survey, therefore, should capture whether the utility has provided specific training to categorize the cause of the failure, conducts forensic evaluations, maintains forensic records and other issues to ensure accurate reporting.

It is also important for there to be checks on the type of pipe and corrosion protection reported. It is especially important that cast iron pipe failures are not inaccurately described as ductile iron pipe failures. Unfortunately, this occurs, and it is important to determine when reported ductile iron pipe failures are actually cast iron pipe failures. This may be demonstrated based on the year of installation of the pipe or if circumferential breaks are attributed to ductile iron pipe, which is impossible.

Information about Inspection and Maintenance is Relevant

It is relevant to determine the inspection and maintenance practices and resources that respondents devote to inspection and maintenance.

The Sample Methodology is Not Available for Comment

It is important for the sample methodology to be available for comment. The survey and accompanying documents do not answer: (1) which entities will be contacted; (2) how will they

Mr. Lee Sears
April 28, 2014
Page 20

be selected; (3) what is the goal sample mix of respondents; or (4) who within an entity will be contacted. These and other sampling issues are very important issues that warrant public notice and comment.

It is Unclear from the Survey Which Materials, Corrosion Protection and Types of Pipelines are Covered

The survey should clearly indicate the type of pipe materials the survey covers.

- Will the survey capture only the metallic pipe materials regulated by the Technical Memorandum or all pipe materials?
- If the survey captures only metallic pipe materials, the survey should capture only transmission pipelines for consistency since steel and concrete pipes are used exclusively for transmission pipelines.

If the survey considers distribution pipelines, the survey should divide the pipelines based upon pipelines that are $\leq 12''$ (distribution) and $14+''$ in diameter (transmission), rather than using $12''$ as the dividing line between distribution and transmission pipelines.

The Survey Should Allow Respondents to Provide Satisfaction Information on Pipe Materials

The survey should provide a mechanism for respondents to answer whether they are satisfied with a particular pipe material/method of corrosion protection

Additional Technical Comments

On the Pipe Survey Questions:

- Question B1.b. would be more accurate as "Pipe Segment Identifier".
- B1.d. Pipe manufacturer is data that is not gathered in many cases.
- B1.1. Resistivity is useful for corrosivity, while pH and acidity are essentially the same and never a significant factor for corrosion.

Conclusion

Thank you very much for the opportunity to provide these comments. We realize that these comments are very detailed, but we view the issues considered in this proposed study and survey to be very important to DIPRA and water works professionals across this country.

Sincerely yours,



Jon Runge, President



TO: Mr. Lee Sears
Materials Engineering Research Laboratory
86-68180
Bureau of Reclamation
P.O. Box 25007
Denver, Colorado 80225

DATE: April 28, 2014

SUBJECT: **Collection and Compilation of Water Pipeline Field Performance Data
(79 FR 10842)**

The following provides my assessment and recommendations for modifications to the “Buried Metallic Water Pipe” survey which is a component of the above named project. Overall, the lack of definitions for types of breaks, lack of collection of causal factors for the breaks and lack of a defined sample plan are the most concerning areas.

BACKGROUND & CREDENTIALS

I have been involved in survey research in both consumer and business-to-business applications since 1981. My education includes a BS in Chemical Engineering from Clarkson University (1981) and MBA in Marketing from Xavier University (1988). My career includes over ten years in product development at Procter & Gamble, three years in marketing research and brand management at Church & Dwight (Arm & Hammer brands), and six years in marketing research at Coors Brewing Company. I have been in private practice since 2001 (Mann Consulting Inc.) providing clients with a wide variety of marketing research and consulting. This experience includes primary responsibility for the American Water Works Association’s annual State of the Industry issue assessment and analysis (2003-2012) and various other water industry surveys for AWWA and the AWWA Research Foundation (now the Water Research Foundation).

INITIAL SCREENING

- **Invitation Letter.** “However, there is a possibility that a request for the data could be made under the Freedom of Information Act.” This type of declaration will lead to response bias due to respondent concerns about the possibility of data they provide being publically disseminated.
- **A6.** To allow for better segmentation and balancing of the eventual utility sample after collection, states should be listed individually in the drop down menu in alphabetical order rather than in predetermined regions.
- **B1i.** It will be critical to specify in advance the soil corrosivity data requested in the survey will be for the specific soils around the breakage, and not a general soil corrosivity profile throughout a given utility’s service area. Generalized regional soil information may not provide adequate understanding of the causal factors in pipe breakage if a utility has a wide variety of soils present in its service area.



COLLECTION INSTRUMENT

- **Language.** The language used in the collection instrument should be tailored to a high school graduate level at a maximum given the typical credentials of those at utilities, in particular smaller utilities, who are most likely to provide this information.
- **Invitation Letter.** The stated expected completion time of “up to 60 minutes” seems insufficient, especially for large utilities that may have numerous breaks to report and/or may require significant manipulation of their internal datasets to report the information as requested.
- **Data Collection:**
 - Unless all of the data is collected only from drinking water, it is critical to provide a column to specify the liquid(s) being transported within the pipe (e.g., raw water, treated water, storm water, sewage, etc.) to understand the internal reactions that might be occurring between the liquid and the interior of the pipe.
 - “Break Type” definitions should be provided so that respondents across different utilities are reporting the same types of breaks in the same manner. This may require sub-categories including location of break (mid-pipe, at joint, etc.). As the debate over allowable break frequency or pipe service life ensues, understanding what types of breaks will likely be critical to assessing performance standards. Additionally, the types of breaks occurring may help point to installation issues or other causal factors that are not inherent to the type of pipe as well as help assess the adequacy of various protection and maintenance methods (such as corrosion control).
 - Causal information regarding breaks is critical, and should be added to the data required for participation and requested from eventual utility participants. Forensic understanding such as the type(s) of causal factors likely involved in the break is important to understanding the role of material in the failure. If causal factor data are not available in a utility’s database, they should be excluded from the sample due to this insufficiency.
 - It would be beneficial to better understanding causal factors in breakage to also be able to cross-reference other site conditions that can significantly contribute to breakage such as the presence of stray current (nearby light rail operations or other stray current sources), bury depth and/or exposure, roadway or other surface traffic conditions that would lead to cyclic stress, presence of fixture restraint to compensate for hammering and surges, and pipe installation (such as if a water transmission line is installed within or crossing through a larger sewer or storm water pipe).

SAMPLE CONSIDERATIONS

While the supporting documents I reviewed outline specifics of the survey instrument in detail, I was not able to find similar clarity in the specifics of the sampling plan for the study. The selection of utilities to include in the database can introduce significant response bias if important factors such as installation, maintenance and soil conditions are not adequately understood and balanced in the database.



- **Utility Installation and Maintenance Capabilities and Practices.** Installation and maintenance capabilities and practices are likely key variables in the relative pipe breakage experience between utilities. It is easy to imagine significant sample bias if, for instance, utilities that predominantly use one type of pipe have poorer installation skills or maintenance programs than utilities that predominantly use a different type of pipe. Great care in balancing the utility sample base will be necessary, as well as perhaps standardizing and normalization of the resulting data base post collection.
- **Soil Conditions.** Related to the screening question for soil conditions, it will be critical to select utilities for the study to balance or allow for eventual standardization of the dataset by important soil conditions such as corrosivity.

Thank you for your consideration of these comments.

Sincerely,

John Mann, BScE, MBA
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October 30, 2014

VIA E-MAIL

Mr. Lee Sears
Materials Engineering Research Laboratory
86-68180
Bureau of Reclamation
Post Office Box 25007
Denver, Colorado 80225
lsears@usbr.gov

Re: Collection and Compilation of Water Pipeline Field Performance Data

Dear Mr. Sears:

The Ductile Iron Pipe Research Association (DIPRA) respectfully provides these initial comments to the “Notice to Reopen the Public Comment Period for Agency Information Collection Activities; Proposed Collection; Comment Request” that appeared in the October 1, 2014 *Federal Register*.

DIPRA intends to submit additional comments once necessary information is made available but wanted to provide initial comments that: (1) neither DIPRA nor any other party can meaningfully comment on the proposed survey or study, as Reclamation continues to fail to provide the public with the necessary information for informed comments; (2) Reclamation has yet to address DIPRA’s initial comments and should do so; and (3) a 60-day comment period is necessary after Reclamation provides the information referenced above.

DIPRA devoted significant time and attention to the attached comments that it submitted on April 28, as this process has the potential to cause irreparable harm to our industry. DIPRA proceeded on the belief that Reclamation would “summarize all comments received regarding this notice” and address those comments. Unfortunately, Reclamation failed to address all of the comments submitted. In this response, therefore, DIPRA will make high-level observations but will not restate its original objections or address all of the concerns with Reclamation’s revised Notice. DIPRA will await Reclamation’s response to our original comments before providing additional detailed comments.

Reclamation specifically requested comments on “ways to enhance the quality, usefulness, and clarity of the information to be collected.” As outlined in great detail in the comments that DIPRA submitted on April 28, it is not possible for us to submit informed comments on the original or revised draft survey instrument/study. In our original submission, we noted that:

[G]iven these concerns, there must be very clear guidance provided in the survey instrument and any other relevant documents so that those wishing to comment and potential respondents will:

- Know the purpose and scope of the study
- Know who will be conducting the work
- Know the standards of evaluation
- Be able to evaluate the proposed standards (i.e. what factors are involved in pipeline reliability)
- Be able to provide their own standards
- Have a list of all key terms and definitions (i.e. what is a failure)
- Be able to evaluate the proposed key terms and definitions
- Have a list of mitigating factors for any breaks/leaks/failures reported
- Have a list of mitigating or other causal factors for any “corrosion-related” breaks/leaks/failures reported

Reclamation did not adequately address these and many other comments in its revised Notice – a problem that we discuss in more detail below. Reclamation did indicate that some key concerns, such as sampling issues, key definitions, and the scope and purpose of the study/survey, are addressed in “Supporting Statements A and B.” Since these documents were not provided in the revised public documents, our counsel requested this information from Reclamation but was told that these documents would not be made available for public review and comment until after the Office of Management and Budget (OMB) review. See Attached email from Mr. Lee Sears to Mr. Mike Denniston, October 15, 2014.

We do not understand why this essential information was not provided in the materials released in February 2014. We also do not understand why Reclamation refused to answer these straightforward questions in its revised Notice and instead directed the public to two documents that were not released publicly with the revised Notice. As reflected in our original April 2014 comments, this study/survey must be totally transparent – for fundamental fairness and to ensure that there are no opportunities for Reclamation to engage in the biased activities that we described in detail in our original letter.

As it stands now, Reclamation either has failed or refused to provide the public with necessary information, including but not limited to:

- Which pipe materials are being surveyed (this information is supposed to be part of the survey but is not available in the pdf documents provided)?
- What is the selection process for utilities and how does the Compilation account for differences in practices and conditions among the utilities?
- How do you define key terms, such as a corrosion-related failure?
- What is the performance standard that Reclamation seeks to achieve?
- Who is doing which parts of the study, as Reclamation, the Water Research Foundation and Battelle Memorial Institute each have an undefined role in the study?
- How is Reclamation going to evaluate economic information, as required by Congress, when it does not ask for any economic-related information in the survey?

In addition to failing to provide information necessary for informed comments, Reclamation failed to address many significant concerns and comments submitted by DIPRA. Without restating these comments, Reclamation did not address *any* of DIPRA's comments related to "Whether the proposed collection of information is necessary for the proper performance of our functions, including whether the information will have practical use." DIPRA provided extensive information about why Reclamation has sufficient information to allow the use of ductile iron pipe with polyethylene encasement in all soil environments, thereby alleviating the need for a study of the performance of ductile iron pipe.

Reclamation has proposed to survey "[a]ll large water utilities" but failed to even address the discussion of the American Water Works Association's (AWWA) recent *Buried No Longer* report. Many, if not all, of the utilities that Reclamation proposes to survey are members of AWWA, and many likely participated in AWWA's survey, which is "the most comprehensive picture of the nation's water pipe inventory ever assembled." Additional data, including data (which has never been refuted by Reclamation) from the flawed National Academy of Sciences study, and references to Reclamation's own statements were also provided. It is important for Reclamation to address these points because: (1) Reclamation specifically requested comment on these subjects; and (2) potential survey respondents need to understand how Reclamation views these reports and data so that they can determine whether they should participate in the survey.

Additional comments focused on whether the survey would have practical use given Reclamation's involvement. It is important for Reclamation to address those comments publicly so that potential survey respondents can determine how the data they provide will be used.

In many instances, Reclamation addressed only part of a comment. For example, Reclamation addressed a comment regarding the use of 12-inch pipe as the delineation between large and small pipes, and indicated that the survey does not define transmission versus distribution lines. Putting aside our initial comments, Reclamation ignored an important second point – the pipe materials surveyed are an important factor to determine which pipe sizes to include in the survey.

If the survey focuses on metallic pipes, the survey should not gather data on distribution pipes, as information would be reported for ductile iron pipe but not steel and concrete pipes. The result would be to gather data that would seem to be irrelevant for the performance comparisons in this study.

In the past, Reclamation has focused on transmission pipes and so it is curious that it is now stating that distinction does not matter. Many other parts of the study, including the purpose, are unclear. Again, DIPRA believes that the data deemed relevant and the standards that are applied are constantly changing – requiring the recusal of Reclamation and crystal clear definitions and standards on the front end of this process.

Reclamation has also continued to provide unclear definitions that are not used consistently. For example, Reclamation states “Breaks and leaks are the focus of the survey. Failure is equivalent to a break and leaks may lead to breaks/failures.” We believe that this is an arbitrary definition that will result in great confusion and variability in results that will make completing and evaluating the survey difficult, if not impossible, if these terms are not better defined.

For example, the survey asks for “Break/Leak Date” but does not mention failures. The use of the terms together implies the terms break and leak are interchangeable. The survey then asks for “Break Location” with no mention of leaks or failures. This demonstrates why clear definitions and standards of performance and evaluation need to be provided, why respondents need to be able to provide their own standards and why respondents need to evaluate the standards once they are agreed upon.

The survey still does not allow for the identification and ranking of concurrent causes of failures/breaks/leaks. As discussed in the prior comments, the absence of definitions and the inability to identify and rank multiple causes of a failure will likely lead to the over-reporting of corrosion-related problems. Combined with the refusal to eliminate problems that occurred in the past but would not occur now or in the future, this study appears destined to provide inaccurate information about the performance expectations of properly installed and maintained pipe materials, which should be the goal of a study such as this.

Even if Reclamation responded to the prior comments and provided the information required to evaluate the revised Notice, the proposed 30-day comment period is not sufficient time for meaningful comments. Since a 60-day comment period was provided initially, it is important to provide the same comment period for the revised Notice. Reclamation must provide significant information for informed comments and must allow adequate time for the public to evaluate that information. At this point, Reclamation is proposing a truncated public comment period with incomplete and insufficient information.

As we discussed in our prior comments, our industry faces the possibility of irreparable harm from this current effort, which does not define the scope, purpose, standards or key definitions for evaluation. We will provide additional comments after Reclamation provides the information necessary for the public to make informed comments, addresses the substantive points made in

Mr. Lee Sears
October 30, 2014
Page 5

our original comments, and provides a full 60-day comment period for interested parties to respond.

Thank you very much for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Runge". The signature is fluid and cursive, with a long horizontal stroke at the end.

Jon Runge, President



TO: Mr. Lee Sears
Materials Engineering Research Laboratory
86-68180
Bureau of Reclamation
P.O. Box 25007
Denver, Colorado 80225

DATE: October 30, 2014

SUBJECT: **Collection and Compilation of Water Pipeline Field Performance Data
(79 FR 10842)**

The following provides my further assessment and recommendations for modifications to the “Buried Metallic Water Pipe” survey which is a component of the above named project. I appreciate that some of my feedback from the prior review (including adding soil corrosivity documentation) was addressed in the latest review.

However, I remain very concerned limitations in clearly defining key terms and documenting causal factors will negate the utility of this study as currently proposed and defined.

BACKGROUND & CREDENTIALS

To review my credentials, I have been involved in survey research in both consumer and business-to-business applications since 1981. My education includes a BS in Chemical Engineering from Clarkson University (1981) and MBA in Marketing from Xavier University (1988). My career includes over ten years in product development at Procter & Gamble, three years in marketing research and brand management at Church & Dwight (Arm & Hammer brands), and six years in marketing research at Coors Brewing Company. I have been in private practice since 2001 (Mann Consulting Inc.) providing clients with a wide variety of marketing research and consulting. This experience includes primary responsibility for the American Water Works Association’s annual State of the Industry issue assessment and analysis (2003-2012) and various other water industry surveys for AWWA and the AWWA Research Foundation (now the Water Research Foundation).

COLLECTION INSTRUMENT

- The importance of understanding the type of failure to the eventual utility of the analysis cannot be overstated.
- B1m is currently labeled “Break/Leak Type.” My understanding from the field is those close to operations see breaks and leaks as very different events, and these need to be tabulated and classified separately.



- Terminology is absolutely critical to the analysis of the subject pipe technologies. Terms in both the types of breaks and leaks (separate and specific to either breaks and leaks) and causal factors (separate and specific to either breaks and leaks) need to be specified more completely in the review process so those reviewing this study can make adequate input. At this juncture, the level of specificity of terms available for comment is insufficient to draw firm conclusions as to their appropriateness.

I would suggest two remedies:

1. If it has not already been done, develop terminology with field operations personnel and/or those persons from utilities who are expected to be tasked with completing the survey. If terms used in the survey are ambiguous, confusing or unknown to those completing the survey, or if the terminology is not consistent or translatable to utility's internal terminology, the data collected will be substantially useless.
2. During data collection, survey takers should be provided with an option to link to more explicit descriptions of the examples in both these questions to provide for consistency in reporting critical to the underlying analysis. And upon completion of the data collection, those analyzing the database should perform an audit to confirm or refute that the classifications were used consistently across responding utilities, and that the classifications used represent the actual failure event as accurately as possible given the utilities' available records.

Further regarding B1m, the examples currently given in parentheses following the title "Break Type" (specifically, "construction defect, corrosion, settlement, frost heave, etc.") seem to be causal factors and not descriptors of failure types. Ideally, these improper examples of breaks and leaks would be replaced by terms developed in the process described above.

Following the split Breaks and Leaks B1m, there should be an additional question titled "Cause of failure" which would then use terms similarly developed in the process described above.

- In the current comments (Federal Register/Vol. 79, No. 190/Wednesday, October 1, 2014/Notices) there is a response to the comment regarding the importance of understanding causal factors stating, "This question is included in the survey. While we agree this piece of information is important, we expect many utilities may not document the causes. Because this column will be in our database, we will be able to compare datasets with and without this data. We are not planning to exclude utilities that do not have this data."

Categorically, information regarding pipe failure without notation of causal factors is of very limited value to drawing sound conclusions about pipe performance, and instead of providing clarity and sound direction will likely contribute to misleading or spurious conclusions.



For example, as industry practices improve with experience, failures due to improper or insufficient installation practices might be eliminated or substantially reduced as these failures of practice are identified and better understood. The intrinsic value of a particular pipe technology would be unnecessarily clouded by past insufficient and improper installation and maintenance practices that may have long been remedied. Failures due to these remedied practices should be factored out of the analysis of the underlying voracity of the pipe technology.

- In the comment that immediately follows (also regarding causal factors), the response is, “Some of these factors will be difficult to collect for many break events. While these data could be important, we do not want to require all of them for fear it would create an undue burden on the respondent. Burial depth has been added to the survey.”

With respect to undue burden, the critical nature of this analysis and the potential for the findings to affect billions of dollars in infrastructure investments in the broad water utility sector for generations to come seems to warrant imposition on utilities for this causal data of acknowledged importance.

Perhaps the undue burden is actually having utilities without causal factors noted in their database participate in the first place. Their efforts will not contribute importantly to a sound scientific understanding of the technology. Worse, the presence of data without well-defined and well-understood definitions and causal factors will undermine the scientific foundation of any conclusions derived from this inadequate data. The presence of incomplete information is not necessarily better than the absence of incomplete data in the analysis.

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink that reads "John Mann". The signature is written in a cursive, slightly slanted style.

John Mann, BScE, MBA
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December 1, 2014

VIA E-MAIL

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Post Office Box 25007
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lsears@usbr.gov

Re: Collection and Compilation of Water Pipeline Field Performance Data

Dear Mr. Sears:

The Ductile Iron Pipe Research Association (DIPRA) respectfully provides these initial comments to the "Notice to Extend the Public Comment Period for the Collection and Compilation of Water Pipeline Field Performance Data Information Collection Request" that appeared in the October 30, 2014 *Federal Register*.

As discussed in our letter dated October 30, 2014 and expounded upon in this letter, these comments are not intended to be exhaustive, as: (1) neither DIPRA nor any other party can meaningfully comment on the proposed survey or study, as Reclamation continues to fail to provide the public with the necessary information for informed comments; (2) Reclamation has yet to address DIPRA's initial comments and should do so; and (3) a 60-day comment period is necessary after Reclamation provides the information referenced above.

DIPRA remains concerned that Reclamation is still not providing the public with adequate information to make informed comments. In its October 1, 2014 Notice, Reclamation repeatedly referred to relevant information being available in Supporting Statements A and B. DIPRA requested this information but was told that these Supporting Statements would not be available until they are submitted to the Office of Management and Budget (OMB). While DIPRA has received this information, it does not appear that Reclamation intends to make Supporting Statements A and B available to the public until after they are submitted to OMB. We believe that the critical information contained in these documents is important for the public's review and comment and should have appeared in the initial/subsequent Notices and should be publicly available.

This information is vital for public comment, as Supporting Statement A indicates that this study will exceed the scope of the study as outlined in Congressional language and in previously-available public documents. Those documents indicated that Reclamation's study would be limited to the pipe materials found in Table Two of Technical Memorandum No. 8140-CC-2004-1. On page 17 of Supporting Statement A, however, Reclamation indicates that the study will include pipe materials not included in Table Two of the Technical Memorandum.

DIPRA asked for clarification of this vital point in its initial comments filed in April 2014. Reclamation, however, did not provide this information in its revised Notice dated October 1, 2014 and initially refused to provide it to DIPRA when Reclamation refused to provide Supporting Statements A and B. We are very concerned that this basic information was not provided initially and still does not appear to be available publicly.

This is yet another example of Reclamation providing inconsistent and misleading information to the public. DIPRA continues to have to expend significant resources scrutinizing every statement made by Reclamation because there appears to be an ongoing effort to hide information from the public.

Reclamation's Supporting Statements A and B also do not provide information that the October 1, 2014 Notice indicates would be provided in those documents. In the Revised Notice dated October 1, Reclamation summarized a comment and provided the following response:

Comment: "The Bureau of Reclamation has obtained the services of an outside [entity] to survey water facilities and collect water data on water pipeline corrosion related failures. The information requested is required to comply with a request from Congress for the Bureau of Reclamation to assemble data on pipeline reliability for specific types of pipes." The following questions pertain to the statement above:

1. Which entity?
2. Just facilities or also water professionals, such as engineers?
3. What type of data?
4. Internal corrosion, external corrosion or both? How do you define and quantify a corrosion related failure? By percentage cause or other method?
5. How do you define a failure?

Response: Supporting Statements A and B have been revised and clarified to address these questions.

Supporting Statements A and B, however, do not include all of this information. All of this information is important, but how a corrosion related failure will be defined and quantified must be established on the front end to ensure clear definitions and the submittal of consistent data. The absence of this and other information as discussed in prior comments undermines the effectiveness and validity of the study.

The revised Notice of October 1, 2014 also includes additional potentially misleading information. In response to a question about the sample mix of respondents (and other questions), Reclamation stated: "Selection is documented in Supporting Statement B. All large water utilities will be contacted." A reasonable person reviewing this information would conclude that the focus of the survey/sample mix would be large water utilities. A review of Supporting Statement B indicates that the anticipated sample mix will be 92 federal facilities compared to 68 water utilities. This is very different than the public information provided in the Notice and another example of our concerns with incomplete/misleading information being provided to the public.

Supporting Statement B also creates confusion, as it implies that the survey may not be limited to federal facilities and large water utilities: "*Generally* respondents to this survey will be personnel working either for Federal water facilities and large water utilities." (emphasis added). Moreover, Reclamation does not define which federal facilities would be covered, and this information is necessary for informed comments.

We also note that the proposed higher percentage of participation from Reclamation facilities has the potential to distort the data in a number of ways. Reclamation's Technical Memorandum has adopted corrosion control requirements that are out of the engineering mainstream in the United States and inconsistent with the standards of the American Water Works Association (AWWA). Reclamation's Technical Memorandum has prohibited polyethylene encasement – the most prevalent corrosion control method for ductile iron pipe – in corrosive soils for more than 10 years. This practice will lead to an objectionable bias in the data.

DIPRA has repeatedly expressed concerns with Reclamation's implementation of the Technical Memorandum, as Reclamation seems intent on justifying its position rather than addressing the issue objectively. Having the majority of data obtained from Reclamation facilities, which constitute a small percentage of water systems nationally, creates statistical concerns and creates the possibility of apparent, if not actual, bias.

DIPRA's initial April 2014 comments also are relevant to question 4 of Supporting Statement A, which asks if there are other relevant studies that have been completed. DIPRA believes that the AWWA's *Buried No Longer* report is relevant and clearly demonstrates that ductile iron pipe can meet Reclamation's service life in all soil environments.

DIPRA also strongly disputes any assertions in Question 6 of Supporting Statement A that its materials may threaten the public. In Supporting Statement A, Reclamation writes that if this study is not conducted, "This may lead to inadequate materials being used for the construction of critical water delivery infrastructure that could endanger the public's safety, health, and access to potable water." This hyperbole, if intended to apply to ductile iron pipe, is unwarranted and contrary to available data and Reclamation's own self-described "good" experience with ductile iron pipe. We also note that Reclamation's response in Questions 2 and 6 of Supporting Statement A clearly stipulates that the Technical Memorandum is a requirement and Reclamation intends to use it as such, contrary to repeated assertions to Congress otherwise.

Mr. Lee Sears
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Reclamation also appears to have established minimum criteria for the data it requires that artificially limit the acceptable responses and would not address the stated goals of the survey. In question B4 of Supporting Statement A (page 5), Reclamation states that the following data are sufficient/required for participation in the survey:

- Pipe Material
- Pipe installation date
- Pipe Condition Monitoring System and Year Installed

The requirement to have a Pipe Condition Monitoring System artificially limits the universe of respondents, as these systems are not prevalent in water pipelines. These three criteria are also insufficient to evaluate pipe performance, as causal factors and other vital information are excluded as minimum requirements.

DIPRA has other concerns and objections but will wait until Reclamation addresses our previous comments and provides all necessary information before devoting additional time and resources to address incomplete information. As requested in our comments dated October 30, 2014, a 60-day comment period is necessary after Reclamation provides the information discussed above.

Very truly yours,



Jon Runge, President



TO: Mr. Lee Sears
Materials Engineering Research Laboratory
86-68180
Bureau of Reclamation
P.O. Box 25007
Denver, Colorado 80225

DATE: December 1, 2014

SUBJECT: **Collection and Compilation of Water Pipeline Field Performance Data
(79 FR 10842)**

Now that revised “Supporting Statements A and B” have been released, I wish to offer further comment on the “Collection and Compilation of Water Pipeline Field Performance Data (79 FR 10842).”

BACKGROUND & CREDENTIALS

To review my credentials, I have been involved in survey research in both consumer and business-to-business applications since 1981. My education includes a BS in Chemical Engineering from Clarkson University (1981) and MBA in Marketing from Xavier University (1988). My career includes over ten years in product development at Procter & Gamble, three years in marketing research and brand management at Church & Dwight (Arm & Hammer brands), and six years in marketing research at Coors Brewing Company. I have been in private practice since 2001 (Mann Consulting Inc.) providing clients with a wide variety of marketing research and consulting. This experience includes primary responsibility for the American Water Works Association’s annual State of the Industry issue assessment and analysis (2003-2012) and various other water industry surveys for AWWA and the AWWA Research Foundation (now the Water Research Foundation).

SUPPORTING STATEMENT A:

- 2.B4 (page 5): Minimum standards for utility participation are set forth in this statement to be the following (referencing 2.B1):
 - a. Pipe Material
 - c. Pipe Installation date
 - j. Pipe Condition Monitoring System and Year Installed

These three criteria seem quite inadequate to allow for even crude analysis of the complex science of pipe technology performance in question. This list of minimum criteria for participation should be expanded to include not only more of the forensic information included in other data items listed in 2.B, but also include additional forensic information that is pertinent to understanding true causal factors not currently addressed in 2.B1 as I stated in my most recent letter to you dated October 30, 2014. Without more robust minimum criteria, the validity and utility of this survey are highly questionable.

- 7.f. (page 7):
 - It is imperative the collection instrument has clearly defined and consistent terminology for breaks, leaks and causal factors that are understood by those persons at utilities tasked with completing the data transfer. Further, this terminology must be clear and consistent with the terminology used in the subject utilities’ databases such that a person completing the collection instrument is transferring breakage, leakage and causal factor data that accurately represent events recorded in their databases. The person providing the data for this study may or may not be a subject matter expert, and may therefore not be able to reliably translate definitions and terminology used in their database to potentially different definitions and terminology used in the survey instrument.
 - Given this potential for incorrect translation, the program to analyze the utility data should include an audit of a subsample of utilities to understand the accuracy with which the true life experiences are being portrayed in the data collected by the survey instrument. Without clear and consistent terminology, the opportunity to misreport events of one nature as something substantially different is too significant to ignore. Best practices suggest that Battelle should clear up any differences or ambiguity in terminology, especially for breaks, leaks and causal factors prior to deploying the survey instrument for data collection. And then upon completion of the data gathering, Battelle should audit a sample of data gathered to be sure what is transferred to the database for analysis accurately represents real world experience.

- 16. (page 17): To be in compliance with the stated requirement “Address any complex analytical techniques that will be used” Battelle must come forward with a plan that addresses how they will deal with incomplete data. As currently constructed, the project will allow for data collection from utilities that do not have complete data regarding failure types and causal factors. The manner in which Battelle proposes to use incomplete data in their analysis is critical to understanding the validity of their work. As I have stated in the past, the lack of clear and understood causal factor data should disqualify utilities from having the rest of their incomplete data included in the analysis. It is a waste of the utilities’ time and, if misused, the incomplete data can result in misleading findings and conclusions.

SUPPORTING STATEMENT B:

- 1. (page 1) and 2b (page 2): Again, the advance review of Battelle’s proposed analysis and statistical treatment of the non-representative sample base proposed in this study is critical to understanding the value and validity of Battelle’s work.
 - The sample universe includes Federal water facilities and larger/very large water utilities. While this sampling strategy seems convenient, this sample pool is likely not representative of the universe of utilities and water facilities as a whole.



- Given the estimates cited in Table 2-1 “Number of Utilities and Facilities” there will be a substantial overrepresentation of Federal water facilities. With 92 of 250 Federal water facilities expect to report versus 68 of 418 water utilities expected to report, Federal water facilities will represent 57.5% of the reporting entities while they represent only 37.4% of the universe of entities invited to participate. That alone significantly skews the response in a substantial manner.

QUESTIONS STILL UNADDRESSED FROM THE FEDERAL REGISTER NOTICE

On page 59293 of the Federal Register/Vol. 79, No. 190/Wednesday, October 1, 2014/Notices there is a comment beginning on the bottom leftmost column beginning with “The Bureau of Reclamation has obtained the services of an outside...” etc. that goes on to state “4. Internal corrosion, external corrosion, or both? How to you define and quantify a corrosion related failure? By percentage cause or other method?” While the Response states, “Supporting Statements A and B have been revised and clarified to address these questions,” I see no detail regarding corrosion adequately addressing the questions stated under #4 above. Given the importance of corrosion in the understanding of pipe failure, this lack of clarification is concerning.

TOTAL LIFE CYCLE ANALYSIS

The current study as proposed is limited to understanding the failure rates of various pipe technologies. But failure rates are only a portion of the consideration for the best overall choice of pipe technology. To better serve the public and the water industry, it would seem prudent to expand the scope of the study under consideration to assess the total life cycle economics of the subject pipe technologies. Other important factors include initial costs of purchase and installation, maintenance, repair costs and losses due to downtime, and ultimate life expectancy.

Thank you again for your consideration of these comments.

Sincerely,

John Mann, BSChE, MBA
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