

**TESTIMONY OF
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NATURAL RESOURCES DEFENSE COUNCIL**

**IN SUPPORT OF A. 4415,
REQUIRING WATER PURVEYORS TO CONDUCT WATER LOSS AUDITS**

**BEFORE THE
NEW JERSEY ASSEMBLY
ENVIRONMENT AND SOLID WASTE COMMITTEE
FEBRUARY 13, 2017**

Good morning Chairman Eustace and members of the Committee. I am Lawrence Levine, senior attorney in the Water Program at the Natural Resources Defense Council (NRDC). I appreciate the opportunity to testify today in support of A. 4415.

NRDC is an environmental advocacy organization with over 57,000 members and online activists in New Jersey, and more than 2 million nationwide. NRDC works to safeguard the earth – its people, its plants and animals, and the natural systems on which all life depends. We combine the power of our members and online activists with the expertise of some 500 scientists, lawyers, and policy advocates across the globe to ensure the rights of all people to the air, the water, and the wild.

I also serve on the Steering Committee of the Jersey Water Works co-chair its Best Practices Committee. Jersey Water Works is a collaborative effort of many diverse organizations and individuals who embrace the common purpose of transforming New Jersey's inadequate water infrastructure by investing in sustainable, cost-effective solutions that provide communities with clean water and waterways; healthier, safer neighborhoods; local jobs; flood and climate resilience; and economic growth.

Through Jersey Water Works, as well as coalition efforts with numerous other New Jersey-based organizations, NRDC has worked for years to improve state policies that protect New Jersey's waters from polluted urban runoff, sewage overflows, and lead and other sources of contamination, and to improve the state's aging drinking water and wastewater infrastructure. I am part of a team of NRDC water experts working on these same issues in states around the country, and at the federal policy level.

NRDC Supports A. 4415

A. 4415 would require drinking water utilities to perform, and report in a standardized format, the results of, annual water loss audits using the industry's best practice audit methodology. It would also require the Department of Environmental Protection (DEP) to post audit results publicly, develop performance benchmarks for utilities to reduce water loss, and provide technical assistance to utilities regarding both the audit process and the implementation of strategies to reduce losses.

The bill is based on model state legislation that NRDC drafted, which draws from the best state water audit laws and policies around the country, and which in turn has been introduced or adopted in several other states. NRDC applauds the Chair and the bill's co-sponsors for introducing this legislation and strongly supports its adoption. We also provide several recommendations to further improve the bill and maximize its impact.

Water Loss Audits are Essential to Improve the State's Drinking Water Infrastructure

In recent months, the Joint Legislative Task Force on Drinking Water Infrastructure has heard much about the importance of asset management in maintaining – and restoring – the integrity of our drinking water systems. One of the most prominent ways in which poor asset management manifests is through water main breaks. Old, deteriorated pipes, sometimes in combination with excessive water pressure within a distribution system, result in “water loss,” the technical term for leakage from a drinking water system. Some of this water loss is highly visible above ground; still more is chronic below-ground leakage, which remains out of sight and out of mind. These water main breaks and leaks can cost utilities and their ratepayers millions of dollars; damage roads, businesses, homes, and other property; allow pathogens to penetrate the system or multiply in areas of decay; and waste huge volumes of water. As the state's current drought warnings remind us, we cannot afford to waste water in this way.

Water loss also includes “apparent loss,” which is a failure to recover revenue from some of the water that is actually delivered to customers who should be paying for it. This results from inaccurate meters, unauthorized consumption, and systematic errors in billing systems.

New Jersey can, with a push by the Legislature, immediately take a necessary first step towards solving these problems. Most drinking water utilities do not even know how much water they are losing, what the causes are in their systems, or how costly these losses are, because they do not effectively audit their water losses. Effective audits would provide the information necessary to reduce water losses and prioritize investments.

States around the nation are beginning to require all utilities to perform and report the results of annual water loss audits using a standard methodology, developed by the American Water Works Association (AWWA), that reflects current best practice in the industry. Some of these states are also requiring independent validation of the self-reported audit data, and some are setting performance benchmarks to reduce losses over time.¹ A.4415 would bring all of these best practices to New Jersey, marking a huge step forward for the State's efforts to modernize its water infrastructure.

Under current law, in New Jersey, only utilities under the jurisdiction of the Delaware River Basin Commission (DRBC) are required to perform and report the results of annual water loss audits using the AWWA methodology.² NRDC commissioned a detailed review of water loss audit reports filed by the 76 DRBC-regulated New Jersey water suppliers, which estimated that

¹ An NRDC website, “Cutting Our Losses,” summarizes water loss auditing policies in every state, and highlights the best policies in leading states. <https://www.nrdc.org/resources/cutting-our-losses>

² <http://www.nj.gov/drbc/programs/supply/water-audit-program.html>.

leakage totaled 14 million gallons per day (mgd) in 2013. This equates to a loss of about 21 gallons per customer connection per day, with many utilities losing substantially more than this amount. Of the total annual leakage, at least 6 mgd appears highly likely to be “economically recoverable” – i.e., investments to reduce leakage will result in savings that equal or exceed the costs. The review also estimated apparent losses – resulting from the failure to accurately record and collect revenue from water actually delivered to customers – totaling 2.1 mgd, valued at \$5.2 million in lost revenue, in 2013.³

Significantly, however, the DRBC water loss data is all self-reported by utilities. In the absence of a system of independent data validation, these audit reports must be viewed as preliminary indicators rather than definitive findings. These utilities self-reported the quality of the data used for the audits – known as a “data validity score” – and the reported scores were significantly higher than a validated water audit data set from around the country. This indicates it is very likely that NJ utilities in the Delaware Basin are overly-confident of the quality of their data, which is typical of non-validated audits. Further, these utilities’ reported water losses were about 50% lower than both the national dataset and the Pennsylvania utilities within the Delaware Basin. Given the age of New Jersey’s water systems, this likewise suggests underlying problems with the data used for the audits, and the potential that losses have been underreported. At the same time, reported water costs were higher in New Jersey than in the national dataset, which means each gallon of water loss has a greater impact on utility revenues than in some other states, and conversely that water loss reduction measures can have greater financial rewards.

The majority of New Jersey residents are served by utilities outside of the DRBC area, which are not required to perform the AWWA audits. Neither DEP nor the NJ Board of Public Utilities (which regulates investor-owned utilities) requires them. DEP does require a report on water supply and customer consumption data every two years, but a standardized AWWA audit report is an option, not a requirement.⁴ Even after DEP issued an official drought warning last fall, DEP strongly urged, but did not require, utilities to conduct a water audit.⁵

Notably, in 2006, DEP told DRBC that the state intended to adopt AWWA water loss audit requirements statewide, at the same time DRBC adopted its regulations.⁶ Again, in 2007, a report commissioned by DEP specifically recommended that the state “require all utilities to conduct annual water audits using the IWA/AWWA Water Audit Method and to implement a [sic] leakage control plans.”⁷ No such requirement has been adopted.

³ Kunkel Water Efficiency Consulting, *Report on the Evaluation of Water Audit Data for New Jersey Water Utilities*, prepared for Natural Resources Defense Council, Jan .10, 2017, <https://www.nrdc.org/sites/default/files/nj-utilities-water-audit-data-evaluation-20170110.pdf>. Highlights of the report are summarized here: <https://www.nrdc.org/experts/ed-osann/numbers-behind-new-jerseys-leaking-water-systems>.

⁴ NJDEP Form: “Water Conservation and Drought or Water Supply Emergency Management Plan Report for Public Water Supply Systems,” <http://www.nj.gov/dep/watersupply/pdf/Cv.Wcp-ws.pdf>.

⁵ https://www.nrdc.org/sites/default/files/impacted-public-water-system-leak-detection-directive_20161109.pdf

⁶ DRBC, Water Management Advisory Committee, Meeting Summary, September 14, 2006,

http://www.nj.gov/drbc/library/documents/wmac_sept06.pdf

(“Dr. Joe Miri (NJDEP) stated that concurrent with DRBC adopting this as a new regulation, NJ would adopt it as well on a state-wide basis.”).

⁷ NJDEP, “Interconnection Study: Mitigation of Water Supply Emergencies” (2007), <http://www.nj.gov/dep/watersupply/pdf/interconnect-report.pdf>.

In the absence of statewide audit data, the review NRDC commissioned of DRBC data also estimated – by extrapolating the DRBC results to all drinking water utilities in New Jersey – total statewide water losses. The analysis suggests that:

- **130 million gallons** of treated drinking water are lost each day across New Jersey.
- Of this, over **50 million gallons per day** of water losses, valued at **\$10 million per year** (variable production costs), are likely to be cost-effective for utilities to save.
- That latter amount is equal to the water use of about **700,000 New Jersey residents**, or a population **2.5 times the size of Newark**
- **An additional \$12.5 million per year in lost revenue** (“apparent loss”) will be cost-effective for utilities to recover through improved water measurement and billing practices.

To provide some additional context for these numbers, a projected savings of \$22.5 million per year from water loss control could provide a **“revenue stream” sufficient to raise \$350 million in bonds to fund investments in water loss control** (assuming a 4% interest rate and 25-year repayment schedule). In other words, with “economically recoverable losses” of this size, **New Jersey utilities could, in the near-term, invest \$350 million in water loss reduction efforts without raising water rates.** But these cost-effective investments cannot be identified without using the best practices in water loss audits, as per the AWWA methodology.

Utilities Can Easily Perform Audits, and Annual Audits are Industry Best Practice

Any water utility can readily perform a water loss audit using the standardized AWWA methodology, at minimal cost. An AWWA audit is essentially a “desktop” audit, using existing data. AWWA makes available free auditing software, and an accompanying manual for approximately \$100. Audits are typically performed with modest investment of time by existing utility staff. For example, utilities regulated by the Delaware River Basin Commission reported that, even though most were unfamiliar with the AWWA audit methodology before new Commission regulations required them to submit annual audits, most utilities completed the audit in 1 to 3 days without outside help.⁸ For a utility already familiar with the methodology and with good internal data collection and reporting systems, an annual audit can be completed by a single staff member in as little as two hours.

Independent validation also is not burdensome. “Level 1” validation by a qualified third-party typically requires about 10-20 hours of time from a consultant, which may cost in the range of \$2,500 to \$5,000. Validation helps the utility identify needs to improve routine data collection, to ensure accurate audit results that do not overstate or understate water losses. The Water Research Foundation defines Level 1 validation as “a desktop review by a knowledgeable third

⁸ DRBC, Water Management Advisory Committee, Meeting Summary, Tuesday, June 16, 2015, http://www.nj.gov/drbc/library/documents/WMAC/06162015/wmac_june15.pdf.

party, who also evaluates key support documentation.”⁹ For example, the validator would assess the quality of data entries by reviewing reports that provided the data for the audit, to assess whether the underlying data collection methods are fully reliable, and make recommendations for improving data collection and management systems and data quality scoring.

AWWA’s water loss audit manual strongly recommends that audits be performed annually, for the benefit of both the utility and state regulatory agencies:

*The AWWA [Water Loss Control Committee] recommends that water utilities should routinely compile water audit data on an annual basis as a standard business practice. This serves as the fundamental activity to promote efficient management of water in the drinking water sector. Thus, collection of standardized, validated water audit data should be the starting basis for water utilities voluntarily launching a water loss control program, and for regulatory agencies to assess water loss management performance.*¹⁰

All states that require AWWA water loss audits require utilities to conduct and submit them annually. From one year to the next, annual audits not only track ongoing progress (or lack thereof) in reducing water loss, they also drive a utility’s efforts to improve the quality of the underlying data that goes into the audit. Each annual audit includes a “data validity score,” which highlights areas where the utility needs to improve its data collection or recordkeeping, in order to facilitate more accurate audits in subsequent years. Moreover, state regulators need to evaluate a robust set of water loss audit results in order to establish regulatory benchmarks for water loss reduction, as A.4415 requires DEP to do. Annual reporting – with continually improving data quality – will provide DEP the data it needs to set smart, attainable benchmarks. Finally, under A.4415, utilities must include in their reports not only the audit results, but also a description of activities they are undertaking to reduce water losses. This, too, is important to track – and publicly disclose – on an annual basis.

The Committee Can Make A.4415 Even More Effective With Several Modest Amendments

Attached to the end of this testimony is a proposed mark-up of A.4415, which recommends three modest additions that complement the existing provisions in the bill, as well as two clarifications to the bill’s wording. All of these recommendations are based on NRDC’s model state legislation and/or existing legislation in other states.

1. In order to help the utilities comply with the audit validation requirement, the bill should direct DEP, to the extent possible with available funds, to help procure the services of independent audit validators for the first two years of the program. (See proposed new section 9 in the attached markup.) Other states, such as Georgia, have been able to provide this support to utilities using technical assistance set-aside funds already available under the Drinking Water State Revolving Fund.

⁹ Water Research Foundation, *Water Audits in the United States: A Review of Water Losses and Data Validity*, pp. 15-16, <http://www.waterrf.org/PublicReportLibrary/4372b.pdf>.

¹⁰ AWWA, Manual M36, *Water Audits and Loss Control Programs*, Fourth Edition (2016), pp. 10-11.

2. In order to help DEP carry out its responsibilities, the bill should authorize establishment of an advisory committee to help implement the program. (See proposed new section 10(c) in the attached markup.) This approach has been extremely helpful in Georgia and California, where utility associations and water professional associations, as well as environmental NGOs, have been extremely helpful in developing technical guidance and training materials and educating utilities about how to comply with the audit requirements.
3. The bill should require each utility to directly notify its customers of the water loss reported in the audit. The notice may be provided with the system's annual consumer confidence report or with the next bill customers receive after the audit report has been filed. (See section 6(a)(6) in the attached markup.) Distribution of audit results directly to customers – and not only on DEP's website – will help inform the public of the condition of the infrastructure that serves them and help build support for taking corrective actions.
4. The bill's definition of "data validity score" should be clarified to identify which AWWA "scoring system" is being referenced. (See section 3 in the attached markup.)
5. A minor wording clarification is needed in the provision concerning technical assistance. (See section 10(b) of the markup.)

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Thank you very much for the opportunity to testify today. Please do not hesitate to contact me by phone (212-727-4548) or email (llevine@nrdc.org) with any questions about the bill or about the revisions proposed in my testimony.