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An Epidemic of Pinhole Leaks in Copper Pipe – A Water Utility's Response

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The Washington Suburban Sanitary Commission

The Washington Suburban Sanitary Commission ("WSSC"), established in 1918, is one of the ten largest water and wastewater utilities in the nation. WSSC serves nearly 1.8 million residents in Prince George's and Montgomery Counties, the two large Maryland counties suburban to Washington D.C. Its legal status is a bicounty agency of the State of Maryland, existing and organized under Article 29 of the Annotated Code of Maryland.[1] WSSC operates and maintains eight water and wastewater plants, over 5,500 miles of fresh water pipeline and over 5,300 miles of sewer pipeline.

While WSSC's primary mission is considered to be the provision of water and wastewater services, WSSC is also the regulatory authority for plumbing work on private property in the area it serves. In this regard, WSSC licenses plumbers, promulgates a plumbing code, and permits/inspects plumbing work.

The Problem

In the late 1990's, WSSC started receiving reports from its customers of pinhole leaks in the copper pipes in their homes. As its name implies, a pinhole leak results from a tiny perforation in the pipe that allows water to escape. It is the final stage of a process known as "pitting corrosion." This is a particularly insidious type of leak as its presence may go undetected until major damage has occurred. Pinhole leaks can cause structural and other property damage, can facilitate the growth of mold, can lead to costly pipe repairs or replacement, and can have adverse effects on a homeowner's insurance from filing claims. By the year 2000, with the reports of pinhole leaks rapidly increasing, it had become apparent that these incidents were neither isolated nor coincidental. WSSC needed to act.

[1] WSSC is somewhat unique in being subject to the authorities of both the State and two Counties. One jurist wryly commented "[The WSSC] is a hybrid body corporate conceived as a result of a menage a trois and derived primarily from the legislative loins of Montgomery and Prince George's Counties." *WSSC v. Pride Homes, Inc., et al.*, 47 Md. App. 390, 392 (1980), *rev'd on other grounds*, 291 Md. 537 (1981).

WSSC's Approach and Strategy for Dealing with the Problem

With the specter of untold liability as a backdrop, legal counsel's initial reaction and recommendations were typical of anticipating an ordinary civil litigation defense. Certainly WSSC needed to investigate the causes and circumstances of pinhole leaks, as would any responsible public agency. The investigation must not, however, be conducted in a manner that might compromise any defenses in some future lawsuit. Rather it was time to circle the wagons, restrict the voluntary flow of information and, if claims for damages were made, make any putative plaintiffs prove liability on the part of WSSC.

But this was not an ordinary case. There was no past occurrence to analyze or defend. The problem of pinhole leaks was ongoing, increasing in frequency and affecting thousands of WSSC customers. So WSSC chose a different tack, proactively launching an open and aggressive investigation. A task force was formed, including representatives from the water supplier (WSSC), those who manufacture the pipe (the copper industry), those who install the pipe (the plumbing industry) and the two county governments. Nationally recognized copper corrosion experts were also included.

While WSSC counsel may have viewed the copper and plumbing industries as potential co-defendants and cross-claimants, they were accepted as "partners" in the task force. Was this arrangement simply a matter of "keep your friends close and your enemies closer"?[2] Not really, as all members of the task force were afforded equal access to the investigation's findings, and there seemed to be a genuine, concerted effort to discover the root cause(s) of the problem.

Was it a risky proposition from a legal perspective to have the corrosion experts, initially retained at the sole expense of WSSC, disclosing their findings and conclusions in real time to the task force as a whole? Does the cliché about "closing the barn door" come to mind? Perhaps a risk did exist if their findings and conclusions would not otherwise have to be disclosed to third parties.

If the experts' findings were adverse to WSSC from a liability standpoint, the experts would almost certainly not be called as expert witnesses by WSSC should litigation ensue. In such circumstances, arguments could certainly be made that their identities, findings and conclusions could be shielded from discovery requests. *See, e.g.*, Fed. R. Civ. P. 26(b)(4)(B); Md. Rule 2-402(f)(2).

Of course documents can be obtained from governmental entities outside of court discovery rules. WSSC is a state agency, as noted above, and is thus subject to Maryland's Public Information Act (PIA)[3], a public record disclosure law analogous to the [Federal] Freedom of Information Act. While the PIA does

[2] Notwithstanding that character Michael Corleone may have uttered this phrase in *The Godfather*, it may be more properly attributed to Sun-tzu – Chinese general and military strategist (~ 400 BC).
[3] Md. State Gov't Code Ann. §§ 10-611 – 10-630

prohibit disclosure of public records deemed privileged by law[4], an attorney work product privilege may not have applied here because counsel was not involved in the retention of the corrosion experts. There is authority, however, that the inter-agency or intra-agency letter or memorandum exemption from public disclosure[5] may apply to documents created by outside consultants hired by a government agency to assist it in internal decision making.[6] Regardless, WSSC accepted the risk of disclosed adverse findings and allowed the experts' work to be shared with the task force members as it became available.

How else did WSSC approach or handle the "epidemic" of pinhole leaks in copper pipe? Consistent with its desire for an open and aggressive investigation, WSSC launched an extensive public outreach campaign. The purpose of the campaign was both to update customers on the status of the investigation and to urge customers experiencing pinhole leaks to contact WSSC with pertinent details. Outreach activities included mailings to all customers via service bill inserts, updates to media outlets, update letters to customers who reported pinhole leaks, update letters to local elected officials and various briefings held throughout WSSC's service area.

One major part of the outreach campaign was the establishment of a page on WSSC's web site devoted to pinhole leaks. In fact, if one were to Google "pinhole leak" today, the first result listed will be a link to the WSSC web page.[7] Aside from providing numerous forms of information related to pinhole leaks, a chief feature of the web page is a link to a "Pinhole Leak Questionnaire" for affected customers to input a variety of data concerning the leaks they experienced.[8] Over 5600 customers responded to the questionnaire, providing information that proved invaluable in gauging the scope of the problem and in narrowing the extensive list of possible causes of the leaks.

Findings

It is not the intent of this presentation to discuss in scientific detail matters related to corrosion, metallurgy or water chemistry. As WSSC's investigation into the pinhole leak problem progressed, however, it became apparent that the problem was not limited to WSSC's service area. Pinhole leaks in copper pipe were being reported not just in other parts of Maryland, but across the country. In 2003, the Maryland General Assembly passed a law establishing a statewide Task Force to Study Pinhole Leaks in Copper Plumbing.[9] The Task Force, in which WSSC actively participated, relied heavily on the data and findings that resulted from WSSC's investigation. The Final Report of the Task Force, issued in

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[4] Md. State Gov't Code Ann. § 10-615(1)
[5] Md. State Gov't Code Ann. § 10-618(b); *see also* 5 U.S.C. § 552(b)(5)
[6] *Gallagher v. Office of the Att'y Gen.*, 141 Md. App. 664 (2001)
[7] *See* http://www.wsscwater.com/copperpipe/pinholescroll.cfm
[8] Sarasota County, Florida has established a similar web page and questionnaire. *See* http://www.co.sarasota.fl.us/EnvironmentalServices/Water/Utilities/PinholeLeaks.asp
[9] Chap. 476, 2003 Md. Laws

December 2004, contains excellent discussions of the scientific elements of the problem, possible causes of the problem and related issues such as the effects of pinhole leaks on homeowners' insurance.[10]

WSSC and the statewide Task Force both concluded that there is no single cause of the "pitting corrosion" that leads to pinhole leaks in copper pipe. It rather appears that several factors or circumstances may be working together to cause the problem. Ironically, one of the more accepted theories holds that changes in water chemistry mandated by the Environmental Protection Agency (EPA) to enhance the quality of drinking water may have inadvertently created a climate inside copper pipes that promotes or facilitates the type of pitting corrosion that ultimately leads to pinhole leaks. It is thought by experts that these changes in water chemistry interfere with the formation or maintenance of a scale or film that forms on the inner surface of the pipes and that would ordinarily provide protection against corrosion.

Corrosion experts also know that the introduction into the water supply of a small amount of a chemical from a class of compounds known as phosphates ("orthophosphate" or "polyphosphates") helps guard against corrosion. The phosphates apparently help form a protective coating on the inner surface of copper pipe without causing the possibly deleterious effects that the EPA rules were designed to prevent. Thus even without knowing the precise cause(s) of pinhole leaks, it may be possible to prevent or mitigate the problem with the use of a corrosion inhibitor. In laboratory tests conducted for WSSC, orthophosphate was effective in stopping pinhole leak activity.

Actions Taken to Prevent or Mitigate Pinhole Leaks

Introducing a new chemical into a public drinking water system is not a casual undertaking. Experts know that the addition of a small concentration of phosphates to the water supply is common and safe, but the public perception may be quite different. Appropriate regulatory approvals also need to be obtained. Furthermore, it may not be fiscally prudent to add the chemical on a system-wide basis without any indication as to its effectiveness outside of lab tests, especially with a water system the size of WSSC's.

It was thus decided to explore the feasibility of a pilot program whereby WSSC would add orthophosphate only to the water supplied to a particular property that had been beset with pinhole leaks. After screening several candidates, a certain apartment building was chosen for the program. This was not to be an "experiment," but rather a study to validate the laboratory tests. Discussions were held with both the property's owner and its residents to explain the project and allay any concerns. A mostly plain-English letter agreement, a redacted copy of which is appended hereto, was used to document the

[10] *See* http://www.dhcd.state.md.us/Website/document/Pinhole_Leaks_in_Copper_Plumbing.pdf

arrangement in lieu of a more formal "legalese" agreement. For the public, a fact sheet on the pilot program was prepared.[11]

The pilot program was successful, and WSSC began plans to add a small concentration of orthophosphate to the water supply on system-wide basis. A fact sheet on the use of orthophosphate[12] was prepared to address any questions or concerns from the public, and the requisite approval was obtained from the Maryland Department of the Environment.[13] Orthophosphate was added to the water WSSC provides its customers in November 2003. Since that time, plumbers in the WSSC service area reported reductions in pinhole leaks, and the reports of pinhole leaks coming in to WSSC subsided.

Liability Concerns from Supplying Water

What was the nature and extent of the liability faced by WSSC? What was the exposure to damages? Surely property damage alone is an insufficient basis upon which to impose liability. It does not appear likely that merely providing potable water to customers would be construed as engaging in an abnormally dangerous activity such as to invoke a theory of strict liability.[14] What fault might be found on the part of WSSC?

Preliminarily, it should be noted that WSSC is an enumerated "local government" for purposes of Maryland's Local Government Tort Claims Act.[15] This Act, *inter alia*, requires the giving of a certain notice as a precondition to filing suit and establishes a cap on the amount of damages that may be awarded. While WSSC did receive several of the statutory notices declaring an intention to sue WSSC for damages allegedly caused by pinhole leaks in copper pipe, no such suits have been filed to date. A case from a service area contiguous to WSSC's, however, may prove instructive.

In *Cormier v. District of Columbia Water and Sewer Authority*, 2008 D.C. App. LEXIS 216, 946 A.2d 340 (2008), an owner of several properties in Washington D.C. brought suit against the defendant water supplier, known by the acronym "WASA." The complaint alleged that WASA supplied "corrosive" water to the Plaintiff's properties resulting in pinhole leaks in copper plumbing and other damages. Plaintiff sought damages based on negligence, product liability and breach of contract, and further sought injunctive relief for alleged nuisance and trespass and a certain declaratory judgment.

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[11] *See* http://www.wsscwater.com/copperpipe/letters/phl_pilot_fs.pdf
[12] *See* http://www.wsscwater.com/copperpipe/letters/Phosphate_PHacts.pdf
[13] *See* http://www.wsscwater.com/copperpipe/letters/letter1.pdf
[14] *See Restatement (Second) of Torts* §§ 519, 520
[15] Md. Cts. & Jud. Proc. Code Ann. § 5-301(d)(7)

WASA moved for summary judgment, based in large part on Plaintiff's expert's[16] deposition testimony which WASA felt was favorable to Defendant's case. In opposition to the motion, Plaintiff presented a "declaration" by its expert, given under the penalty of perjury, which amplified his deposition testimony and made additional statements favorable to Plaintiff's case. The trial court granted WASA's motion, finding that Plaintiff's proof of negligence was insufficient because its expert's un-notarized "declaration" was not an affidavit within the meaning of applicable rules and could therefore not be considered. The court also held that Plaintiff's evidence of damages was too speculative to defeat a summary judgment motion.

On appeal, it was held that the rule regarding affidavits should have been construed so as to allow consideration of Plaintiff's expert's "declaration." It was further held, on the issue of speculative damages, that the trial court erroneously applied a standard applicable in the context of a trial but not at a summary judgment stage. Certain other issues argued on appeal were expressly not addressed. Accordingly, the summary judgment in favor of WASA was reversed, and the case was remanded for further proceedings.

WSSC will certainly follow the continuing story of its neighboring utility's case. The general consensus among experts that there is no single cause of the pitting corrosion that leads to pinhole leaks, and that this phenomenon might not therefore have been anticipated or prevented, should figure prominently in WSSC's defense if legal action is brought.

Liability Concerns from Regulatory Functions

Instead of water chemistry or other water characteristics, what if the copper pipe itself or something about the installation of the copper pipe were implicated as a cause of or contributing factor in the formation of pinhole leaks?[17] Would focus shift to WSSC's task force "partners" – the copper and plumbing industries?

As noted above, however, WSSC is also the regulatory authority for plumbing work on private property in its service area. Could WSSC be found liable for having allowed or prohibited certain plumbing materials? Should WSSC have required a thicker gauge of copper pipe so as to better resist corrosion? Could WSSC be found liable for having inspected and passed what turned out to be a faulty installation? The answers to these questions should be "no" based on the "public duty doctrine."

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[16] Interestingly, Plaintiff's expert in *Cormier* was one of the experts retained by WSSC for its investigation into pinhole leaks.

[17] Although matters related to the manufacturing of copper pipe and the installation of copper pipe have now generally been discounted as possible causes of pinhole leaks, these matters, along with all other possible causes, had to be considered as part of the investigation.

The public duty doctrine essentially holds that, absent a "special relationship" with a particular individual or class or individuals, the duty of a government entity such as WSSC in enacting and enforcing regulations is one owed to the public generally. As such, any breach of that duty is not actionable by an individual allegedly damaged thereby.[18]

The public duty doctrine is a principle independent of governmental immunity[19], although the same result may obtain. Immunity is an exemption from liability. With the public duty doctrine, the question of immunity is never reached because, absent an actionable duty, the requisite elements of a tort are not established.

It must be noted, however, that the public duty doctrine is not universally accepted. Some states reject the doctrine on public policy grounds, holding that any duty owed to the public generally <u>is</u> a duty owed to individual members of the public.[20]

<u>Conclusion; Lessons Learned?</u>

The epidemic seems to be over. The addition of orthophosphate to the public drinking water system appears to have stemmed the tide of reported pinhole leaks in copper pipe. Throughout the process of dealing with the problem, affected WSSC customers and other interested parties were provided with pertinent information as it became available. WSSC's process for addressing pinhole leaks in copper pipe was methodical, scientific and essentially open to the public. No lawsuits were filed against WSSC related to pinhole leaks.

Did WSSC's transparent approach in dealing with the pinhole leak problem create a degree of anxiety for WSSC counsel? To some degree, the answer is "yes." But was not WSSC's approach also an example of a local government's open, proactive and responsible response to a known problem affecting thousands of its customers? Without question, the answer again is "yes."

Should WSSC's transparent approach serve as a model for handling future problems of this nature involving unknown causes and liabilities? Of course any future problems will involve a completely different set of facts and policy considerations which may influence how the problem should be handled. Thus from counsel's perspective, at least, the jury is still out on this issue.

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[18] *See, e.g., Westfarm Associates v. WSSC*, 66 F.3d 669, 684 (4th Cir. 1995) ["Rather, under the public duty doctrine, WSSC may not be held liable for negligent acts or omissions in the enactment or enforcement of regulations."]; *Willow Tree v. Prince George's County*, 85 Md. App. 508 (1991).

[19] As an agency of the State, the doctrine of sovereign immunity applies to WSSC. In *Katz v. WSSC*, 284 Md. 503 (1979), however, it was held that what is now codified as Md. Ann. Code art. 29, § 1-201 constitutes a legislative waiver of WSSC's immunity with respect to tort actions.

[20] *See, e.g., Coffey v. City of Milwaukee*, 247 N.W.2d 132 (Wisc. 1976).

SAMPLE LETTER AGREEMENT
PINHOLE LEAK PREVENTION PILOT PROGRAM

April 3, 2002

XXXXX XXXXXXX
Property Manager
XXXXXXXX at XXXXX
XXXX XXXXXXXX Lane
Laurel, MD 20708

Re: Pinhole Leak Prevention Pilot Program
Letter Agreement

Dear Ms. XXXXXXX:

The purpose of this letter is to confirm and document our agreement for the participation of the owner of the property known as XXXXXXXX at XXXXX, XXXXXXXX XXXXXXXX Limited Partnership ("XXXX") in the WSSC Pinhole Leak Prevention Pilot Program. As you know, WSSC has been investigating the cause of pinhole leaks in copper pipes for quite some time. Although we may never know the exact cause(s) of the leaks, we have learned from bench scale tests that the introduction of a very small concentration of orthophosphate in the water supply may be highly beneficial in stopping or preventing pinhole leaks.

Our next step is to verify the results of the bench scale tests in a building such as XXXXXXXX at XXXXX that has experienced pinhole leak problems. Such verification may well lead to the introduction of orthophosphate in the delivered water on a WSSC system-wide basis. This agreement will thus be of mutual benefit as XXXXXXXX at XXXXX will receive at WSSC's expense a water treatment that should ameliorate the pinhole leak problem, while WSSC will gain knowledge and experience for future system-wide planning.

Phosphates, such as orthophosphate, are used by more than 50 percent of the water utilities in this country. They are safe and FDA approved. In fact, phosphates are used in many of our favorite foods and drinks in concentrations hundreds of times higher than would be used in this pilot program at XXXXXXXX at XXXXX. The use of orthophosphate at XXXXXXXX at XXXXX in the designed concentration will not be discernable to consumers of the water.

In essence, the pilot program at XXXXXXXX at XXXXX involves use of a storage tank of approximately 50 gallons capacity holding diluted orthophosphate solution. A feed pump adds the diluted orthophosphate solution to the building's water

supply pipe. The building's water meter is replaced for the duration of the program with a meter capable of sending a continuous flow signal to an electronic controller. The controller signals the feed pump to add the solution in proportion to water flow, thus maintaining the desired concentration of about one part per million. The controller also totals water usage and is used for billing purposes. WSSC periodically takes water samples at various agreed upon locations in the building.

A temporary water pipe with a hose valve and a temporary eyewash station are also installed by WSSC in connection with the equipment. The equipment is secured in a locked enclosure bolted to the floor to prevent movement or damage. A 115 volt duplex receptacle on a dedicated 20 amp circuit is to be installed by XXXXXXXX at XXXXX, with cost reimbursement by WSSC, in the meter room at a location designated by WSSC. It is anticipated that the pilot program may last approximately six months.

It is our understanding that XXXX is aware of and consents to this agreement, and that you have the authority to sign the agreement on behalf of XXXX. The salient terms of our agreement are as follows:

- XXXX grants to WSSC and its personnel the right to enter upon the XXXXXXXX at XXXXX premises for the purposes of installing, operating and maintaining (including water sampling) all equipment necessary for achieving a concentration of orthophosphate of approximately one part per million (equivalent to one milligram per liter) in the water supply of the premises.

- All equipment as noted above shall be installed, operated and maintained by and at the expense of WSSC and shall remain the property of WSSC.

- XXXX shall ensure that WSSC personnel are provided ready access to those portions of the premises necessary for purposes of the pilot program.

- All visits by WSSC personnel to the XXXXXXXX at XXXXX premises shall be preceded by a call from WSSC to the XXXXXXXX at XXXXX property manager or her designee.

- WSSC personnel will remain available at all reasonable times during the pilot program to answer questions or address concerns of XXXXXXXX at XXXXX owners, managers or residents. The WSSC point of contact is XXXX XXXXX, Pinhole Leak Task Force Manager, 301-206-XXXX. Emergency inquiries may be directed at any time to the WSSC Radio Room at 301-206-4002.

- The pilot program and the terms of this agreement shall remain in effect until WSSC determines that it has received sufficient data for purposes of the pilot program and so notifies the owner and/or management of XXXXXXXX at XXXXX, or for a period of twelve (12) months from the date of this letter, whichever shall first occur.

- At the conclusion of the pilot program, unless otherwise agreed, all equipment installed by WSSC shall be removed, and all areas of the XXXXXXXX at XXXXX premises disturbed by the program shall be restored, as nearly as practicable, to the condition which existed prior to the program, all at the expense

of WSSC. Any damage to the premises from the installation or operation of the equipment shall be repaired at the expense of WSSC.

- WSSC shall defend, indemnify and save harmless XXXX, XXXXXX Properties, LLC, their agents and employees (the "Releasees") from and against all claims against the Releasees for personal injuries and damage to real or personal property arising out of the pilot program, whether caused or alleged to be caused by the negligence, carelessness or willfulness on the part of WSSC, its agents or employees. For purposes of this Letter Agreement, "personal injuries and damage to real or personal property" shall not include any injuries or property damage arising from pinhole leaks.

If the above terms are acceptable, please indicate the agreement of XXXXXXXX at XXXXX by signing below and returning the original of this letter to XXXX XXXXX at this address. An additional copy of this letter is enclosed for your records. Any questions or comments at this point concerning this agreement may be directed to Mr. XXXXX at 301-206-XXXX.

On behalf of WSSC and our customers, thank you very much for your cooperation and participation in this most important program.

Sincerely,

XXXX X. XXXXX
General Manager

Agreed as set forth above.
XXXXXX XXXXXX Limited Partnership

By: XXXXXXXX, LLC
Managing Agent

By: _____ _____
XXXXXX XXXXXXX (Date)
Property Manager

XXX:jak