

Know

You Should



A Message from the American Concrete Pipe Association

Bulletin No. 130

Leaky Pipe Causes State of Emergency

A recent pipe failure has resulted in major property damage and the declaration of a state of emergency for a community in Wisconsin.

Shell Lake is the largest land-locked lake without an outlet in the state of Wisconsin and is approximately 2,580 acres in size. Because the lake has no surface water outlet, the City of Shell Lake commissioned a local civil engineering firm for the design of a combination gravity/siphon discharge from Shell Lake to the Yellow River, a distance of approximately 4.4 miles. The project bid resulted in a pipeline system of smooth-wall corrugated HDPE pipe.

The pipeline system was installed in late November 2002 and after eight months of repeated attempts to repair leaks; the pipeline is still not in operation. The repeated sessions of pipe trial repairs has been well documented by the *Washburn County Register*, a local newspaper serving Shell Lake and the surrounding area. A recent *ACPA Dispatch*, "Dreams Float Away" (Drainage Pipe Deprives Residents of Money and More), describes the frustration of Shell Lake residents.

The results of the poor pipe performance include:

- Flooding and severe water damage to 120 of the lakes 380 residences;
- A declaration of a state of emergency for the Shell Lake area by the Governor of Wisconsin;
- The use of inmates to supply sandbags to prevent flood damage;
- Millions of dollars in water damage; and
- A class action lawsuit by the residents of Shell Lake against the design engineer, the pipe manufacturer, the contractor and the City of Shell Lake.

Peer Review

Desperate for solutions, the City of Shell Lake retained the firm of Ruekert/Mielke (R/M) to provide a peer review of the project. The peer review was intended to investigate the possible causes of the pipe system failure and propose alternatives for the repair of the project. The peer review describes some of the problems that were found with the HDPE pipeline.

- The pipe supplier acknowledged that an unknown amount of defective pipe had been manufactured and some of it had been installed on the Shell Lake Project. But, the manufacturer could not determine how much defective pipe had been produced nor how much had ended up on the Shell Lake Project.

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- The report pointed out some of the problems with the pipe. Examples included vent tubes not welded properly, factory-installed gaskets installed backwards, and flotation.
- There were also problems with the pipe supplied with pre-installed gaskets. “The pipe supplied by ADS arrived at the job site with the gaskets pre-installed on the spigot end of the pipe. Some of these gaskets arrived damaged and had to be replaced in the field by the Contractor’s personnel.”
- The pipe material specified and installed in this project is not suitable for the application.
- Contracting crews were instructed to use native material for bedding and backfill, in order to minimize construction costs.

The peer review evaluated several different repair alternatives for the project, including relaying the entire pipeline, or relaying portions of the pipeline with different piping materials, slip-lining portions of the project, and repairing joints either with grout or internal sleeves or external sleeves. The recommendation for repairs included a multi-step process that could cost up to \$2,000,000 and take up to twelve months to complete.

Governor Jim Doyle declared a state of emergency for the Shell Lake area, instructing state agencies to continue the work they have provided to date and to explore additional options to assist the Shell Lake community efforts.

Lawsuit Filed

Eventually, the residents of Shell Lake filed a lawsuit against the City of Shell Lake, Wisconsin DNR, Thompson Sand & Gravel, Bob Thompson and Sons, Advanced Drainage Systems (ADS), Daniel Kling and ECG Inc.

- **Count 1** of the lawsuit is against the consulting firm, ECG, Inc. for negligence. It alleges that ECG negligently designed and engineered the project, approved unnecessary or harmful changes to the original plan, negligently approved products from ADS and the construction and installation performed by Thompson, and negligently retained, trained and supervised persons working on the project.
- **Count 2** of the lawsuit cites the negligence of ADS. It alleges negligent manufacturing of pipe products, supplying pipe products that were defective and unsuitable for the intended application, certifying unsuitable product for use without sufficient basis, and failing to provide adequate testing, inspection, training and supervision.

Engineers typically evaluate material characteristics such as service life, hydraulic efficiency, and installation costs when considering alternate pipe materials. Shell Lake is an example of how the selection of a pipe material can affect human lives, for better or worse. All drainage projects impact the lives of real people – every day. When making a decision on what pipe to use, consider how the decision affects lives.

For a copy of “Dreams Float Away” (Drainage Pipe Deprives Residents of Money and More) request *ACPA Dispatch*, Vol. I No. 4 from any ACPA member or download a copy from www.concretepipe.org.