US Army Corps
of Engineers
Waterways Experiment
Station

Zebra Mussel Research Technical Notes

August 1993

Modification of Water Intakes to Reduce Zebra Mussel Infestations

Background Zebra mussels can quickly attach to and clog the downstream end of an intake used to supply raw water for fire protection or other purposes. One strategy for dealing with zebra mussels in these situations is to periodically dewater pipes and kill the zebra mussels by exposure to the atmosphere. This strategy can be used only in water systems that are used periodically. As an alternative to dewatering the entire system, personnel of the U.S. Army Engineer District, Nashville, have investigated techniques for modifying intake pipes to reduce the chances of zebra mussel infestations.

Purpose The purpose of this technical note is to suggest strategies for modifying intake pipes for reducing the likelihood of infestation by zebra mussels.

Additional information This technical note was prepared by Dr. Andrew C. Miller, U.S. Army Engineer Waterways Experiment Station (WES), and Mr. Richard Nimmo, Nashville District. For more information, contact Mr. Nimmo, (615) 736-5607, or Mr. John Case, (615) 736-5607. Dr. Ed A. Theriot, WES, (601) 634-2678, is Manager of the Zebra Mussel Research Program.

Strategies to modify water intake pipes As an option to completely draining all pipes in a raw water system, only the intake could be temporarily dewatered. District personnel are considering installing a swivel joint on an 8-in.-diameter intake that would allow lifting the pipe out of water when the pump is not in use (Figure 1).

Other options to reduce infestations at the entrance of an intake pipe are being considered. One option consists of placing a 24-in.-diameter, 6-ft-long pipe over the intake, which is directed at a 90-deg angle downward. This would act as a still well, and would eliminate water movement and reduce dissolved oxygen (Figure 2). An air vent would be installed so that the system would not trap air.

A third option would be to lower a 12-in.-diameter sealed pipe over the 8-in.-diameter intake, which is directed toward the water surface (Figure 3). Since the second pipe is sealed, it would trap air as it is lowered. The end of the intake would be exposed to the atmosphere, which would kill any attached zebra mussels. The larger pipe would have to be raised when the pump is used.

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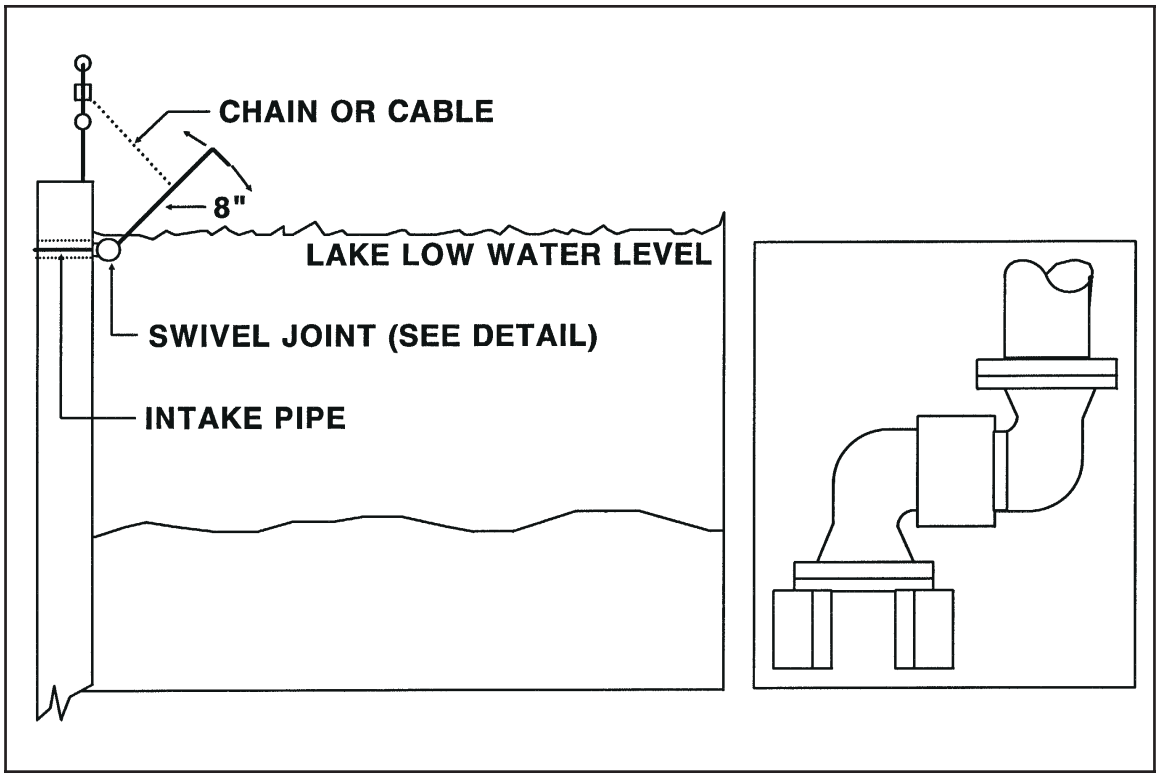

Figure 1. Movable water intake

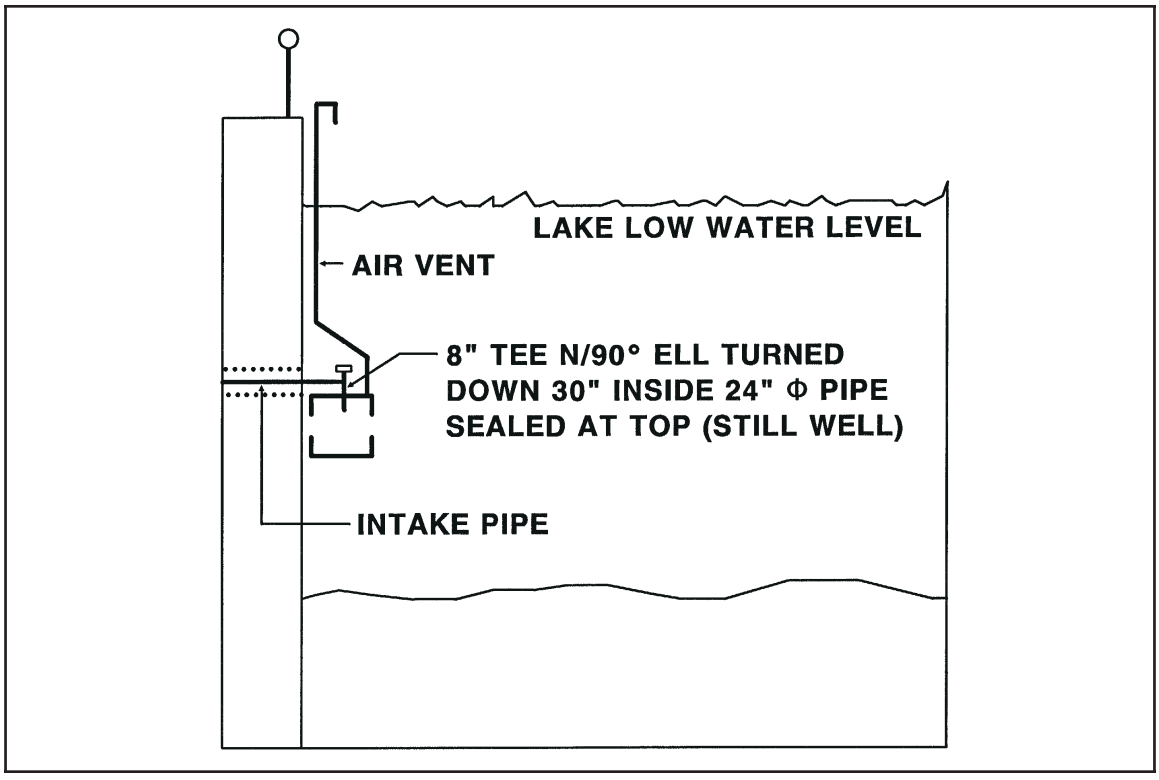

Figure 2. Protecting an intake with a temporary still well

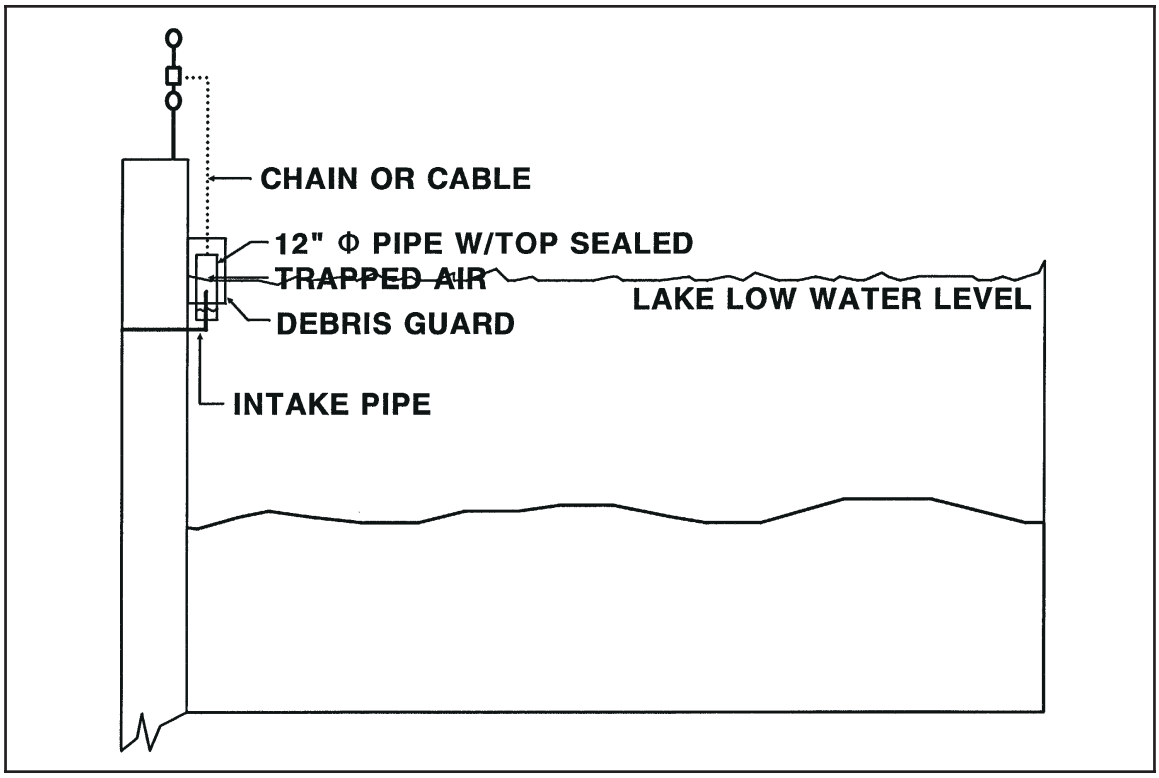

Figure 3. Protecting an intake with a 12-in.-diameter top-sealed pipe that is movable

Summary The first option, use of a swivel at the end of the intake to hold the pipe out of water, appears to be the most feasible to protect a periodically used raw water system. District personnel are considering all options and will implement one when appropriate.