

RECLAMATION

Managing Water in the West

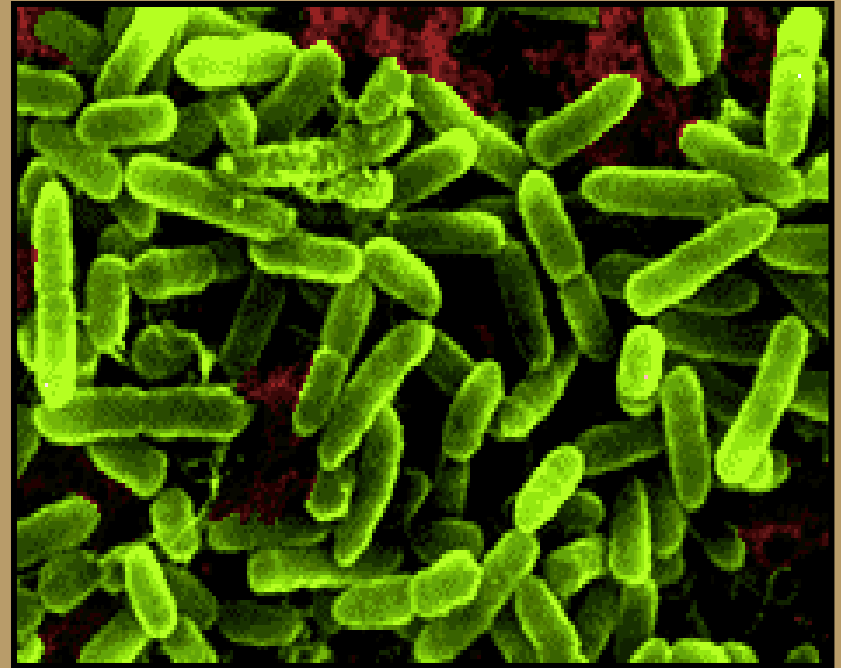
Davis Dam Zequanox™ Treatments



U.S. Department of the Interior
Bureau of Reclamation

Zequanox™

- NY State Museum developed environmentally friendly bacterial product lethal only to quagga and zebra mussels
- Made from dead cells of a specific strain of *Pseudomonas flourescens* (CL 145A)
- Commercially developed by Marrone Bio Innovations
- Reclamation and MBI have a cooperative research and development agreement (CRADA)



Pseudomonas flourescens

Zequanox™

Natural compounds in the bacterial product kill the invasive mussels when ingested by destroying the mussels' digestive system.



Photos by New York State Museum

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Ecotoxicology Studies

Zequanox™ tested safe on numerous important aquatic species:

- **Water flea, *Daphnia magna***
- **Freshwater shrimp, *Hyalella azteca***
- **Native blue mussel, *Mytilus edulis***
- **Native freshwater (Unionid) clams – (*Elliptio complanata*, *Lampsilis radiata*, *Lasmigona compressa*, *Pyganodon grandis*, *Strophitus undulates*, *Pyganodon cataracta*)**
- **Mallard duck, *Anas platyrynchos***
- **Fish**
 - **Fathead minnow, *Pimephales promelas***
 - **Sunfish, *Lepomis macrochirus***
 - **Brown trout, *Salmo trutta***
 - **Chinook salmon, *Oncorhynchus tshawytscha***

Davis Dam Treatments - 2011

- EPA authorized (2010) Reclamation a Quarantine Exemption per FIFRA Section 18 for Colorado River dams
- Reclamation in process of following NEPA protocols
- Reclamation plans to treat one Davis Dam cooling water system with Zequanox™ in March 2011



Davis Dam

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Key points in EPA letter granting Quarantine Exemption per FIFRA Section 18 to Reclamation:

“An exemption from tolerance will be established for this strain of Pseudomonas fluorescens.”

“The proposed use is not expected to pose a significant risk to the environment, to ground water and surface water, or to non-target organisms.”

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Questions?

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