

SOLUTIONS BY **NETAFIM™**



The Texas White House **Bush's Ranch**

Unique and challenging design considerations for a state-of-the-art green home for a very important family.

PROJECT OVERVIEW

David Heymann, a leading university architecture professor, was tasked with designing a 4,000 square foot home with four bedrooms situated on an arid high prairie of the American southwest. The house would have every available green feature and be the rural home of a very private family. The owner's top three requests were anything but extravagant: a king-sized bed, a good shower, and some comfortable chairs on the porch.

Heymann designed a passive-solar house positioned to absorb winter sunlight, warming the interior walkways and walls of the residence. Inside a central closet in the home are geothermal heat pumps drawing water from approximately 300 feet deep. This piping network is designed to use the water, usually about 67°F to heat the home in the winter and cool it in the summer. The home consumes only about 25% of the electricity required for what a "conventional" heating and cooling system would cost and requires no fossil fuels to operate.

In addition, the home also incorporates a 40,000 gallon underground cistern to catch rainwater shedding from the roofs. The rainwater is used to irrigate native flowers and shrubs chosen for the landscape surrounding the home as well as fruit trees.

The unique on-site wastewater system was designed by Ron Suchecki, General Manager of Hoot Aerobic Systems and Jim Prochaska, P.E., President of JNM Technologies and Lighthouse Treatment Systems. The demands that needed to be met were one-of-a-kind. "We had to design an on-site system that could survive with the input of a single caretaker, yet automatically ramp up to handle a party of 50 without missing a beat," said Prochaska.

BUSH'S RANCH SUMMARY

LOCATION

Near Crawford, Texas

ON-SITE WASTEWATER TREATMENT SUPPLIER

Hoot Aerobic Systems

JNM Technologies

Lighthouse Treatment Systems

ISSUES TO ADDRESS

- Large variations of inputs into the wastewater system
- Creating a self sustaining system with an unsure immediate future
- System location and the flow of gravity

NETAFIM PRODUCTS USED

- Netafim disk filters
- Netafim Bioline dripperline with 0.6 GPH pressure compensating, continuous self-flushing drippers

RESULTS

- Effective wastewater treatment for different quantities of inputs
- Filter performs effluent filtration and automatically backflushes and performs scheduled field flush cycles as well
- Zones are automatically advanced each time the system doses ensuring even distribution
- System can utilize just one zone to encourage plant growth if low levels of water usage are observed

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THE NETAFIM SOLUTION

"This project provided some very unique and challenging design considerations" said Prochaska, who was also the Engineer for the project.

"We were honored to be approached with the project" said Suchecki, "however as the scope of the project was revealed to us, the honor quickly turned into a challenge. As an aerobic system manufacturer, I wanted to incorporate my technology, however we had to be realistic on what it could do alone. The challenge was to design a system that could sustain itself, despite the uncertain immediate future."

Further complicating the design was the proposed system location. Using gravity flow, all of the treatment equipment would have to be placed right outside the bedroom window of the owners, between them and their new 7-acre lake. This was obviously not an option.

The resulting wastewater system features over 2,000 gallons of pre-treatment and equalization tanks which meter dose to a 1,000 GPD Hoot Aerobic System. The effluent then leaves the aerobic system and enters a recirculating media filter, which acts like a sand filter. The effluent passes through a unique media several times prior to discharge from the filter, where it passes through another media filter before entering the pump tank.

The effluent is filtered through 100 micron/140 mesh Netafim disk filters before being pumped 350 feet away to a four zone Netafim Bioline drip dispersal field. The 3-dimensional "depth" filtration provided by Netafim disk filters help capture over 90% of the particles in the water, ensuring years of trouble free system operation. The Netafim Bioline drip tubing features 0.6 GPH pressure compensating, continuous self-flushing drippers. The drippers are impregnated with Vinyzene®, a chemical specifically designed to keep microbial slime build-ups on the drippers to a minimum. The result is an incredibly well-balanced flow of effluent into the soil thanks to the pressure compensating design and self-flushing feature of the Bioline drippers. Dripper spacing in the dripperline is 24" and rows were also placed on 24" centers.

The Hoot Control Center operates the Lighthouse Beacon Filtration System. The filter not only performs effluent filtration, but automatically backflushes and performs scheduled field flush cycles as well. The zones are automatically advanced each time the system doses ensuring even distribution. If low levels of water usage are observed, the system can utilize just one zone to encourage plant growth.



The incorporation of this innovative, on-site wastewater system is a testament to the acceptance of on-site as a long term treatment solution. The owners' incorporation of environmentally sensitive approaches to their new home are examples of what individuals can do to create a better place for all of us to live.

This home, near Crawford, Texas is also known as "the Texas White House." It is the private residence of George W. and Laura Bush.



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