

ERTEC Environmental Systems

Protecting Global Lands and Waterways™

Case Study E-Fence™

Wildlife Exclusion and
Sediment Control



- > Lower Project Costs
- > Better Performance
- > ZERO Waste
 - ✓ Reusable
 - ✓ Recyclable



E-Fence HDPE Polymer Matrix



E-Fence™ installation contractor



Application:

Wildlife Exclusion and Sediment Control

Product:

ERTEC E-Fence™, 48" (1.22 m), black with climber barrier and sediment control for temporary installation

Project/Builder:

Large Private Residence Construction

Region:

Southwestern Ontario, Canada

Species at Risk:

Eastern foxsnake (*Pantherophis gloydi*), Northern map turtle (*Graptemys geographica*), Common snapping turtle (*Chelydra serpentina*), Blanding's turtle (*Emydoidea blandingii*), Butler's garter snake (*Thamnophis butleri*)

ERTEC E-Fence is a highly reliable and low cost species exclusion and control barrier designed for projects in habitat where threatened small vertebrates are present. The fence is designed to exclude small vertebrate species from active construction areas, control movement within fragmented habitat and for survey perimeter control. E-Fence has the capability to serve more than one function. For this project the owner decided to eliminate the need for additional fence lines by installing two functions in the same fence line: 1) Wildlife exclusion, and 2) Sediment Control using ERTEC's revolutionary sediment control systems.



- Typically cuts first project costs significantly. If reused on subsequent projects, the savings are dramatic.
- Highly configurable for different species and habitat
- Allows wind and water flow-through and significantly reduces knock-downs, and washouts.

Project Background and Location: Custom Home Builder: Bouma Builders, Custom Residence Construction, Lighthouse Cove, Southwestern ON (Thames River at Lake St. Clair). Civil/Bio: MTE Consultants.

Determinant Species: Eastern foxsnake (*Pantherophis gloydi*)

Configuration: E-Fence Black, 48" (1.23 m) width. Trenched 6" (15 cm). Climber Barrier Top Lip 8" (20 cm) In the same trench with E-Fence, ERTEC S-Fence 12" (30 cm) was installed for sediment control.

The Challenge: This site was expected to see frequent high winds. The current Best Management Practice recommends a very expensive two-meter-high fence which is lumber-framed, lumber-braced, wire-backed and geotextile-covered. Geotextile fences are fraught with very high total project costs and ongoing maintenance difficulty. Geotextiles tend to fail from or during wind and rain events or from longer-term (6 months) UV exposure. It is common to find these geotextile fences either riddled with holes or with locations along the base where it has been undermined by stormwater flows (see photos, Appendix A). Geotextile/Lumber fences are known to be highly unreliable. E-Fence does not suffer these same issues.



E-Fence Sediment Control Panel

Dual Function: Sediment Control: E-Fence Sediment Control Panel is a high performance and approved substitute for silt fence and wattle. It installs into the same trench as E-Fence eliminating the need for a separate silt fence or wattle. Further savings can be achieved with Triple Function E-Fence which features high visibility orange fence material which adds a construction safety fence and a third function into the same fence line.

Technical Support Distributor
for Projects in this Region



Several U.S. and Int'l patents apply

H372645 updated: 10/1120

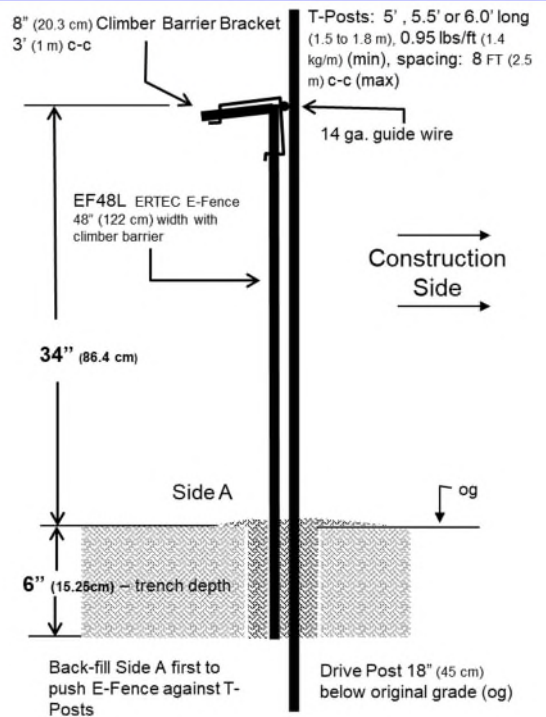
ERTEC Environmental Systems

1150 Ballena Blvd. Suite 250, Alameda, CA 94501
phone: 510-521-0724, fax: 510-521-3972
sales@ertecsystems.com, www.ertecsystems.com

© 2020 ERTEC Environmental Systems
Case Study—E-Fence™
Residential Construction—Ontario, Canada
Wildlife Barriers—page 1 of 2



E-Fence 48" (1.22 m) with 8" (20 cm) climber barrier with Sediment Control Panel installed on Construction Side



E-Fence™ with a 8" climber barrier configured for the Eastern foxsnake

E-Fence Anti-Climb Features: In live tests at Scales Nature Park in Ontario, Canada, Eastern foxsnakes (Pb) were not able to climb over E-Fence with a climber barrier. The snakes were unable to reach the top of the fence. Three aspects enhance the safety factor of E-Fence versus the current standard practice of 2-meter high geotextile fence for the protection of Pb: 1) Pb individuals were not even able to reach the climber barrier. 2) The surface of E-Fence has a very low friction coefficient by design. The snakes were not able to establish suitable contact with the fence in order to climb. They were observed to rise to a certain point but then collapse to the right or to the left. The E-Fence Rigid Polymer Matrix™ strand angle contributes to the difficulty in climbing. Additionally, unlike mesh fences (such as metal mesh or geotextile mesh) on which the snakes could apply their scales to the ladder structure, E-Fence polymer matrix presents itself at sharp strand angles which tend to drive climbers to the right or to the left and down. The snakes could not find leverage to climb. 3) The very high reliability (high functional longevity) of E-Fence (almost no stormwater washouts, or wind knock-downs) as compared to traditional systems leaves significantly less opportunity for a Pb to find a gap in the perimeter barrier and migrate onto a construction site. [Link to climbing study](#)

High Wind and Storm Water Flows: The coefficient of drag (Cd) was evaluated for both E-Fence (which is at least 50% open area) and solid type exclusion fences (such as geotextile or solid plastic types). [Link to wind study](#). A very large difference in Cd was evident. Drag forces on E-Fence are dramatically reduced (less than 10% of that found with solid fences). For this reason, we see that solid fences must withstand much greater wind-driven forces and pressure. The greater pressure and forces on solid fences dramatically reduce their reliability leading to premature failure.

E-Fence™ allows high wind and concentrated stormwater flow-through

Stormwater runoff will cause geotextile or solid type exclusion barriers to fail in two modes: 1) if installed along contours, head-pressure from ponding against the barrier can penetrate weak points along the trench. Storm water flows will then concentrate and flow underneath causing unwanted and sometimes severe land erosion. Ponding upstream of the fence occurs because the barrier's Percentage Open Area (POA) is very low, causing it to block flow quickly, 2) if solid barriers are installed up and down contours (which is routinely required), runoff will collect and concentrate along the barrier as it flows downhill. Runoff will scour out the base of the barrier, creating loss of integrity. Weep holes drilled or formed into solid barriers will not allow enough water to flow through (POA is often less than 1%). Weep holes will plug and block flow very quickly in stormwater events. To control damage, E-Fence is designed with 50% POA, and with a flow rate greater than 600 gallons/ft²/min. [E-Fence Rigid Polymer Matrix™](#) allows stormwater to flow through. It provides very high reliability because there is almost no storm-water washouts nor wind knock-downs. This significantly reduces maintenance and monitoring costs and increases animal safety. [Link to Key Design Factors for Wildlife Exclusion Fence](#).

Summary: "E-Fence™ is a much better solution than the other options. I feel its easy to monitor, and if for some reason maintenance is required, it will be easy to maintain." - Will Huys MTE Consultants



**E-Fence with Sediment Control Panel
Sediment capture post storm**



E-Fence with sediment control in the same trench, eliminating the need for a separate silt fence or wattle