

Lake Rip Rap, Inc.

Macoupin Mechanical Boats

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“Setting the stage for a natural shoreline healing”

Lake Rip Rap, Inc.

2010 Illinois Lake Management Convention



“Erosion Control for Residential Shorelines”

“Erosion Control for Residential Shorelines”

Seawall Maintenance

An Alternative to Seawalls

Unusual Methods

Shoreline Patios

Soil Filled Revetment with Native Seeding

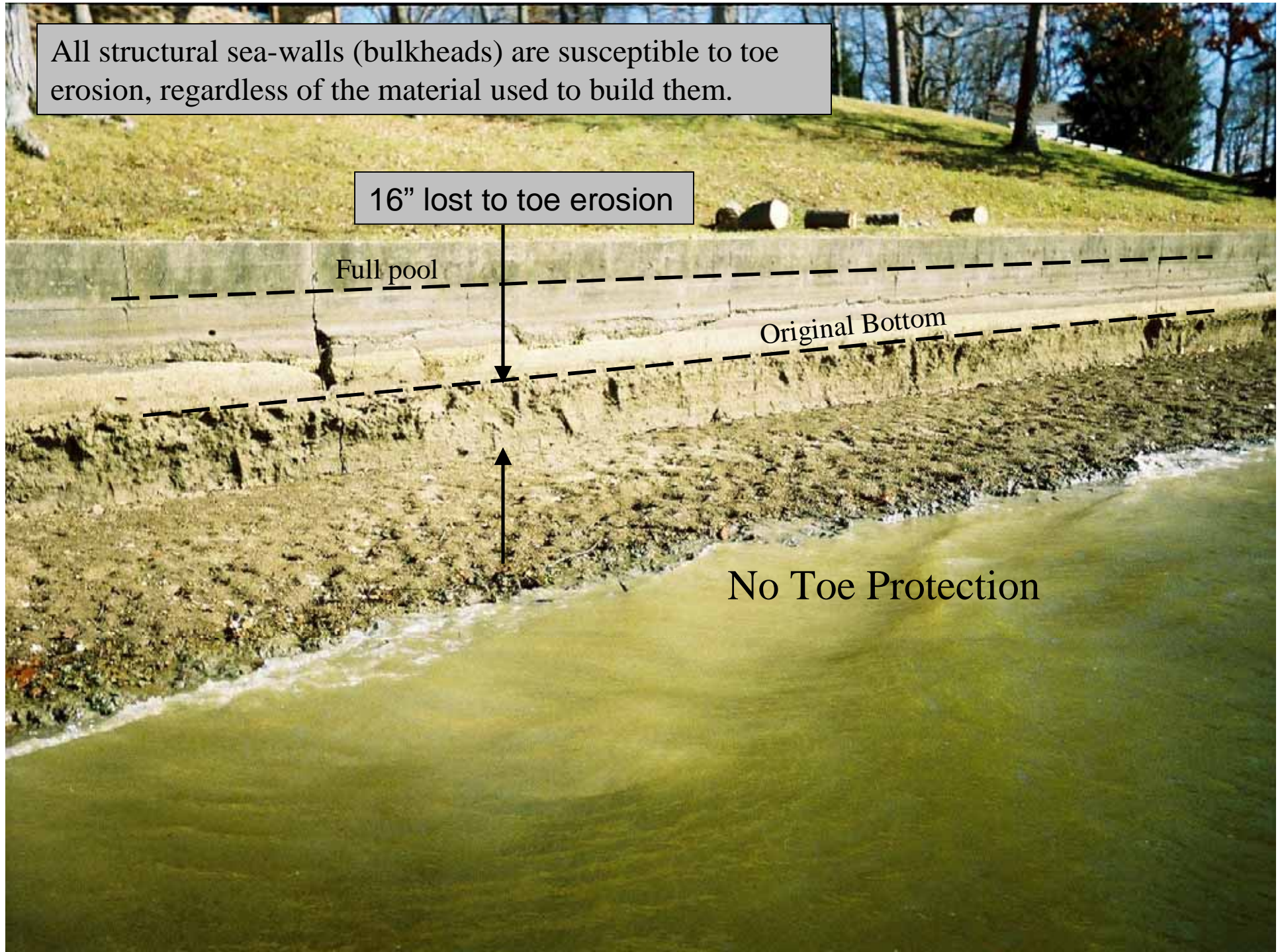
Lean Revetments

Mechanical Riprap Boats

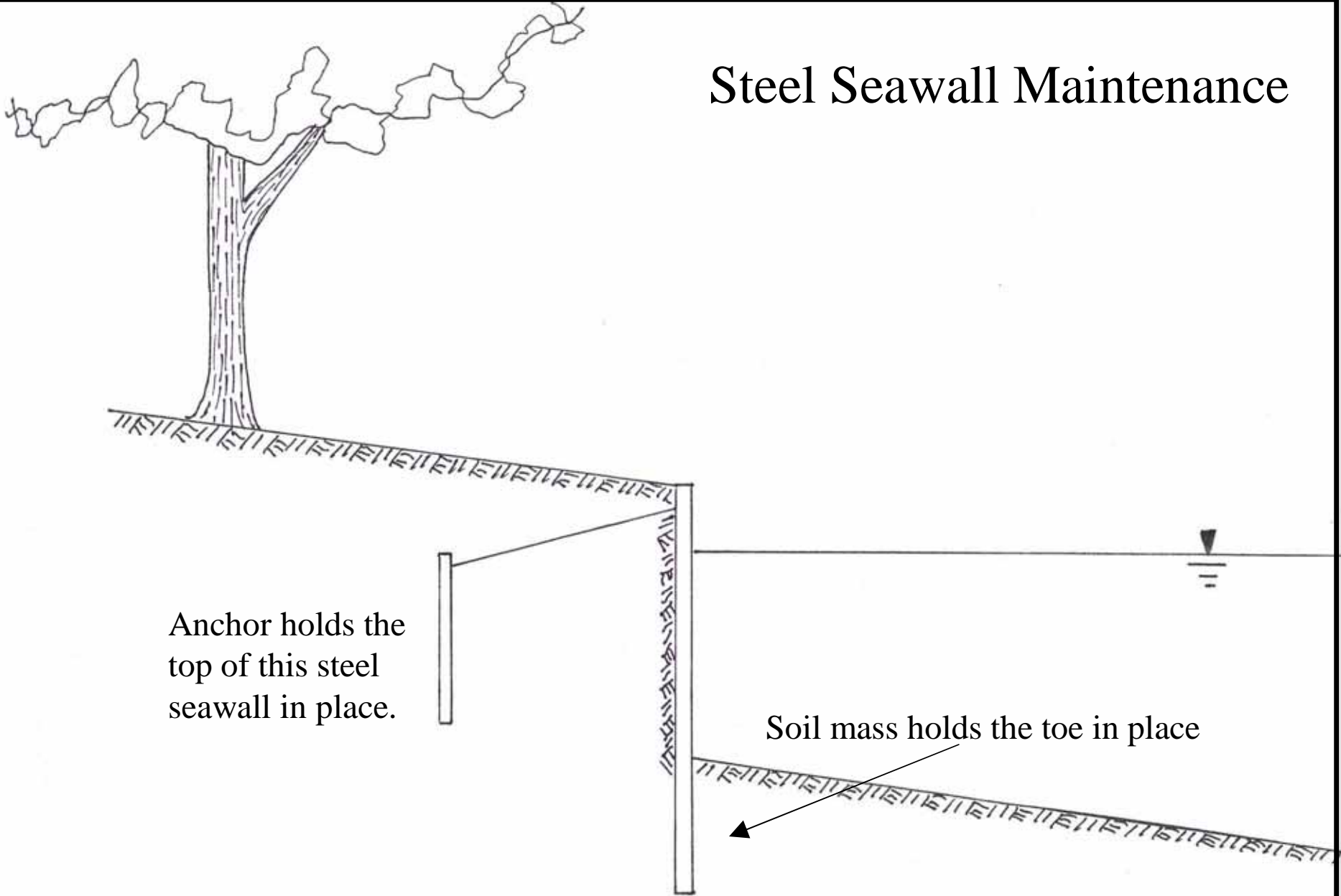


Steel Seawall Maintenance

All structural sea-walls (bulkheads) are susceptible to toe erosion, regardless of the material used to build them.



Steel Seawall Maintenance

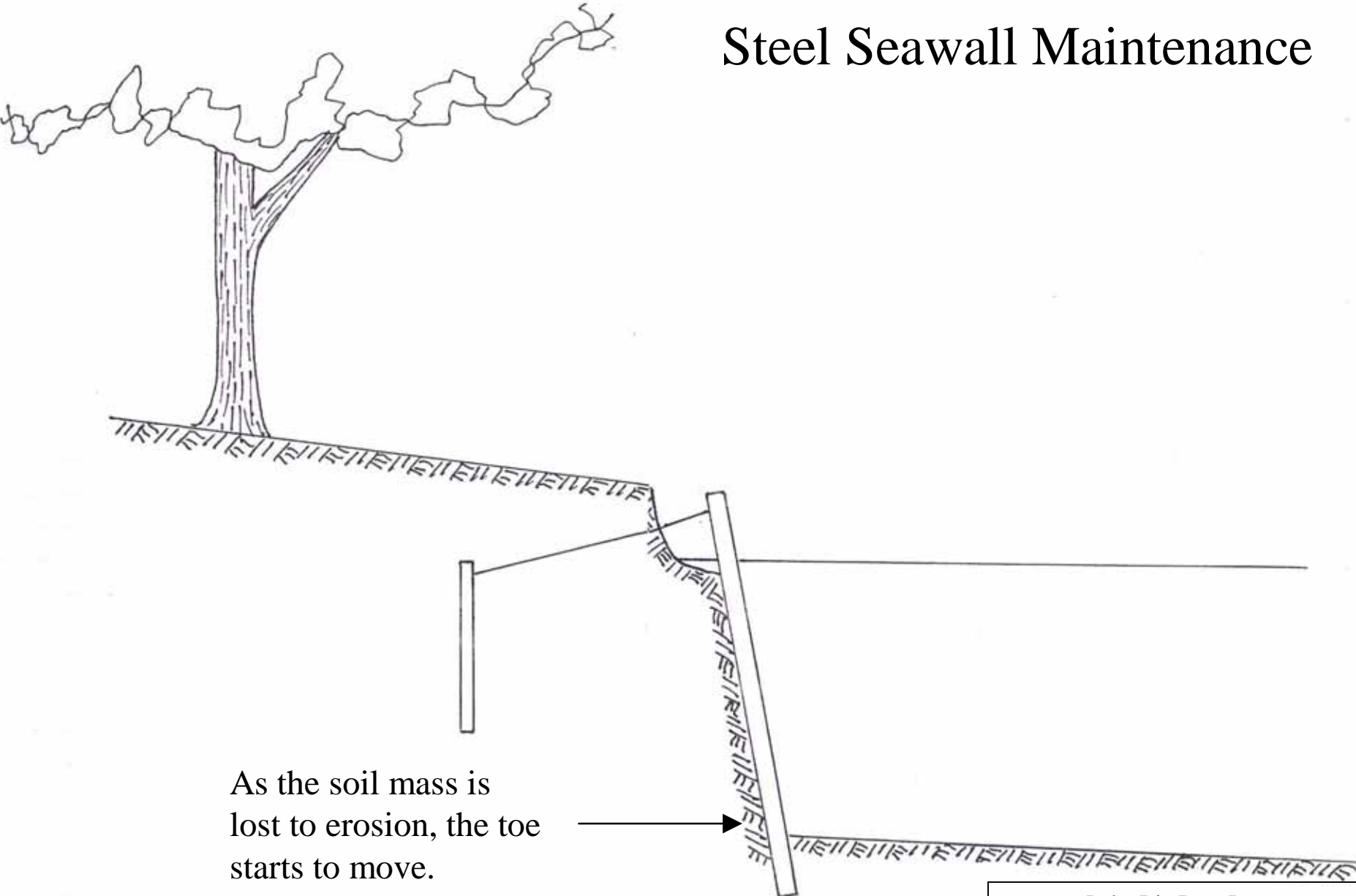


Anchor holds the top of this steel seawall in place.

Soil mass holds the toe in place

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Hank Sutton	Jan. 15, 2010

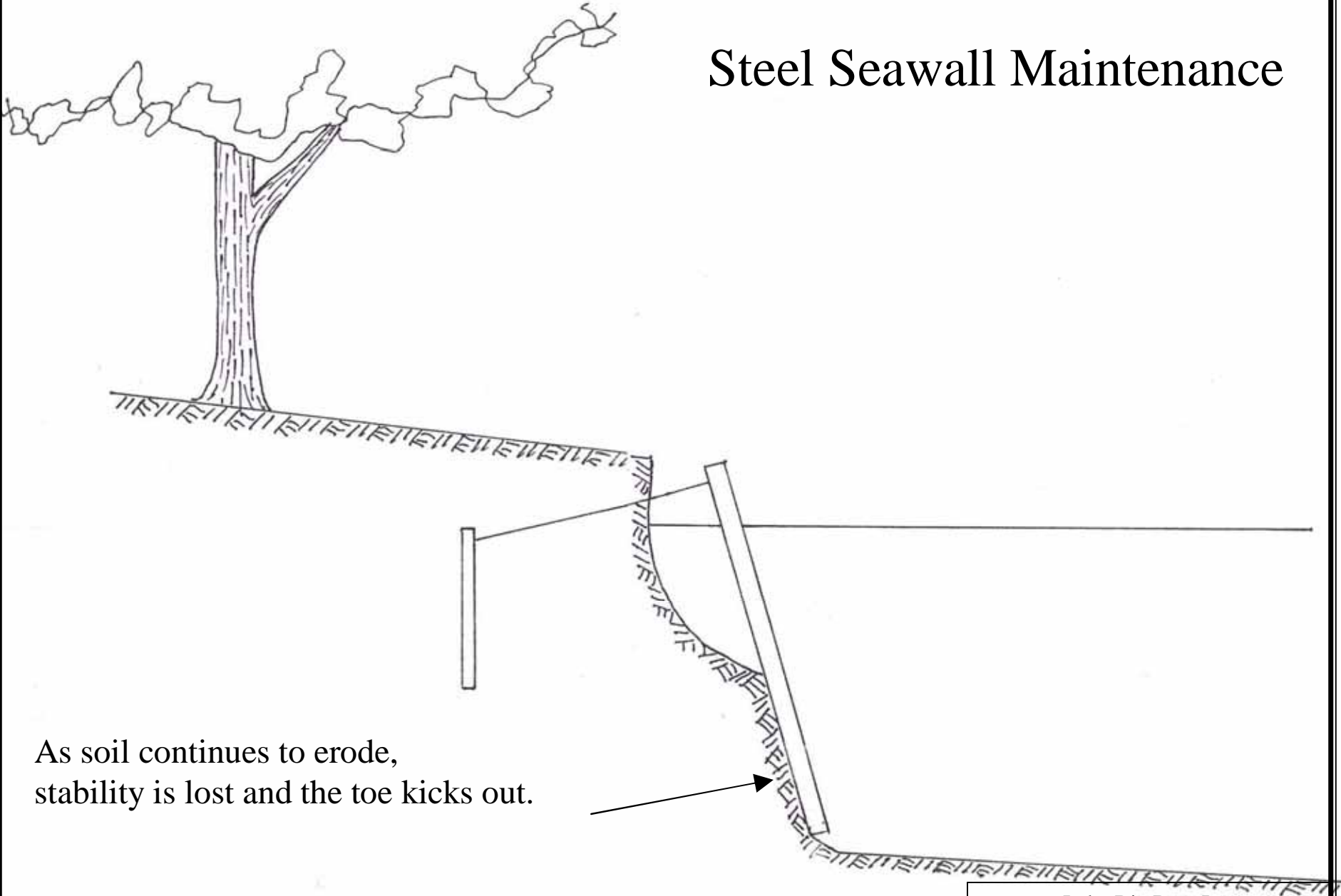
Steel Seawall Maintenance



As the soil mass is lost to erosion, the toe starts to move.

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Hank Sutton	Jan. 15, 2010

Steel Seawall Maintenance



As soil continues to erode, stability is lost and the toe kicks out.

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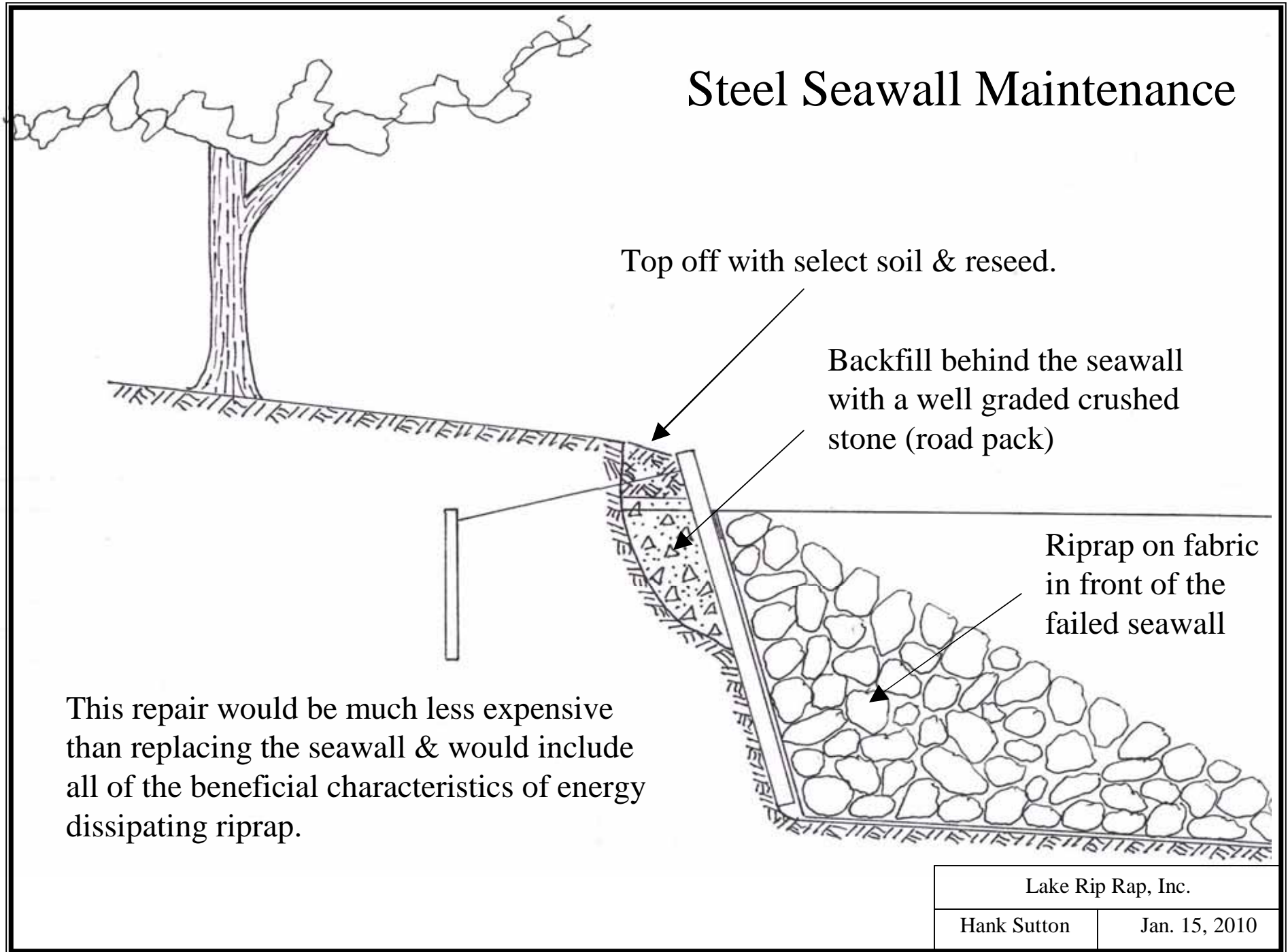
Steel Seawall Maintenance

Top off with select soil & reseed.

Backfill behind the seawall with a well graded crushed stone (road pack)

Riprap on fabric in front of the failed seawall

This repair would be much less expensive than replacing the seawall & would include all of the beneficial characteristics of energy dissipating riprap.

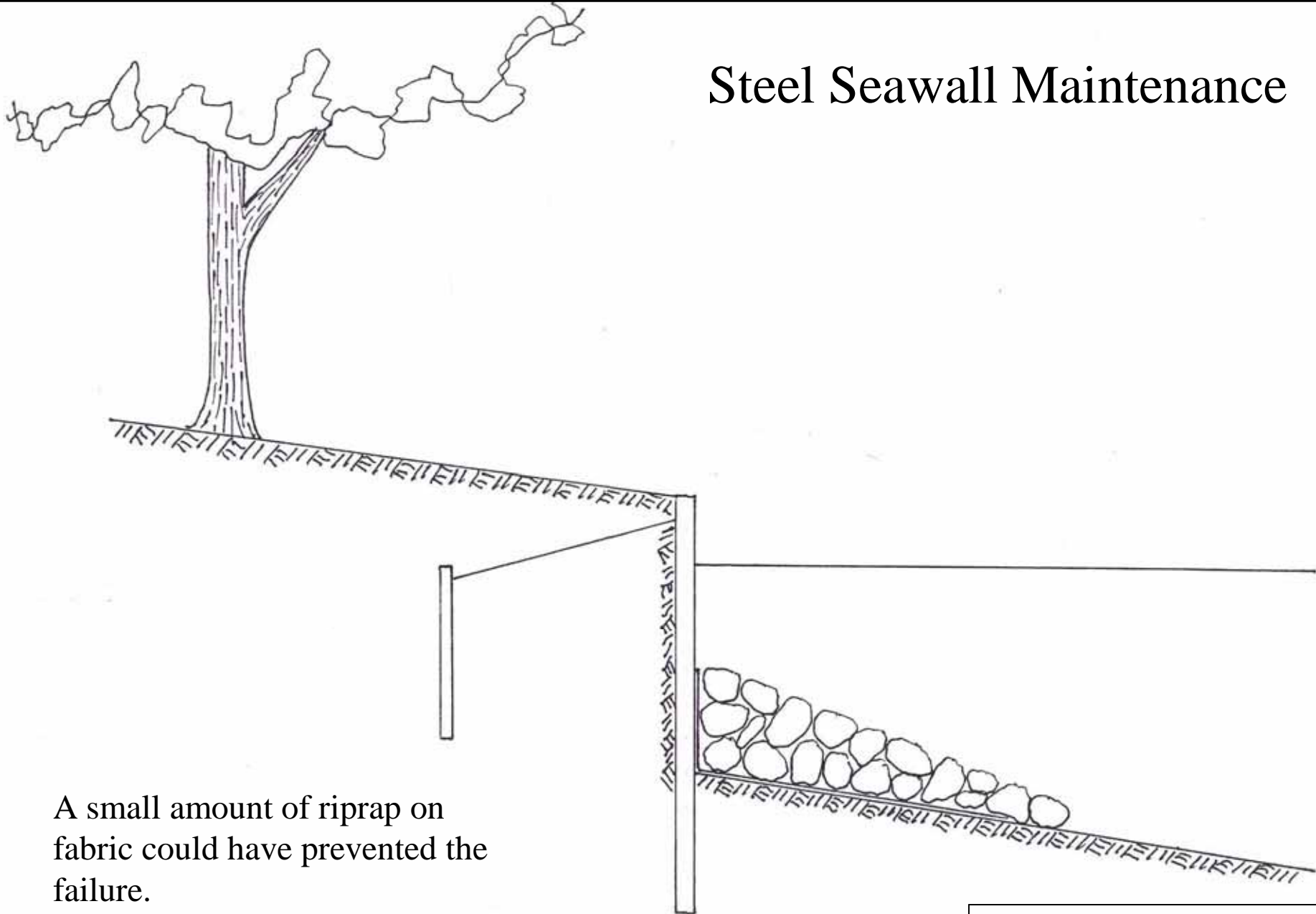


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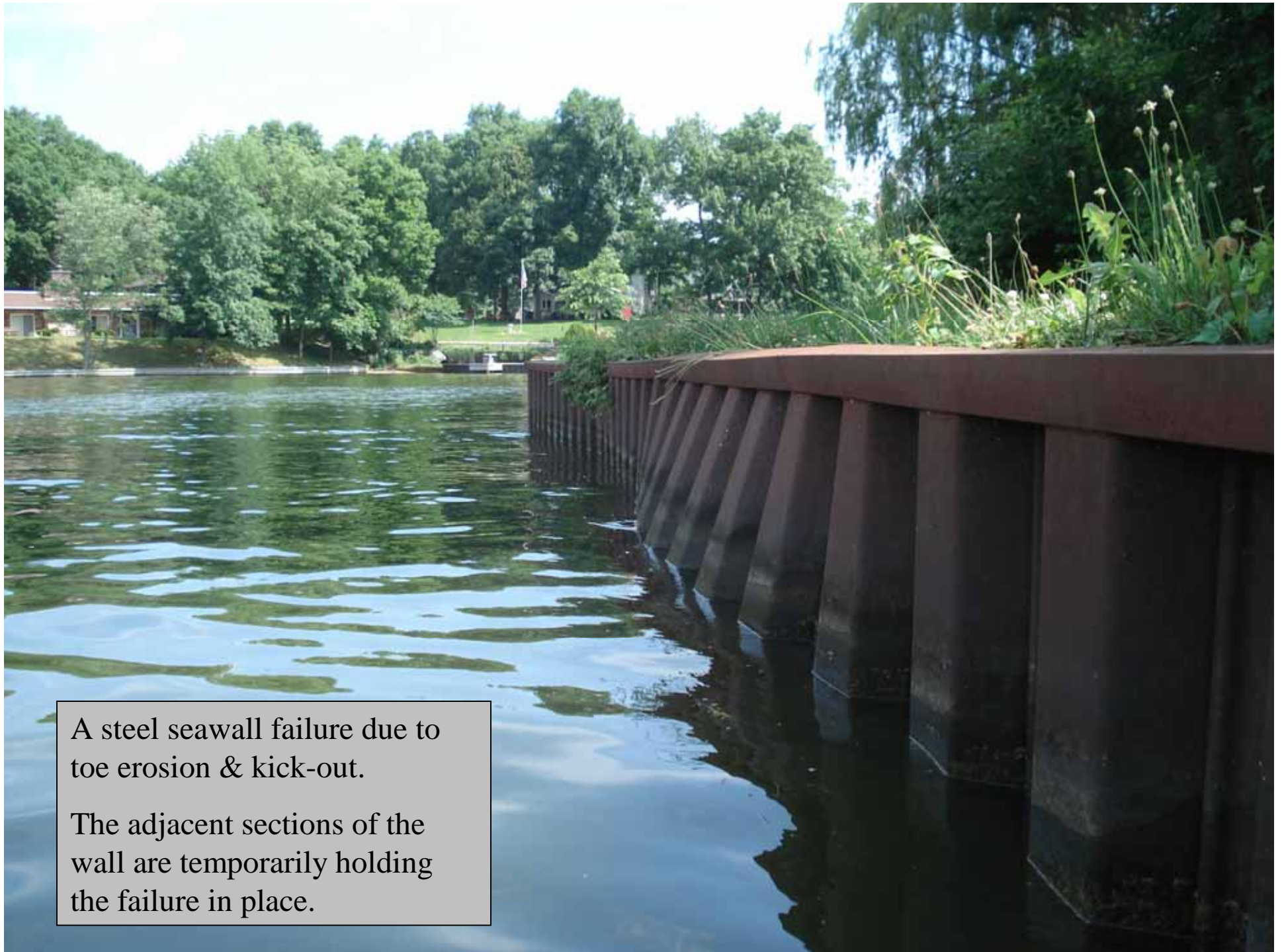
Jan. 15, 2010

Steel Seawall Maintenance



A small amount of riprap on fabric could have prevented the failure.

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Hank Sutton	Jan. 15, 2010



A steel seawall failure due to toe erosion & kick-out.

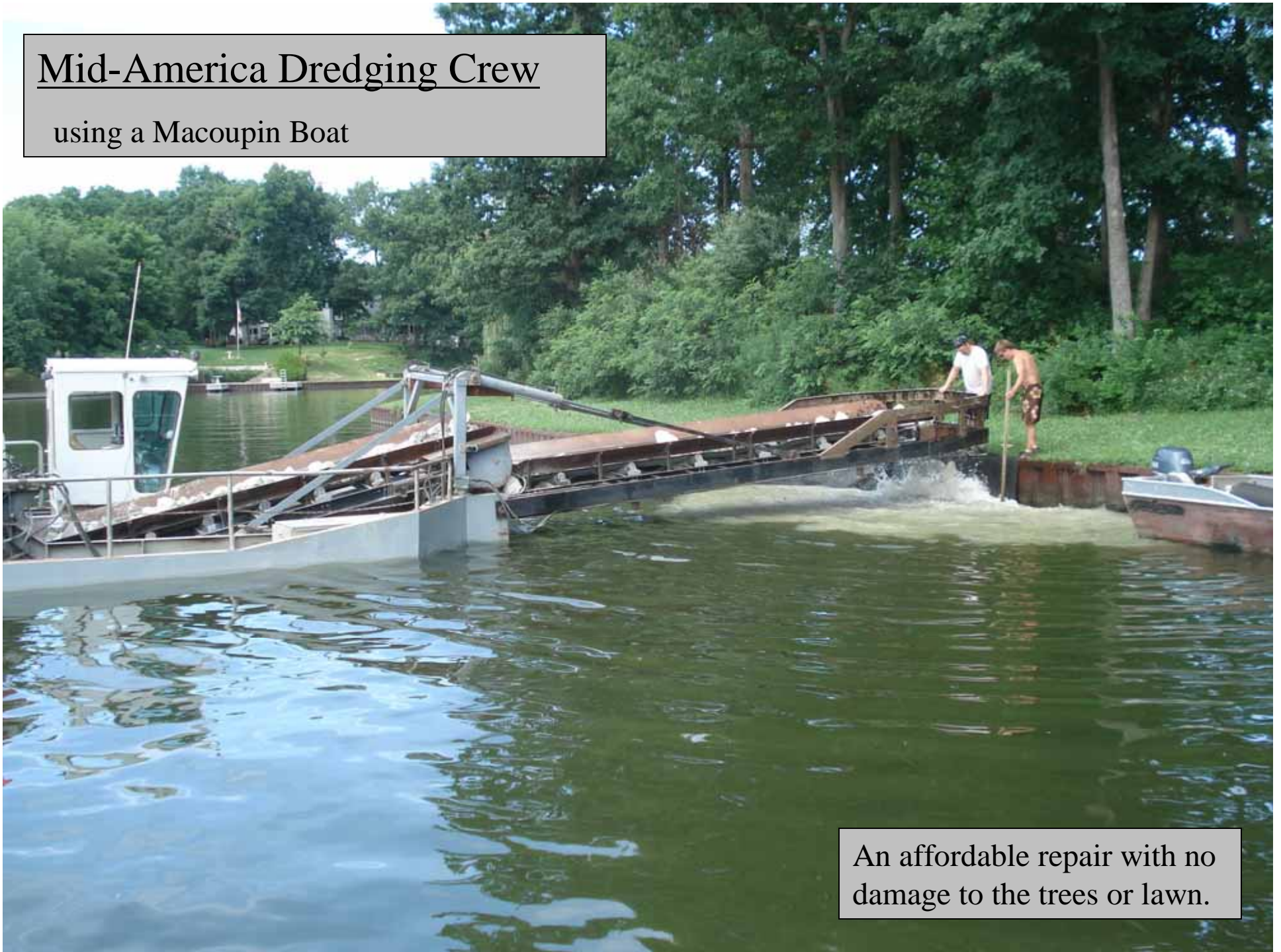
The adjacent sections of the wall are temporarily holding the failure in place.



Reverse Angle

Mid-America Dredging Crew

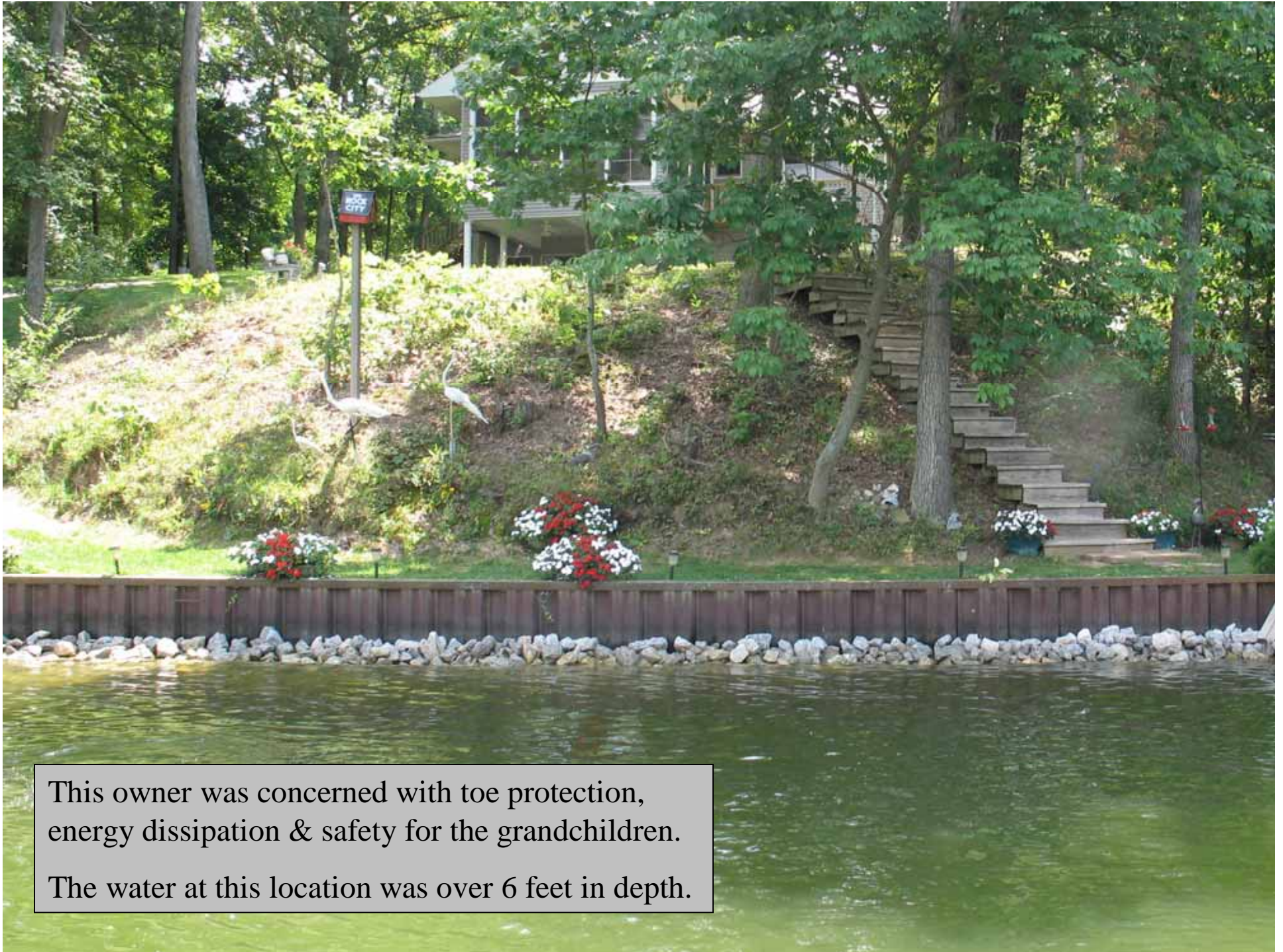
using a Macoupin Boat



An affordable repair with no damage to the trees or lawn.



Preventative Maintenance at Lake Wildwood



This owner was concerned with toe protection, energy dissipation & safety for the grandchildren. The water at this location was over 6 feet in depth.

Failing steel seawall under a boat house.





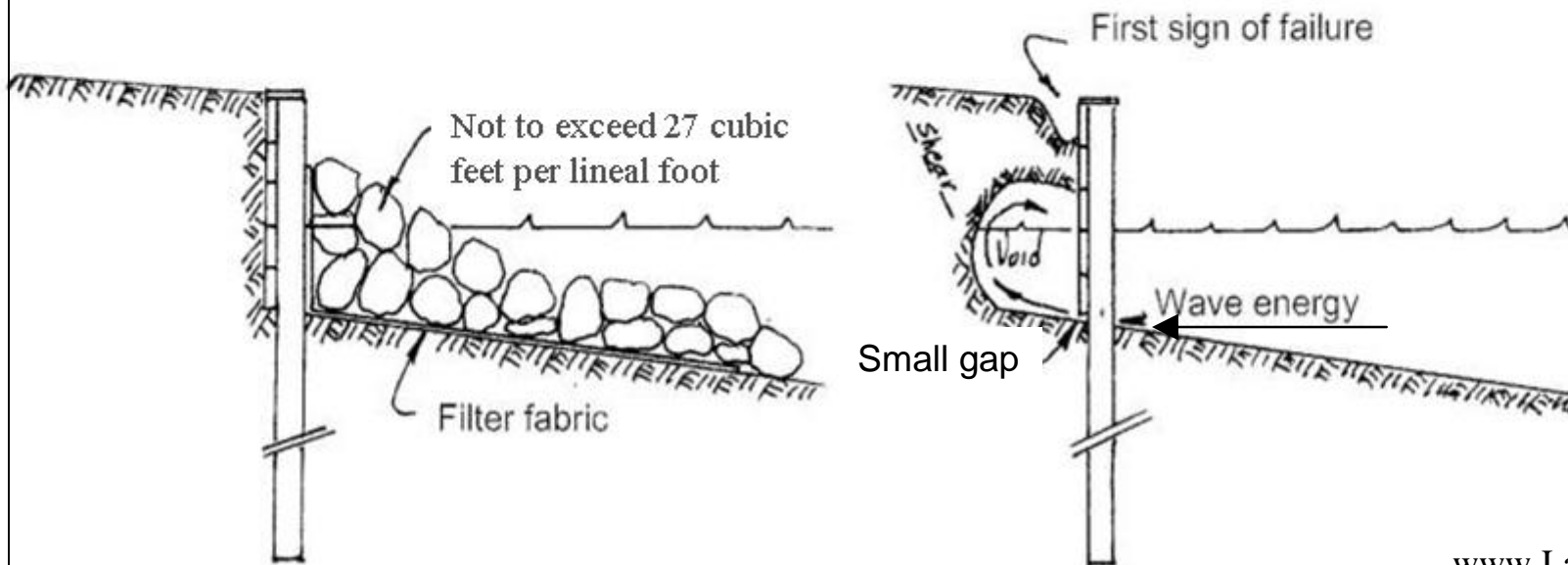
Soil loss behind the seawall



Rusted steel seawalls can be restored by an application of riprap in front of the wall.



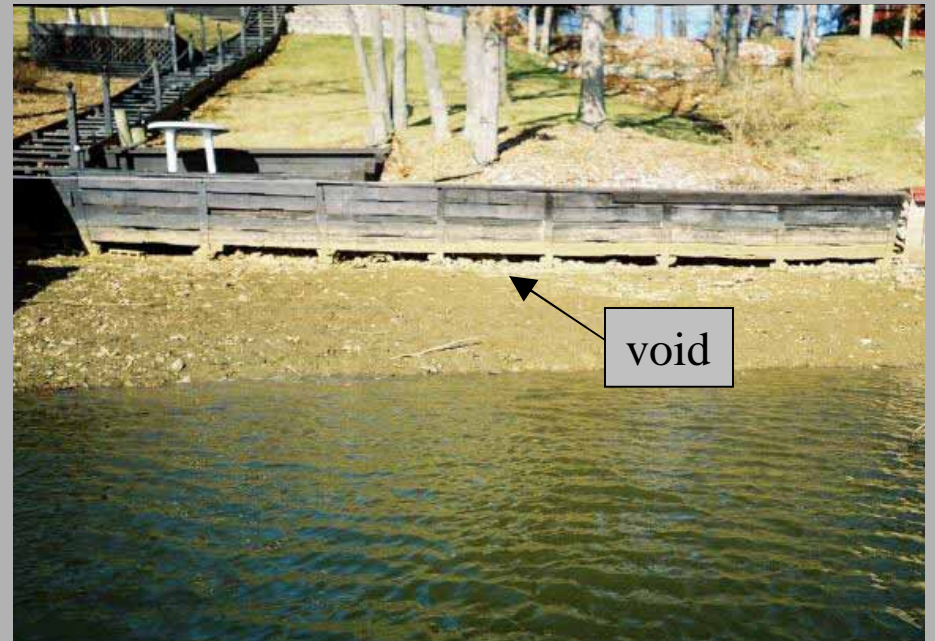
Toe Protection for wooden seawalls

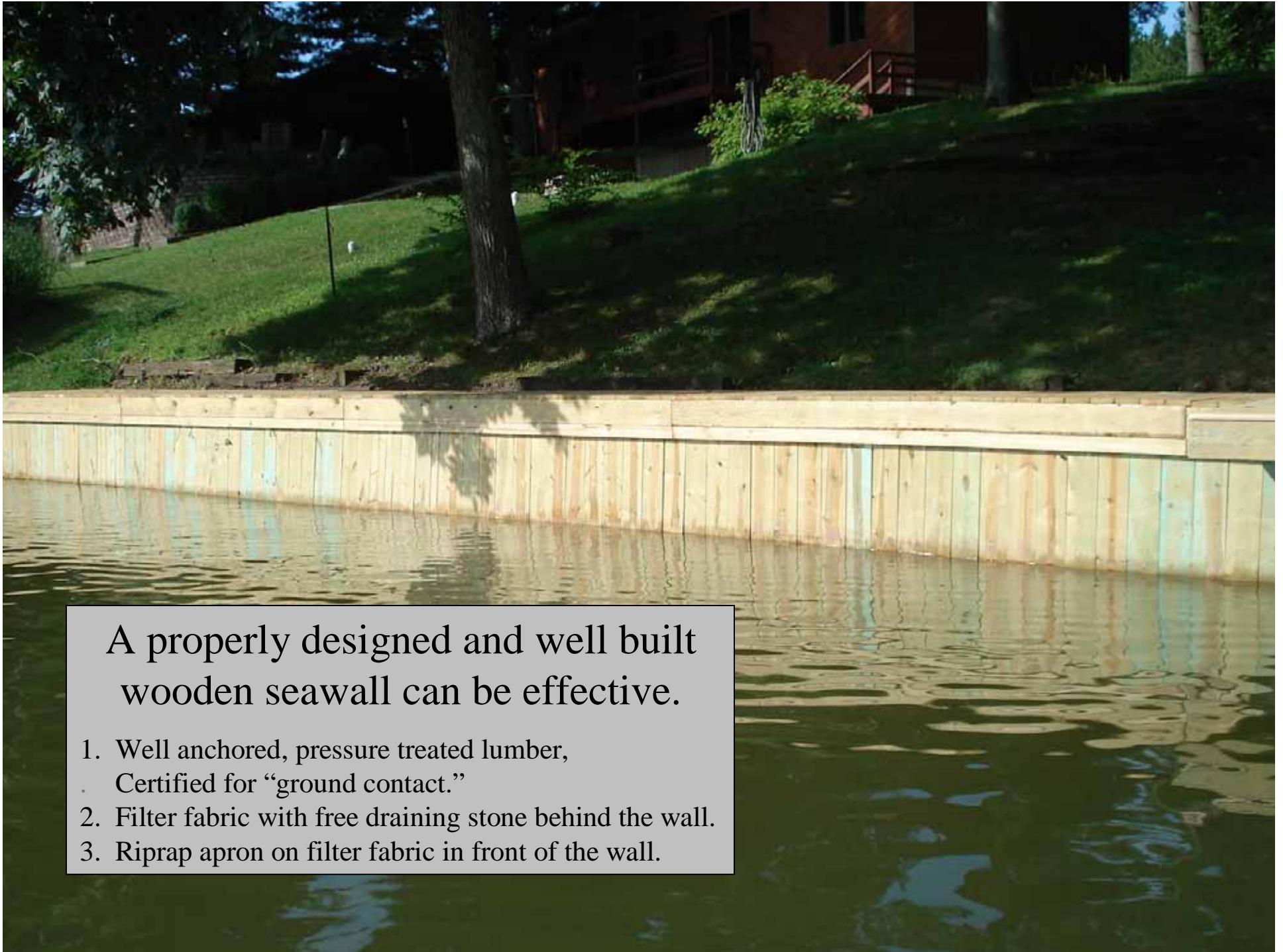


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Wooden seawalls lose their effectiveness with very little toe erosion.





A properly designed and well built wooden seawall can be effective.

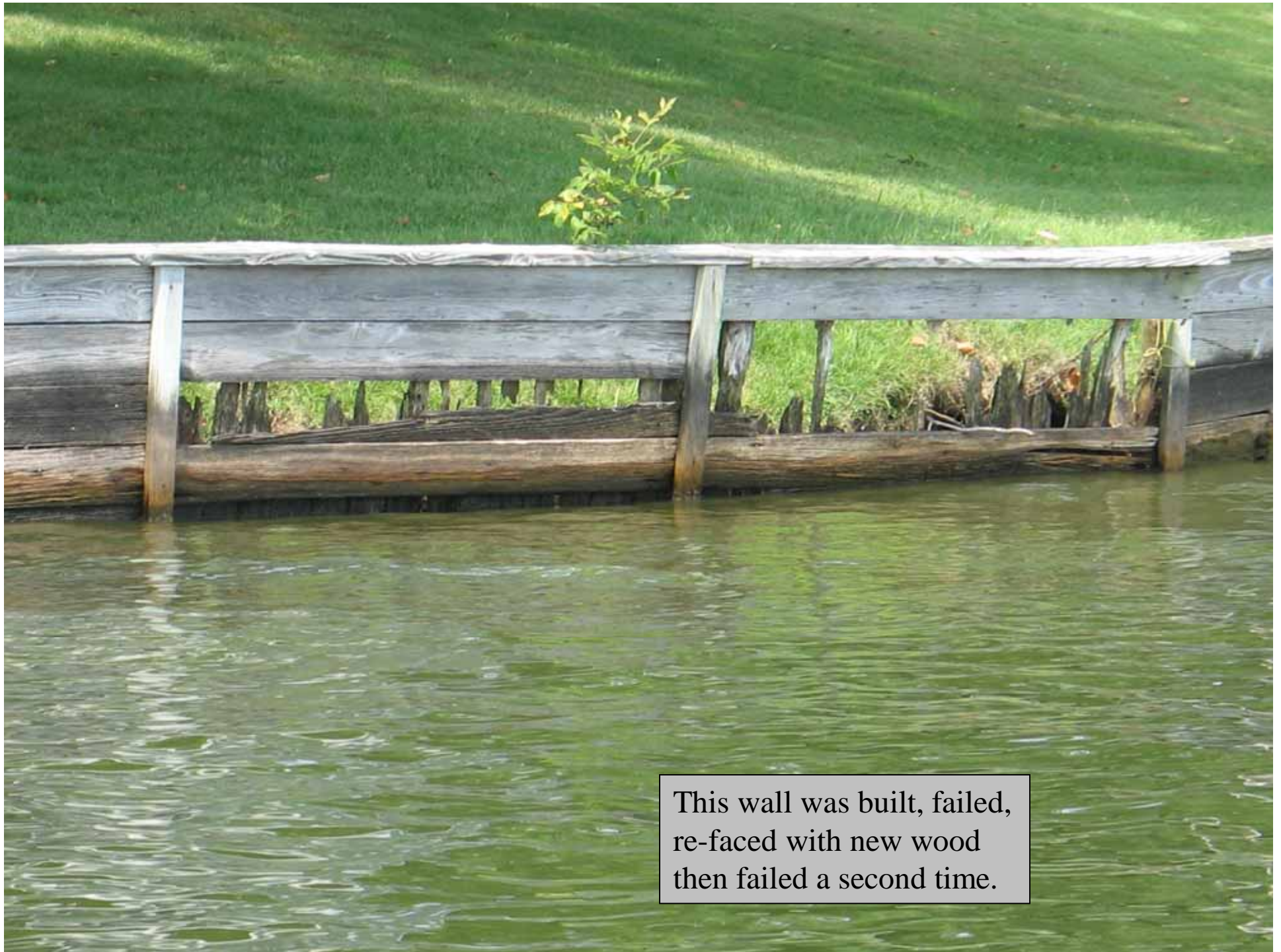
1. Well anchored, pressure treated lumber, Certified for “ground contact.”
2. Filter fabric with free draining stone behind the wall.
3. Riprap apron on filter fabric in front of the wall.



Failed Wooden Seawall



Failed Wooden Seawall

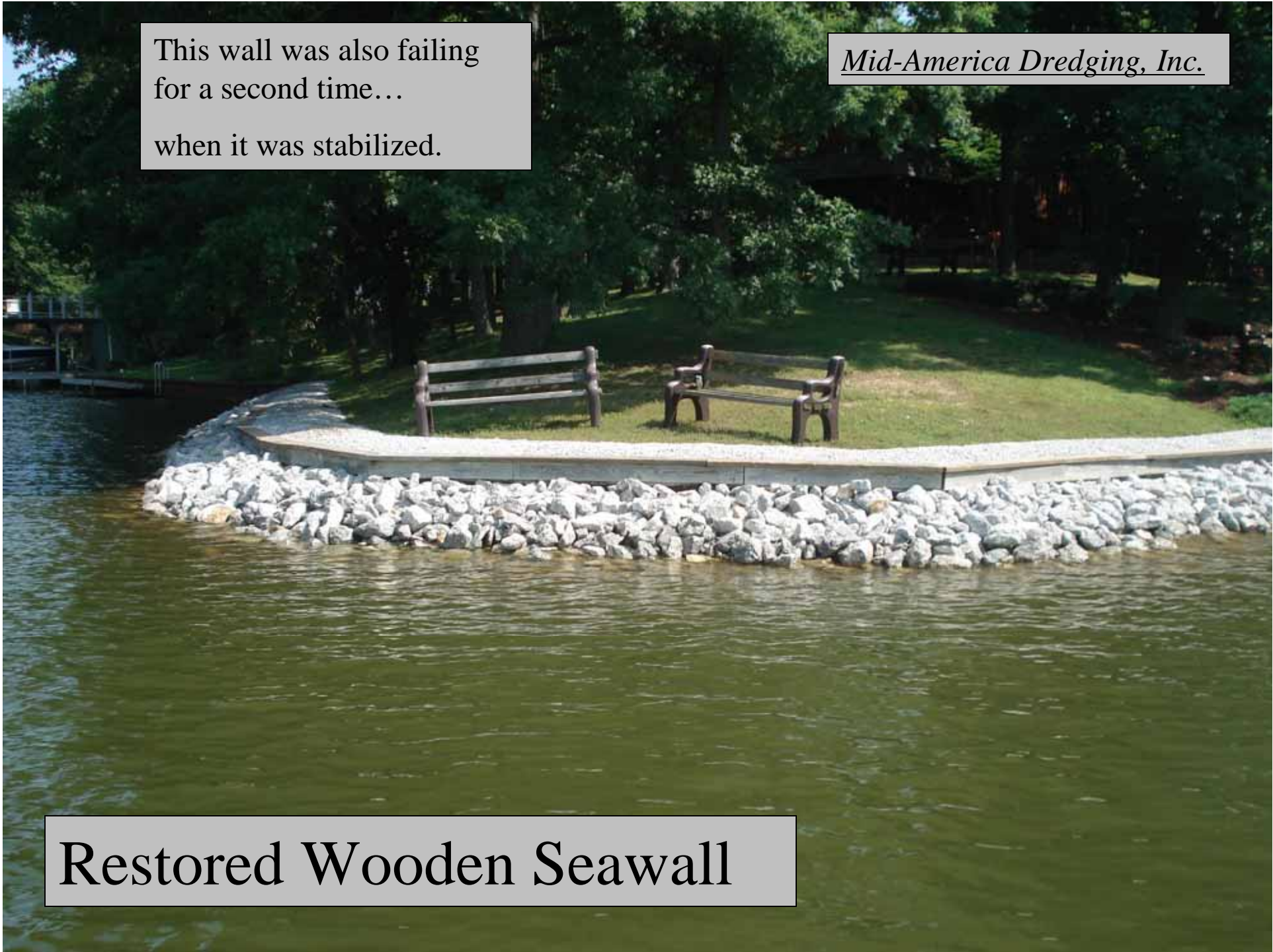


This wall was built, failed, re-faced with new wood then failed a second time.

This wall was also failing
for a second time...
when it was stabilized.

Mid-America Dredging, Inc.

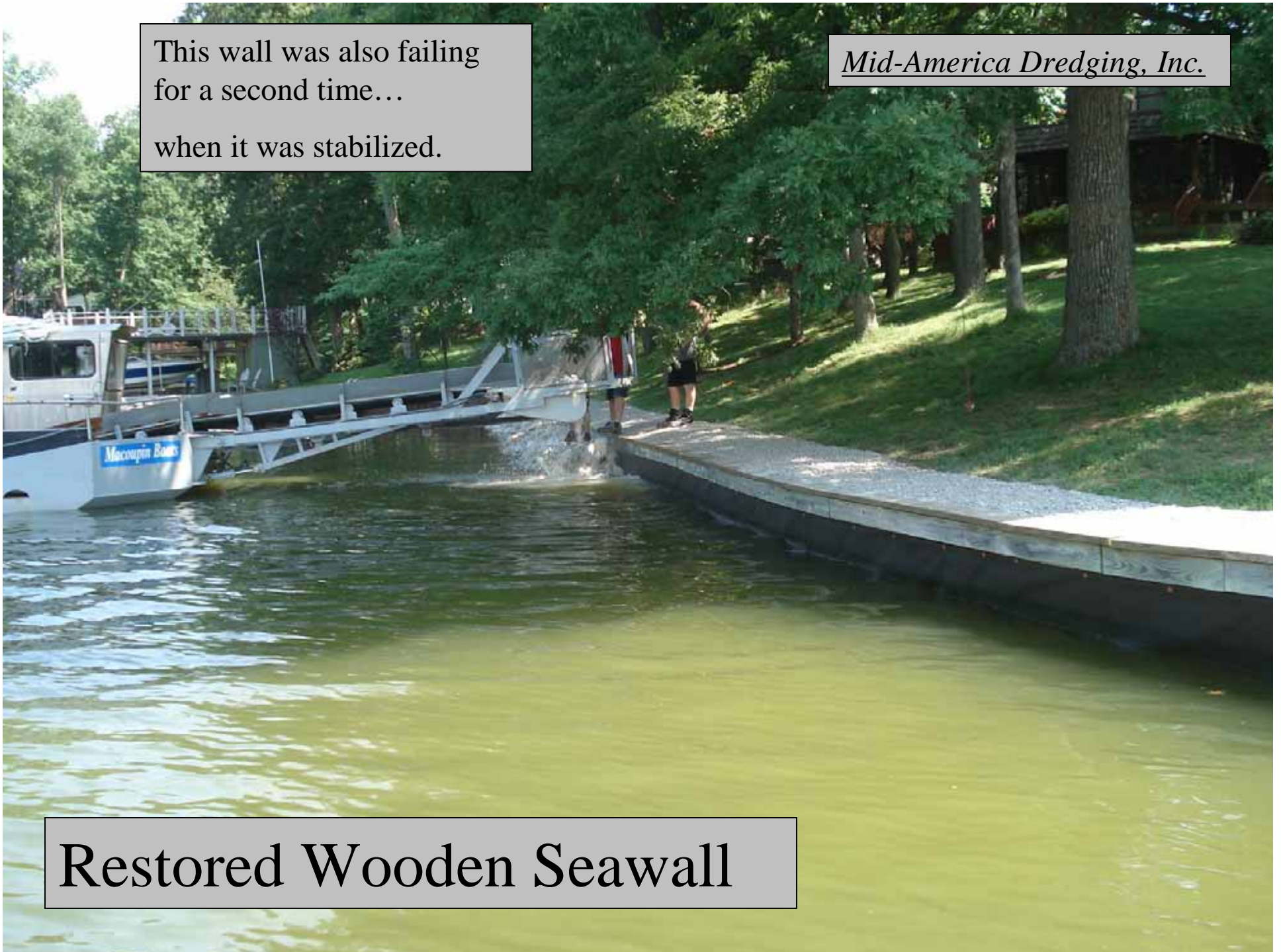
Restored Wooden Seawall

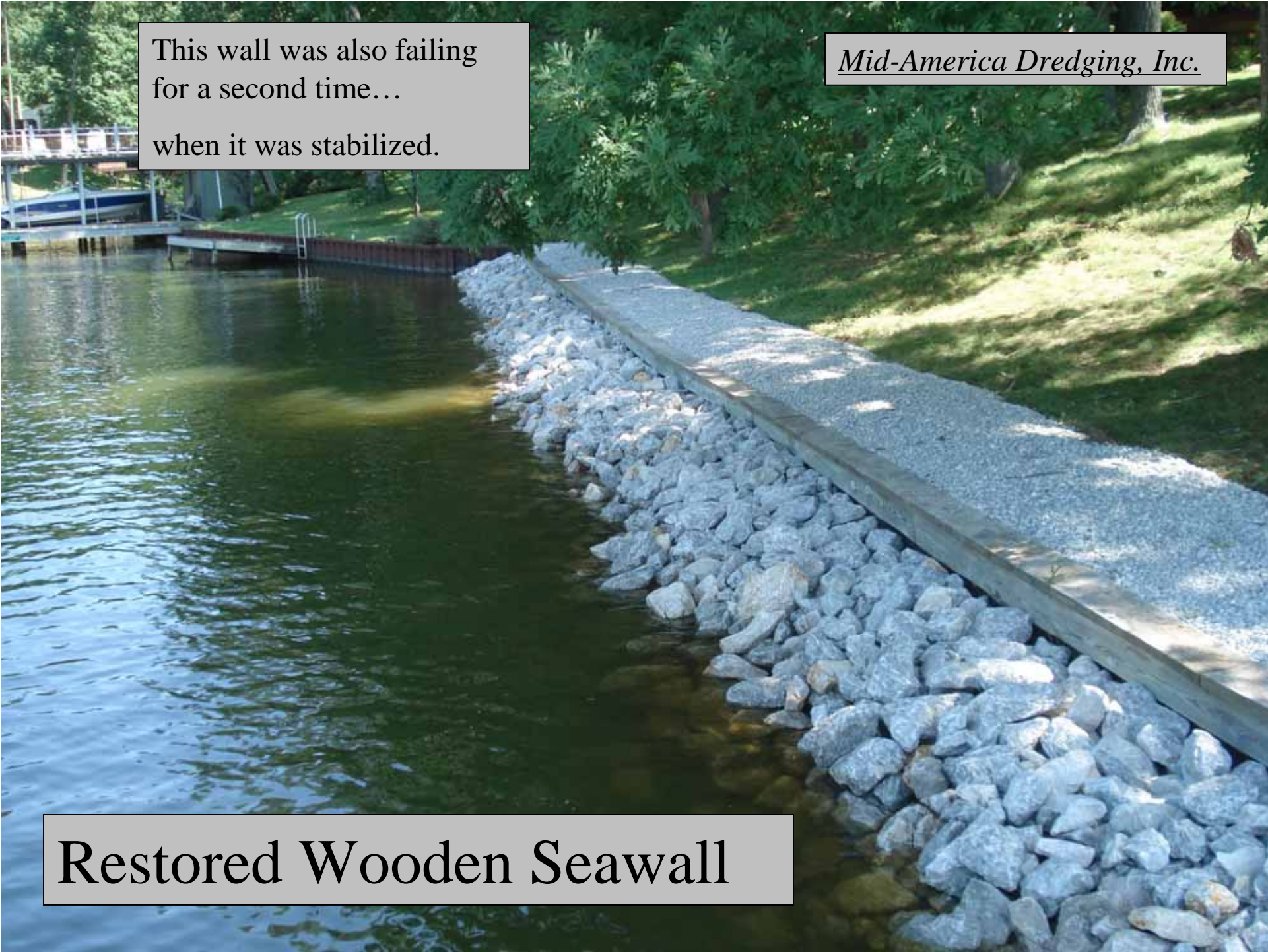


This wall was also failing
for a second time...
when it was stabilized.

Mid-America Dredging, Inc.

Restored Wooden Seawall

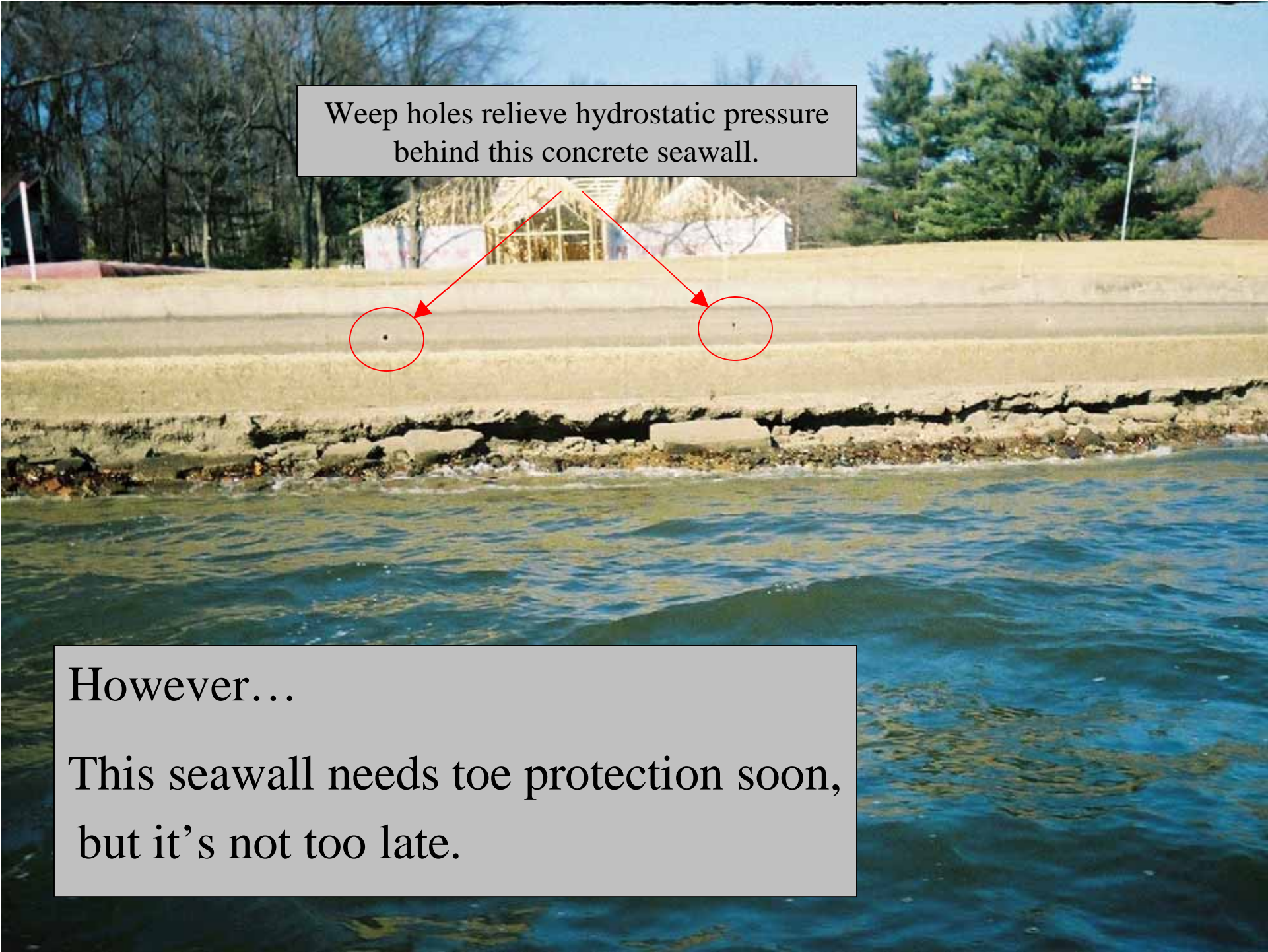




This wall was also failing
for a second time...
when it was stabilized.

Mid-America Dredging, Inc.

Restored Wooden Seawall



Weep holes relieve hydrostatic pressure
behind this concrete seawall.

However...

This seawall needs toe protection soon,
but it's not too late.

All seawalls (bulkheads)
need flexible toe protection.

A riprap apron on filter fabric provides
very economical toe protection for seawalls.

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Unusual Attempts to Control Shoreline Erosion



Recycled Highway Guard Rail



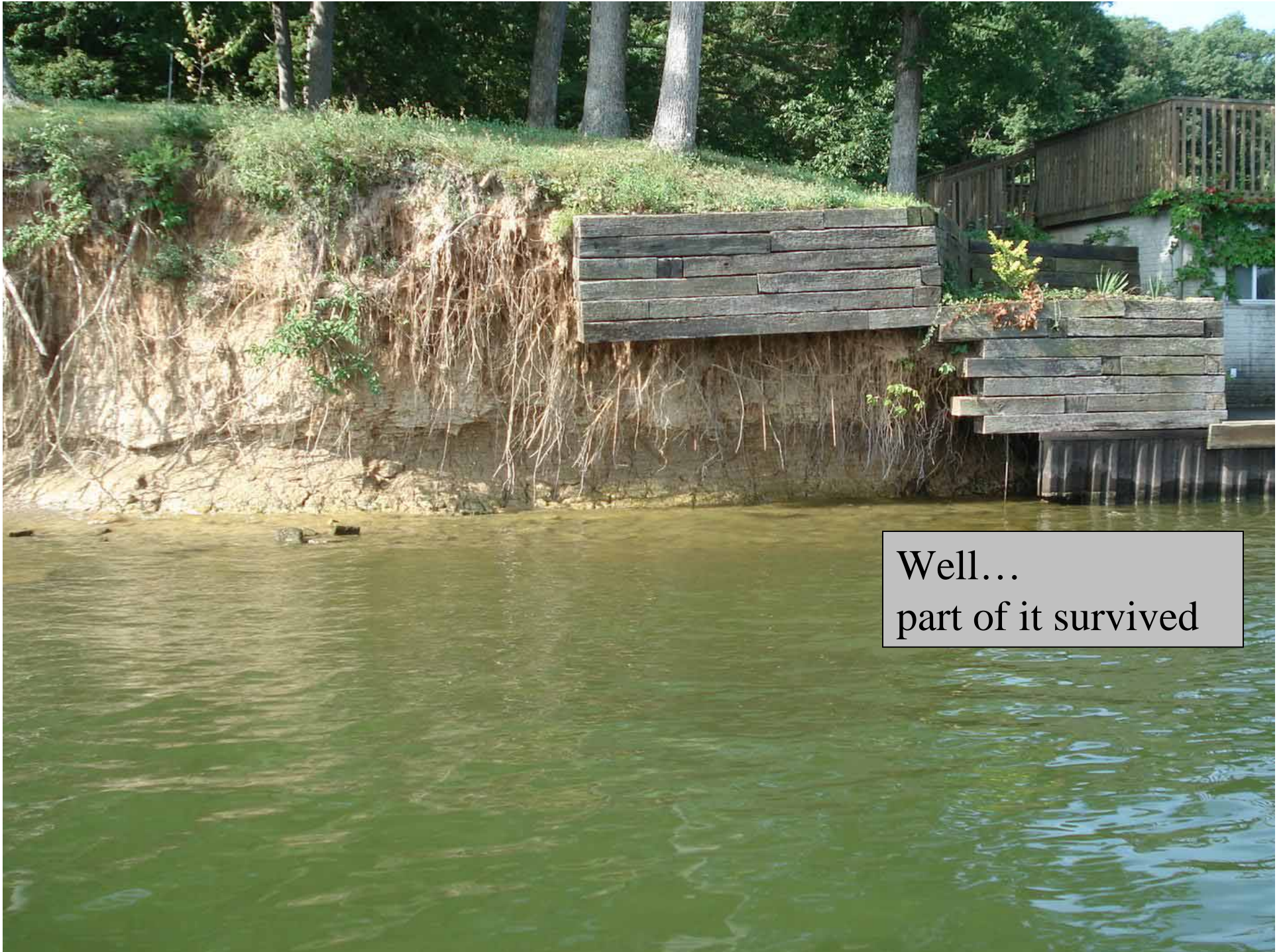
Typical results with a paved shoreline.



Typical results with a paved shoreline.



Riprap toe protection improves the effectiveness of this paved shoreline.



Well...
part of it survived



1989 - This property owner put a lot of time, effort & money into this shoreline, unfortunately, it was not effective.





Rail road ties, power poles,
mine belting & used car tires

1989 - This property owner put a lot of time, effort & money into this shoreline,
unfortunately, it was not effective.



1989



20 years after
riprap application



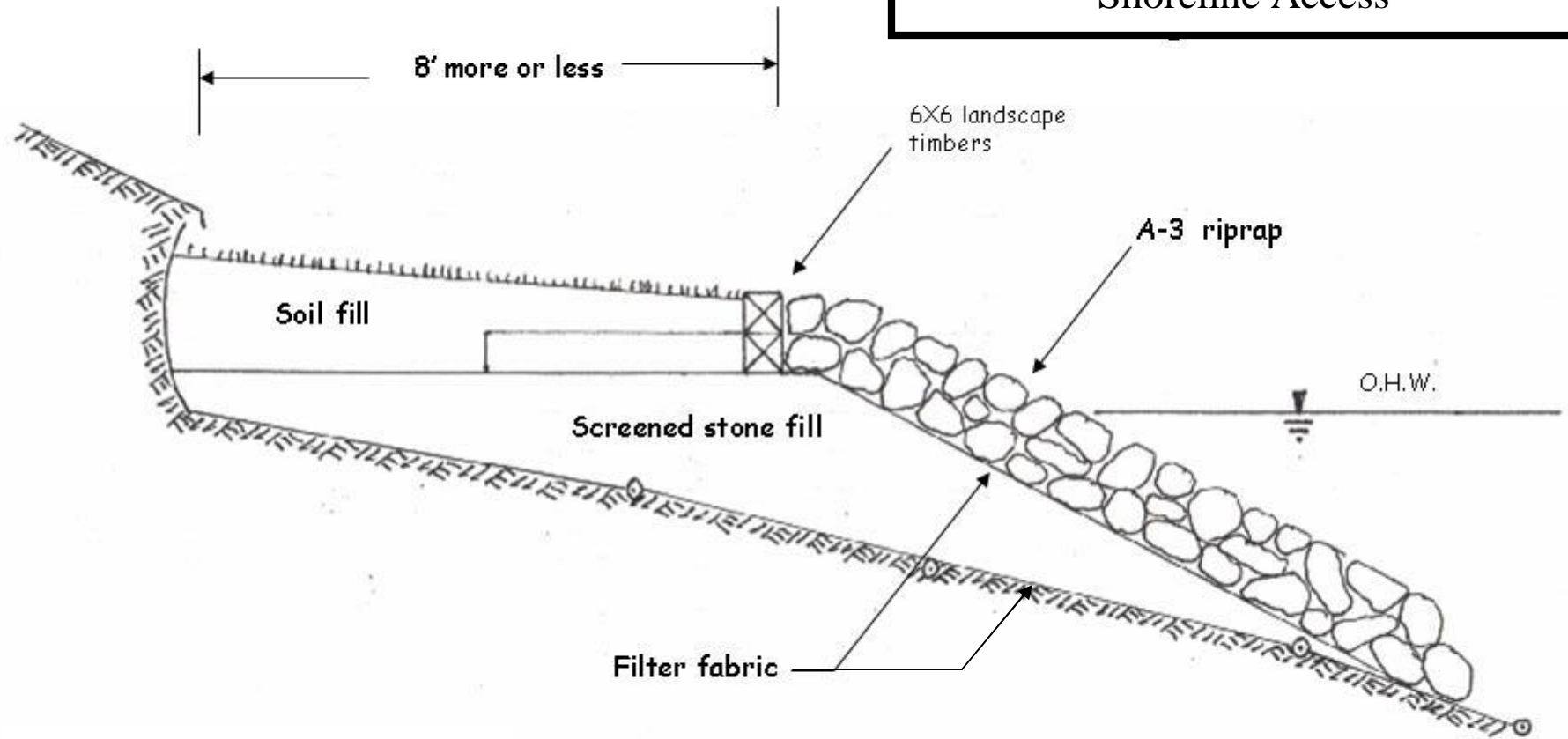
Same location at low pool - 2009

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An Improved Alternative to seawalls.

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Energy Dissipating
Shoreline Access



A Seawall Alternative

Typical Section



Before



After
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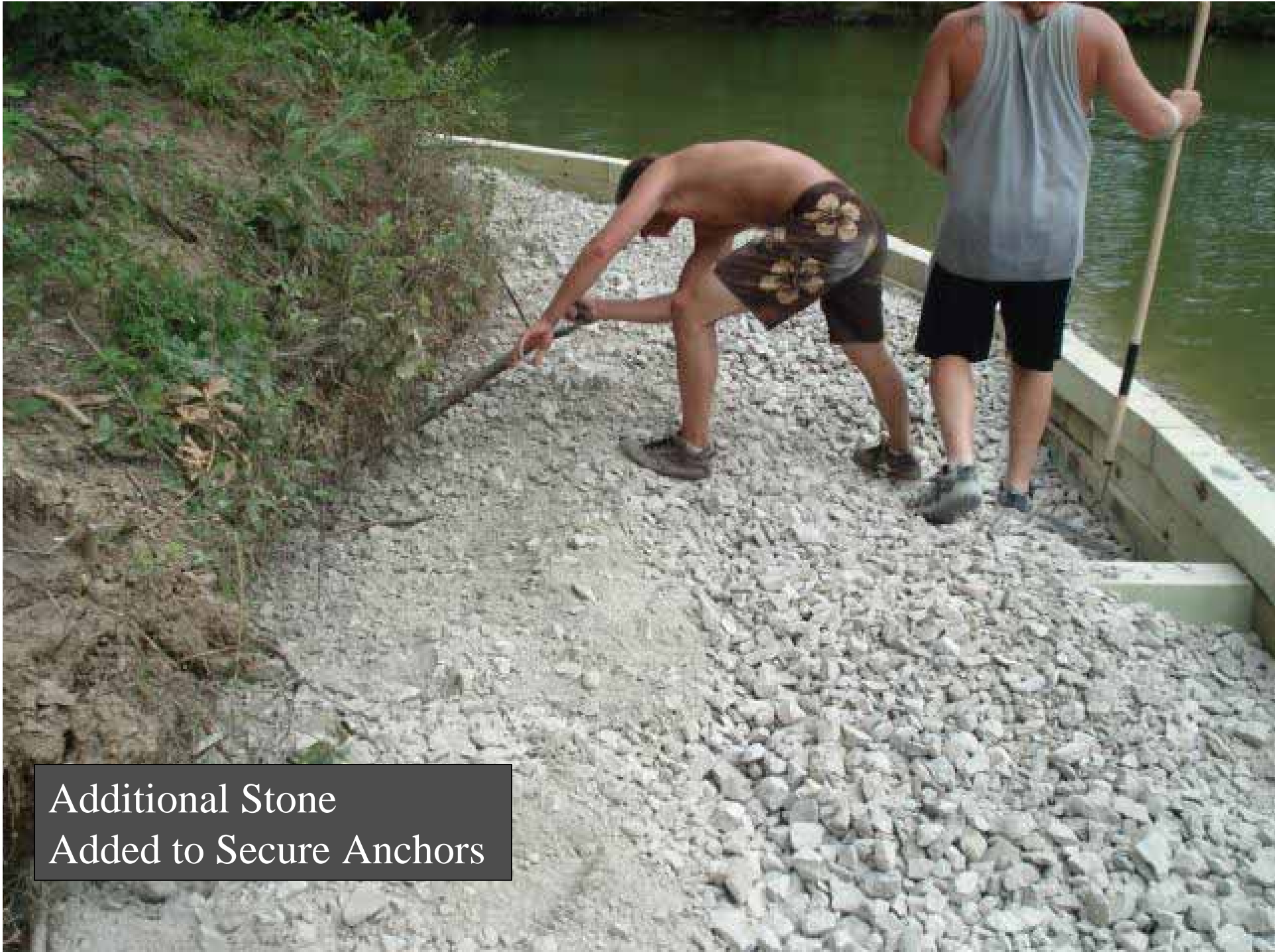
Placing the rock base on filter fabric



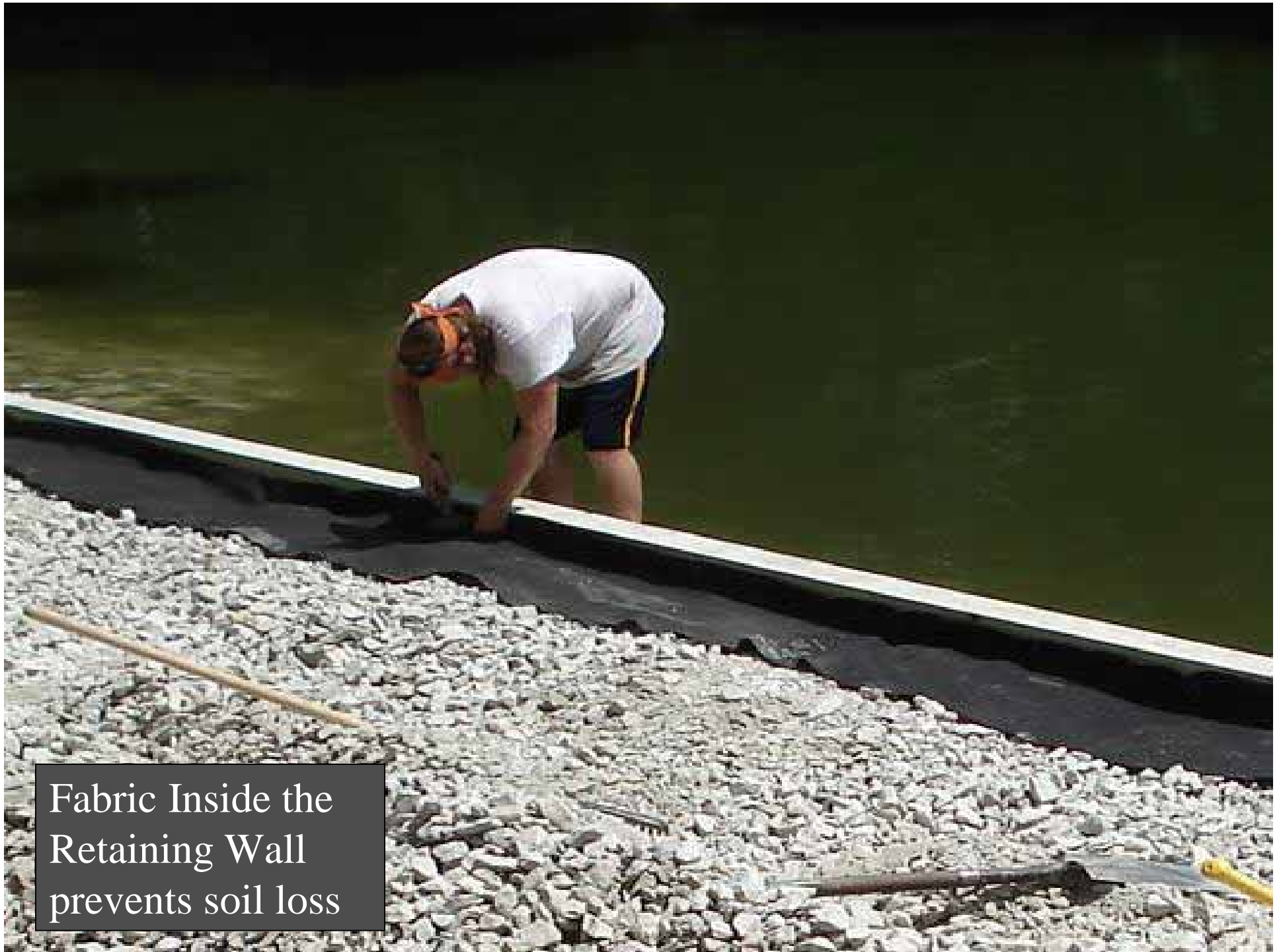
Actually the “Retaining Wall” is more of an edging with riprap on one side and soil on the other.

Treated Timber Retaining Wall with Anchors

Note: Pressure Treatment should be Certified for “Ground Contact” with a Manufacturer’s Guarantee



Additional Stone
Added to Secure Anchors



Fabric Inside the
Retaining Wall
prevents soil loss



Securing Filter Fabric
to Outside of the
Retaining Wall



Riprap on 2h:1v slope...

1. Dissipates wave energy
2. Provides safety for small children, pets and non-swimmers
3. Reinforces the Retaining Wall
4. Provides Interstitial Habitat



Ready for Seeding

Note: Total fill below OHM
0.95 cubic yards/ lineal foot

Shoreline Patios



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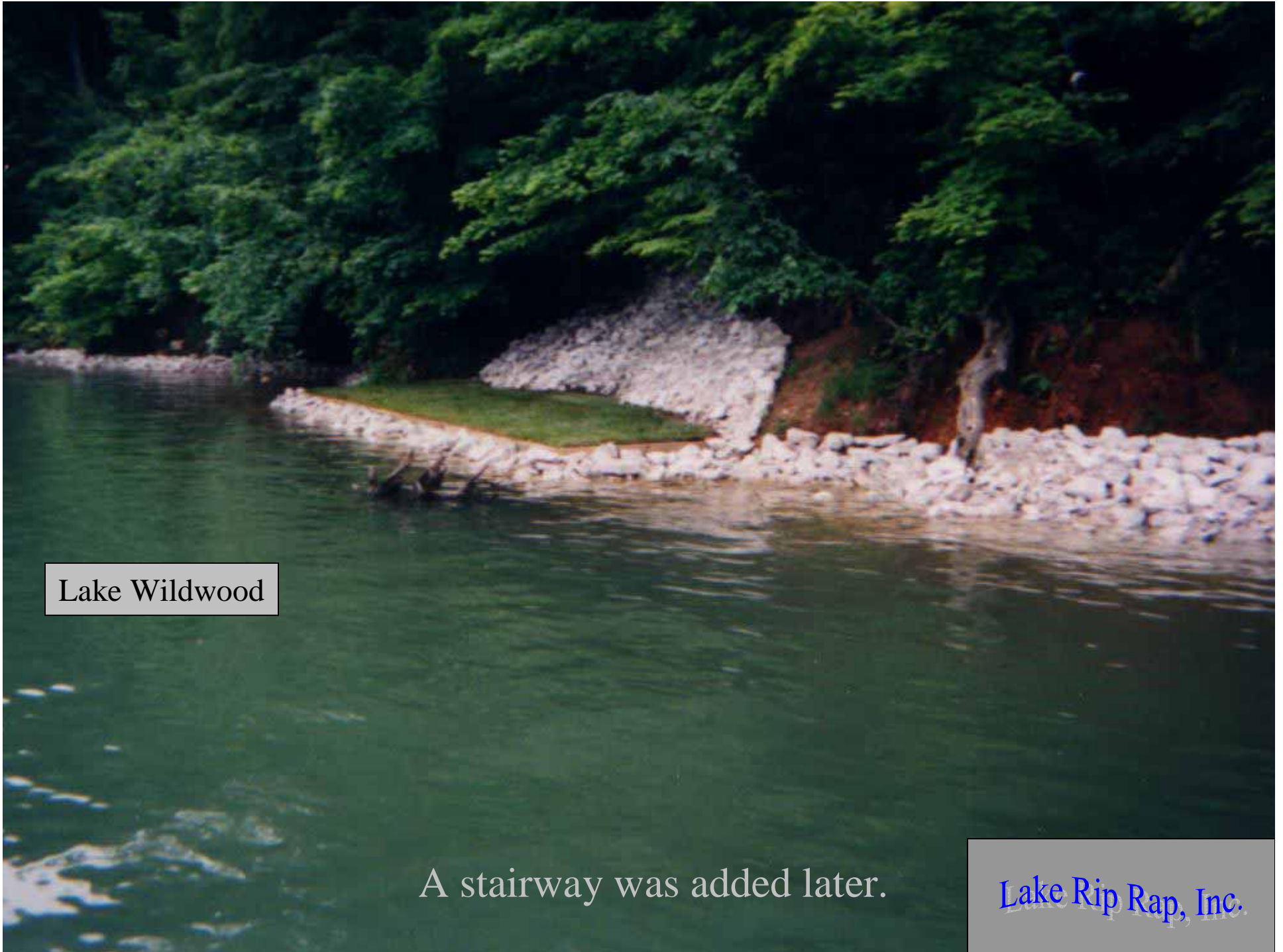


Base compaction is critical with this design.
Built in 4" layers with repeated wetting and compacting.

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Lake Wildwood

A stairway was added later.

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Lake Holiday

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Apple Canyon Lake



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To reduce the overall cost, ordinary stone riprap was used with only a single layer of the more expensive boulders.



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Lean Riprap Revetment
with
Natural Plant Colonization



Before



Natural Plant Colonization

After 10 years

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Newly Built



Natural Plant Colonization

After 10 years

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Built: 1994
Photographed: 2009



At full pool



43" below full pool

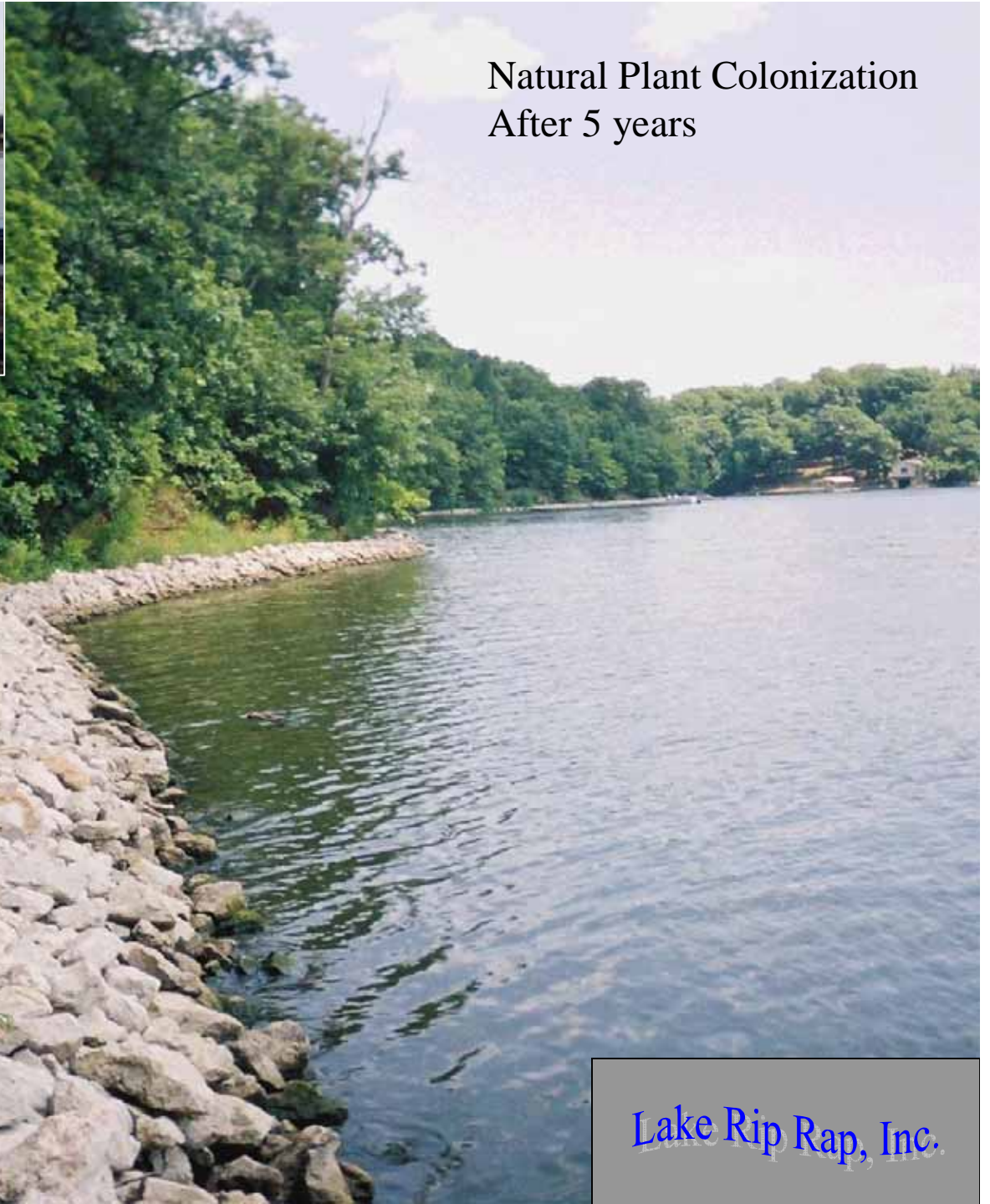
Sunset Lake

Lean Revetment
after 15 years

This Lean Revetment has simply
dissipated the wave energy and ...
“Set the stage for a natural shoreline healing”.



Before



Natural Plant Colonization
After 5 years

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Before treatment, huge quantities of soil were entering the lake annually.

Natural Plant Colonization - after 7 years.

Gillespie New Lake
Gillespie, Illinois



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A lean application of riprap is completely effective and has a very pleasing natural appearance.

Can you tell which photo shows the natural shoreline





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Constructed revetment.



Gillespie New Lake, Gillespie, Illinois

Natural Shoreline



Kinkaid Lake, Murphysboro, Illinois





Lake Rip Rap, Inc.

Constructed revetment.



Gillespie New Lake, Gillespie, Illinois

Properly applied and maintained, riprap on filter fabric:

1. *positively* stops wave induced shoreline erosion & bank retreat
2. reduces sedimentation & improves water quality
3. provides interstitial habitat
4. does not reflect wave energy
5. does not impede wildlife access
6. is not compromised by fluctuations of the water level
7. is the least expensive method of shoreline erosion control
8. provides stable conditions for a natural healing and re-vegetation of the shoreline

With no excavation, no environmental damage and no heavy equipment on the bank.

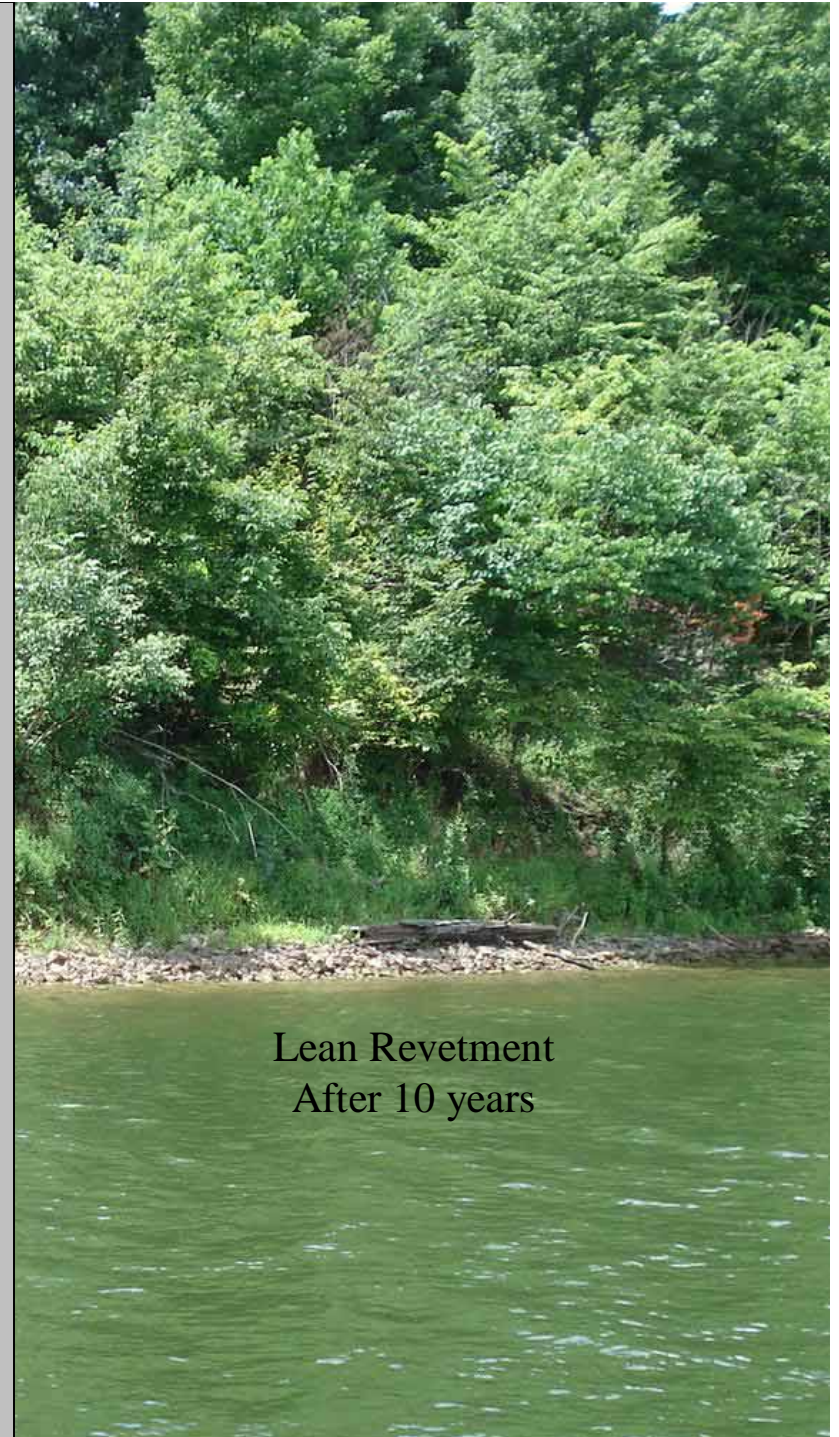
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"Setting the stage for a natural shoreline healing"

It appears as though this shoreline was never eroded...

But in fact, it had a 6 ft. high bank at the time of construction.

The bank has healed by natural slope reduction and natural plant colonization.



Lean Revetment
After 10 years



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"Setting the stage for a natural shoreline healing"

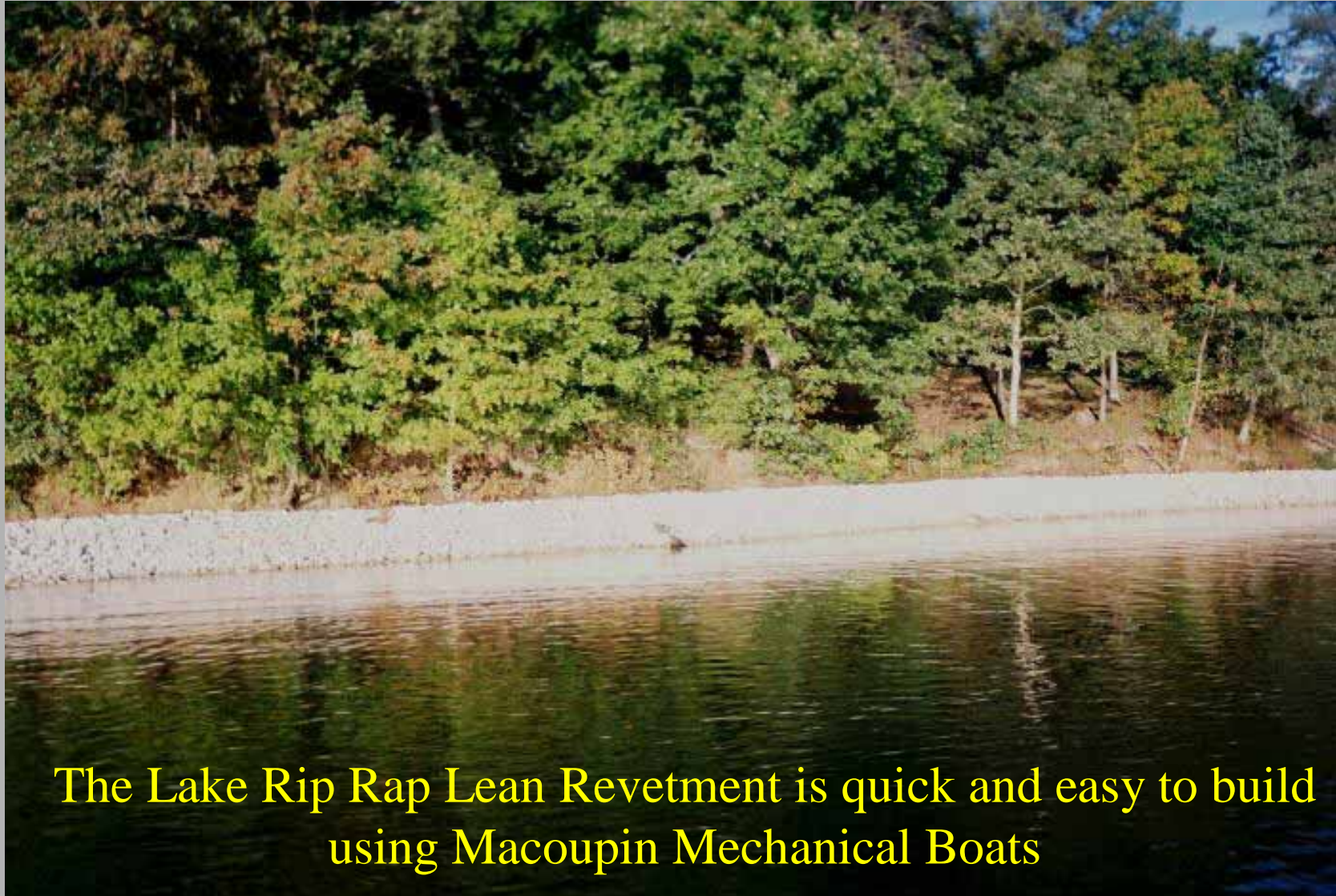
Unprotected Shoreline

This area was not treated because at the time of construction (1999), the erosion was very slight, in this section.

Lean Revetment
After 10 years

Remarkable Success at
less than \$40 per foot.

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The Lake Rip Rap Lean Revetment is quick and easy to build
using Macoupin Mechanical Boats



Before



After 7 years

Natural Plant Colonization

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Soil Filled Revetment with Native Seeding



7 years earlier

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www.LakeRiprap.com

217-899-9706



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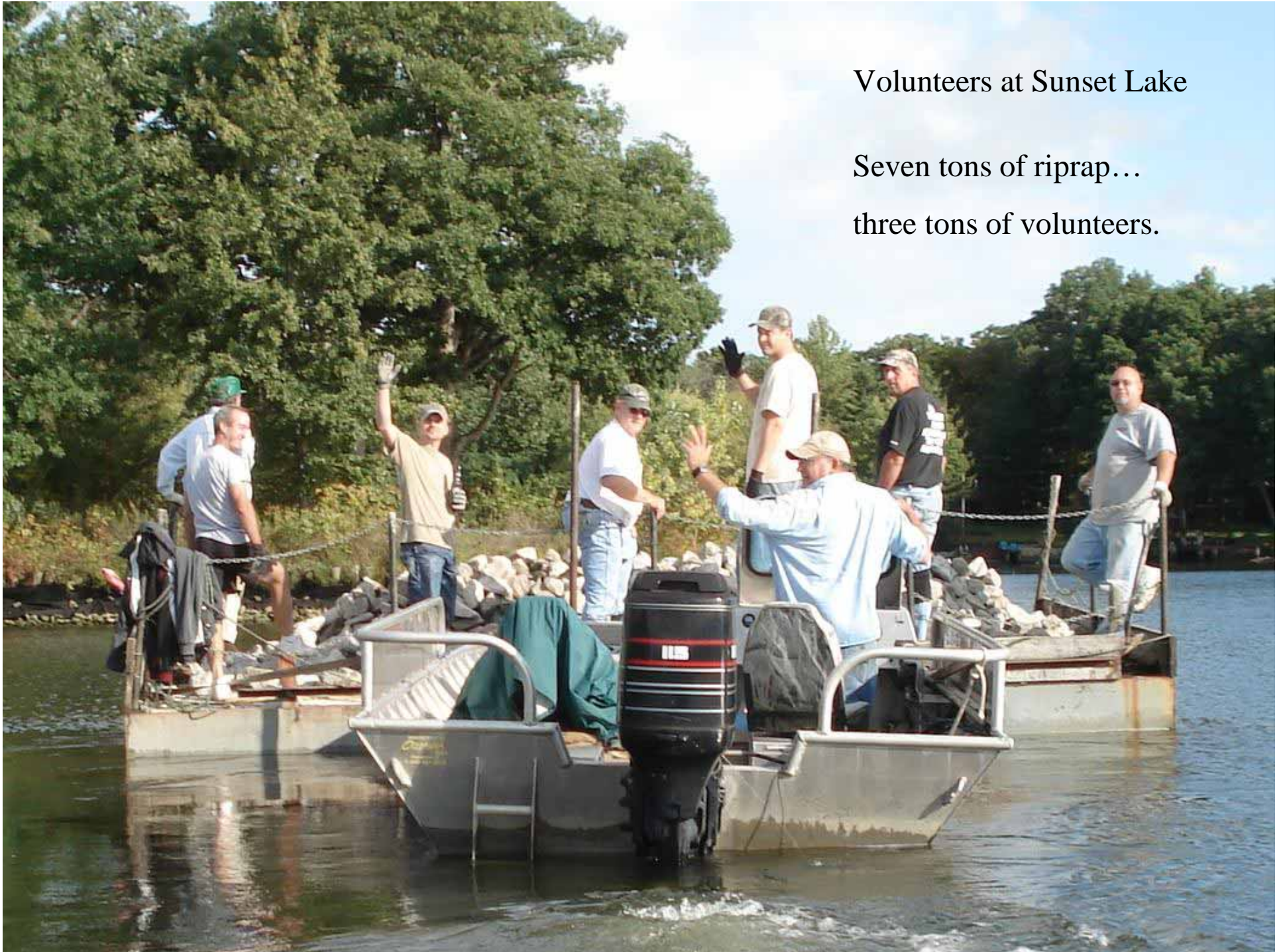
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Volunteers at Sunset Lake

Seven tons of riprap...

three tons of volunteers.



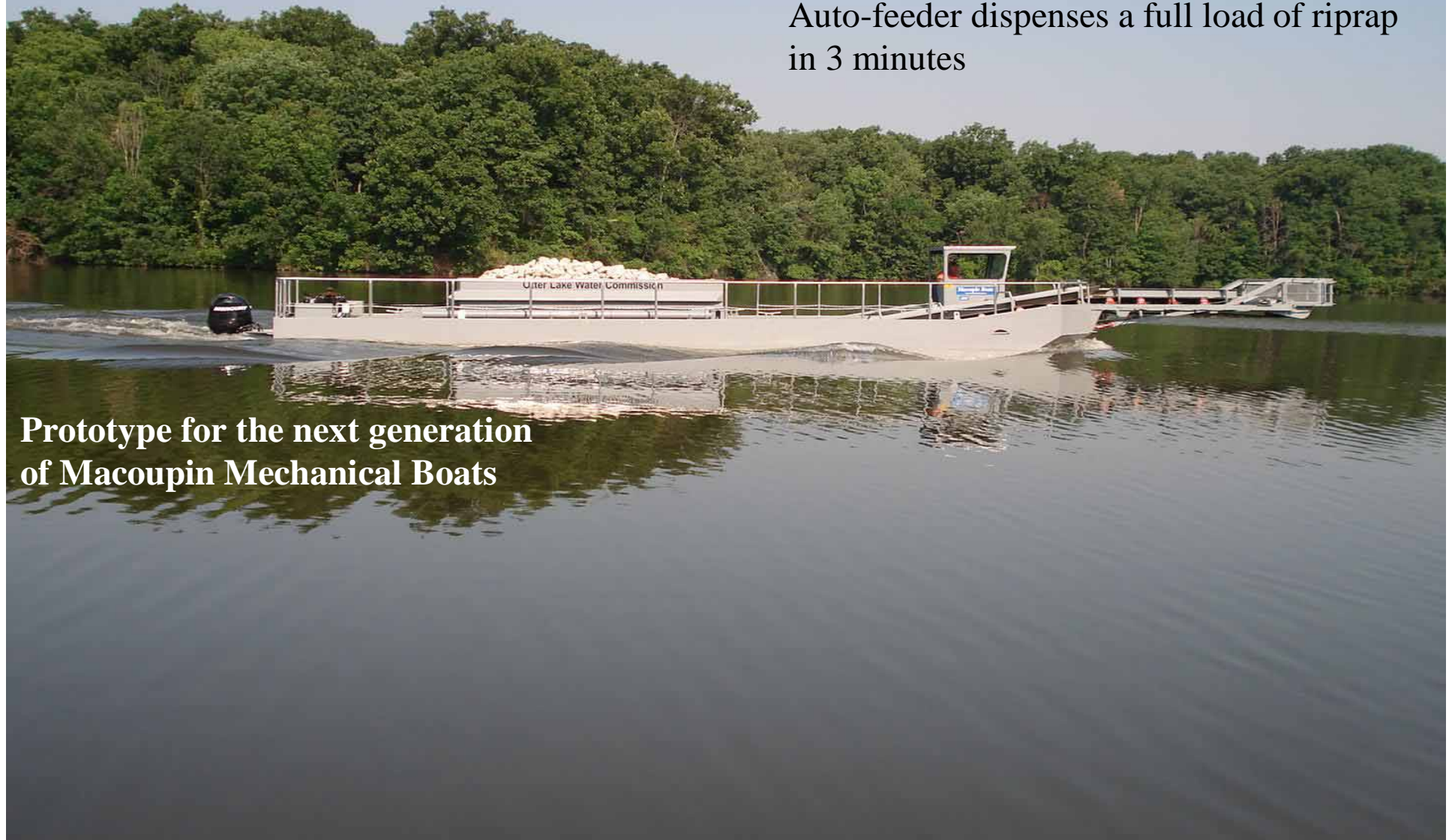
What's new at
Macoupin Boats

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Macoupin Mechanical Boats

Proven by performance at Otter Lake...

Auto-feeder dispenses a full load of riprap
in 3 minutes



**Prototype for the next generation
of Macoupin Mechanical Boats**

Lake Rip Rap, Inc.

Macoupon Mechanical Boats



Macoupon 310

Nearing completion and will be ready for launch this spring.



Introducing the:

Macoupon 310

A smaller version, with a payload of 10 tons, built for residential work.

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Lean Breakwater

Thanks for your interest in Natural Shoreline Healing.
www.LakeRiprap.com - www.MacoupinBoats.com - (217) 899-9706 - hank@LakeRiprap.com

Questions?



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