

# Runoff Reduction Plan

## Deer Lake

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This runoff reduction plan includes instructions for installing rock infiltration to capture runoff water from the new boathouse. The boathouse is not yet installed, and rain gutter configuration is unknown. Therefore, this plan outlines basic capacity needs, construction specifications, and instructions. Specific placement and piping will be developed.

### Design Calculations<sup>1</sup>:

Boathouse (14ft X 26ft = 364 ft<sup>2</sup>)

Runoff volume with 1 inch rain: 30 ft<sup>3</sup>

**Rock volume needed: 75 ft<sup>3</sup>**

The soil profile from the soil map indicates that a depth of 4 feet would be appropriate for the rock pit to reach sand and gravel for better infiltration. The pit should be located at the top of the hill near the back of the boathouse. Since there is a slope in this area (about 20%), and the bottom of the pit should be flat, the uphill side will need to be about 5 feet deep.



*Approximate Rock Infiltration Location*

A 4 foot deep pit would need a surface area of 18 ft<sup>2</sup>, so it might be 3ft X 6 ft. To minimize the difference in excavated depth, the narrower dimension would be placed parallel to the lot line as shown.

### Quantities Rock Infiltration #1

<sup>3</sup>/<sub>4</sub>" – 2" clean sewer rock: 3 yards

Topsoil: 1 yard

Filter fabric: 110+ ft<sup>2</sup> (approx.)

*(6' width X 30' to allow for overlap and some extra)*

6" inlet PVC pipe: ? feet

6" outlet PVC pipe: ? feet

Outlet pipe screen

Shady grass seed

Straw blanket

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<sup>1</sup> Program standards allow for installation of an infiltration system to capture a 1-2" rain event, depending upon space available and desired budget.

Utility lines must be marked before any excavation begins. You or your landscaper can request marking of underground utilities at [diggershotline.com](http://diggershotline.com) or by dialing 811.

The septic system drain field is located nearby. Check system drawings before finalizing a location for the infiltration pit. (Permit drawings were not available on-line.)

A permit will likely be required from the Polk County zoning office for the rock infiltration – although it may be possible to include with the boat house permit.

**Silt fence must be in place below excavation area before project begins.**

Any changes to this project would need to be approved by Harmony Environmental on behalf of the Deer Lake Conservancy.

Instructions:

1. Dig a pit of the specified size as shown on site diagram. The bottom of the pit should be flat. Extra rock volume is need because of the slope.
2. Connect the pipe from the roof downspout to the pit. The pipe will enter near the top of the rock on the uphill side of the pit, so the top of the pipe will begin about 8 inches below the surface (underneath the filter fabric).
3. Construct an outlet for the rock chamber with a 6” PVC pipe installed on the downhill side of the rock chamber. The PVC pipe will outlet at the surface of the slope in a well-vegetated area. A screen is installed on the end of the outflow pipe to prevent animals from entering it.
4. Line the sides only of the pit with filter fabric allowing for pipe to enter and exit the rock chamber of the pit. **NOTE THE BOTTOM OF THE PIT IS NOT LINED TO PREVENT CLOGGING OF THE FILTER FABRIC.**
5. Fill the pit with clean,  $\frac{3}{4}$  to 2 inch washed rock, stopping approximately 6 inches from the top.
6. Add a horizontal layer of filter fabric on top of the rock.
7. Cover the filter fabric with topsoil to the surface.
8. Plant grass seed and cover with erosion control fabric.