

Increasing Restoration Success

Runoff Considerations

Post-planting Care

Cheryl Clemens

Harmony
Environmental

Finding a balance



People



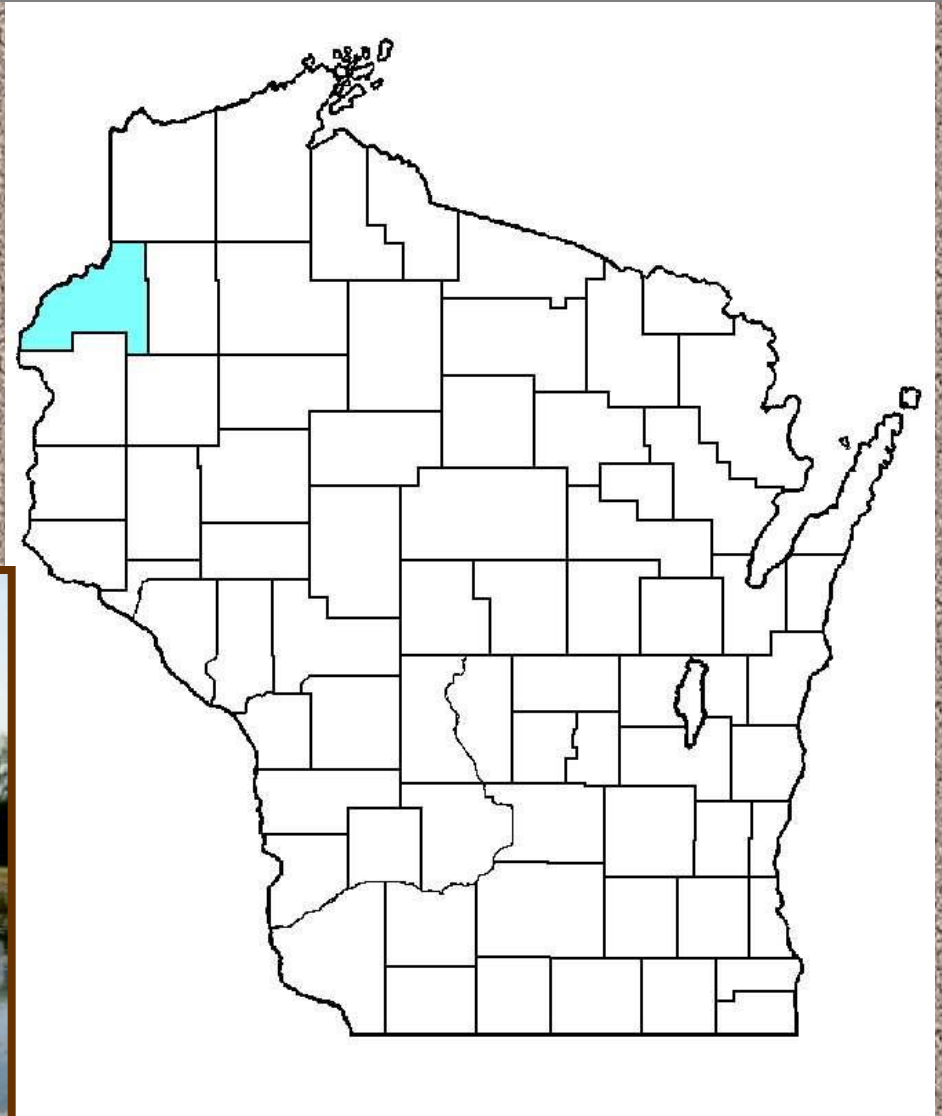
Land



Water

Burnett County Natural Shorelines Program

- 509 Lakes
- 31,258 Acres of Water



The Buffer Zone is in: Is the job done???

Runoff through the view corridor

Extremely steep slopes

Lots of impervious surface . . .

New Program Emphasis

- Increased emphasis on runoff management (diversions and infiltration)
- Technical assistance and cost sharing
- Waterfront runoff book
- Greater emphasis on watering

Post-planting Care

WATER

Reminders

Timers

Pumps

Drip Irrigation

Volunteer Crews?

WEEDS

ID Common Invasive

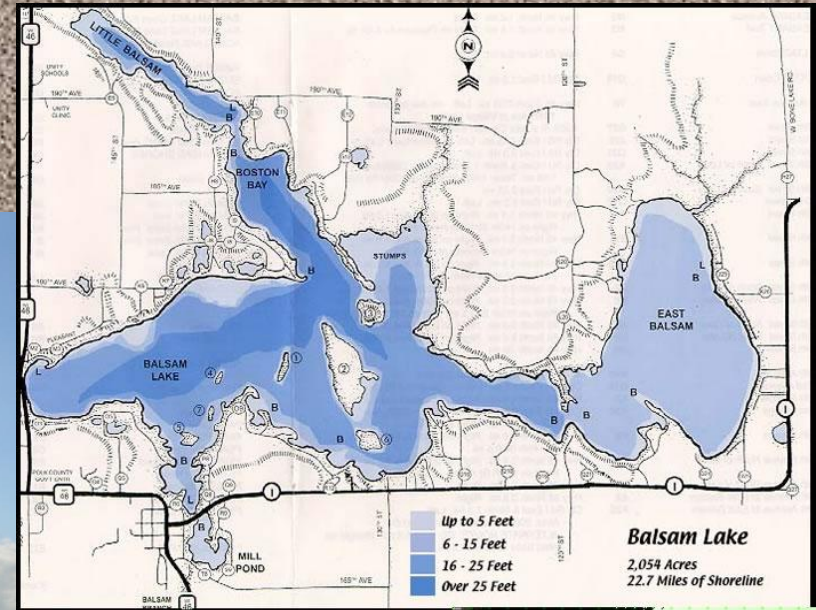
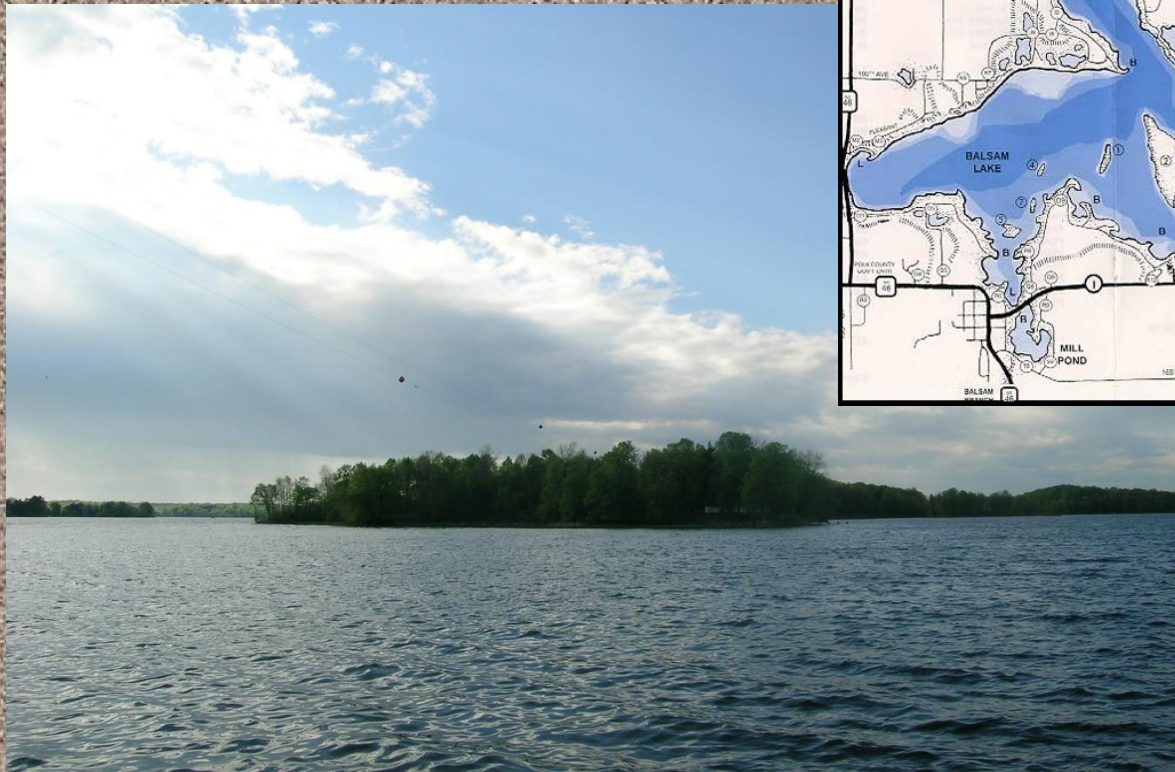
ID Seedlings Planted

Hand pull vs. Herbicide

Initial maintenance

NOT NO MAINTENANCE

Balsam Lake P&R District



•Waterfront
Runoff Program

Sources of Runoff



Roofs & Parking Areas



Roads & Driveways

Waterfront Runoff Reduction Project:

To reduce nutrient loading to lakes

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graph LR; A[To reduce nutrient loading to lakes] --> B[Minimize impervious surfaces]; A --> C[Divert runoff to prevent erosion]; A --> D[Encourage infiltration];
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Minimize impervious surfaces

Divert runoff to prevent erosion

Encourage infiltration

Minimize Hard Surfaces



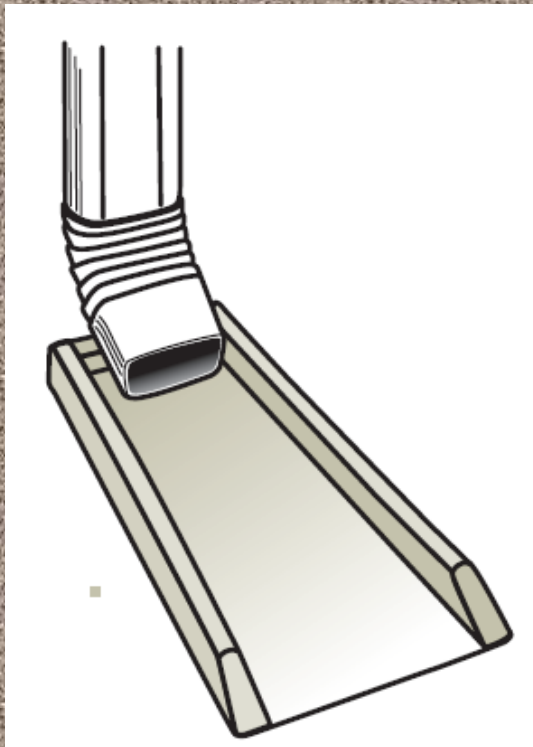
Alternatives:

- Clean $\frac{3}{4}$ inch rock or pea gravel
- Stepping stones
- Porous paving materials

*Note: Avoid compacting soil with heavy equipment or frequent foot traffic

Divert Runoff

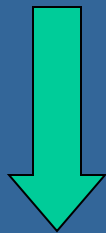
Diversion practices redirect water away from the lake towards infiltration practices



- Gutters and downspouts
- Drain tile
- Berms
- Driveway or path diversions
- Rain barrels

Rain Barrels

Collect and store
rainwater from gutters



Provide water for
plants and gardens



Encourage Infiltration

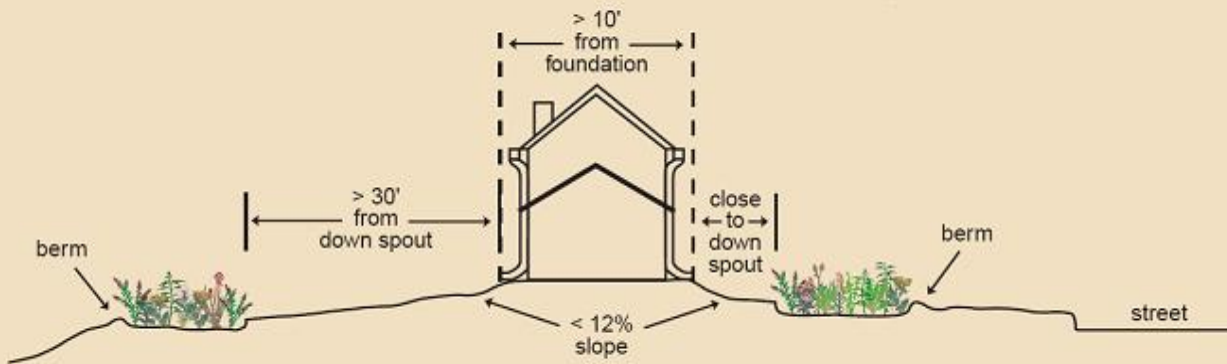
Infiltration practices allow water to soak into the soil

- Rain Gardens
- Shoreline Buffers
- Native Plants
- Rock Pits
or Trenches



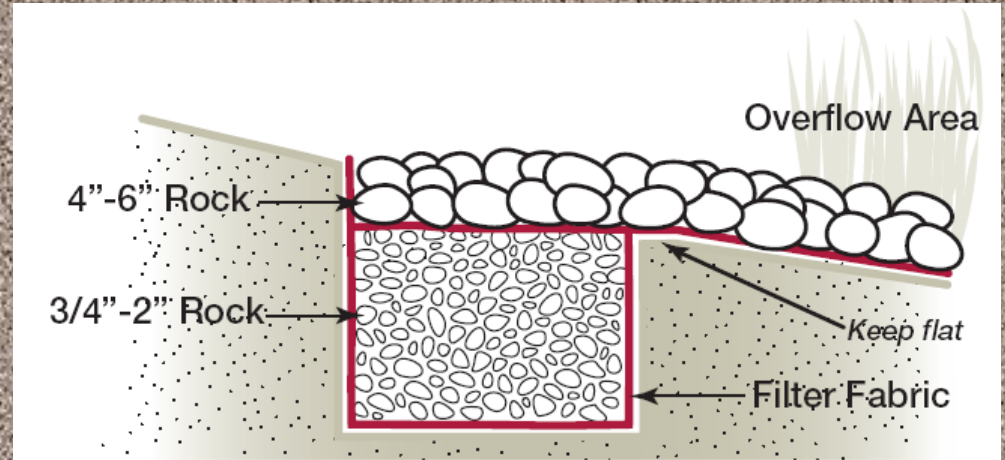
Rain Gardens:

Sunken gardens with native flowers



- Intercept and collect rain water
- Absorb and filter water slowly
- Attract birds and butterflies, not mosquitoes

Rock Pits or Trenches



- Capture and store storm water runoff
- Encourage infiltration



Runoff Practice Considerations

- Drainage area
- Available space
- Infiltration capacity
- Plant selection
- Property use
- Landowner preference

Deer Lake Example Project

Palmer's Landscaping
715-483-9222



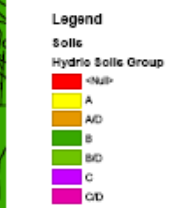
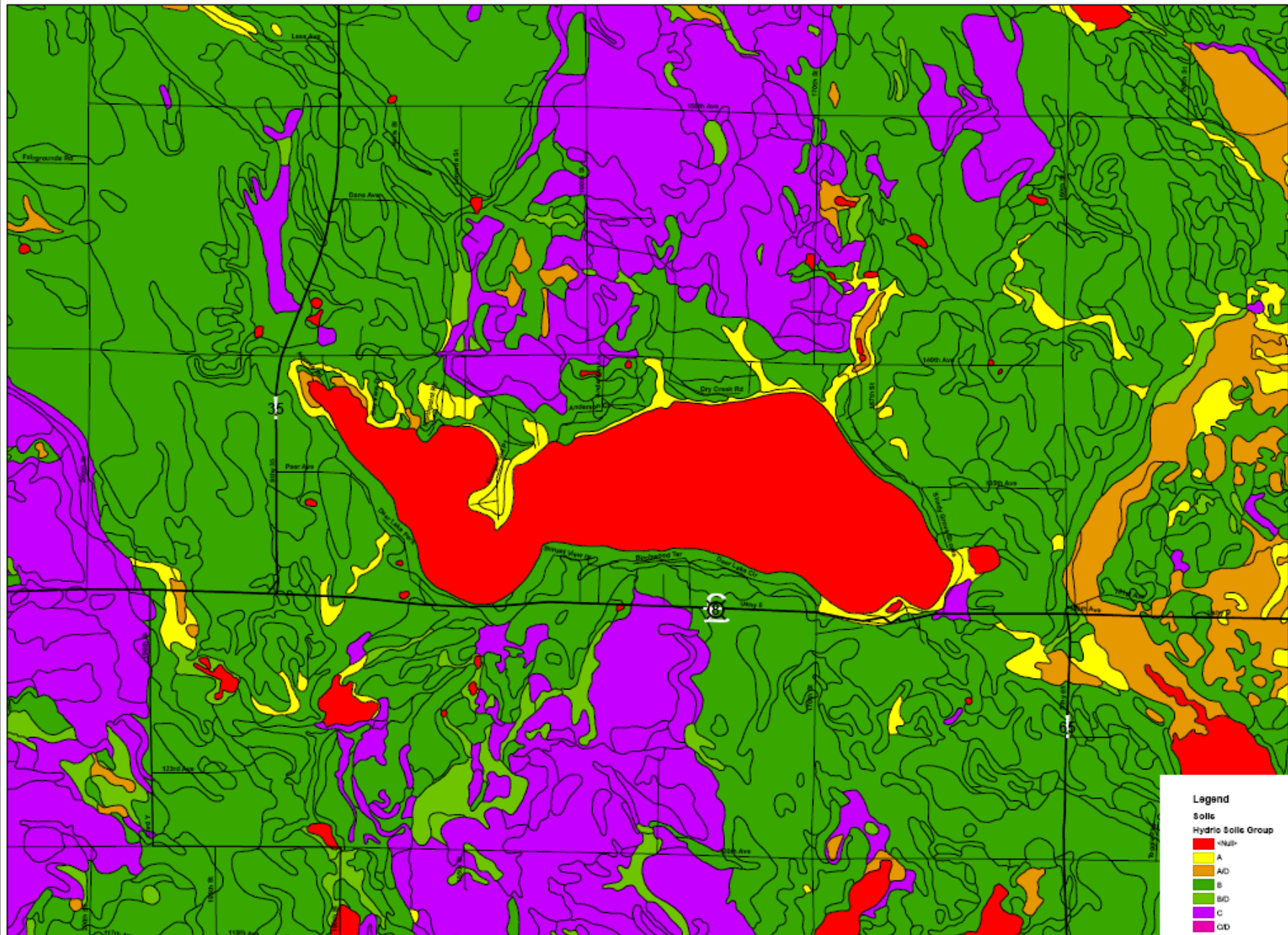
Project Area



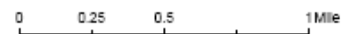
Sources and Flow of Runoff





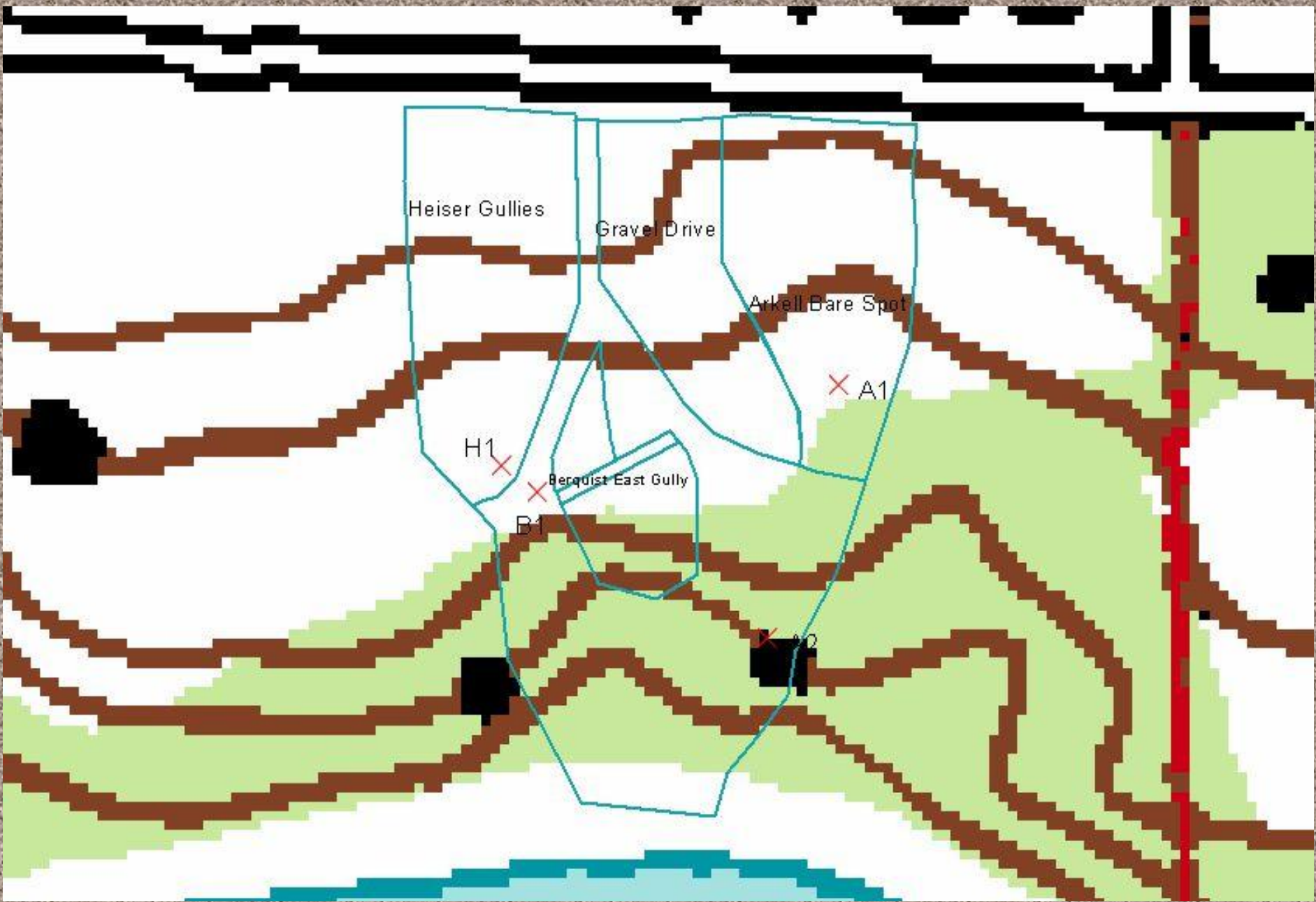


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**SOILS - HYDRIC SOILS GROUP
DEER LAKE, WI**





Soil Tests Results

Soil Boring #1

0 – 12"	Silt
12-36"	Clay
36 – 60"	Silt/Gravel
60 – 64"	Sand ***

Soil Boring #2

0 – 11"	Silt
12-36"	Clay
36 – 60"	Sand ***



Area 3

Before Rain Garden



Infiltration Hole to
Gravel



Area 3 Rain Garden





Area 4-5
Rock Pit



Area 4-5
Rain
Garden 2





Area 4-5
Rain
Garden 3







Area 6
Rock Pit







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Questions?