



Birch Stream Watershed Management Plan

Stakeholders' Presentation

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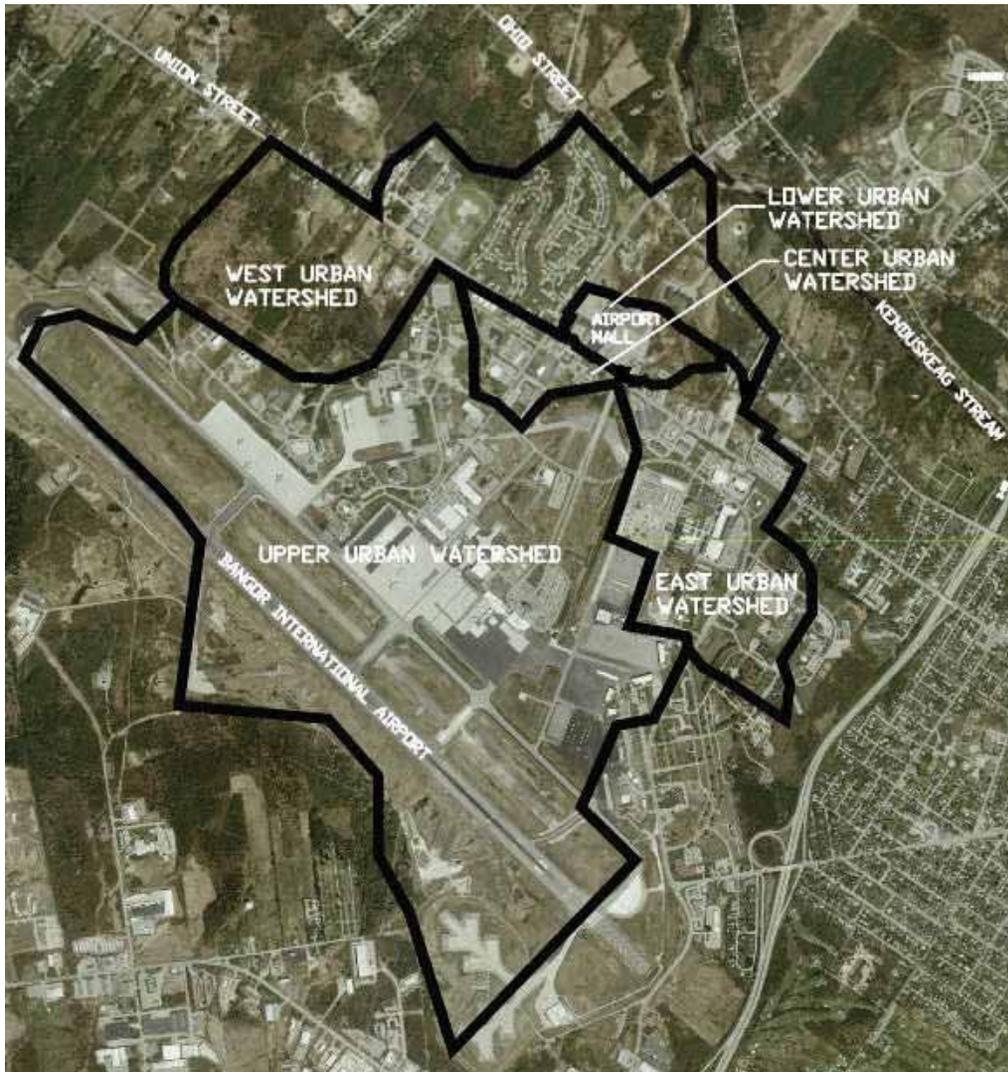


Description

Maine Department of Environmental Protection (MDEP) determined Birch Stream is an “Urban Impaired Stream.”

The watershed contains a total of 1,870 acres, which includes 244 commercial, industrial, governmental, and residential properties.

Description



For this discussion we have divided the watershed into five “Urban Sub-Watersheds”

- Upper - Airport
- East - UCB
- West - Capehart
- Center - EMMC
- Lower - Mall

Upper and East Urban Watersheds

- **Study in 2008 by SMRT identified several areas that needed treatment.**
- **City initiated remedial work at BIA in 2009. More scheduled for 2010 and beyond.**
- **Other initiatives near EMMC have been preliminarily designed but not implemented yet.**

East and West Urban Watersheds

- ▣ **Development is more sparse than other areas of watershed.**
- ▣ **Less pavement and rooftops means less stormwater runoff.**
- ▣ **Remediation work is less urgent.**

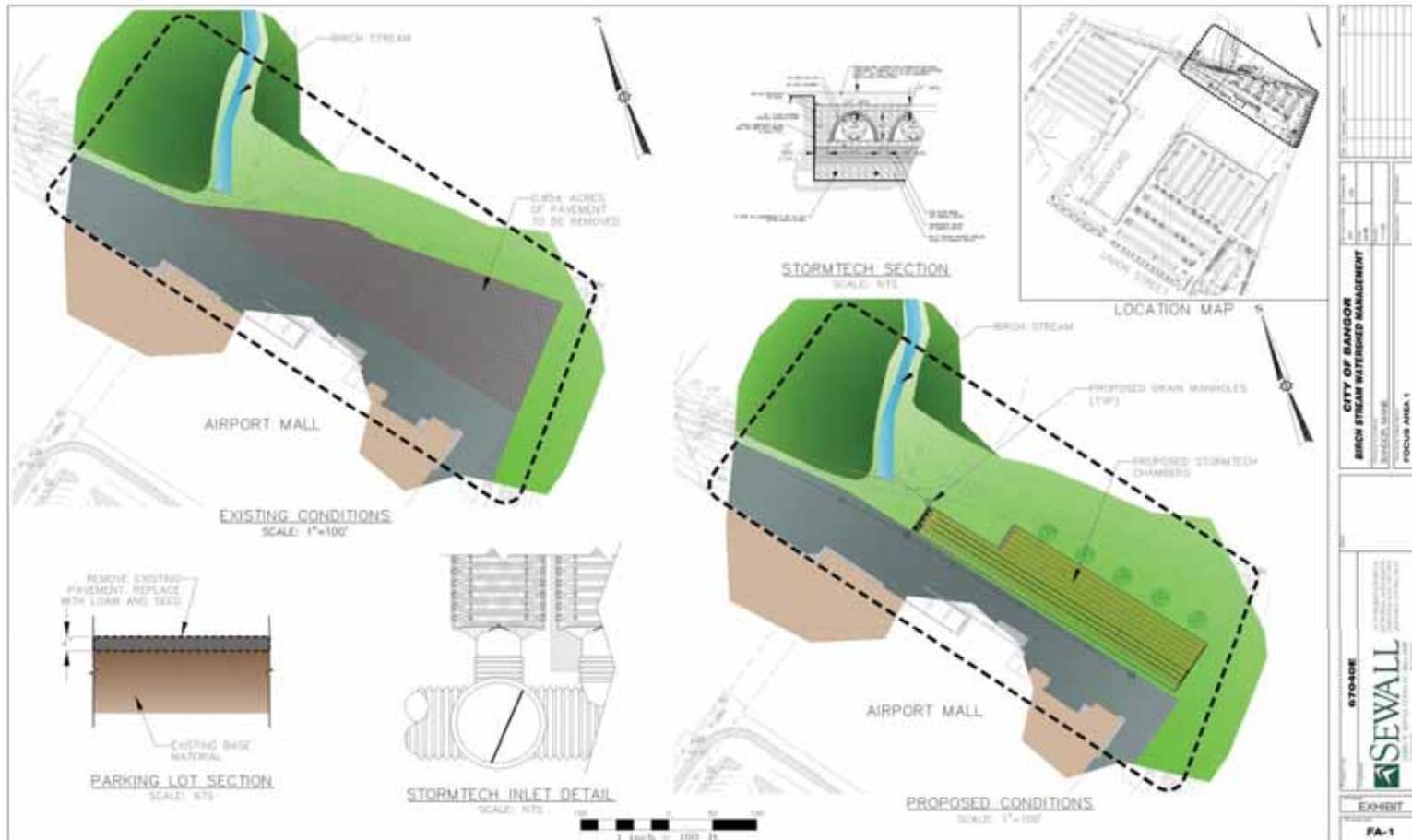
Lower Urban Watershed

- ▣ Sewall has completed preliminary design work around the Airport Mall.
- ▣ Treatment area includes not only the Mall, but also much of the surrounding areas.

Lower Urban Watershed Treatment Systems

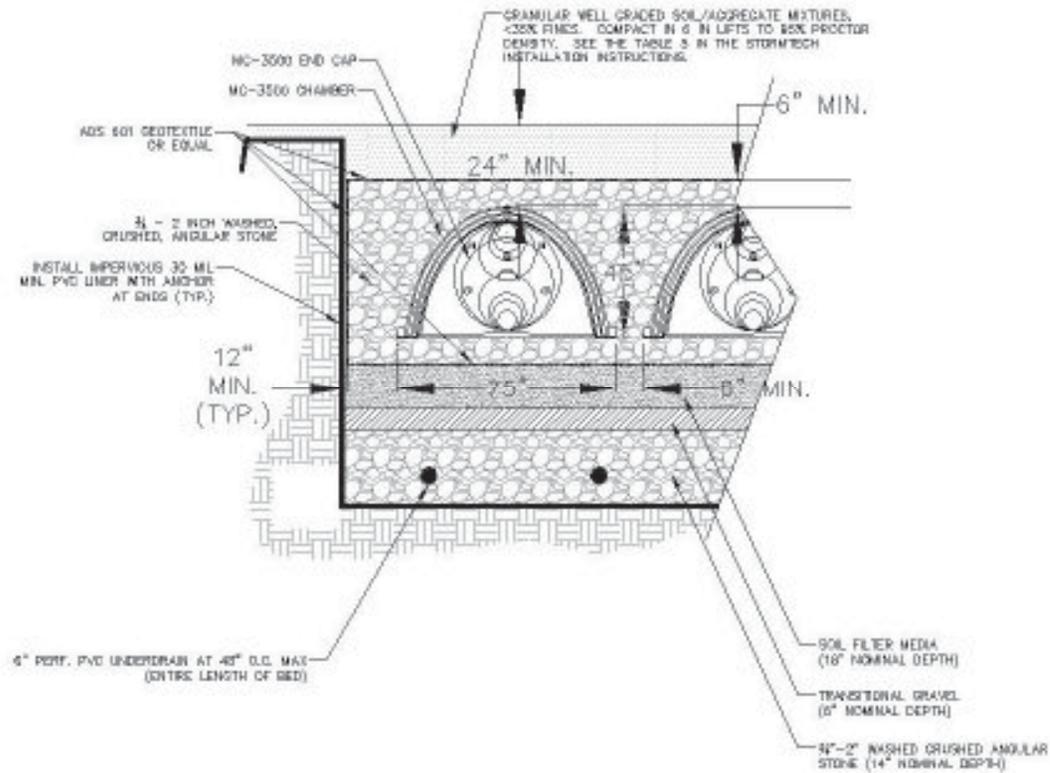
- ▣ Stormtech filtration systems
- ▣ Filterra tree wells
- ▣ Revegetation of unused areas

Stormtech Filtration System



- Located behind Mall
- Will treat Mall roof, west & rear parking areas, golf driving range, car wash

Stormtech Filtration System



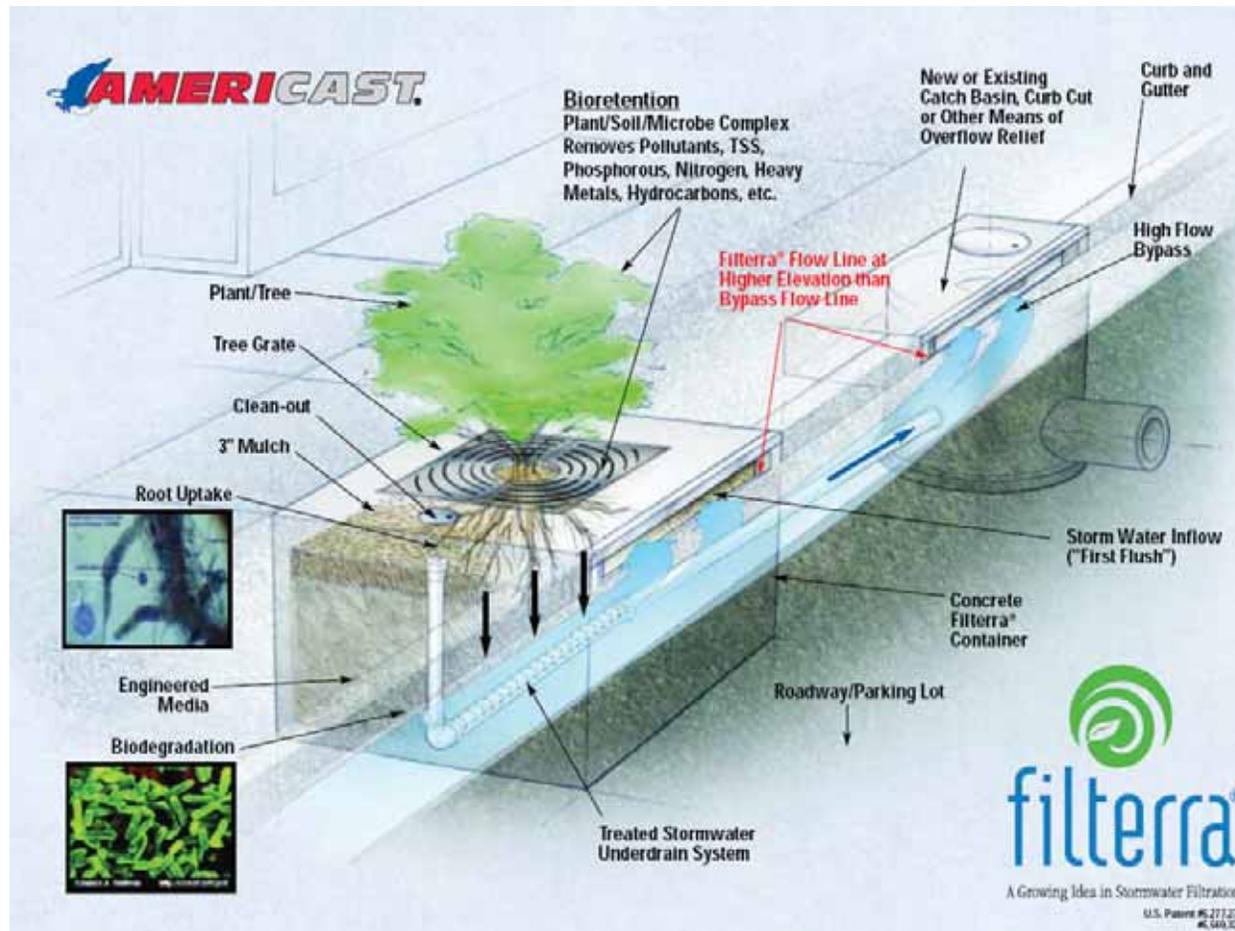
Filterra Tree Well System Locations



**14 tree wells
at Airport Mall**

**2 tree wells at
McDonald's**

Filterra Schematic



Next Steps

■ **Costs - \$750k to \$900k**

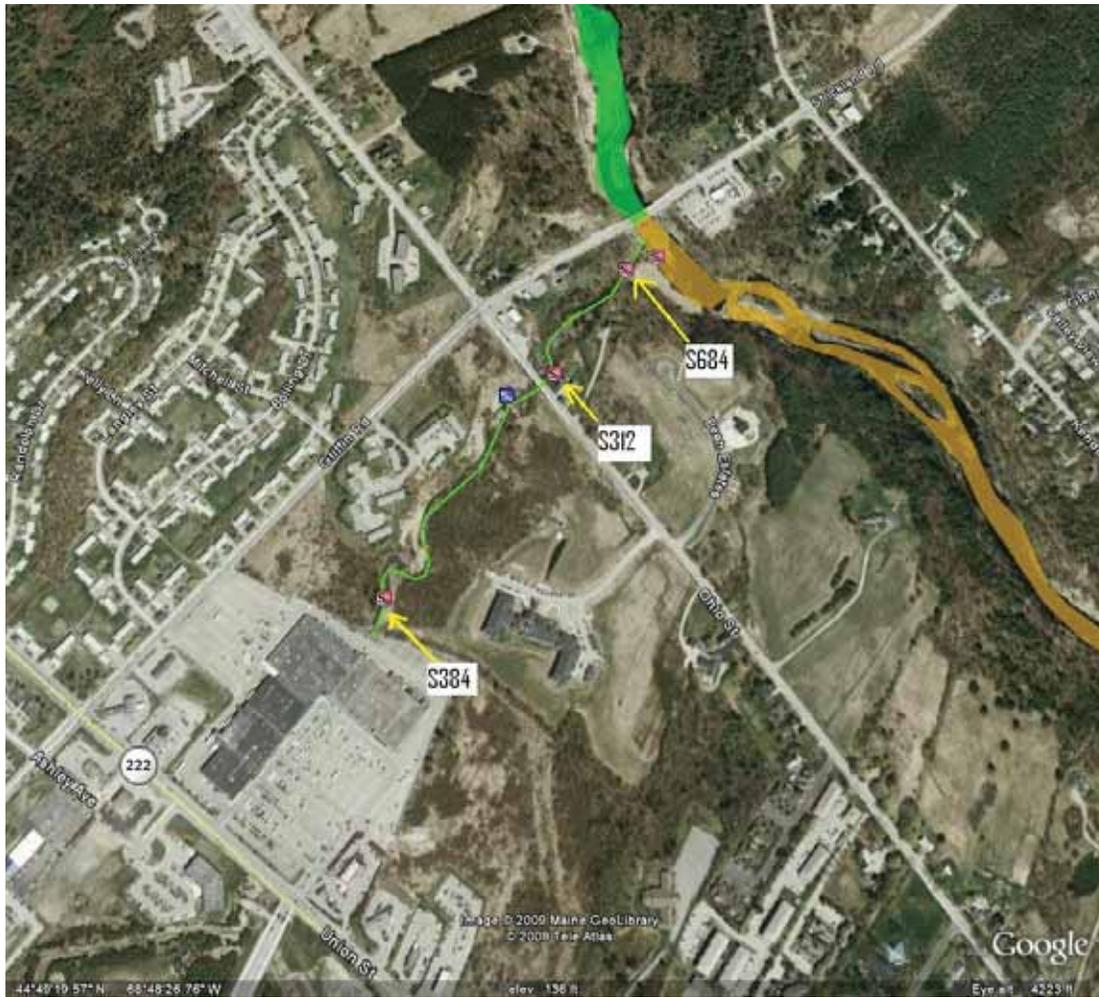
■ **Funding Sources**

- **American Recovery and Resource Act of 2009**
- **Maine DEP Grants**
- **TIFF and City Bonds**
- **Other?**



Comments & Questions

MDEP Stream monitoring Locations in Birch Stream



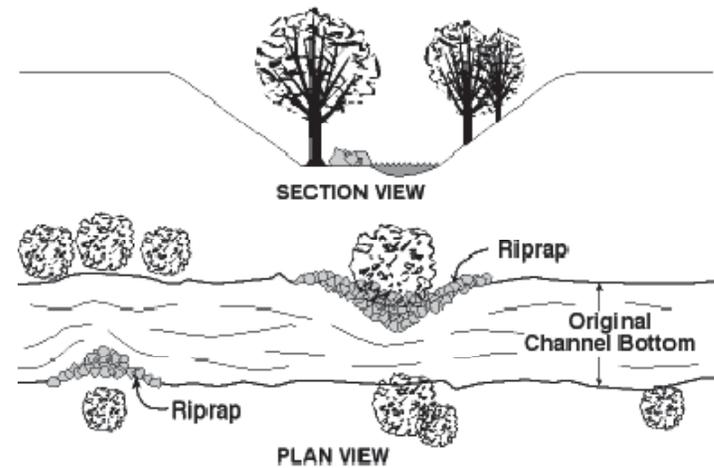
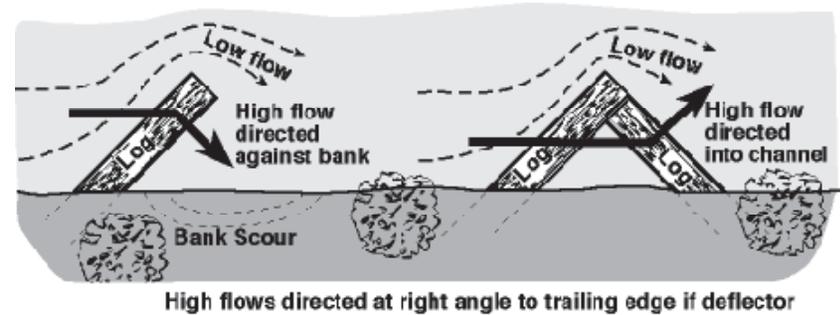
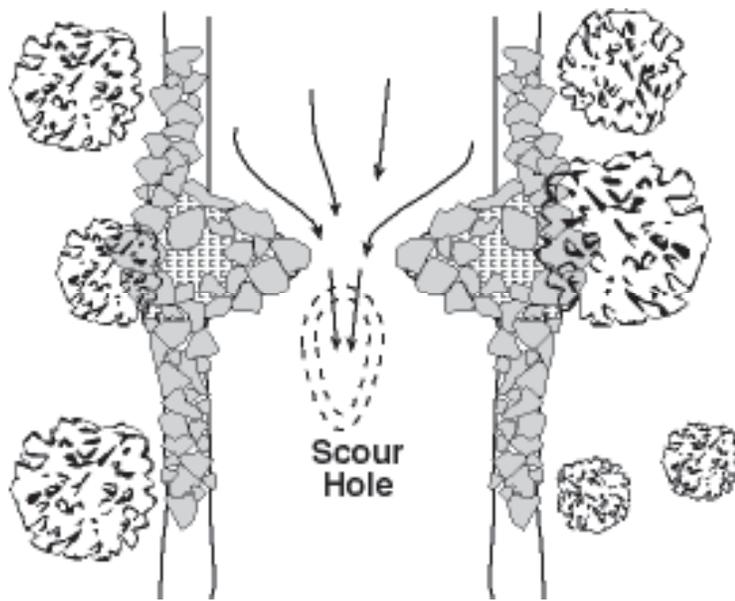
Upper reach Stream Channel Morphology



Upper Stream - 2009 Aerial Photograph by Sewall Company



Channel Modification Techniques



Broken Storm Drain and Undermining, Enters stream at right angle



Undermining of Box Culvert from storm pipe at right angle



Debris Dams, Trash and Bank Erosion

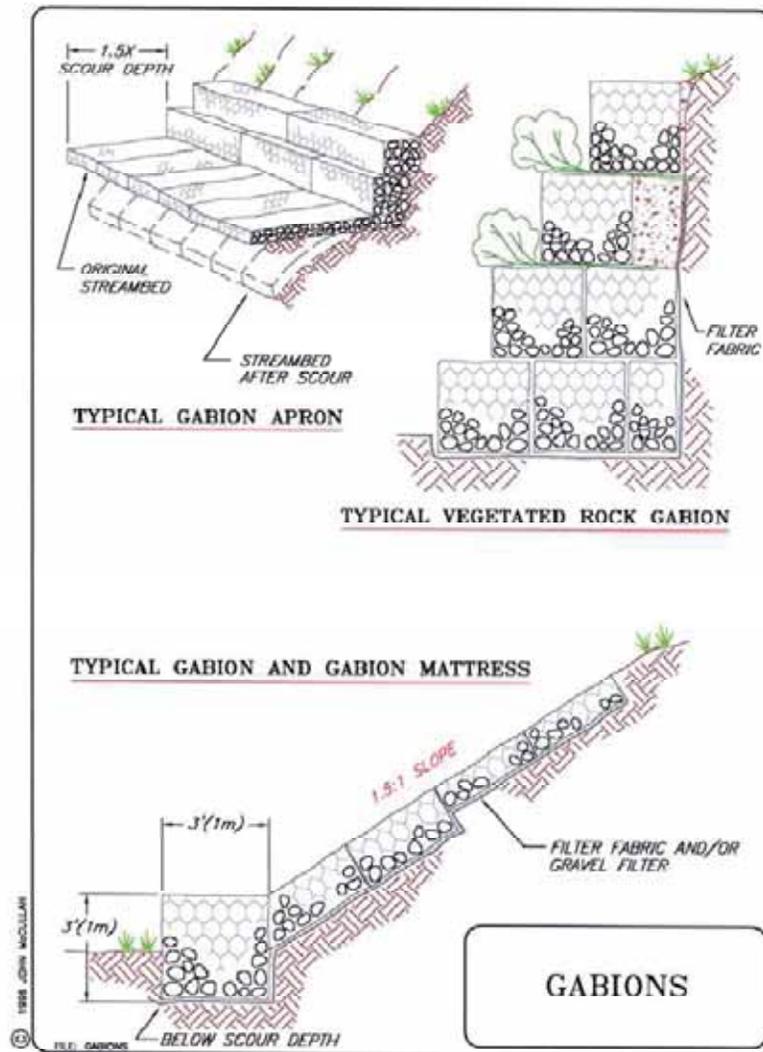


Severe Bank Erosion and Tree fall





Gabion Basket Bank Stabilization



Channel Scour and Bank Erosion



Downed Tree Debris and Ledge Deflection into Erodible Bank



Solutions to Stream Morphology and Structural Problems

- **Repair Storm Drain Outlet at Ohio Street Culvert – reduce angle to be in line with stream channel**
- **Repair undercutting to Box culvert**
- **Remove Trash and Channel Debris**
- **Harden Erodible Banks downstream of Ohio Street (Gabion baskets, rip rap)**
- **Realign Channel if necessary**