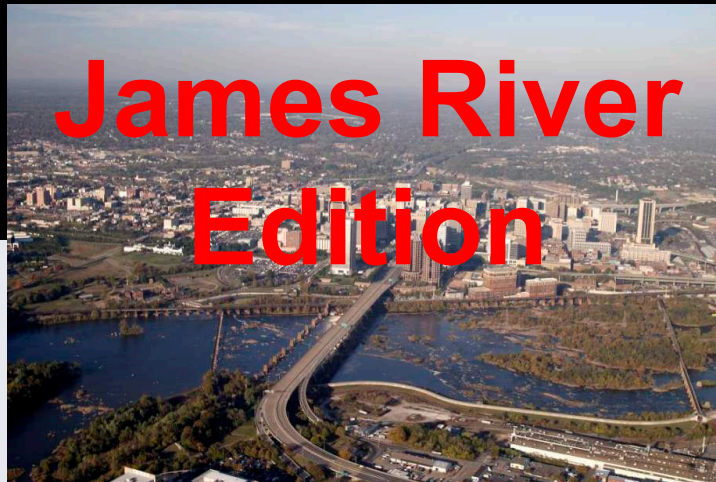


Extreme BMP MAKEOVER

**James River
Edition**



BMP Field Survey:



- ~200 BMPs in survey sample
- Visual screening, NOT sampling water quality
- Targeted BMPs:
 - Newer types not well researched
 - BMPs that are becoming popular
 - BMPs with design standards still evolving

Methodology

- Compiled master BMP database – 11 localities
- Common list of BMP “names”
- Mapped locations of BMPs

Visual assessments of...

- Installation Quality
- Placement / Integration into Site
- Sizing
- Flow Paths
- Stability
- Vegetative Health
- Soil Texture
- Maintenance
- Overall performance score



BMP Survey Form

BMP Evaluation Form			
FACILITY ID: _____	REGION: _____ JURISDICTION: _____	DATE: ____/____/____	ASSESSED BY: _____
NAME: _____ ADDRESS: _____ PHOTO IDS: _____			HANDHELD GPS ID: _____
SECTION 1- BACKGROUND INFORMATION (GIS)			
BMP TYPE: <input type="checkbox"/> Water Quality Dry Pond <input type="checkbox"/> Dry Swale <input type="checkbox"/> Level Spreader <input type="checkbox"/> Unspecified Dry Pond <input type="checkbox"/> Wet Swale <input type="checkbox"/> WQ Inlet <input type="checkbox"/> Wet Pond <input type="checkbox"/> Grass Channel <input type="checkbox"/> Underground <input type="checkbox"/> Wetland <input type="checkbox"/> Dry Well <input type="checkbox"/> Proprietary Device <input type="checkbox"/> Filter (specify: _____) <input type="checkbox"/> Permeable Pavement <input type="checkbox"/> Other <input type="checkbox"/> Infiltration (specify: _____) <input type="checkbox"/> Bioretention			YEAR CONSTRUCTED: _____ OWNERSHIP: <input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Unknown
SITE CHARACTERIZATION			
DRAINAGE AREA: _____ (acres) IMPERVIOUS COVER: _____ (%) Discerned from: <input type="checkbox"/> Plan <input type="checkbox"/> County Data <input type="checkbox"/> GIS <input type="checkbox"/> Field CONTRIBUTING DRAINAGE AREA (48 hr 2 day): Note - All percentages should sum up to 100% _____ Industrial _____ Commercial _____ Urban/Residential _____ Suburban/Res _____ Forested _____ Institutional _____ Golf course _____ Park _____ Crop _____ Pasture _____ Other: _____			
SECTION 2- Field Visit			
Rain in last 48 hrs? <input type="checkbox"/> Yes <input type="checkbox"/> No Evidence of high water table? <input type="checkbox"/> Yes <input type="checkbox"/> No			
DESIGN ELEMENTS			
FACILITY SIZE: Length: _____ (ft) Width: _____ (ft) Surface Area: _____ (ft ²) Depth of WQ storage: _____ (ft)	OBSERVED WQ STORAGE VOL: _____ (ft ³)	HYDRAULIC CONFIGURATION: <input type="checkbox"/> On-line Facility <input type="checkbox"/> Off-line Facility	DESIGN STORM: <input type="checkbox"/> Water Quality <input type="checkbox"/> Flood Control <input type="checkbox"/> Channel Protection <input type="checkbox"/> Unknown
SIGNAGE (check all that apply): <input type="checkbox"/> None <input type="checkbox"/> Flood Warning <input type="checkbox"/> Stormwater Education <input type="checkbox"/> No Trespassing <input type="checkbox"/> Wildlife Habitat <input type="checkbox"/> Public Property <input type="checkbox"/> Do Not Mow <input type="checkbox"/> Other: _____			
OUTLET CHARACTERISTICS			
MEASUREMENTS: Number of Outlets: _____ Outlet Diameter: _____ (in) (up to 4 outlets) _____ (in) _____ (in) _____ (in)	TYPE OF OUTLET: <input type="checkbox"/> N/A <input type="checkbox"/> Pipe <input type="checkbox"/> Riser <input type="checkbox"/> Weir <input type="checkbox"/> Large Storm Overflow <input type="checkbox"/> Open channel <input type="checkbox"/> Large Storm By-pass <input type="checkbox"/> Other: _____		
OUTLET FEATURES: <input type="checkbox"/> N/A <input type="checkbox"/> Trash Rack <input type="checkbox"/> Pond Drain <input type="checkbox"/> Inverted outlet pipe <input type="checkbox"/> Hooded outlet <input type="checkbox"/> Multiple outlet levels <input type="checkbox"/> Anti-vortex device <input type="checkbox"/> Perforated pipe <input type="checkbox"/> Gravel Disphragm <input type="checkbox"/> Micropool			
Outlet includes restrictor? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<input type="checkbox"/> Impoundment BMP BMP contains Emergency Spillway?: <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, type: <input type="checkbox"/> Channel <input type="checkbox"/> Riser Overflow <input type="checkbox"/> Weir <input type="checkbox"/> Other: _____		DOWNSTREAM CONDITIONS: <input type="checkbox"/> Unknown <input type="checkbox"/> Stream <input type="checkbox"/> Other <input type="checkbox"/> Closed storm sewer <input type="checkbox"/> Surface channel <input type="checkbox"/> Road ditch Active Erosion <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe Trash <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe Sedimentation <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe Odor <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe Algae <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe Other WQ Problems <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe	
OUTLET CONDITIONS: Outlet Erosion <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe Outlet Clogging <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe Structural Problems <input type="checkbox"/> None <input type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Severe			

Technical Report

Stormwater BMPs in Virginia's James River Basin: An Assessment of Field Conditions & Programs

(part of the *Extreme BMP Makeover* project)



June 2009

Final Draft



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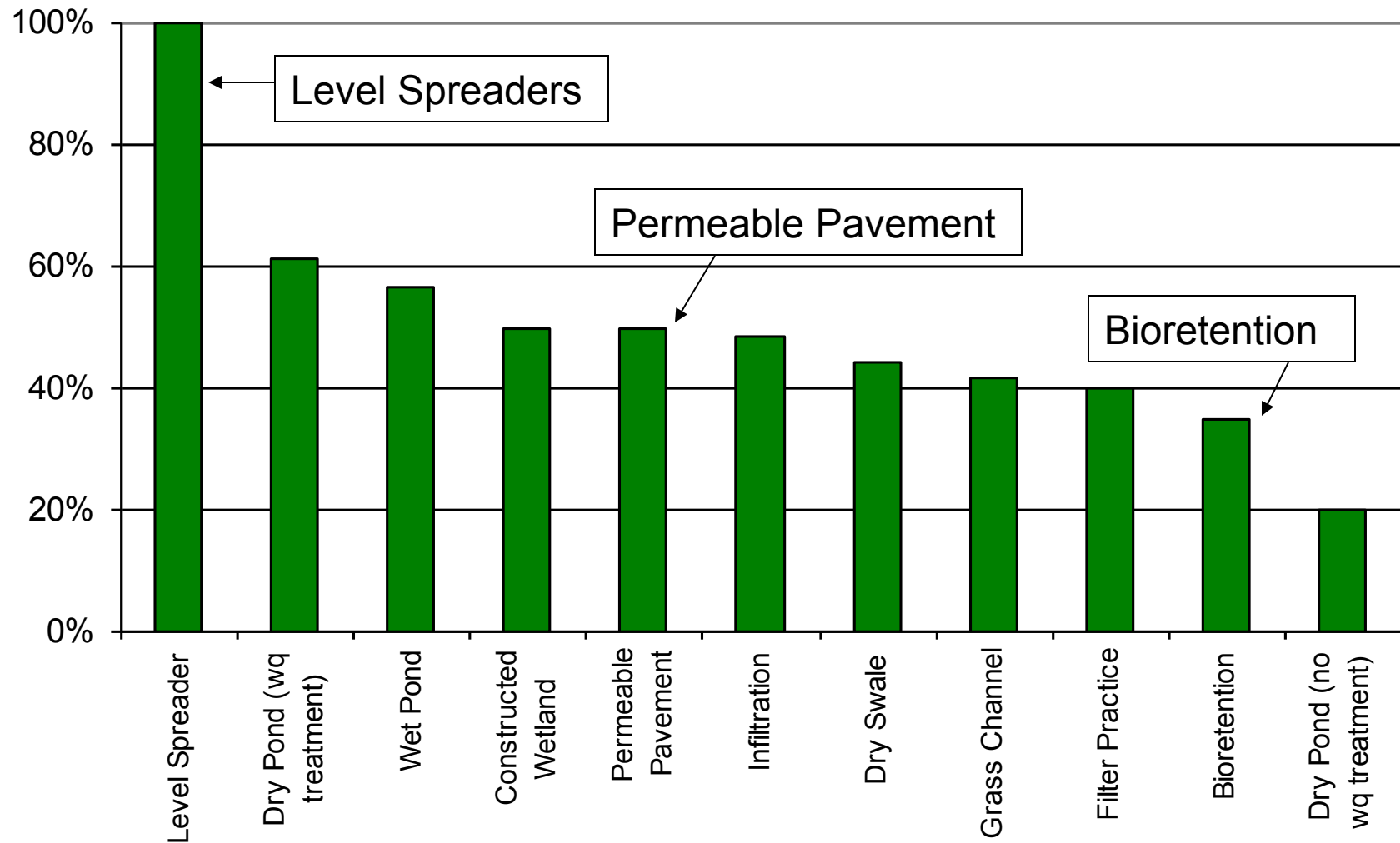
www.stormwatercenter.net

Design, Construction & Maintenance Issues

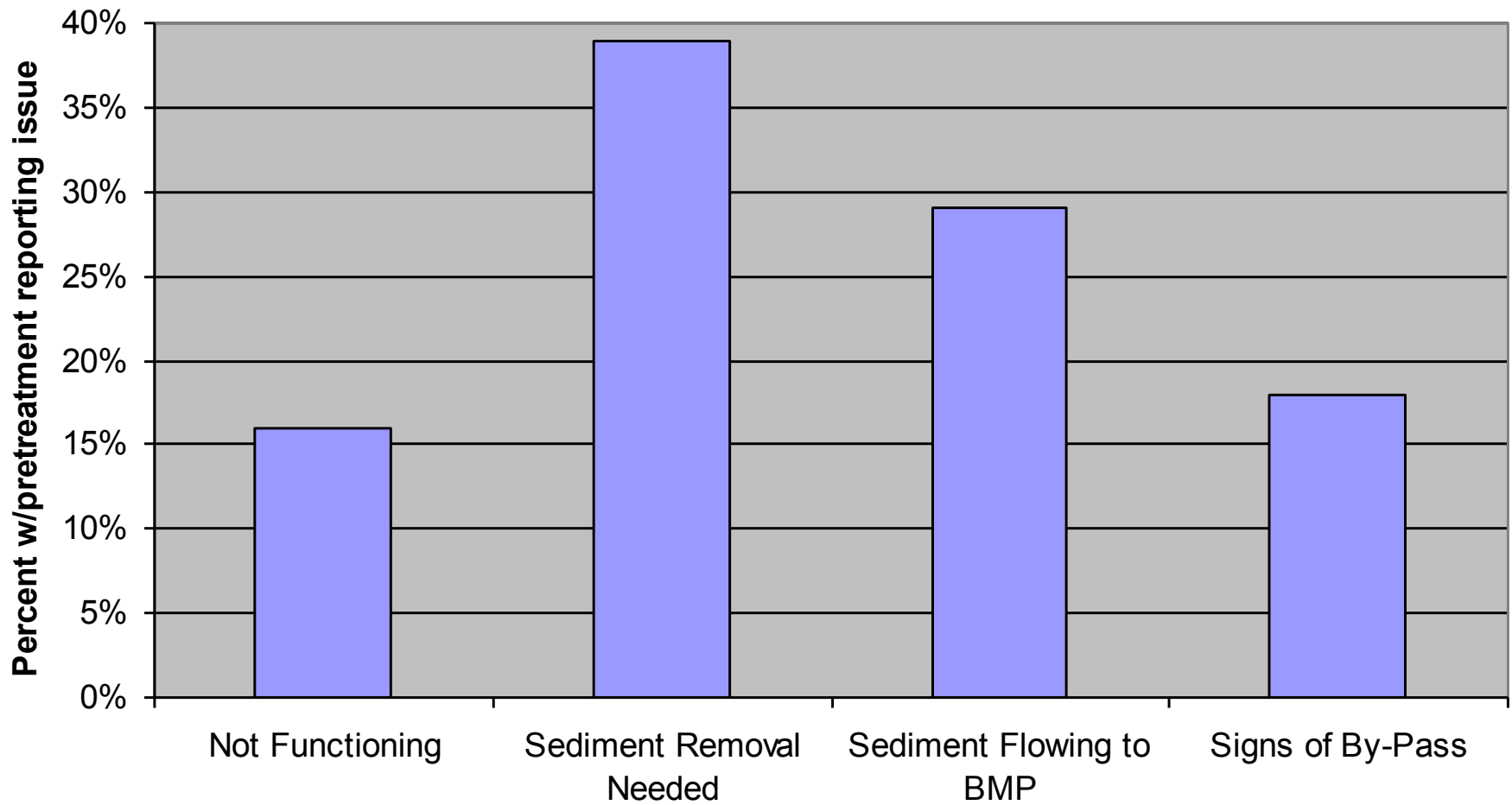


BMPs Surveyed with Maintenance Issues

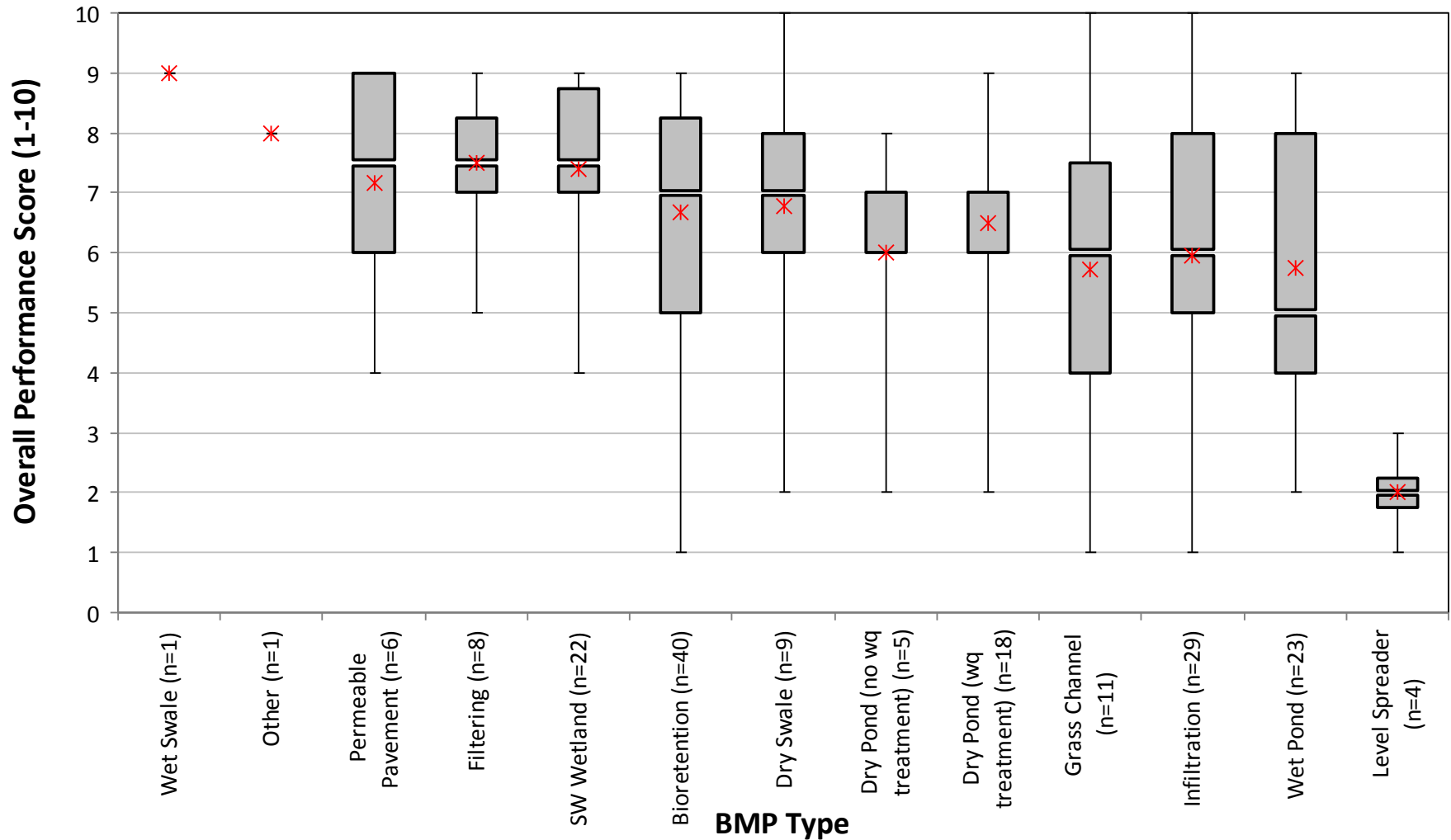
Percent of BMPs Surveyed with Maintenance Issues



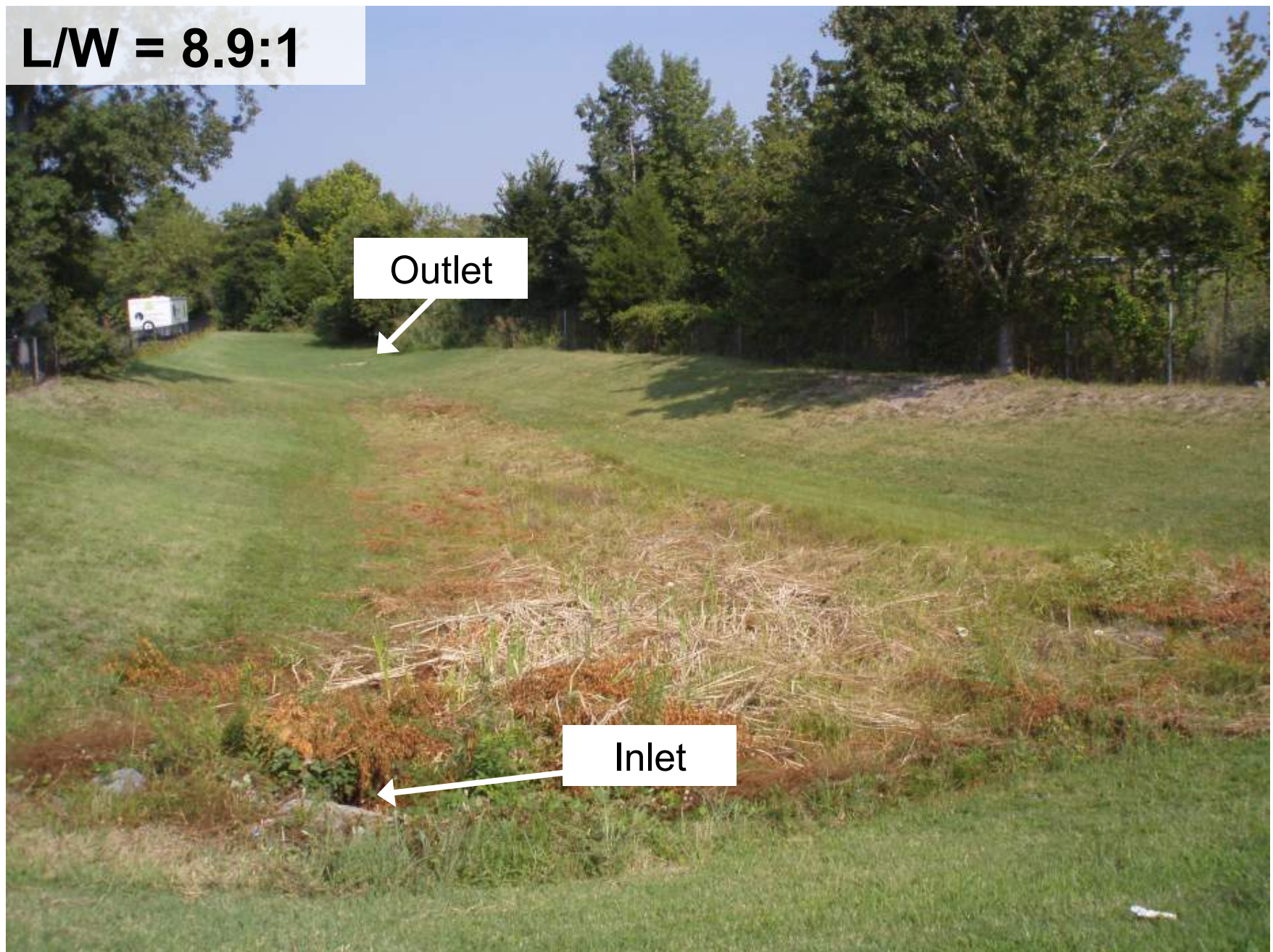
Issues with Pre-Treatment (for 78 sites with pre-treatment)



Range of Overall Performance Scores By BMP Type



$L/W = 8.9:1$



SFP = almost none

