

# The Road to Stormwater Compliance



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MN-CAR Program Manager



# Stormwater Permit Compliance

1

## Easy

- SWPPP
- Best Management Practices
- Monthly inspections
- Quarterly Stormwater Monitoring Reports (SWMRs) 78%
- Stormwater Annual Report (2010 – 78%)
- Annual Employee Training

2

## Hard

- 303(d) TMDL Impaired Waterways

3

## Painful

- Stormwater Benchmark Sampling and Follow Up



# Best Management Practices

## Vehicle Storage

- Inspect incoming vehicles
- Process vehicles prior to storage
- Inspect vehicle storage area regularly.

## Vehicle Processing

- Remove fluids prior to dismantling or crushing
- Dismantle vehicles
- Remove batteries, battery cable ends, and lead wheel weights
- Remove R-12 and R-134a refrigerant.
- Spill control
- Remove mercury switches

## Parts Storage

- Store batteries inside building or covered container.
- Store all engines and transmissions inside a building or in a covered weather-proof (non leaking) container.
- Store no more than 500 scrap tires onsite (or obtain required permit from MPCA).
- Store vehicle body parts indoors or on racks off the ground.

## Crushing Operations

- Process all vehicles prior to crushing.
- Clean up any leaked residual fluids, debris, and broken parts at the end of each day of crushing.
- Review expected cleanup activities with the employees crushing the vehicles.

## Facility Management

- Store all fluids in the designated tanks that are located inside a building or outside in secondary containment.
- Properly label all tanks.
- Maintain well-stocked spill kits
- Immediately clean up any observed leak or spill.
- Conduct regular inspections of equipment & perform preventive maintenance.
- Control erosion of unpaved areas.
- Sweep paved surfaces.
- Repair broken pavement
- Conduct annual employee training .









CAUTION  
LOW  
HEADROOM

FIRE  
DANGER  
KEEP 100 FT. AWAY FROM FLAME OR SPARK

CAUTION  
HAZARDOUS  
MATERIAL

DANGER  
KEEP 10 FT. AWAY FROM FLAME OR SPARK

DANGER  
KEEP 100 FT. AWAY FROM FLAME OR SPARK

PART #  
181 GAL.

DANGER  
FLAMMABLE  
LIQUIDS





# Remove mercury switches

Contact ELVS at,  
877-225-ELVS (3587), or  
visit ELVS' Web site at  
[www.elvsolutions.org](http://www.elvsolutions.org).

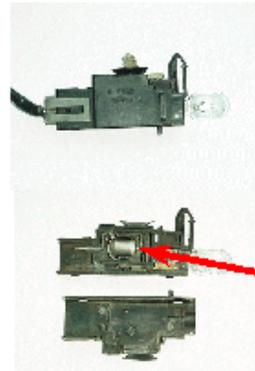
**FREE...REPLACEMENT OF YOUR MERCURY SWITCH ...FREE**

**REPLACING 1  
MERCURY SWITCH  
CAN PREVENT  
CONTAMINATION OF  
1 ACRE OF LAKE FOR  
1 YEAR**



**REPLACING 1  
MERCURY SWITCH  
CAN PREVENT  
CONTAMINATION OF  
2,000 WALLEYE**

FORD HOOD 1970 -1995



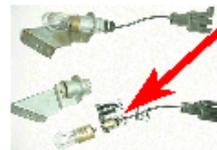
FORD TRUNK 1970 -1995



CHRYSLER HOOD 1980-90S



GM TRUNK 1970 -1995



**MERCURY SWITCH**



GM HOOD 1970 -1995



**FREE...DO YOUR PART!!! HELP THE ENVIRONMENT...FREE**

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045

046





**DO NOT  
BLOCK  
CONTAINER**



SCHIPAN  
INDUSTRIAL  
RECYCLING  
SERVICES

EAST WAY  
DISPOSAL  
88-3300

**KMR**  
381-1315



**SPILL**  
Response Kit

FOR NON AGGRESSIVE LIQUIDS



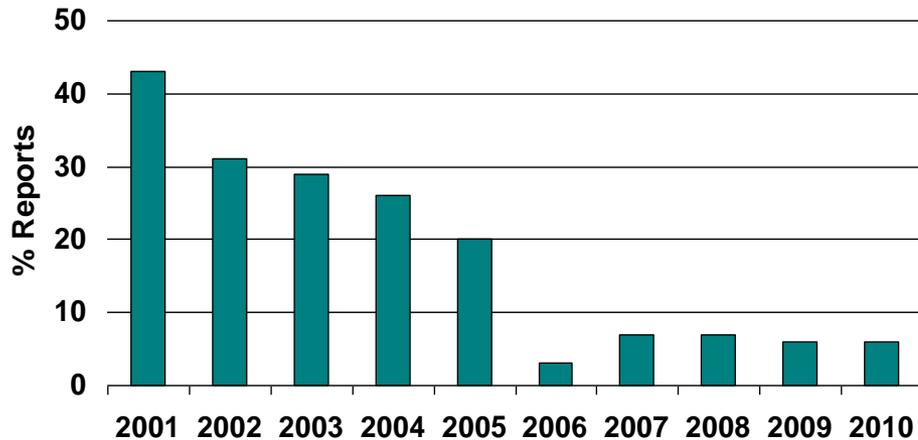
SPILL  
KIT

The image shows a yellow, cylindrical spill kit container. It has a lid with a black handle. The container is positioned in a utility area, next to a grey vertical pipe and a metal mesh cage. In the background, there are other containers, including a purple one with 'TEP' written on it and a yellow bucket. The floor is concrete.



# Good Spill Control Can Reduce Spills & Leaks by 90%

Reported Spills and Leaks







JUN 27 2002



MAY 8 2002





**ELGIN**

Alfa Romeo

THEEL AUTO

THEEL AUTO

THEEL  
AUTO



JUN 27 2002



OLL R PARTS  
612-423-2808



# Employee Training



# Stormwater Sampling Concerns

1. Don't 'create' benchmark locations
2. Stormwater sampling is not a reliable indicator
3. Limited basis for benchmarks
4. Benchmarks become 'action levels'
5. Focus should be on water quality protection, not sampling

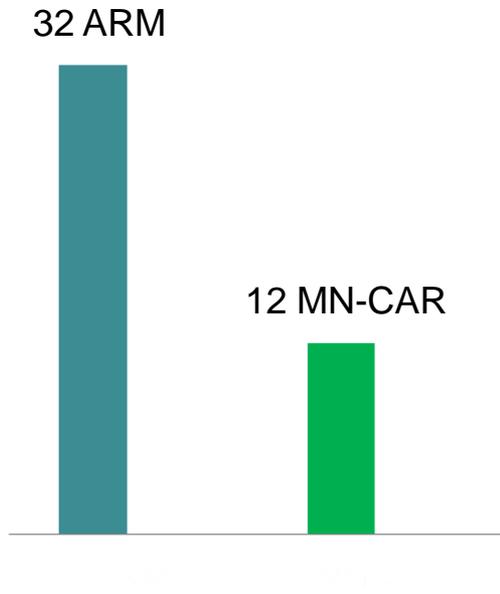


# Sampling Tips

- Keep BML location clean
- Maintain vegetation
- Use scoop
- Do not disturb bottom
- Consider filters
- If Pb exceedance, measure hardness and recalculate benchmark



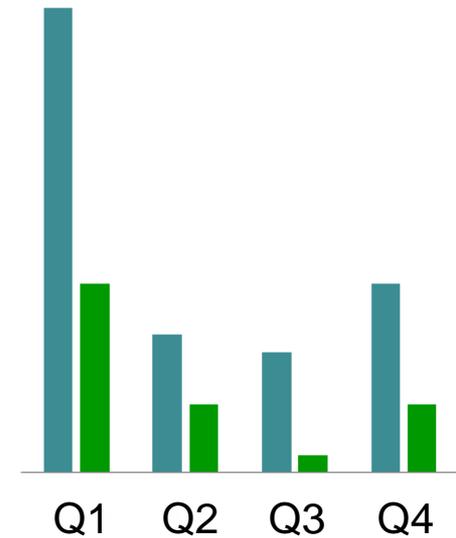
# ARM Sampling Results



Who

60

How  
Many  
Samples



When



# ARM Stormwater Sampling Data (mg/l)

	Min	Max	Mean	Median	Benchmark	% Exceed
TSS	ND	10,100	390.15	38	100	28.8
Fe	ND	575	21.18	2.6	1.0	69.7
Al	ND	59	4.45	1.47	1.5	49.9
Pb	ND	0.922	2.299	ND	0.164	12.7

Six ARM members (19%) met all benchmark levels.



# How Do We Compare?

Median Values (mg/l)

	ARM	Scrap Recyclers	Urban Runoff
TSS	38	56	58
Fe	2.6	2.0	NA
Al	1.47	1.5	NA
Pb	ND	0.05	0.017



# Pollutant Sources

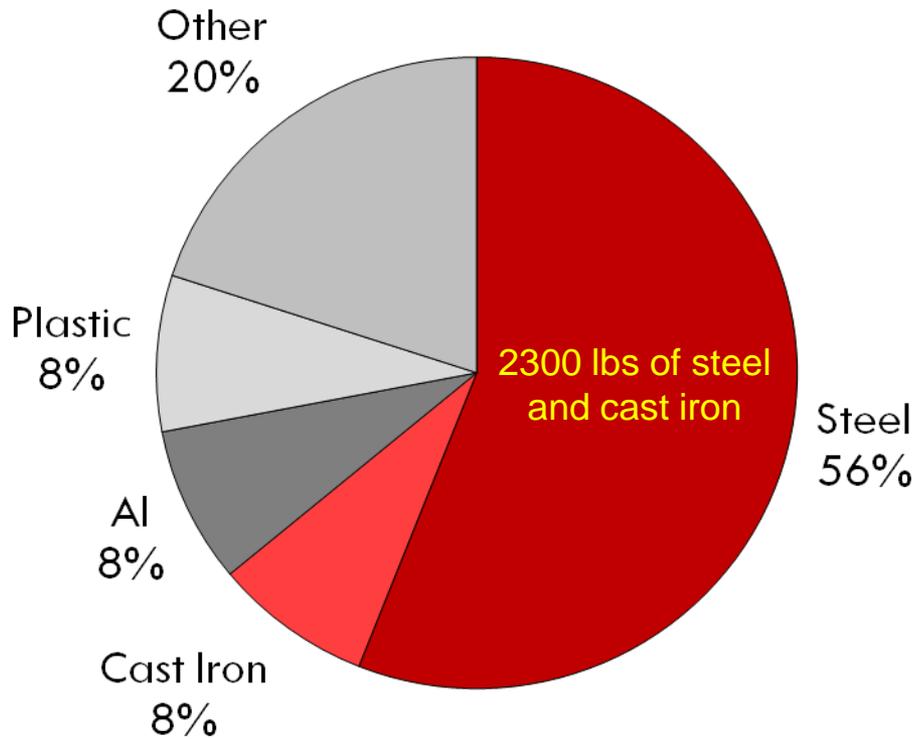


# TSS Sources



# Fe Sources

## Vehicle Composition



Buildings

Pavement

Equipment

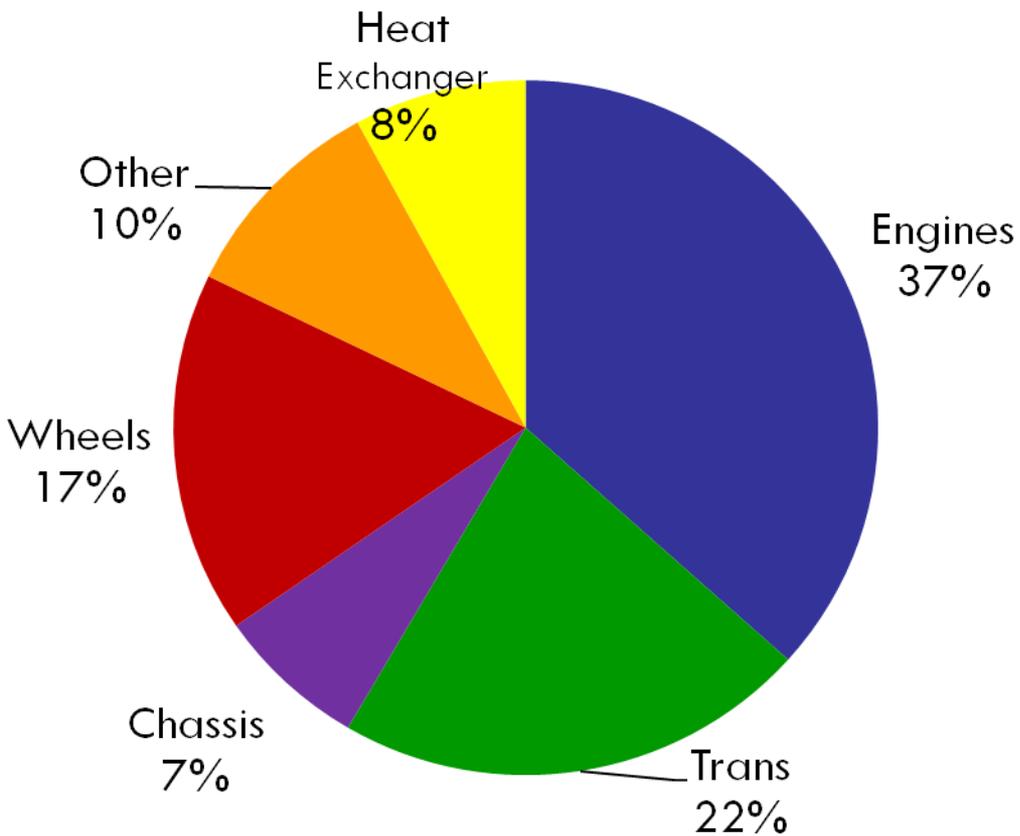
Natural soil

Atmospheric deposition



# Al Sources

## 300 lbs of Aluminum in Vehicles



Rain gutters  
Downspouts  
Atmospheric deposition



# Metal Characteristics

<10% is dissolved

70-90 % are small particles (<20 $\mu$ m)

## Removal Mechanisms

Pollution prevention

Sedimentation

Filtration

Chemical reaction

- Sorption
- Ion exchange
- Organic precipitation



# Stormwater Treatment







12/09/2005



# Media Filtration



Zeolite



Granular  
Activated  
Carbon

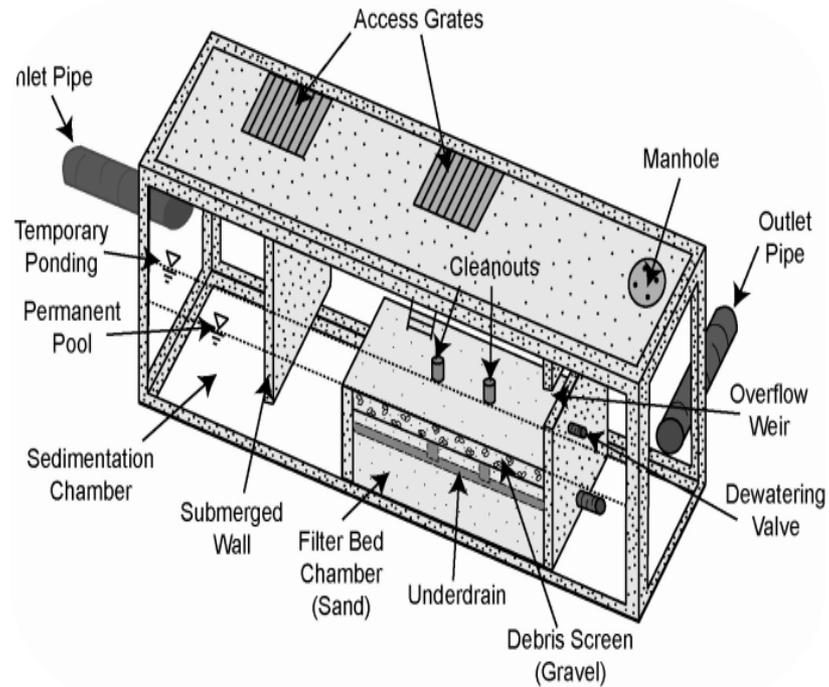


Peat



Sand

# Sand Filter

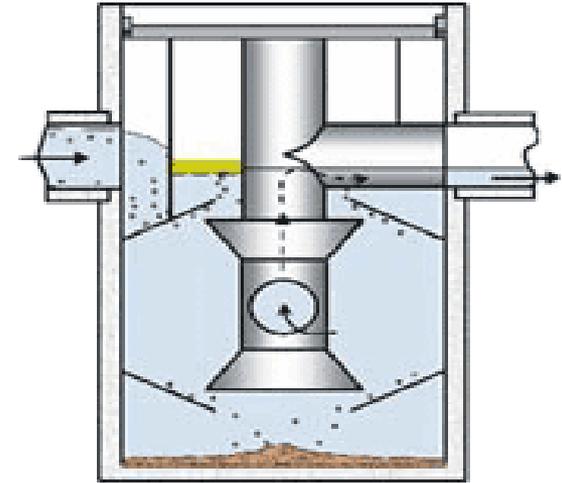
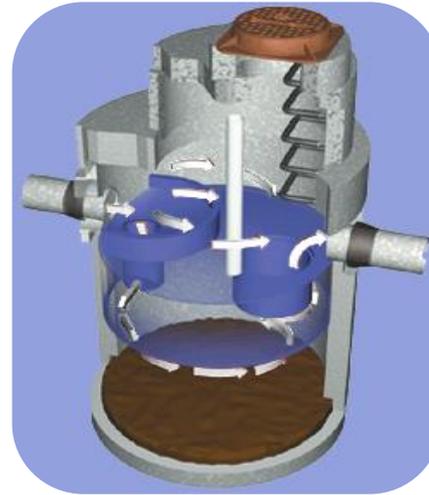
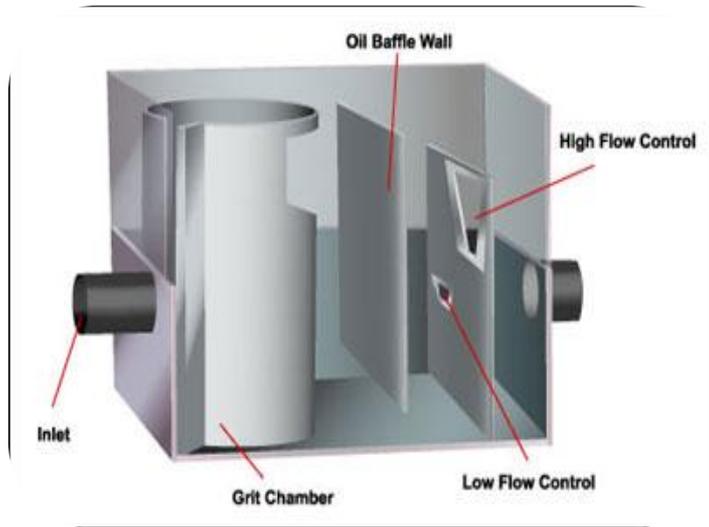




# Proprietary Media Filtration



# Not Recommended for Metal Control



## Oil Water Separators

### Hydrodynamic Devices

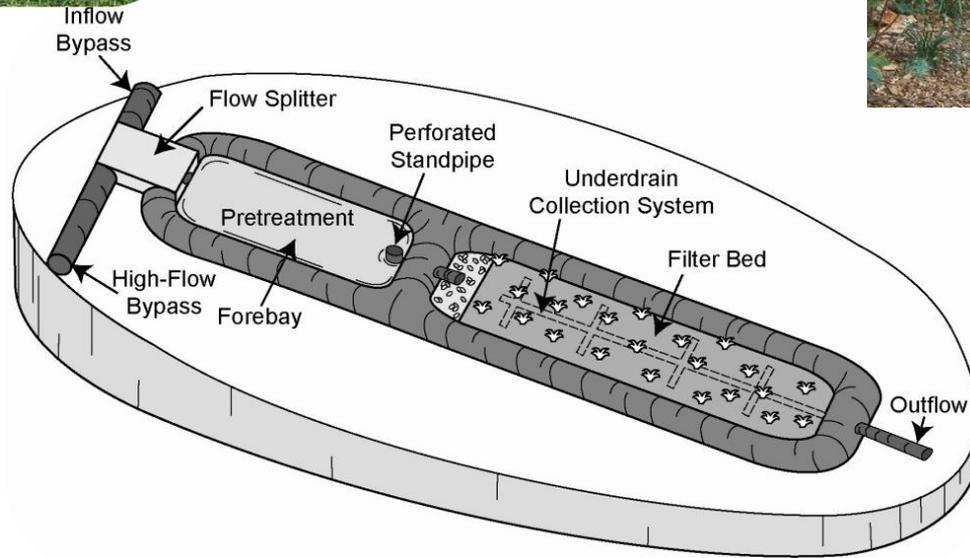
- Vortechincs
- Stormceptor
- Downstream Defender





**Think Green**

# Incorporate Filter Media into Swales





**Bioswale**

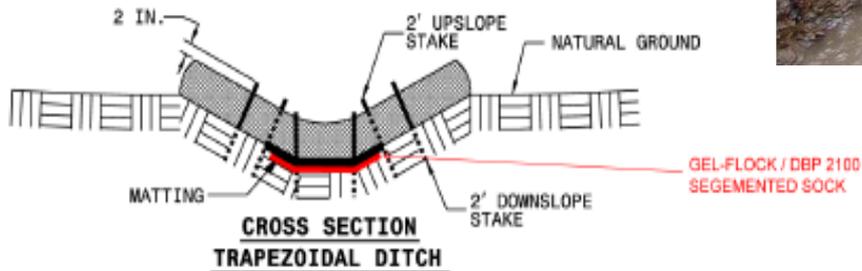


**Bioretention**

**NOV 19 2003**

# StormKlear Gel-Floc Sock

Chitosan



# Stormwater Compliance Strategy

1. Meet basic permit requirements consistently



2. Avoid continued frustration, wasted resources, and enforcement



3. Work together as partners for reasonable solutions

