QUARTERLY STATUS MEETING NO. 14 AGENDA
BMP Retrofit Pilot Program

DATE:	**September 26, 2001, Wednesday**
TIME:	**10:00 a.m. to 3:00 p.m.**
PLACE:	**RBF, 14725 Alton Pkwy, Irvine, CA 92619 phone: (949) 472-3505**
ATTENDEES:	**Distribution**
COPIES TO:	**File: JN 34123, 34218**
SUBJECT:	**Quarterly Status Meeting No. 14**

AGENDA ITEMS

1. Introductions and Objectives of the Meeting
2. Remarks by Caltrans and Plaintiffs
3. Final Report Presentation and Overview
4. O&M Cost Development Update
5. Construction Cost Data Evaluation Update
6. Closure and Meeting Summary

BMP
Retrofit Pilot Program Status Meeting No. 14

September 26, 2001

Agenda Items

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2. Remarks by Caltrans and Plaintiffs
3. Final Report Presentation and Overview
4. O&M Cost Development Update
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Item 1

Introduction and Objectives of the Meeting

Item 2

Remarks by Caltrans and Plaintiffs

Item 3

Final Report Presentation and Overview

M. Barrett

Summary of Constituent Removal

	TSS	Nitrate	TKN	P
Wet Basin	93%	61%	27%	5%
MCTT	75%	-63%	18%	18%
Austin MF	90%	-71%	41%	39%
Delaw are MF	81%	-55%	44%	44%
Bio Strip	83%	36%	47%	7%
EDB	76%	35%	37%	53%
Bio Sw ale	77%	60%	69%	8%
StormFilter	40%	-7%	19%	24%
CDS	8%	6%	13%	2%

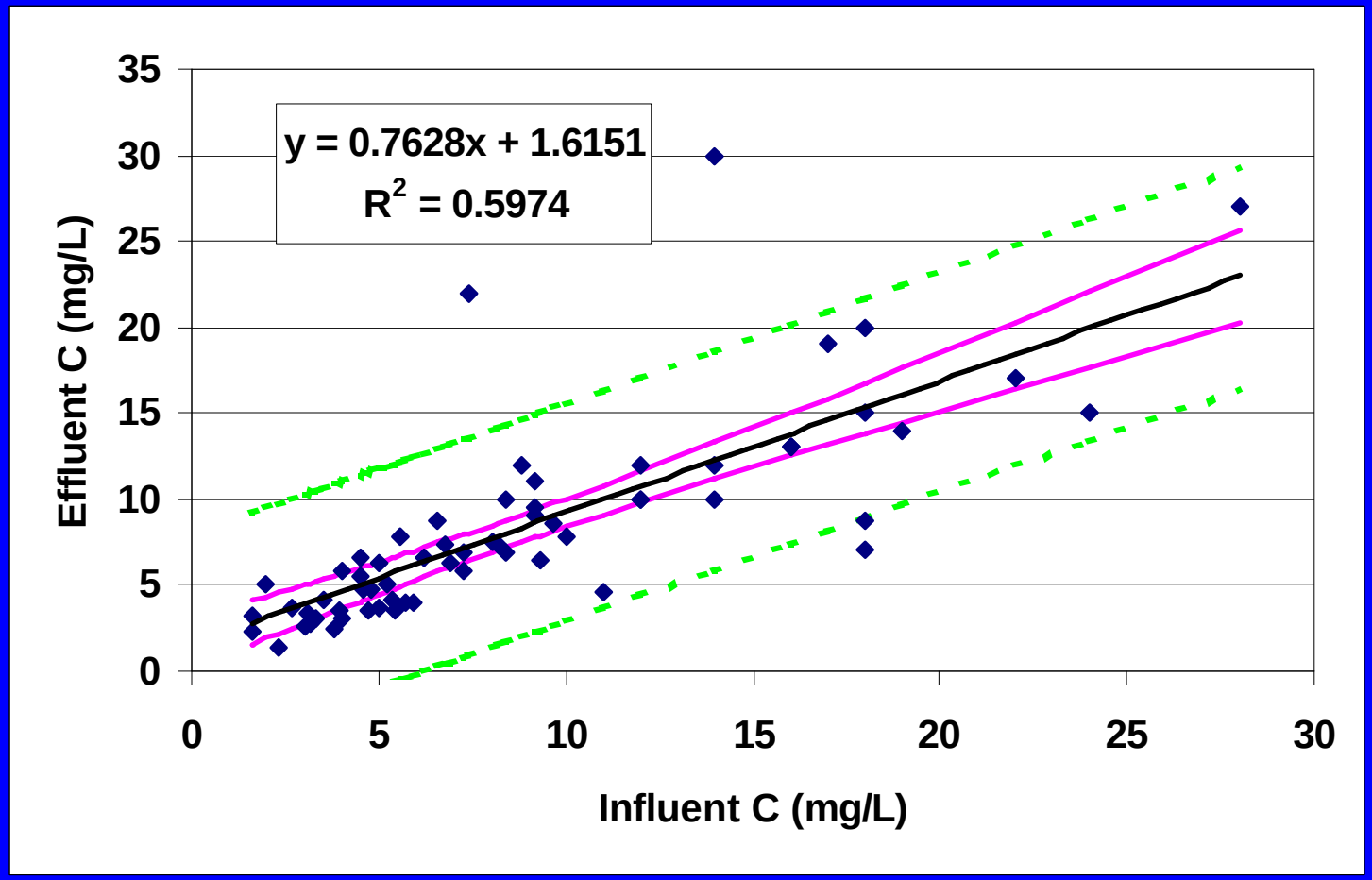
Strips, Swales, EDBs are Load Reduction

Methodology

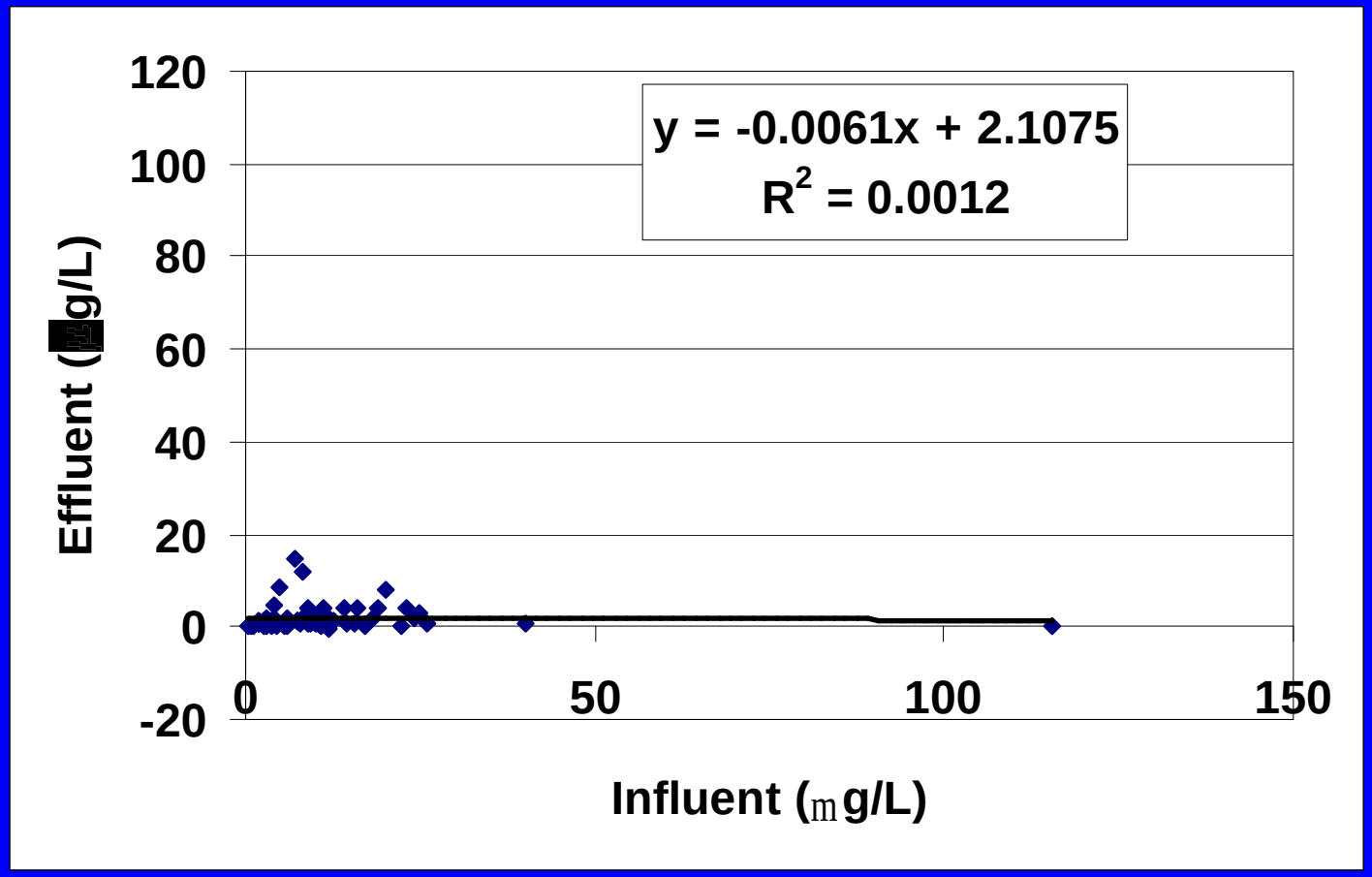
- Influent plotted against effluent EMC to determine relationship
- Confidence interval calculated for regression equation
- Water quality design storm estimated and used to compare BMPs

Typical Regression Relationship

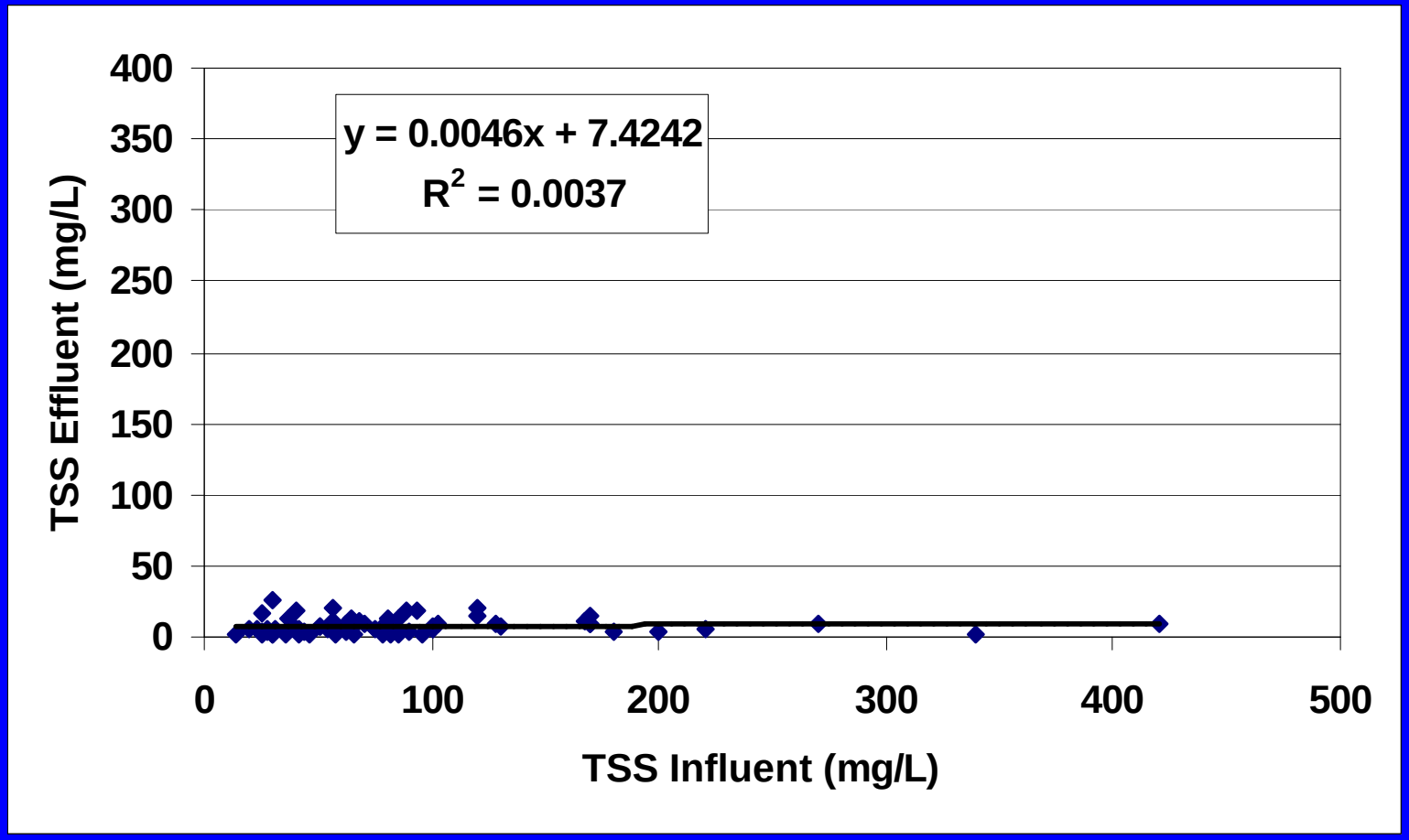
Sand Filters - Dissolved Cu



Sand Filter – Particulate Copper



Sand Filter - TSS



General Relationships

- Sand filters – effluent concentrations of particle associated constituents independent of influent C
- Wet basins – all effluent concentrations independent of influent C
- Other BMPs – essentially all effluent C linearly related to influent C

Design Storm Concentrations

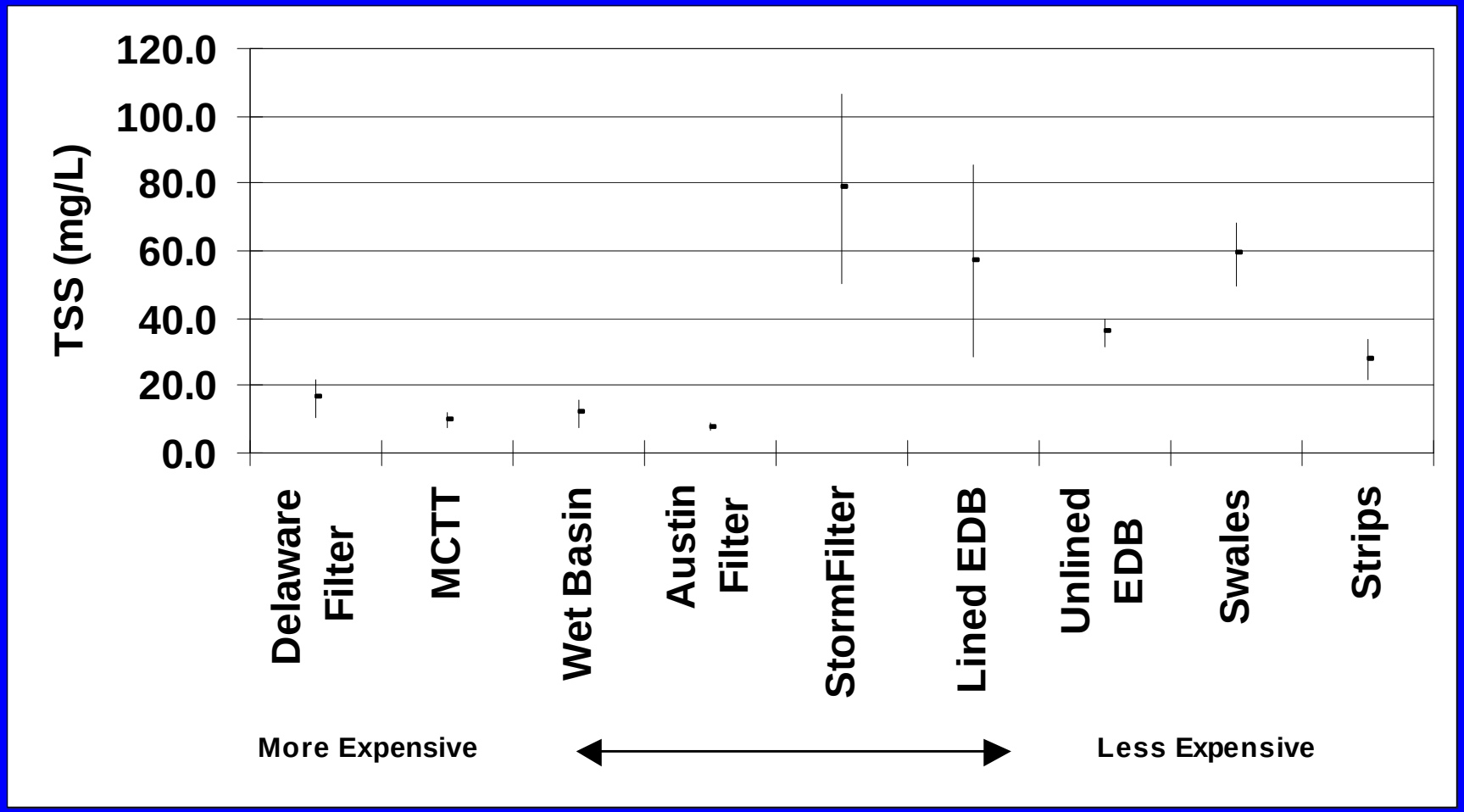
Constituent	Concentration[a]
TSS	114
Nitrate (as N)	0.97
Total Kjeldahl Nitrogen	2.36
Ortho-phosphorus	0.12
Particulate Phosphorus	0.26
Dissolved Copper	18
Dissolved Zinc	122
Dissolved Lead	8

[a] Concentration in mg/L except metals which are mg/L.

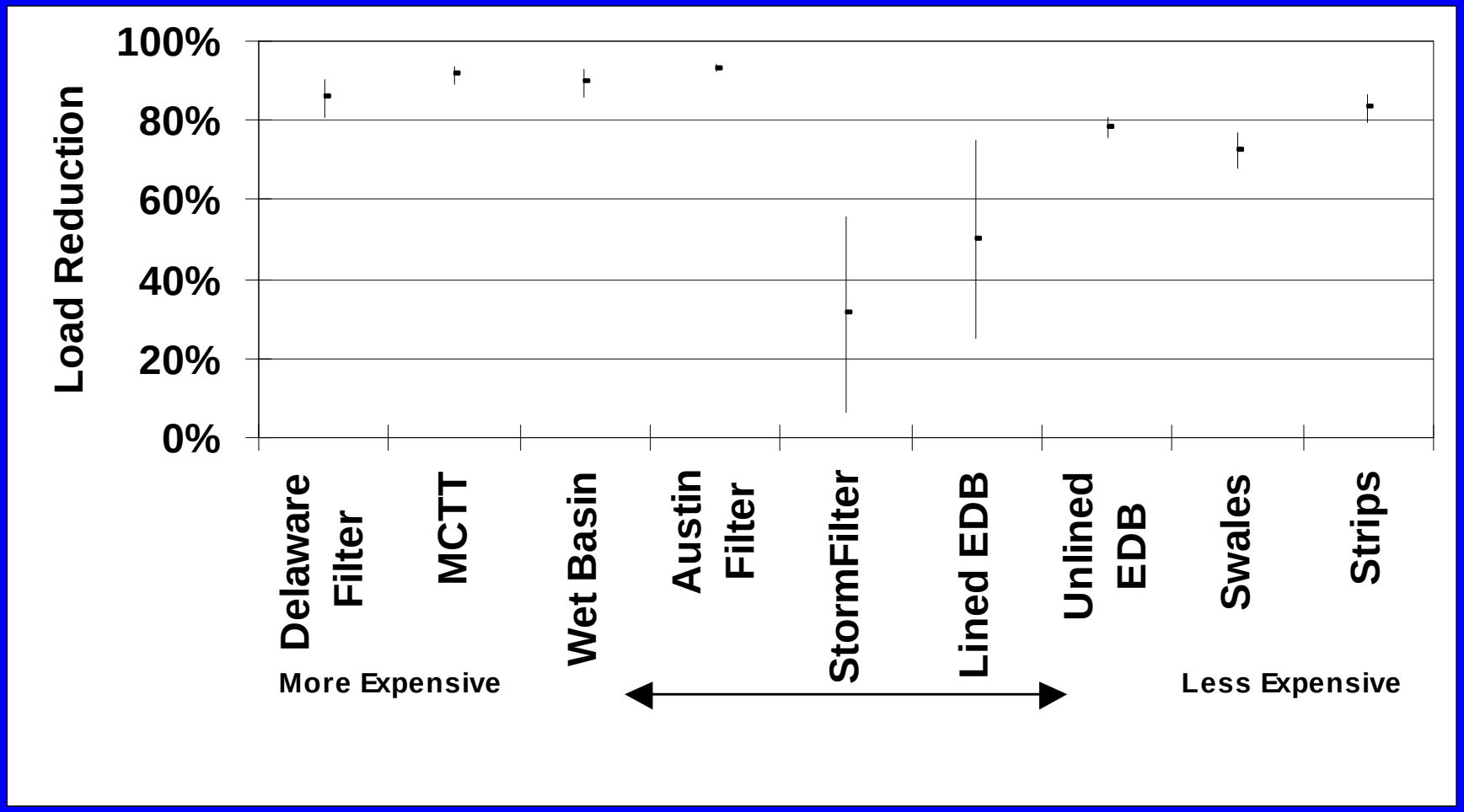
BMP Relative Construction Cost

BMP Type	Cost/m^3 of the Design Storm
Delaware Sand Filter	$3,500
MCTT	$2,850
Wet Basin	$2,640
Austin Filter	$2,000
StormFilter	$1,575
Lined Extended Detention	$350
Unlined EDB	$875
Swales	$700
Infiltration Basins	$640
Strips	NA
Drain Inlet Inserts	$37

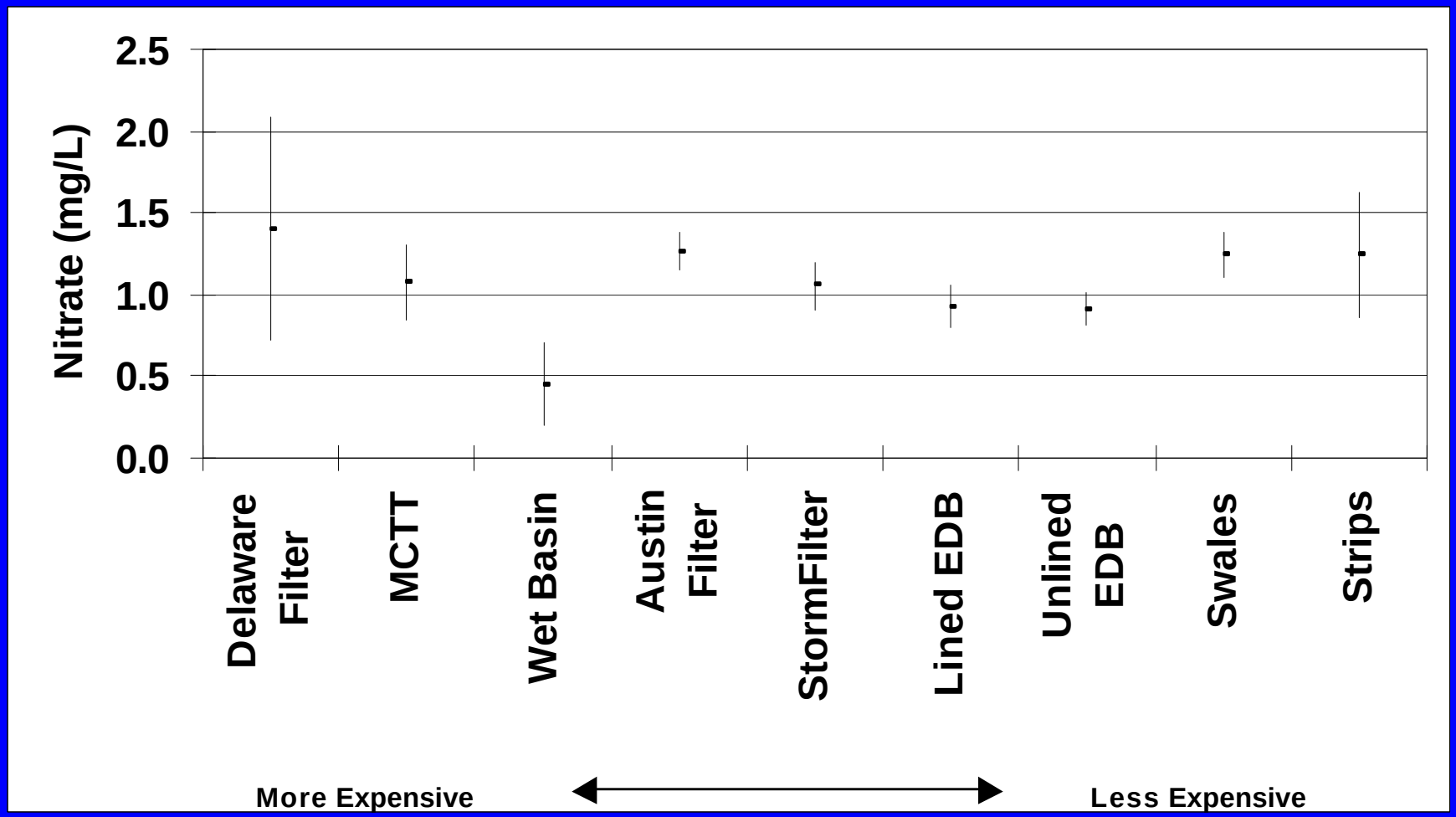
TSS Effluent (114 mg/L in)



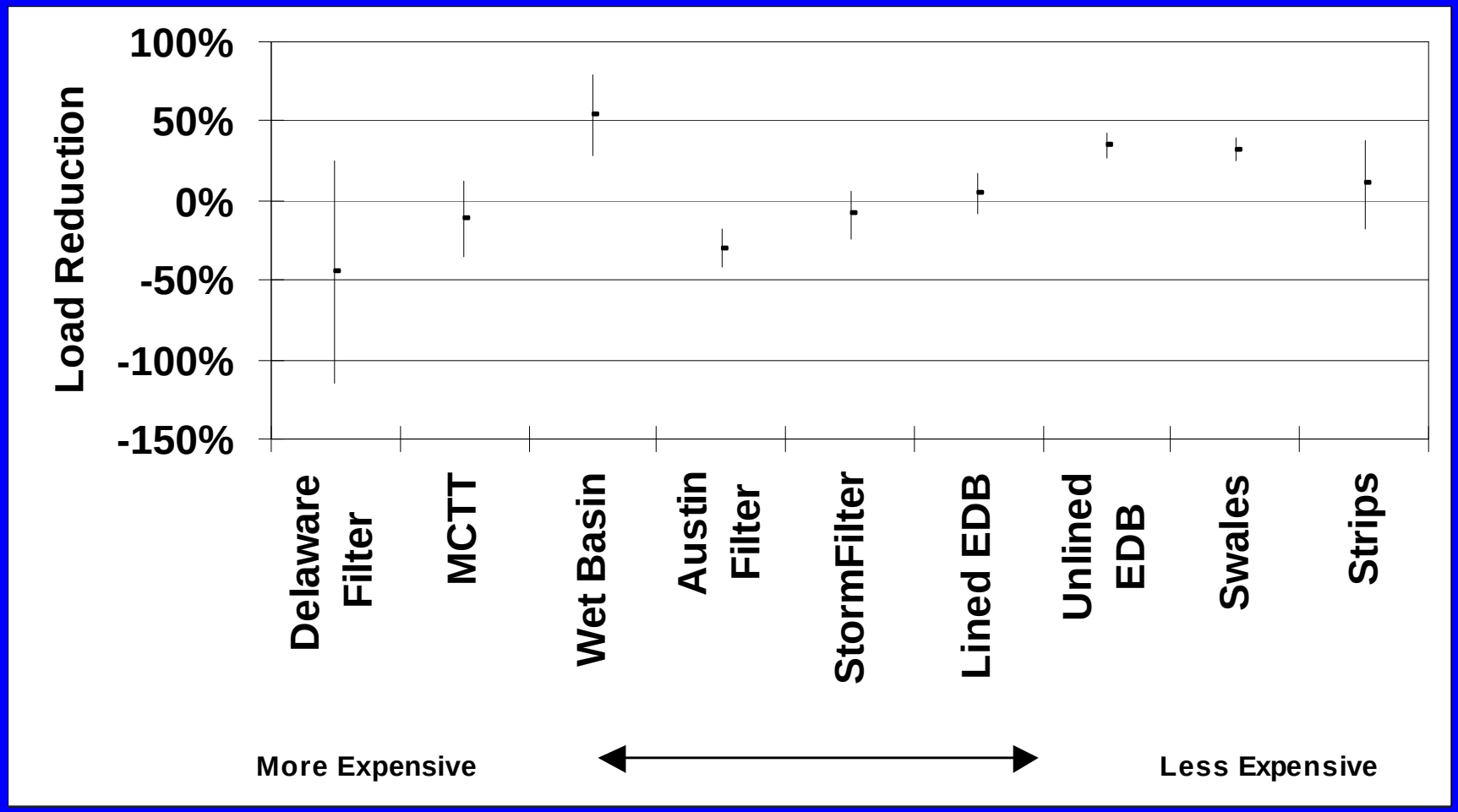
TSS Load Reduction



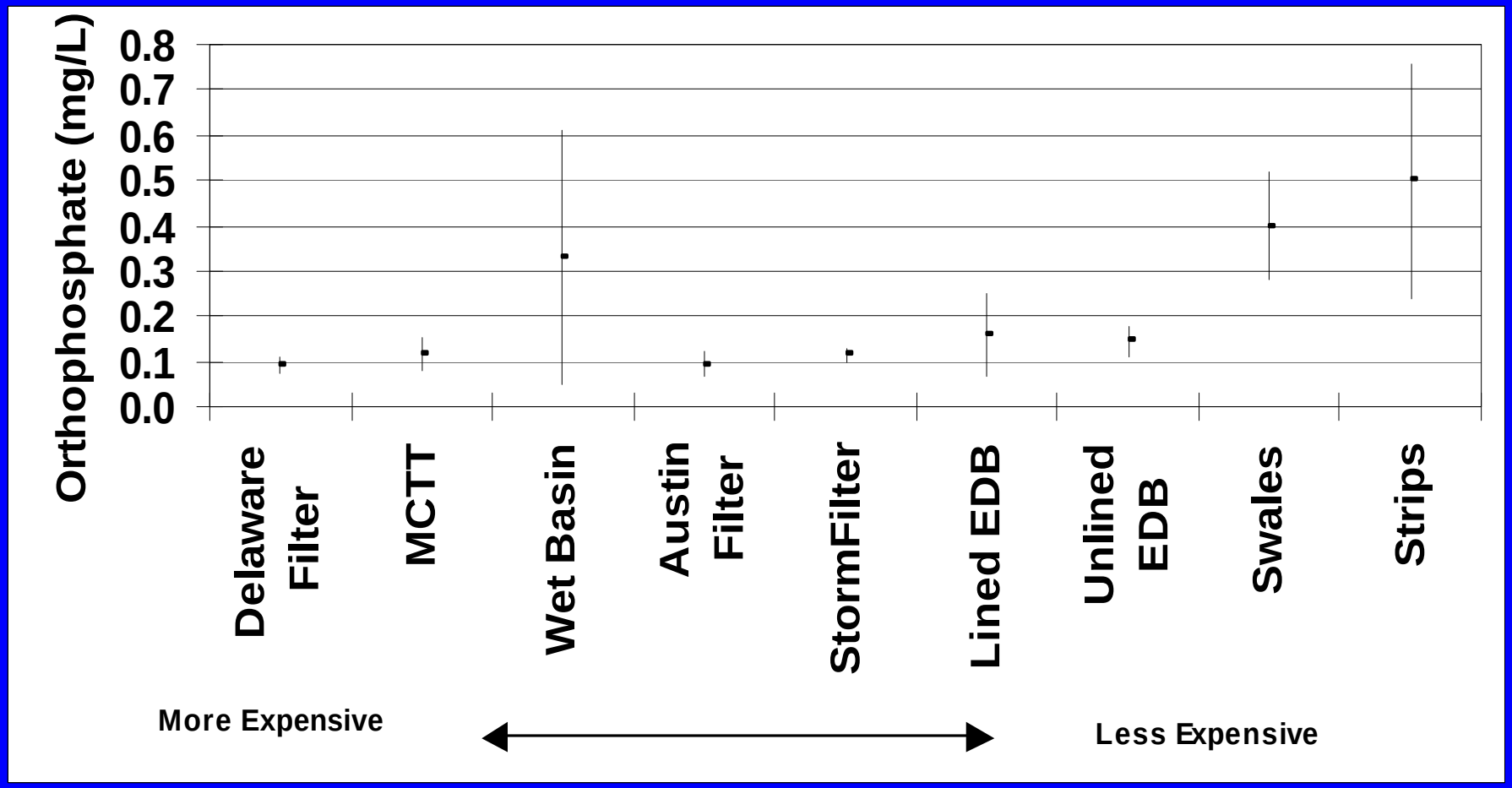
Nitrate Effluent (0.97 mg/L in)



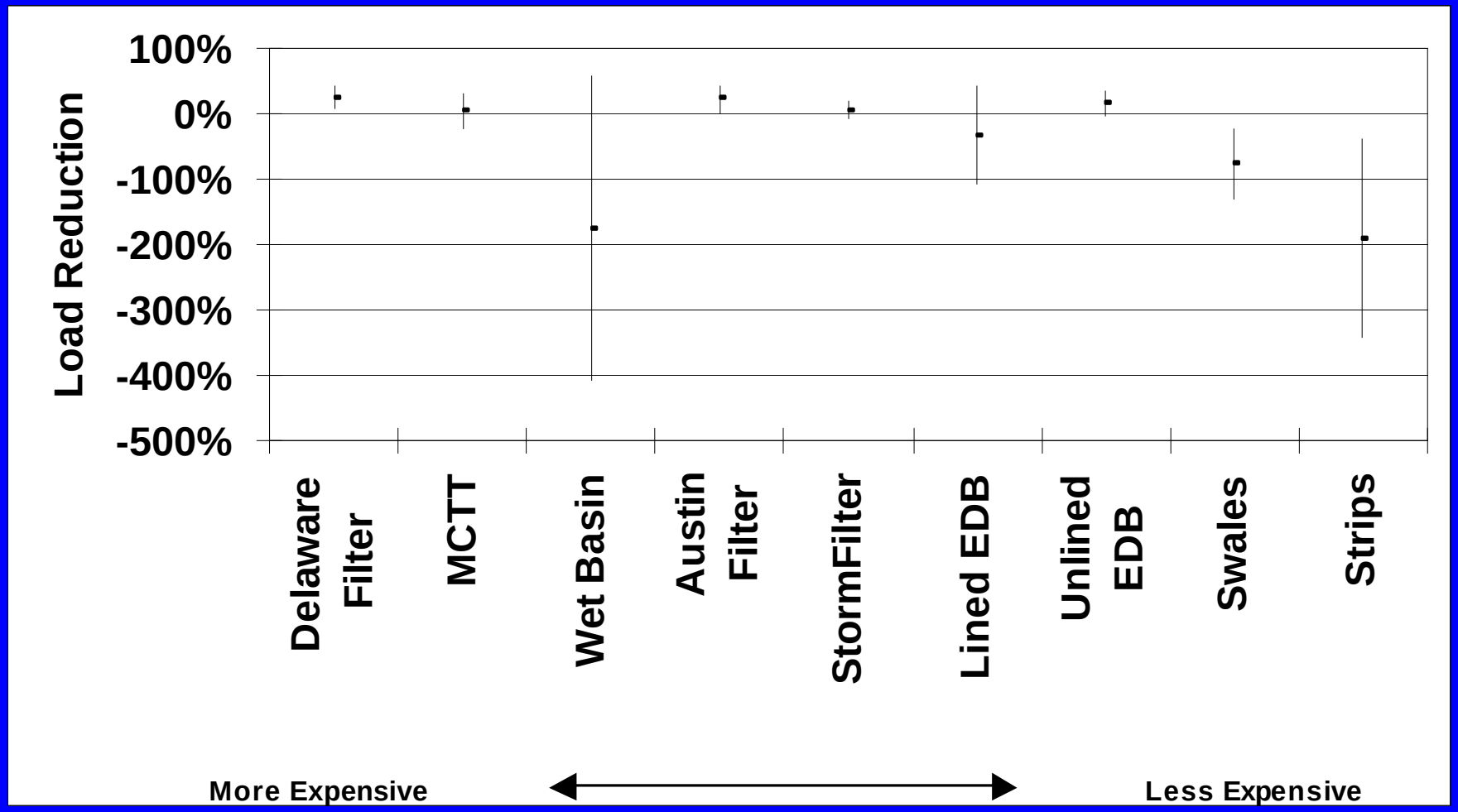
Nitrate Load Reduction



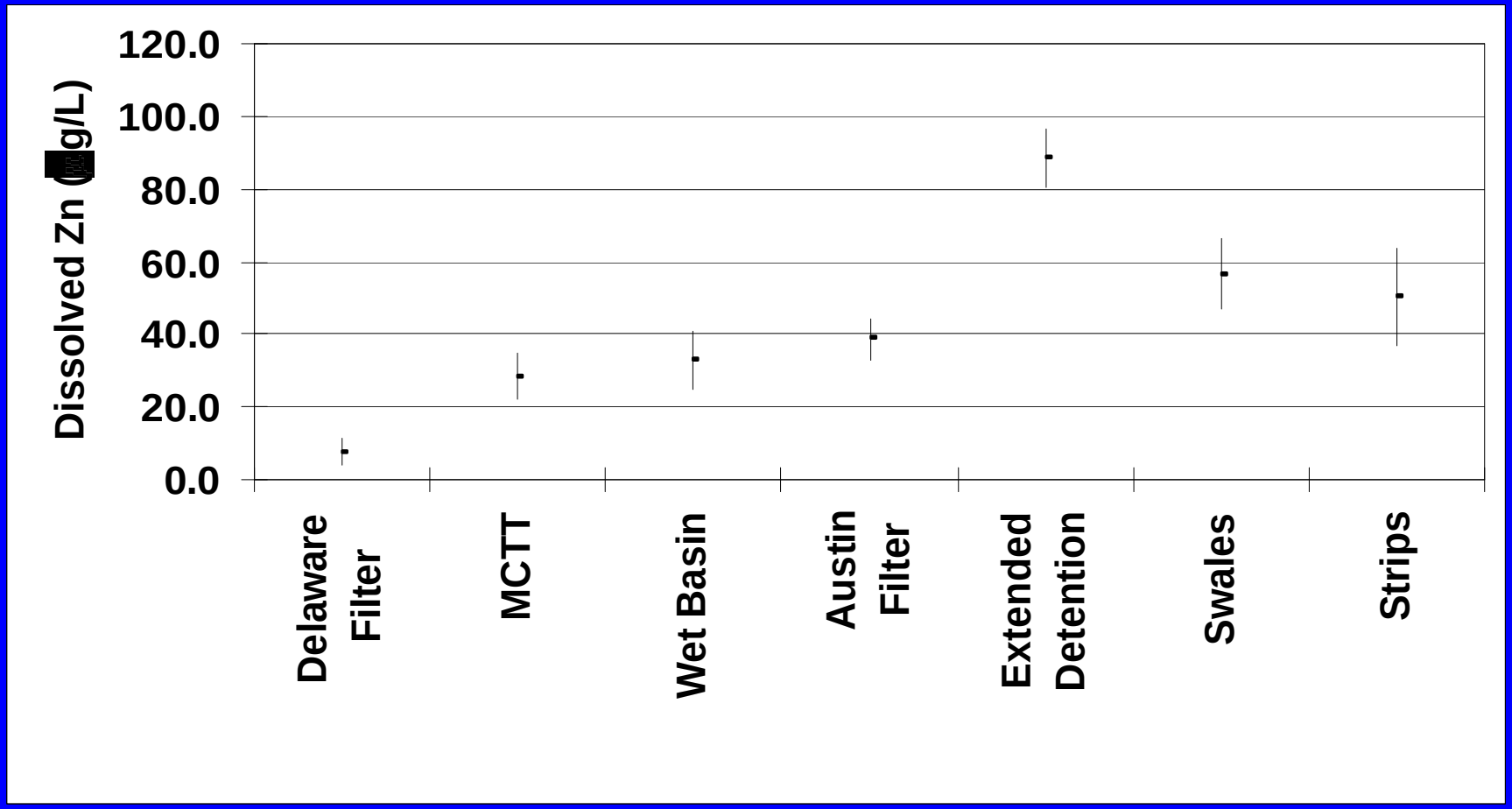
Ortho-phosphorus (0.12 mg/L in)



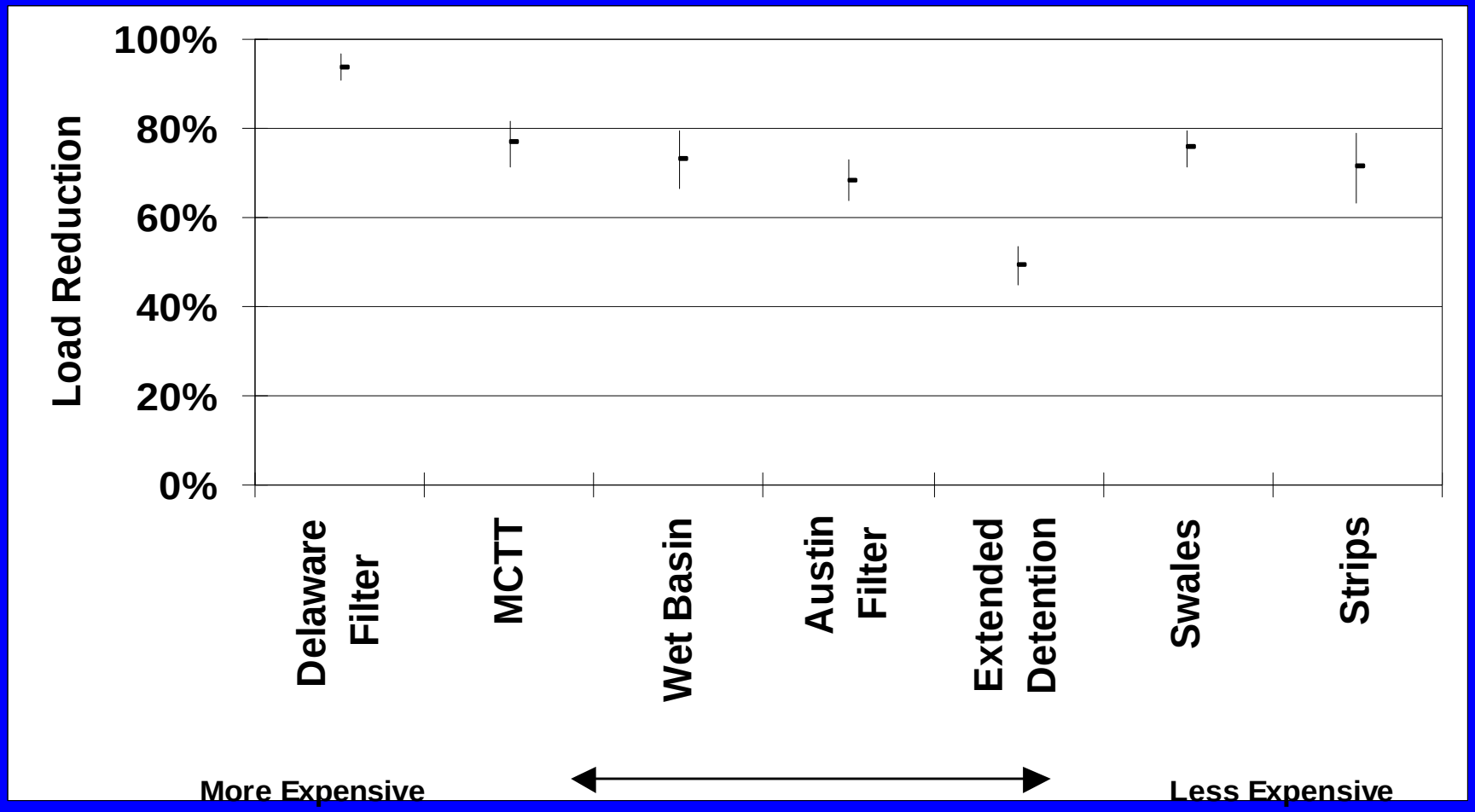
Ortho-P Load Reduction



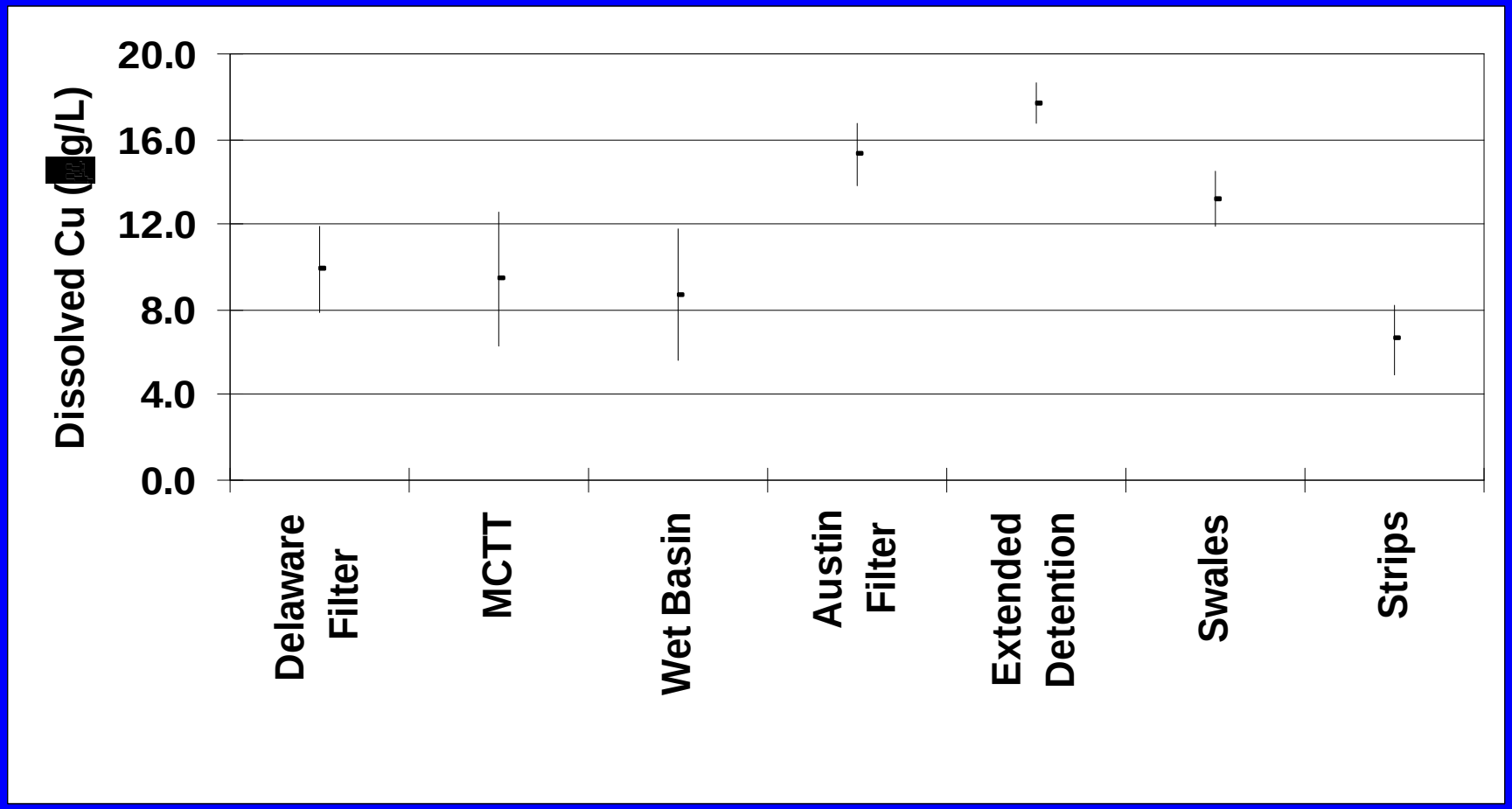
Dissolved Zn Effluent (122 µg/L)



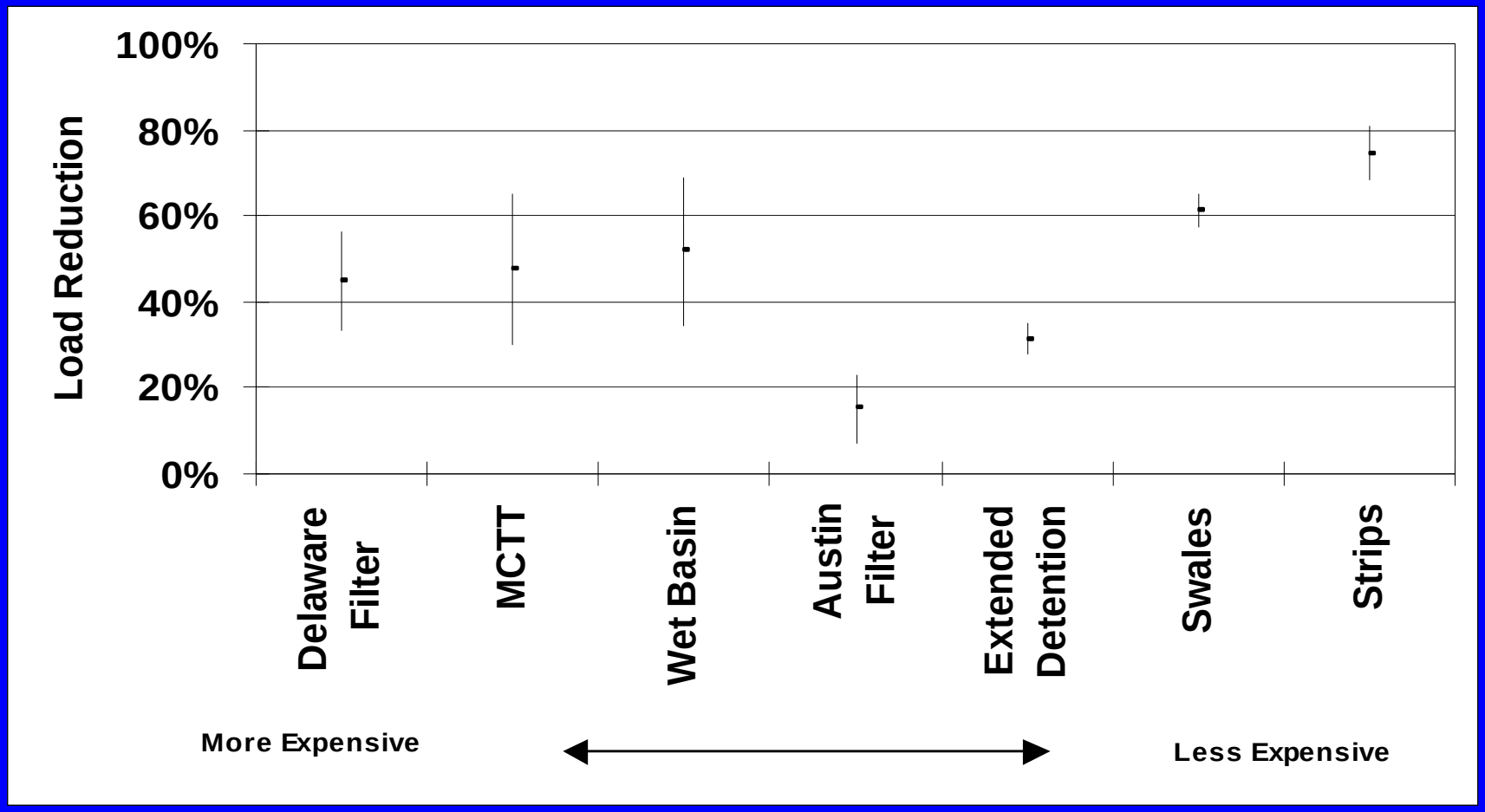
Dissolved Zn Load Reduction



Dissolved Cu Effluent (18 µg/L)



Dissolved Cu Load Reduction



Drain Inlet Inserts % Removal*

Constituent	Fossil Filter	StreamGuard
Copper	4	4
Lead	9	11
Zinc	3	3
TPH	3	15
Sediment	20	9

*excluding litter

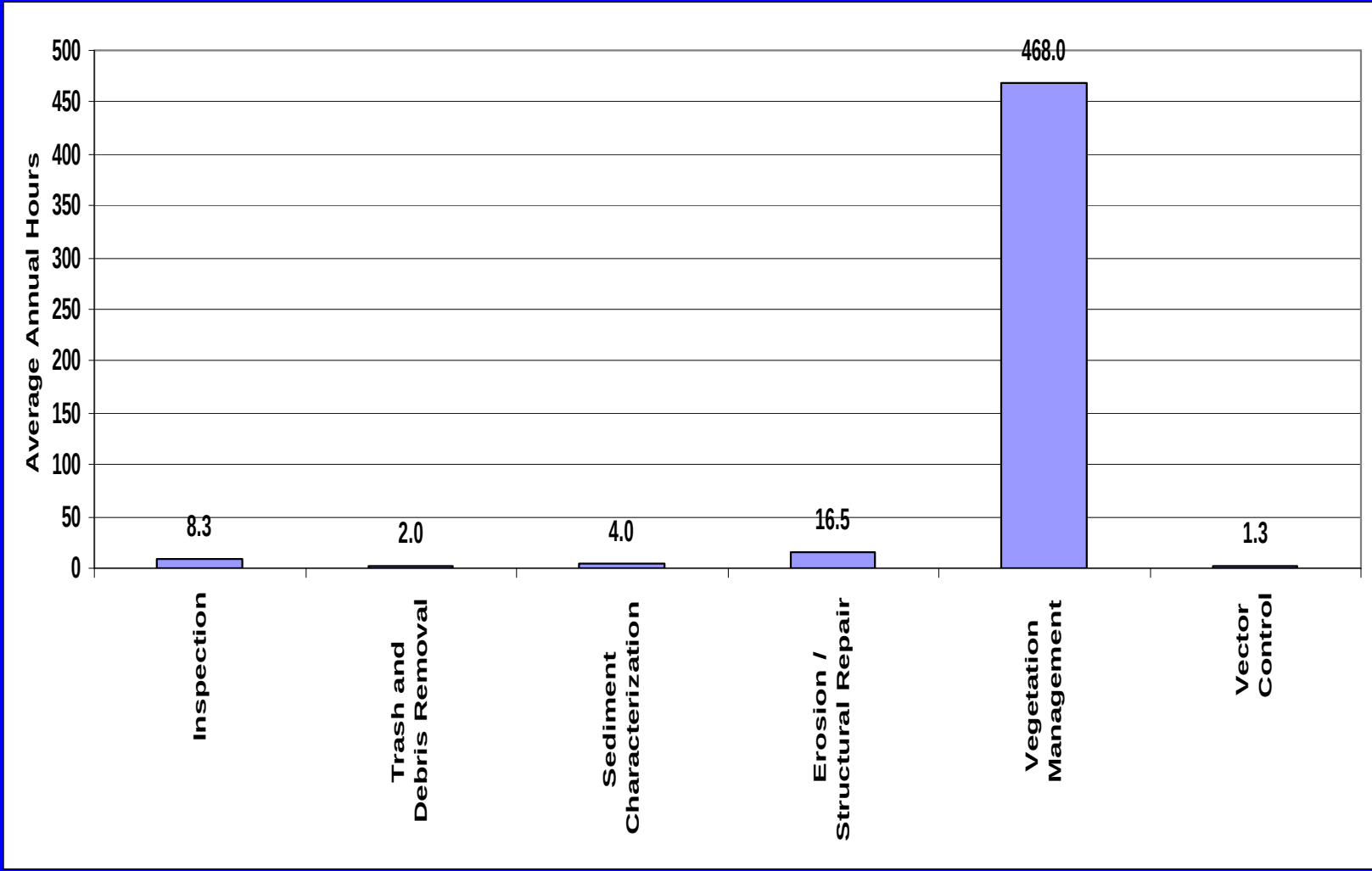
Oil Water Separator

- Installed at a maintenance station
- Diesel/Oil/Gasoline were usually near the detection limits at the influent
- No free oil ever accumulated in the device
- Not appropriate for stormwater treatment

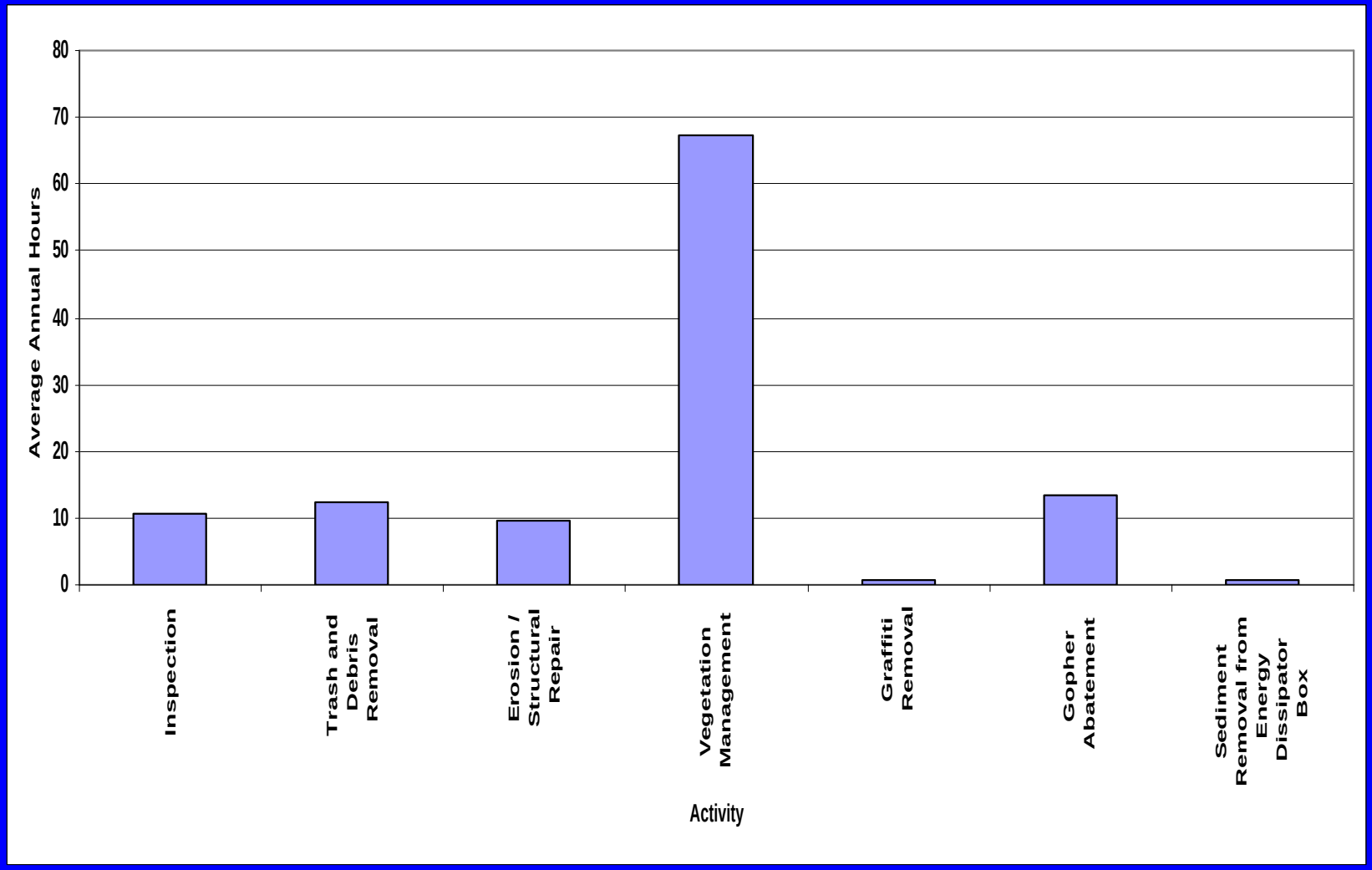
Average Annual Maintenance (h

Wet Basin	500
MCTT	220
Strips	180
Swales	116
Inf. Basin	89
Extended Detention	80
Sand Filters	49
Inserts	31
Infiltration Trench	18

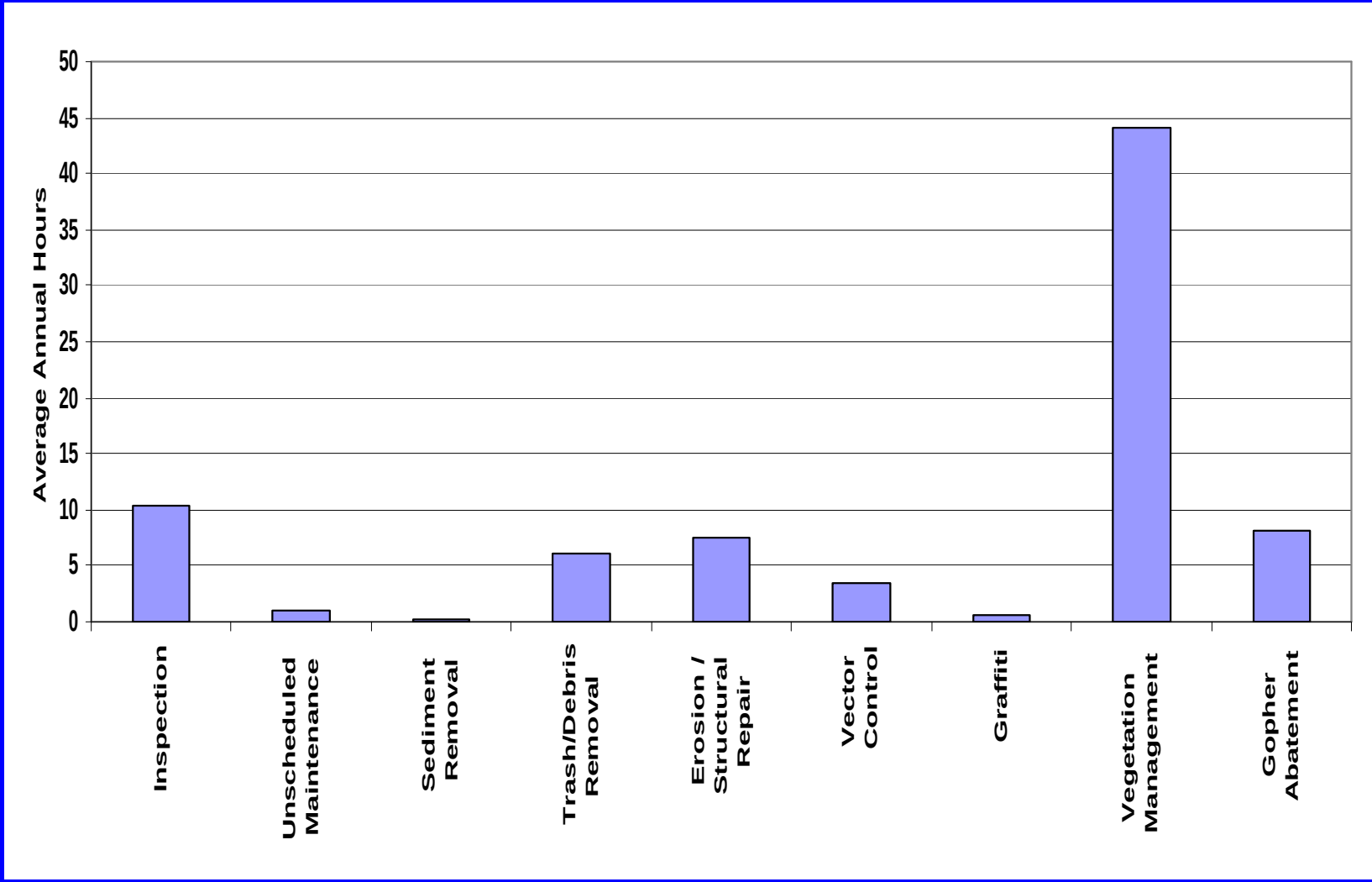
Wet Basin Field Hours



Swale Field Activities



Extended Detention Maintenance



Technically Feasible BMPs

- Biofiltration Swales and Strips
- Extended Detention Basins – Unlined preferred
- Infiltration Devices
- Sand Filters – Austin preferred over MCTT or Delaware
- Wet Basin

BMPs Eliminated

- Oil/Water Separator
  - Influent concentrations normally below effective level
- StormFilter
  - High cost, low effectiveness
- Inlet Inserts
  - low effectiveness, not robust (maintenance requirements)

Most Applicable BMPs

- Biofiltration Swales
- Biofiltration Strips
- Extended Detention Basins
- Austin Sand Filters

Item 4

O&M Cost Development Update

Item 5

Construction Cost Data Evaluation Update

Item 6

Closure and
Meeting Summary