

Center for Watershed Protection
Survey Results: Stormwater Regulatory Questionnaire

The following are the results of a survey conducted to measure the priorities and extent of State regulatory action in the implementation of water quality requirements. This survey was intended to increase the awareness of researchers and educators to help them understand state water quality concerns and to provide a basis for making recommendations on future programming.

It has now been 10 years since the publishing of the NPDES Phase II storm water requirements in the federal register. All States are now moving to implement various aspects of the CWA and priorities are beginning to emerge in response to meeting regulatory requirement and achieving water quality goals. A clear understanding of trends and priorities will assist researchers and help educators tailor their focus to meet the State's needs in addressing these concerns.

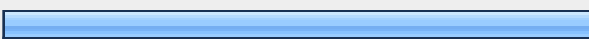
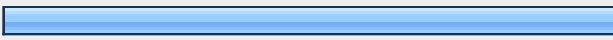
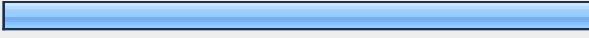
Published lists on the USEPA NPDES and storm water websites were used to identify 245 state officials, including representatives from all 50 states and major territories, to participate in the survey. A total of 56 valid responses were received, giving a 23% response rate. More importantly the results represent responses from 35 states and one territory. The survey was administered through the Center for Watershed Protection and distributed through the online survey provider "Survey Monkey" using a modified Dillman technique (Dillman 2007).

Results of the survey are detailed below, and are discussed in the recent publication: Collins, K.A., Lawrence, T.J., Stander, E.K., Jontos, R.J., Kausha, S.S., Newcomer, T.A., Grimm, N.B., Cole Ekberg, M.L. (2010) Opportunities and challenges for managing nitrogen in urban stormwater: A review and synthesis. *Ecol. Eng.* Vol. 36, Issue 11, pg 1507-1519

For questions regarding this survey or the results, please contact Kelly Collins, kac@cwpl.org.

Stormwater Questionnaire

1. Please select the following stormwater discharge activities that your agency regulates (select all that apply):

		Response Percent	Response Count
Industrial		90.6%	48
Construction		94.3%	50
MS4 Communities		90.6%	48
Other (please specify)			11
		answered question	53
		skipped question	6

2. On a scale from 1(not important)to 6 (very important), please rate the importance of the goals listed below as they relate to your agency's evaluation of stormwater requirements.

	Not Important	2	3	4	5	Very Important	Response Count
Stream and Shoreline Protection	0.0% (0)	5.7% (3)	15.1% (8)	1.9% (1)	28.3% (15)	49.1% (26)	53
Meet Environmental Standards	0.0% (0)	1.9% (1)	7.5% (4)	5.7% (3)	13.2% (7)	71.7% (38)	53
Protect Stream/Lake Ecology	0.0% (0)	0.0% (0)	11.3% (6)	11.3% (6)	22.6% (12)	54.7% (29)	53
Protect Human Health and Safety	0.0% (0)	1.9% (1)	3.8% (2)	13.2% (7)	26.4% (14)	54.7% (29)	53
Water Quality/Pollution Prevention	0.0% (0)	0.0% (0)	1.9% (1)	0.0% (0)	13.5% (7)	84.6% (44)	52
Flood Control	11.5% (6)	23.1% (12)	9.6% (5)	26.9% (14)	17.3% (9)	11.5% (6)	52
answered question							53
skipped question							6

3. On a scale from 1 to 6, how concerned is your agency about the impact of stormwater on human health (i.e. bacteria, pathogens, etc.)?							
	Not Concerned	2	3	4	5	Very Concerned	Response Count
Answer	1.9% (1)	3.8% (2)	3.8% (2)	20.8% (11)	32.1% (17)	37.7% (20)	53
	<i>answered question</i>						53
	<i>skipped question</i>						6

4. How concerned is your agency about the impact of stormwater on the environment?							
	Not Concerned	2	3	4	5	Very Concerned	Response Count
Answer	0.0% (0)	1.9% (1)	5.7% (3)	11.3% (6)	18.9% (10)	62.3% (33)	53
	<i>answered question</i>						53
	<i>skipped question</i>						6

5. How concerned is your agency about the following impacts due to stormwater runoff:							
	Not Concerned	2	3	4	5	Very Concerned	Response Count
Thermal impacts to receiving waters	7.7% (4)	13.5% (7)	11.5% (6)	28.8% (15)	23.1% (12)	15.4% (8)	52
Changes to hydrology/baseflow	1.9% (1)	9.6% (5)	7.7% (4)	25.0% (13)	23.1% (12)	32.7% (17)	52
Dissolved oxygen in receiving waters	1.9% (1)	1.9% (1)	9.6% (5)	21.2% (11)	32.7% (17)	32.7% (17)	52
Instream/Lake habitat alteration	0.0% (0)	0.0% (0)	9.6% (5)	19.2% (10)	26.9% (14)	44.2% (23)	52
	<i>answered question</i>						52
	<i>skipped question</i>						7

6. On a scale of 1 to 6, how concerned is your agency about the impact of stormwater on the following:							
	Not Concerned	2	3	4	5	Very Concerned	Response Count
Property values	11.8% (6)	35.3% (18)	19.6% (10)	17.6% (9)	13.7% (7)	2.0% (1)	51
Recreational opportunities	1.9% (1)	5.7% (3)	13.2% (7)	26.4% (14)	35.8% (19)	17.0% (9)	53
Aesthetics	0.0% (0)	13.5% (7)	15.4% (8)	30.8% (16)	30.8% (16)	9.6% (5)	52
Economic development	3.8% (2)	5.7% (3)	26.4% (14)	28.3% (15)	30.2% (16)	5.7% (3)	53
	<i>answered question</i>						53
	<i>skipped question</i>						6

7. How concerned is your agency about stormwater runoff impacts to infrastructure (roads, bridges, buildings, etc) from rapidly eroding stream banks and shorelines?							
	Not Concerned	2	3	4	5	Very Concerned	Response Count
Answer	5.7% (3)	9.4% (5)	20.8% (11)	15.1% (8)	26.4% (14)	22.6% (12)	53
	<i>answered question</i>						53
	<i>skipped question</i>						6

8. How concerned is your agency about the following pollutants:							
	Not Concerned	2	3	4	5	Very Concerned	Response Count
Nitrate	2.0% (1)	2.0% (1)	10.0% (5)	14.0% (7)	40.0% (20)	32.0% (16)	50
Total Nitrogen	2.0% (1)	2.0% (1)	9.8% (5)	13.7% (7)	31.4% (16)	41.2% (21)	51
Total Phosphorus	0.0% (0)	2.0% (1)	5.9% (3)	17.6% (9)	21.6% (11)	52.9% (27)	51
Pesticides	0.0% (0)	11.8% (6)	13.7% (7)	23.5% (12)	27.5% (14)	23.5% (12)	51
Pathogens and Bacteria	0.0% (0)	2.0% (1)	8.0% (4)	12.0% (6)	34.0% (17)	44.0% (22)	50
Total Suspended Sediment	0.0% (0)	0.0% (0)	5.9% (3)	11.8% (6)	29.4% (15)	52.9% (27)	51
Heavy Metals	0.0% (0)	2.0% (1)	9.8% (5)	13.7% (7)	35.3% (18)	39.2% (20)	51
Oil and Grease	0.0% (0)	2.0% (1)	17.6% (9)	19.6% (10)	25.5% (13)	35.3% (18)	51
Salt	2.0% (1)	5.9% (3)	19.6% (10)	27.5% (14)	17.6% (9)	27.5% (14)	51
	answered question						51
	skipped question						8

9. Please rank the top three (3) pollutants of concern in your particular geographic area					
Pollutant					
	Nitrate	Total Nitrogen	Total Phosphorus	Pesticides	Herbicides
1 (Most Important)	3.9% (2)	11.8% (6)	21.6% (11)	2.0% (1)	0.0% (0)
2	2.0% (1)	15.7% (8)	27.5% (14)	5.9% (3)	2.0% (1)
3	6.0% (3)	14.0% (7)	18.0% (9)	4.0% (2)	2.0% (1)

10. Which of the following stormwater pollutants are regulated in your State?					
	Regulated - Statewide	Regulated - Limited Areas (please specify)	Not Regulated	Don't Know	Response Count
Nitrate	47.8% (22)	21.7% (10)	15.2% (7)	15.2% (7)	46
Total Nitrogen	40.4% (19)	29.8% (14)	17.0% (8)	12.8% (6)	47
Total Phosphorus	45.7% (21)	34.8% (16)	13.0% (6)	6.5% (3)	46
Pesticides	52.2% (24)	10.9% (5)	15.2% (7)	21.7% (10)	46
Pathogens and Bacteria	57.4% (27)	21.3% (10)	8.5% (4)	12.8% (6)	47
Total Suspended Sediment	55.3% (26)	31.9% (15)	10.6% (5)	2.1% (1)	47
Heavy Metals	50.0% (23)	32.6% (15)	10.9% (5)	6.5% (3)	46
Oil and Grease	57.4% (27)	21.3% (10)	14.9% (7)	6.4% (3)	47
Salt	32.6% (15)	21.7% (10)	26.1% (12)	19.6% (9)	46
If you checked 'Regulated-Limited Areas', please specify the regulated area for each pollutant:					28
answered question					47
skipped question					12

11. Please indicate how the following pollutants are regulated (mark all that apply):							
	TMDLs	Pollutant Load Reductions	Maximum Concentration	Narrative Standard (i.e. visibility)	Other (please specify below)	Don't Know	Not Regulated
Nitrate	28.3% (13)	8.7% (4)	32.6% (15)	21.7% (10)	6.5% (3)	26.1% (12)	13.0% (6)
Total Nitrogen	41.3% (19)	21.7% (10)	23.9% (11)	32.6% (15)	4.3% (2)	19.6% (9)	10.9% (5)
Total Phosphorus	60.9% (28)	32.6% (15)	26.1% (12)	32.6% (15)	4.3% (2)	13.0% (6)	4.3% (2)
Pesticides	22.7% (10)	9.1% (4)	34.1% (15)	11.4% (5)	6.8% (3)	29.5% (13)	15.9% (7)
Pathogens and Bacteria	68.9% (31)	24.4% (11)	44.4% (20)	13.3% (6)	6.7% (3)	8.9% (4)	4.4% (2)
Total Suspended Sediment	50.0% (23)	21.7% (10)	30.4% (14)	37.0% (17)	6.5% (3)	8.7% (4)	8.7% (4)
Heavy Metals	37.8% (17)	22.2% (10)	46.7% (21)	8.9% (4)	8.9% (4)	8.9% (4)	8.9% (4)
Oil and Grease	15.2% (7)	8.7% (4)	37.0% (17)	34.8% (16)	8.7% (4)	13.0% (6)	15.2% (7)
Salt	24.4% (11)	8.9% (4)	31.1% (14)	17.8% (8)	4.4% (2)	20.0% (9)	20.0% (9)
Comment:							
	<i>answered question</i>						
	<i>skipped question</i>						

12. Please list your best sources of information regarding stormwater and a brief explanation why:	
	Response Count
	38
	<i>answered question</i> 38
	<i>skipped question</i> 21

13. Please list three (3) priority research or information needs that are not being adequately addressed by existing programs:

		Response Count
		35
	<i>answered question</i>	35
	<i>skipped question</i>	24

14. Please rate the following practices for their potential effectiveness in stormwater management in the geographical area in which you work.

	Not Effective	2	3	4	5	Very Effective	Response Count
Stream/shoreline/wetland/riparian setbacks	4.8% (2)	0.0% (0)	14.3% (6)	19.0% (8)	19.0% (8)	42.9% (18)	42
Better Site Design	0.0% (0)	0.0% (0)	7.1% (3)	14.3% (6)	40.5% (17)	38.1% (16)	42
Conservation development	0.0% (0)	5.0% (2)	10.0% (4)	32.5% (13)	32.5% (13)	20.0% (8)	40
Policies that minimize the disturbance of soil	0.0% (0)	4.8% (2)	9.5% (4)	14.3% (6)	35.7% (15)	35.7% (15)	42
Reduce impervious area	0.0% (0)	4.8% (2)	11.9% (5)	14.3% (6)	40.5% (17)	28.6% (12)	42
Reduce connection of impervious area to receiving waters	0.0% (0)	2.4% (1)	14.3% (6)	11.9% (5)	35.7% (15)	35.7% (15)	42
Conservation easements	0.0% (0)	2.4% (1)	19.0% (8)	35.7% (15)	23.8% (10)	19.0% (8)	42
Open space preservation	0.0% (0)	0.0% (0)	14.3% (6)	33.3% (14)	26.2% (11)	26.2% (11)	42
Wet ponds	4.9% (2)	0.0% (0)	17.1% (7)	39.0% (16)	26.8% (11)	12.2% (5)	41
Dry ponds	0.0% (0)	9.8% (4)	26.8% (11)	36.6% (15)	19.5% (8)	7.3% (3)	41
Constructed wetlands	2.4% (1)	9.8% (4)	19.5% (8)	19.5% (8)	31.7% (13)	17.1% (7)	41
Filtration practices	0.0% (0)	9.8% (4)	7.3% (3)	22.0% (9)	41.5% (17)	19.5% (8)	41
Biofilters (bioretention, rain gardens, bioswales, etc.)	2.4% (1)	4.8% (2)	9.5% (4)	11.9% (5)	38.1% (16)	33.3% (14)	42
Grass swales	2.4% (1)	4.8% (2)	9.5% (4)	28.6% (12)	35.7% (15)	19.0% (8)	42
Infiltration	0.0% (0)	2.4% (1)	12.2% (5)	22.0% (9)	39.0% (16)	24.4% (10)	41

Vegetated buffer strips	2.4% (1)	2.4% (1)	7.3% (3)	22.0% (9)	31.7% (13)	34.1% (14)	41
Green roofs	2.4% (1)	7.3% (3)	22.0% (9)	39.0% (16)	24.4% (10)	4.9% (2)	41
Permeable pavement	2.4% (1)	7.3% (3)	19.5% (8)	36.6% (15)	24.4% (10)	9.8% (4)	41
	answered question						42
	skipped question						17

15. List the top five (5) practices that your agency feels are most effective for stormwater management.					
Practices					
		Stream/shoreline/wetland/riparian setbacks	Better Site Design	Conservation development	Policies that minimize the disturbance of soil
1 (Most Effective)		15.0% (6)	27.5% (11)	0.0% (0)	17.5% (7)
2		15.0% (6)	17.5% (7)	2.5% (1)	10.0% (4)
3		2.5% (1)	15.0% (6)	2.5% (1)	5.0% (2)
4		10.5% (4)	5.3% (2)	2.6% (1)	5.3% (2)
5		5.3% (2)	2.6% (1)	7.9% (3)	5.3% (2)

16. To the best of your knowledge, how often are the following practices used in the development of stormwater management systems in the geographical area in which you work:

	Not At All	2	3	4	5	Always	Response Count
Stream/shoreline/wetland/riparian setbacks	2.4% (1)	22.0% (9)	39.0% (16)	14.6% (6)	17.1% (7)	4.9% (2)	41
Better Site Design	0.0% (0)	24.4% (10)	34.1% (14)	26.8% (11)	9.8% (4)	4.9% (2)	41
Conservation development	2.6% (1)	33.3% (13)	35.9% (14)	23.1% (9)	5.1% (2)	0.0% (0)	39
Policies that minimize the disturbance of soil	0.0% (0)	34.1% (14)	34.1% (14)	12.2% (5)	9.8% (4)	9.8% (4)	41
Reduce impervious area	12.5% (5)	32.5% (13)	32.5% (13)	15.0% (6)	5.0% (2)	2.5% (1)	40
Reduce connection of impervious area to receiving waters	7.3% (3)	36.6% (15)	29.3% (12)	14.6% (6)	7.3% (3)	4.9% (2)	41
Conservation easements	2.5% (1)	40.0% (16)	27.5% (11)	25.0% (10)	5.0% (2)	0.0% (0)	40
Open space preservation	0.0% (0)	29.3% (12)	39.0% (16)	19.5% (8)	9.8% (4)	2.4% (1)	41
Wet ponds	5.0% (2)	7.5% (3)	17.5% (7)	30.0% (12)	30.0% (12)	10.0% (4)	40
Dry ponds	5.0% (2)	12.5% (5)	15.0% (6)	30.0% (12)	35.0% (14)	2.5% (1)	40
Constructed wetlands	5.0% (2)	30.0% (12)	37.5% (15)	20.0% (8)	7.5% (3)	0.0% (0)	40
Filtration practices	2.5% (1)	22.5% (9)	25.0% (10)	25.0% (10)	17.5% (7)	7.5% (3)	40
Biofilters (bioretention, rain gardens, bioswales, etc.)	4.9% (2)	24.4% (10)	22.0% (9)	24.4% (10)	22.0% (9)	2.4% (1)	41
Grass swales	2.4% (1)	4.9% (2)	24.4% (10)	29.3% (12)	31.7% (13)	7.3% (3)	41
Infiltration	2.5% (1)	20.0% (8)	22.5% (9)	27.5% (11)	15.0% (6)	12.5% (5)	40




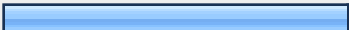
Vegetated buffer strips	2.5% (1)	7.5% (3)	25.0% (10)	45.0% (18)	17.5% (7)	2.5% (1)	40
Green roofs	35.9% (14)	46.2% (18)	15.4% (6)	0.0% (0)	2.6% (1)	0.0% (0)	39
Permeable pavement	12.2% (5)	56.1% (23)	19.5% (8)	9.8% (4)	2.4% (1)	0.0% (0)	41
	answered question						41
	skipped question						18

17. Please list the top five (5) practices used in the geographical area in which you work.					
Practices					
	Stream/shoreline/wetland/riparian setbacks	Better Site Design	Conservation development	Policies that minimize the disturbance of soil	
1 (Most Used)	13.5% (5)	13.5% (5)	0.0% (0)	5.4% (2)	
2	5.4% (2)	2.7% (1)	0.0% (0)	8.1% (3)	
3	11.4% (4)	0.0% (0)	2.9% (1)	8.6% (3)	
4	2.9% (1)	11.8% (4)	0.0% (0)	0.0% (0)	
5	6.3% (2)	3.1% (1)	0.0% (0)	6.3% (2)	

18. On a scale of 1 to 6, how difficult is it to implement or encourage the use of Low Impact Development (LID) practices? Please explain why:

	Not Difficult	2	3	4	5	Very Difficult	Response Count
Answer	0.0% (0)	7.5% (3)	15.0% (6)	42.5% (17)	20.0% (8)	15.0% (6)	40
Please explain why:							36
answered question							40
skipped question							19


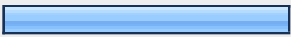

19. What would help promote the use of LID practices?





		Response Percent	Response Count
Information (i.e. fact sheets, design examples)		58.3%	21
Resources (i.e. technical assistance, grant programs)		86.1%	31
Research results		61.1%	22
Institutional support		52.8%	19
Other (please specify)			9
answered question			36
skipped question			23

20. List three BMPs that you feel are effective, but not commonly used in stormwater management :

	Response Count
	24
answered question	24
skipped question	35

21. Why are the BMPs that you listed in the previous question not adopted more frequently?		
		Response Count
		24
<i>answered question</i>		24
<i>skipped question</i>		35

22. Does your agency require evaluation of BMPs?			
		Response Percent	Response Count
Yes		48.8%	20
No		43.9%	18
Don't Know		7.3%	3
<i>answered question</i>			41
<i>skipped question</i>			18

23. Which of the following does your State use for measurement of BMP effectiveness?			
		Response Percent	Response Count
Percent removal (loads)		55.6%	15
Percent removal (concentration)		44.4%	12
Runoff reduction (volume reduced)		55.6%	15
Effluent concentrations		22.2%	6
Other (please specify)			5
<i>answered question</i>			27
<i>skipped question</i>			32

24. Do you have any additional comments?		Response Count
		11
	<i>answered question</i>	11
	<i>skipped question</i>	48