



# REDUCING AQUATIC TRASH THROUGH STORMWATER AND SOLID WASTE MANAGEMENT: PROJECT SUMMARY REPORT

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## EXECUTIVE SUMMARY

The prevalence of trash in urban waters is a significant and growing concern for municipalities across the U.S. To address this issue, a group comprised of EPA staff and stormwater and solid waste (“SW2”) industry professionals (SW2 workgroup) collaborated in 2021-2022 to better understand the barriers to effectively prevent trash pollution in waterways and share ideas for interventions that might help address these barriers. The SW2 workgroup engaged practitioners and leaders in the stormwater and solid waste sectors to determine critical areas of interest and needs related to aquatic trash prevention. Information was gathered through a survey, a series of remote facilitated stakeholder dialogues, and conversations with key experts.

SW2 professionals from municipalities across the U.S. provided valuable information on topics such as the status of programs that directly or indirectly address trash in waterways, challenges in addressing aquatic trash via solid waste and stormwater management programs, and existing and needed resources to meet these challenges. They identified a diverse set of challenges related to aquatic trash prevention, which can be summarized into four broad categories:

- **Resources:** Municipalities lack the funds and/or staff capacity to effectively control aquatic trash.
- **Understanding:** A lack of public awareness and understanding of the problem of aquatic trash and of waste management in general.
- **Information:** Data and information is lacking on various interventions that municipalities can take to reduce aquatic trash, including information about cost and efficacy of best management practices.
- **Collaboration:** Enhanced regional cooperation is needed among neighboring jurisdictions, along with interagency cooperation across government offices in a single locale.

The SW2 workgroup developed a list of existing information, tools, and reports that address challenges identified by solid waste and stormwater management experts. This [list of online resources](#) is available on the EPA Trash Free Waters Program website and will be updated to include new resources<sup>1</sup> over time. With the signing into law of the [Infrastructure Investment and Jobs Act](#) in November 2021, the situation regarding resources has changed with an infusion of \$50 billion for water infrastructure, primarily through State Revolving Funds, making future investment in stormwater practices to solve persistent aquatic trash problems an opportunity not to be missed over the next five years.

Based on the challenges and needs identified, the SW2 workgroup also developed several proposals for potential projects to be considered for implementation by one or more of the SW2 project partners. These project ideas are as follows:

1. Aquatic Trash Cost-Benefit Analysis
2. Standardized Metrics and Methods for Aquatic Trash Monitoring and Performance Measurement of Capture/Reduction Measures
3. Development and Oversight of a Stormwater Community of Practice for Aquatic Trash
4. Online Engineering Practice Guide for Management of Aquatic Trash

With input from stormwater and solid waste management experts, these project ideas were prioritized and refined. The SW2 workgroup, with leadership from the National Municipal Stormwater Alliance (NMSA), will initially focus on implementing project ideas 2 and 3 as resources allow. Project Ideas 1 and 4 will require further refinement and may be pursued later.

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<sup>1</sup> <https://www.epa.gov/trash-free-waters/aquatic-trash-prevention-information-and-resources-stormwater-and-solid-waste>

# 1. INTRODUCTION - THE STORMWATER / SOLID WASTE NEXUS: AQUATIC TRASH MANAGEMENT

According to the 2021 “Definitive Study on Litter in America”, Keep America Beautiful (KAB) found that 90% of Americans believe that litter is a problem in their community.<sup>2</sup> The problem of trash polluting the environment is long-standing and complex, and has evolved over time. As noted in a 2009 KAB report focused on litter issues over the previous four decades, the amount of visible litter on and near the nation’s roadways has decreased by over 60% over that time with non-plastic materials (paper, metal, glass) decreasing nearly 75% since 1969. However, the portion of plastics content in litter found in streams and rivers over the same period has increased by over 165%, as compared with an increase in per capita use of plastics packaging of 340% over the last 40 years<sup>3</sup>. Today it is estimated that 70% of all trash in the ocean is comprised of plastics<sup>4</sup>, and that a significant majority of these plastics are from land-based sources.

The *leakage* of solid waste into the ambient environment is a problem that is often caused by intentional or unintentional littering or illicit dumping, by loss of materials during collection and transport of solid waste, or due to extreme weather events. Litter accumulation is often quite visible as a *linear source* along roadways and streets, with greater accumulation at storm inlet grates. Even with reactive measures such as frequent street-sweeping and proactive measures such as trash can deployment, litter accumulation often happens quickly, allowing for the unattended leakage to disperse into the environment. Once litter enters a stormwater conveyance (and becomes *aquatic trash*) it is eventually transported downstream through inlets, pipes, channels and streams, ultimately discharging into a water body or the ocean.

It is at that very point of discharge that the *dispersed* pollution of land-based litter becomes a focused, or *point source*, opportunity to intercept and remove such pollution if this area is located within a jurisdiction of a regulated municipal separate storm sewer system (MS4). At that point of discharge, the composition of gross solids in the water will likely include significant vegetative matter, sediment, and pollutants other than trash, generally considered to be solid waste that must be properly managed.

Plastic waste is of special concern. Plastic waste that escapes or is discharged to the aquatic or marine environment often breaks down from larger *macroplastics* into smaller fragments, eventually becoming *microplastics* (generally defined as <5 mm in any dimension), and then *nanoplastics* (< 100 nm), and may become widely dispersed in aquatic or marine ecosystems. The exponentially increasing use of plastic and the leakage of plastic, coupled with its extreme longevity in the environment, requires both short-term triage that can be quickly implemented, along with development of longer-term sustainability solutions.

The economic and environmental considerations of the long-term costs of a world filling up with trash, especially plastic waste, are not yet fully understood. However, as our grasp of the nature and mobility of litter and trash pollution from land to water improves, the opportunity exists for improvements in engineering and management of aquatic trash interception and reduction independent of the larger, more complex, and longer-term recycling and waste management infrastructure issues.

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<sup>2</sup> <https://kab.org/litterstudy/>

<sup>3</sup> [https://kab.org/wp-content/uploads/2019/11/LitterinAmerica\\_FactSheet\\_LitterOverview.pdf](https://kab.org/wp-content/uploads/2019/11/LitterinAmerica_FactSheet_LitterOverview.pdf)

<sup>4</sup> <https://www.science.org/content/article/plastic-makes-nearly-70-all-ocean-litter>

## PURPOSE AND GENESIS OF THE SW2 PROJECT

In recent years, several high-profile conferences and seminars have presented scientific research and case studies clearly identifying ocean plastic and marine debris as a critical and dangerous global problem. The consensus among experts is that prevention and control of land-based litter and aquatic trash upstream from open waters is the best hope for reduction of further accumulation of ocean plastic. To a large extent however, this problem has not been addressed in any significant way from a meaningful regulatory or government-funded sanitation/public works perspective.

Following several informal discussions over the period 2018-2021 between public- and private-sector participants of these marine debris conferences, a nexus of interest in the lessons learned was noted that seemed to cross over what often operate as technical and administrative “silos” within public works, i.e., solid waste management, stormwater management, and others such as transportation, and even tourism, parks, and recreation. A common theme of discussion was, “How can we all get the biggest bang for our buck for aquatic trash management?”

In response, the SW2 workgroup (composed of representatives from EPA’s Trash Free Waters and Stormwater programs, the National Municipal Stormwater Alliance, the American Chemistry Council, and KCI Technologies) was formed to outline a focused effort on the needs and challenges to the deployment of trash capture and aquatic litter control in local communities, and their municipalities.

## SW2 PROJECT GOALS, OBJECTIVES, AND ACTIVITIES

The SW2 Project workgroup began with a vision that new and promising aquatic trash capture infrastructure technologies, associated design guidance, trash reduction approaches, and improved diagnostic, monitoring and measurement methods would reduce this ubiquitous form of pollution. To validate this vision, initial efforts were made to characterize how trash/litter is addressed within MS4 programs and permits and to better define the perceived needs by public works officials with respect to litter and aquatic trash in their jurisdictions. A survey developed independently by NMSA was sent to NMSA member organizations (see Appendix).

A total of 80 responses from all regions of the country generated many insights into the problem. Over 60% of respondents stated that the issue of trash in their community and stormwater program is “fairly” or “very” significant, with over 30% citing a very significant level. In questioning which municipal department provides leadership on trash capture/reduction efforts, there was no clear consensus, with some municipalities identifying stormwater departments, some identifying solid waste departments, and some identifying some other group or entity leading these efforts. It should be noted that less than 5% identified a cooperative arrangement between stormwater and solid waste departments, which is consistent with findings that over 50% of respondents stated their trash reduction/capture program is poorly coordinated or not coordinated at all between departments/groups. When asked what might enable better coordination, no clear consensus was found, but leading options include leadership training on stormwater/trash issues, formation of a Community of Practice to share trash mitigation knowledge and opportunities, a program providing formal regulatory credit for trash reduction/capture, and an online information resource that is regularly updated and maintained.

With respect to trash capture/reduction in MS4 permits, over half of respondents stated that requirements regarding the control of trash are included in their MS4 permits and over half of respondents also stated that they do not track and report trash capture information in permitting documents, such as annual reports. Responses reflect that there is no consensus on the metrics used by municipalities to quantify trash captured with municipalities using a variety of different metrics,

including dry weight, wet weight, volume, piece count and visual assessments. The leading element associated with trash reduction/capture programs was found to be public education, with nearly 70% of respondents identifying this element as a central activity associated with their trash reduction/capture programs. The findings of this survey are useful in understanding the state of aquatic trash prevention efforts via municipal stormwater and solid waste programs. An effort to generate a larger data set should be pursued in the future to develop definitive greater understandings of these issues.

It was clear from NMSA survey respondents that there was strong interest in the “state of the art” with respect to engineering design and operations of litter control and aquatic trash capture, and that further dialogue among stakeholders would be beneficial. To review these survey results, see Appendix A.

Based on this survey input, initial SW2 workgroup discussions and other sector input, a workplan was developed with the following action items:

1. Host a series of three (3) facilitated discussions between municipal stormwater and solid waste management officials, staff, practitioners, researchers, and product manufacturers from across the country on the needs and opportunities for reducing aquatic trash in waterways through effectively coordinated municipal management and implementation of trash capture infrastructure, citing real-world examples.
2. Research and review online resources currently available to aid in implementing more effective municipal and community approaches for reducing trash pollution in waterways (now available [here](#)). Identify gaps in currently available guidance and resources (including funding), along with recommended approaches to address these gaps.
3. Summarize the results of the dialogues, and recommend proposed products, resources, guidance, and policies that would help municipalities overcome the identified challenges and barriers to reducing trash in the environment.

To address Action Item 1, three dialogue sessions were scheduled, as noted below. Participants in the SW2 Project dialogues were primarily municipal government and public works staff, with limited involvement of NGOs or local community organizations.

Session 1: The first session, held on April 6, 2021, focused on the status of the issue by sharing information on relevant regional and national efforts to improve stormwater and solid waste management, and discuss successful examples of municipal efforts – including effective stormwater-solid waste program collaboration - to address the problem of trash in waterways.

Session 2: In the second session, held on April 26, 2021, participants identified barriers that communities face when trying to address the problem of trash escaping into the environment (especially waterways) and articulated potential broad-brush solutions.

Session 3: In the third session, held on December 15, 2021, participants were presented with four project ideas developed in response to previous dialogue session discussions with the goal of helping communities to address the problem of aquatic trash more effectively.

Action Items 2 and 3 were supported by input received during the dialogue sessions as well as through research and analysis. Specifically, a current compilation was developed of useful freely available online technical and informational publications focused on topics related to aquatic trash, as described in greater detail in Section 3 of this document. Additionally, four project concepts were developed based

upon the identified barriers, needs and opportunities gleaned during Dialogue Sessions 1 and 2. These project concepts were presented to the stakeholders during Session 3 and feedback was requested.

## 2. STATUS AND BARRIERS

Dialogue Sessions 1 and 2 were focused on identifying the status of aquatic trash control in the U.S. as well as barriers related to stormwater management and solid waste dynamics as they impact aquatic trash in urban areas.

### STATUS OF AQUATIC TRASH AT THE NATIONAL AND LOCAL LEVEL

The objective of Dialogue Session 1 was to share information on relevant regional and national efforts to improve stormwater and solid waste management and discuss successful examples of municipal efforts – including effective stormwater-solid waste program collaboration - to address the problem of trash in waterways. Over 120 participants attended this session who heard from speakers on national initiatives to reduce aquatic trash through stormwater and solid waste management and examples of successful municipal-level efforts to address aquatic trash.

EPA staff presented information on the Trash Free Waters (TFW) Program, shared information on the Agency’s National Recycling Strategy, and provided an overview of recent legislation associated with SW2 issues. A presentation was made by a leading stormwater practitioner on an effort led by NMSA to develop standardized test methods on the performance of stormwater control measures through the Stormwater Testing and Evaluation for Products and Practices (STEPP) initiative<sup>5</sup>. This initiative is associated with a recently established committee (E64) within the American Society of Testing and Materials, International (ASTM). This committee is currently developing both lab- and field-based testing standards in the stormwater sector, including standard E332, which provides a test method to evaluate trash capture technologies that was completed and published in July, 2022<sup>6</sup>.

Three speakers from across the country gave presentations on successful efforts to address aquatic trash at the municipal level. One speaker focused on the benefits of one utility with multiple services lines and how that helps them successfully engage customers in reducing aquatic litter while another speaker presented on how their municipality uses relationships with other departments and agencies for more holistic watershed management in the context of aquatic trash. The last speaker spoke about aquatic trash reductions through collaboration with neighboring jurisdictions and other stakeholders to create a common mandate to reduce trash. A moderated discussion with these panelists and the webinar participants covered the following topics:

- Community-based social marketing and engagement
- Addressing the intersecting issues of homelessness and litter
- Controlling illegal dumping

Overall, the status of the SW2 topic is that internal and external collaboration and communication is proving to be critical for municipalities in the effort to manage aquatic trash. Also, while there is a lack of standards and consistency in technical aspects of aquatic trash management, there is some progress being made in the sector on this front.

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<sup>5</sup> <http://nationalstormwateralliance.org/stepp/>

<sup>6</sup> <https://newsroom.astm.org/newsroom-articles/new-standard-outlines-test-methods-trash-capture-devices>

## BARRIERS IDENTIFIED BY STAKEHOLDER PARTICIPANTS

The objective of Session 2 was to identify barriers to implementing more effective and/or comprehensive municipal approaches to reducing trash loadings into waterways. A total of 55 participants attended this session. The format of the event consisted of three speakers from local governments who presented on barriers they face with respect to implementing effective measures for keeping trash out of waterways. Participants identified barriers they face when trying to address the problem of trash escaping into the environment. The session concluded with a facilitated discussion on needs to overcome those barriers.

Three speakers representing a variety of regions and community sizes shared information on their successes and challenges with aquatic trash. Participants were invited to identify barriers that communities face when trying to address the problem of trash escaping into the environment by placing virtual “sticky notes” on an online platform. Barrier categories were identified and used to focus the discussion to economic, institutional, technology, and legal/political obstacles. Participants were invited to add examples of broad-brush needs to overcome the identified barriers. The main challenges identified were:

1. Municipalities lack the funds and/or staff capacity to effectively control aquatic trash.

Many of the stormwater and solid waste management professionals cited funding and staff shortages as one of the most significant challenges that they face in their work to reduce aquatic trash. While nearly all participants agreed on the need for additional resources, a variety of different explanations for the causes of these funding shortages and the proposed solutions were presented.

Participants noted that federal grant funding is desired, but reporting requirements tend to be too onerous and that costs to address aquatic trash fall overwhelmingly on municipal governments and their taxpayers. It was noted that Extended Producer Responsibility (EPR) could help to defray these costs in a more equitable manner by providing the staff and capacity to manage aquatic trash more effectively.

2. There is insufficient public understanding of the problem of aquatic trash and the true cost of waste management.

Many stakeholders spoke about challenges stemming from a lack of public understanding of the aquatic trash issue and its importance. Specifically, lack of public awareness or apathy leads to persistent littering behavior, a lack of political will for policies to reduce aquatic trash, and pushback against rate increases for solid waste and stormwater fees. Also, it was noted that that decision-makers and the public do not understand the true cost of managing aquatic trash.

Participant input highlighted the need for increased public outreach on the issue of aquatic trash in general and greater public engagement by municipal stormwater and solid waste departments. It is hoped that this increased understanding on aquatic trash costs and impacts will catalyze change from the public on the challenges and costs of proper aquatic trash management.

3. Insufficient information about various interventions that municipalities can take to reduce aquatic trash, including information about cost, effectiveness, and best management practices.

Local governments are hesitant to implement interventions that have not been tested and that are not proven to be effective. Additionally, understanding the effectiveness of various interventions is hindered by a lack of high-quality baseline data on trash loadings and/or adequate systems for monitoring escaped trash over time.

It was noted from participant input that technical resources needed include trash capture technology costs, effectiveness, and maintenance requirements, costs and effectiveness of outreach campaigns, bans on single-use plastic products, street sweeping, and surveillance of illegal dumpsites, and sustainable solutions to prevent the escaped trash associated with homeless encampments.

4. There is a need for enhanced regional cooperation amongst neighboring jurisdictions and inter-agency cooperation across government offices in a single locale.

Several solid waste and stormwater management professionals spoke about the benefits that greater cooperation with other government agencies and other jurisdictions has brought to their work. Some cited examples of data sharing between departments to improve program operations as well as sharing resources.

Stakeholders also spoke about the challenges stemming from a lack of coordination, which include a lack of clarity regarding the overall lack of ownership and responsibility over the problem of litter management and its solutions distribution of responsibilities within a municipal government, and the difficulty tracking and regulating litter in watersheds that encompass multiple jurisdictions.

### 3. EXISTING RESOURCES AND PROPOSED PROJECTS

#### EXISTING RESOURCES

The SW2 Project workgroup engaged with participants to provide input as the workgroup focused on the [compilation of existing on-line resources](#)<sup>7</sup> that addressed the identified challenges and barriers to litter control and aquatic trash mitigation. During the SW2 Project, several new resources were added to the compilation, and it became apparent to the workgroup that such a rapidly evolving subject suggested the need for a *living resource* compilation, in order to be up to date with the latest developments. The recent new infusion of funding for water infrastructure from the Bipartisan Infrastructure law is just one prominent example.

#### PROPOSED PROJECTS

An objective of the SW2 Project is to develop a list of proposed projects that could take the form of products, resources, guidance, and policies that can enable municipalities to overcome the identified challenges/barriers to reducing trash in the aquatic environment. Four project ideas were developed based on the dialogues.

A brief overview of these projects is provided below. It should be noted that the level of effort as well as identity of a lead entity varies for each. Additionally, the sequence of implementation is not prescribed so projects can be implemented separately, in various sequences, or concurrently.

##### Overview of the Proposed Projects

##### *Project Idea 1 - Aquatic Trash Cost-Benefit Analysis*

This project idea focuses on research and analysis to determine the costs and benefits of aquatic trash prevention and remediation. This project will quantify both the direct costs of preventing and cleaning up escaped trash as well as indirect costs of trash in the aquatic environment. The analysis will illuminate the economic benefits of proactive aquatic trash prevention. While supported by dialogue

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<sup>7</sup> <https://www.epa.gov/trash-free-waters/aquatic-trash-prevention-information-and-resources-stormwater-and-solid-waste>

participants, given the complexity of this cost-benefit analysis and limited available data this project will not be pursued at this time, but may be revisited in the future.

#### *Project Idea 2 - Standardized Metrics and Methods for Trash Capture/Reduction*

This project will include a survey to gather information on metrics/methods used for trash capture/reduction efforts along with an analysis of this information to develop recommendations. The complexities of this topic will require further refinement to clarify the context of standardization within the aquatic trash field such as single metrics vs. multiple metrics based on type of trash commonly found in the environment (e.g., floatables/plastics or non-floatables). Standardization of trash capture should also consider pragmatic aspects of sampling equipment and human resources as well as the repeatability of results and the level of skill needed to produce consistent data. As has been noted, ASTM Committee E64 on Stormwater Control Measures recently published standard E322, which provides a test method to support the measurement of trash capture technology efficacy<sup>8</sup>. NMSA will work with ASTM to leverage the publication of this document to explore additional standards to further the management of aquatic trash.

#### *Project Idea 3 - Development and Oversight of a Stormwater and Trash Community of Practice*

The project will establish a Community of Practice (CoP) on stormwater and trash to meet regularly. The project will also include the further development of the existing resource list. Based upon the NMSA survey, dialogues, and additional sector engagement, project idea 3 requires the least resources to initiate and sustain making it top priority. Once established, the CoP will allow professionals to come together in a coordinated fashion. NMSA will therefore be initiating an effort to develop the CoP.

#### *Project Idea 4 - Online Engineering Practice Guide for Management of Aquatic Trash*

Project Idea 4 is focused on the development of a Manual of Practice (MoP) like most other areas of sanitary engineering: diagnostics, available technologies, design, operation and maintenance. This project might be combined with Project Idea 3 sometime in the future as a CoP could also facilitate the development of a technical guide since the practitioners with the knowledge to shape this guide would likely be engaged with the COP. However, at this time, staff time and funding are not available to pursue the development of this guide.

## 4. CONCLUSIONS AND RECOMMENDATIONS

The issue of managing aquatic trash is significant and complex. Navigating the topic requires consideration of both the solid waste and stormwater management sectors, including how those sectors can work together more effectively at the municipal and regional scales.

Policies on aquatic trash are dynamic in that localities utilize a variety of methods to address trash via stormwater and solid waste management, through public engagement and participation or through the deployment of different types of infrastructure (such as technologies that capture trash in stormwater conveyance systems or in open water). The challenges identified through the dialogues reflect deficiencies in funding and staff capacity within aquatic trash programs, insufficient understanding by decision makers and the general public of the scale and cost of waste management in the context of aquatic trash, limited information on actionable interventions localities can use to address aquatic trash issues, especially in the context of cost effectiveness, and challenges with cooperative efforts both within local government departments and between jurisdictions located within the same watershed or geographic proximity. Based upon this input, as well as through additional sector engagement, the SW2

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<sup>8</sup> <https://www.astm.org/get-involved/technical-committees/committee-e64/scope-e64>



workgroup developed a list of resources associated with each identified challenge. This information is captured on the EPA Trash Free Waters website, with the vision of a growing and changing site available to the public to provide information based upon identified needs (see footnote 6).

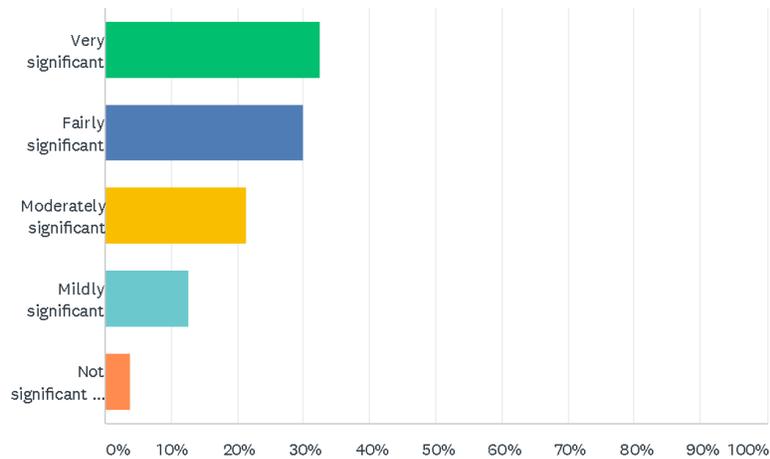
In addition to focusing on the status and challenges of aquatic trash programs and resources to meet these challenges, the SW2 workgroup developed a series of actionable project concepts. Two of these projects will be addressed in the near term (project ideas 2 and 3), while the other ideas will be considered for future implementation contingent on the availability of staff time and funding availability.



## Appendix – Summary of National Municipal Stormwater Alliance (NMSA) Stormwater and Trash Survey

### Q1 How significant is litter, trash, or gross solids an issue in your community and/or stormwater program?

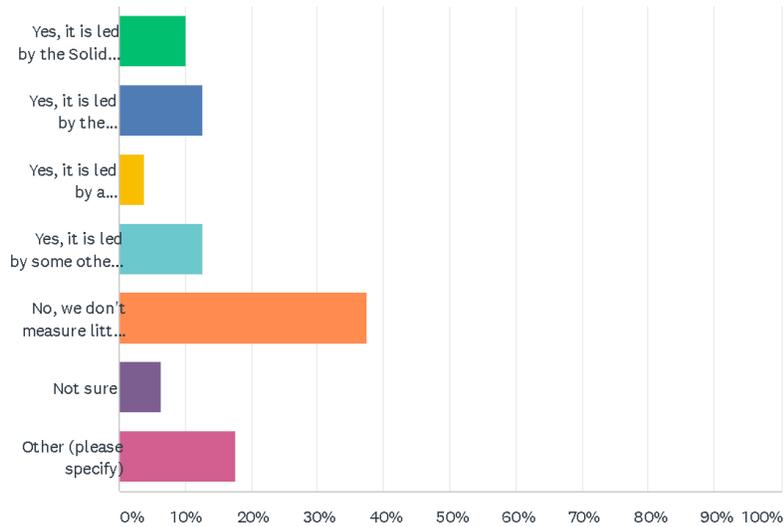
Answered: 80 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very significant	32.50%	26
Fairly significant	30.00%	24
Moderately significant	21.25%	17
Mildly significant	12.50%	10
Not significant at all	3.75%	3
TOTAL		80

## Q2 Do you measure litter, trash, or gross solids capture within your jurisdiction and if so, who leads this?

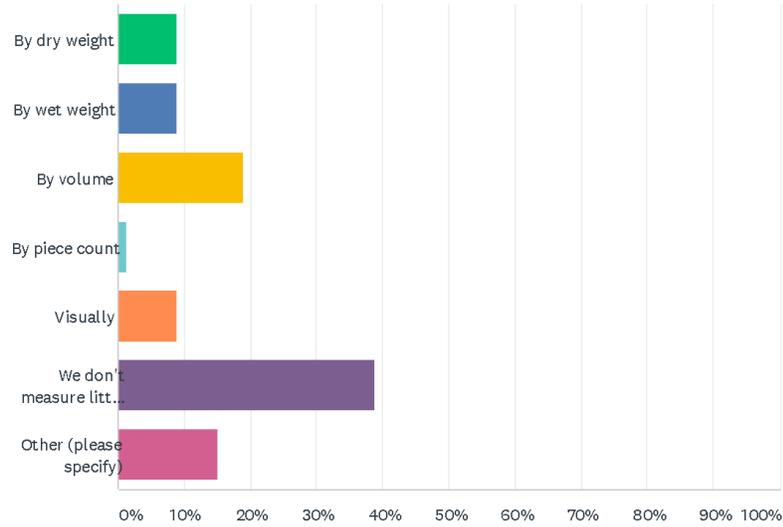
Answered: 80 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes, it is led by the Solid Waste department	10.00%	8
Yes, it is led by the Stormwater department	12.50%	10
Yes, it is led by a cooperative arrangement between the Stormwater and Solid Waste departments	3.75%	3
Yes, it is led by some other group or department not listed above	12.50%	10
No, we don't measure litter capture at all	37.50%	30
Not sure	6.25%	5
Other (please specify)	17.50%	14
<b>TOTAL</b>		<b>80</b>

### Q3 If you measure litter, trash, or gross solids capture within your jurisdiction, what metrics do you use?

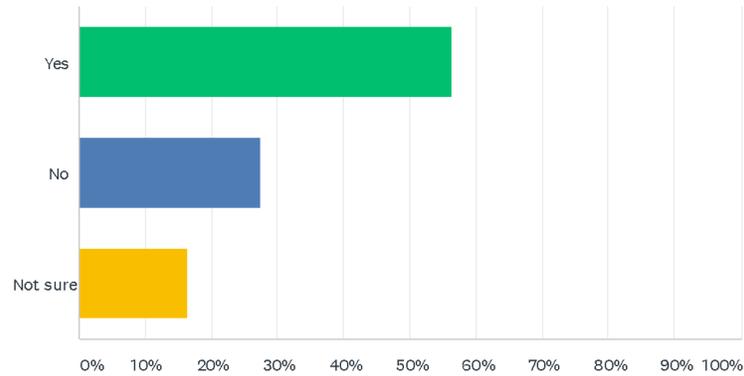
Answered: 80 Skipped: 0



ANSWER CHOICES	RESPONSES	
By dry weight	8.75%	7
By wet weight	8.75%	7
By volume	18.75%	15
By piece count	1.25%	1
Visually	8.75%	7
We don't measure litter capture	38.75%	31
Other (please specify)	15.00%	12
TOTAL		80

### Q4 Does your MS4 permit require you to control litter, trash, or gross solids?

Answered: 80 Skipped: 0

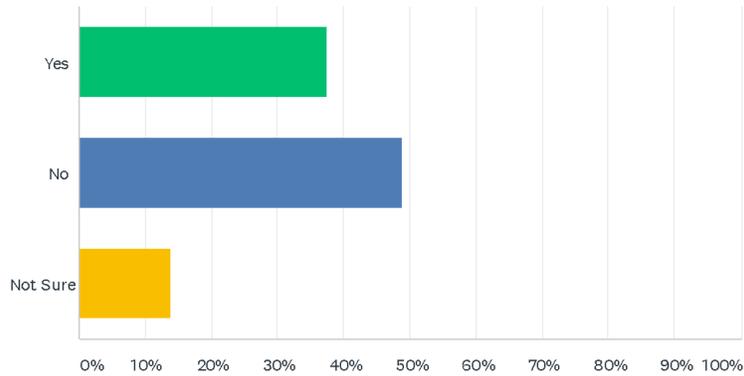


ANSWER CHOICES	RESPONSES	
Yes	56.25%	45
No	27.50%	22
Not sure	16.25%	13
TOTAL		80



### Q5 Do you track and report on litter, trash, or gross solids collected in your MS4 permit reports or TMDL compliance reports?

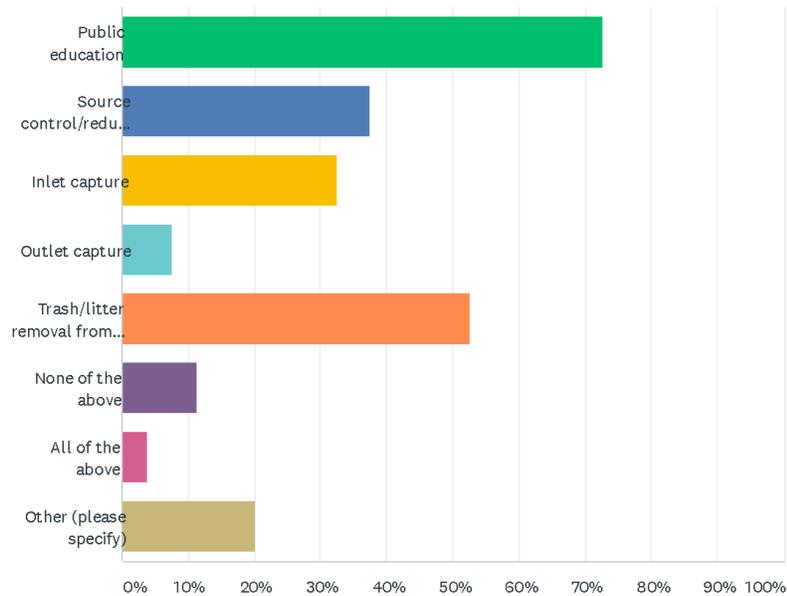
Answered: 80 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	37.50%	30
No	48.75%	39
Not Sure	13.75%	11
TOTAL		80

**Q6 If you have a litter, trash, or gross solids reduction and/or capture program in your community, what element(s) are included in this program?**  
 (Note that more than one option is acceptable)

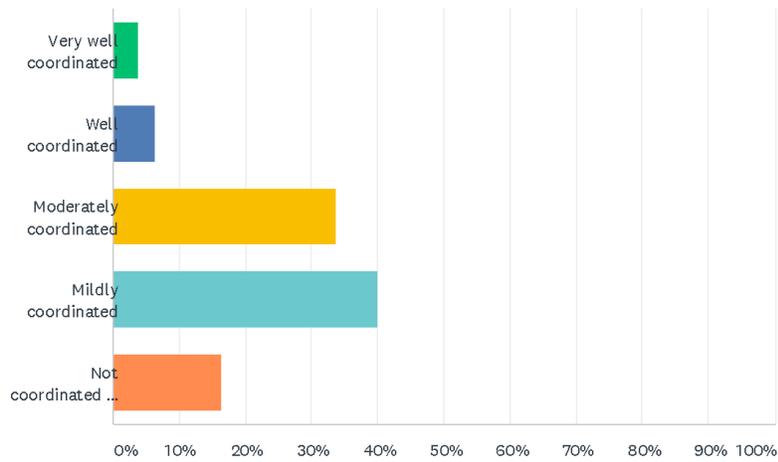
Answered: 80 Skipped: 0



ANSWER CHOICES	RESPONSES	
Public education	72.50%	58
Source control/reduction	37.50%	30
Inlet capture	32.50%	26
Outlet capture	7.50%	6
Trash/litter removal from waterways	52.50%	42
None of the above	11.25%	9
All of the above	3.75%	3
Other (please specify)	20.00%	16
Total Respondents: 80		

**Q7 How would you rate the extent to which varying groups in your community that are involved with stormwater and litter, trash, or gross solid (such as stormwater programs and solid waste departments) are well-coordinated in efforts to reduce litter, trash, or gross solids from receiving waters?**

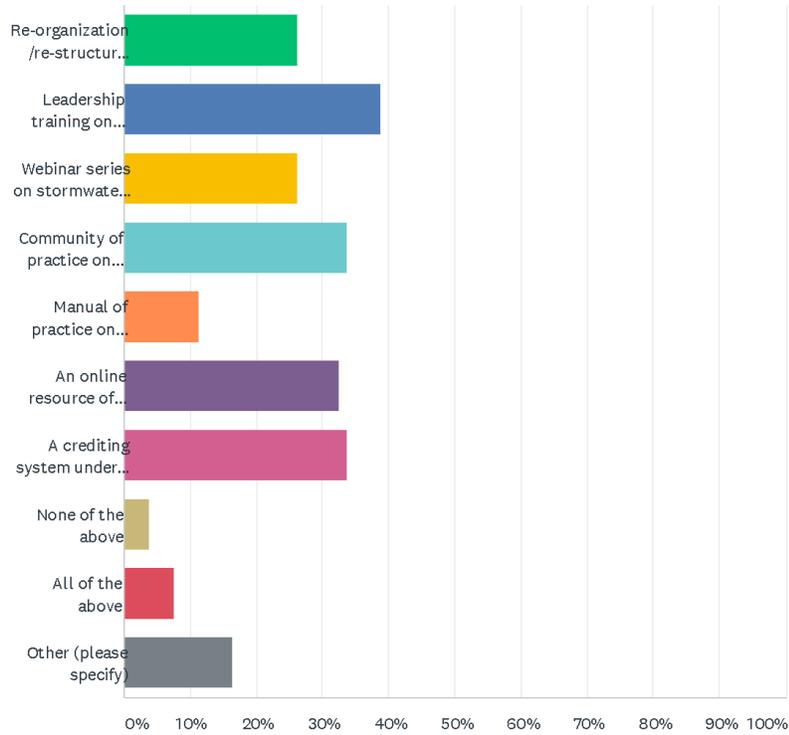
Answered: 80 Skipped: 0



ANSWER CHOICES	RESPONSES
Very well coordinated	3.75% 3
Well coordinated	6.25% 5
Moderately coordinated	33.75% 27
Mildly coordinated	40.00% 32
Not coordinated at all	16.25% 13
<b>TOTAL</b>	<b>80</b>

Q8 Which of the options listed below might better enable coordination your community in the effort to reduce the amount of litter, trash, or gross solids in receiving waters?

Answered: 80 Skipped: 0





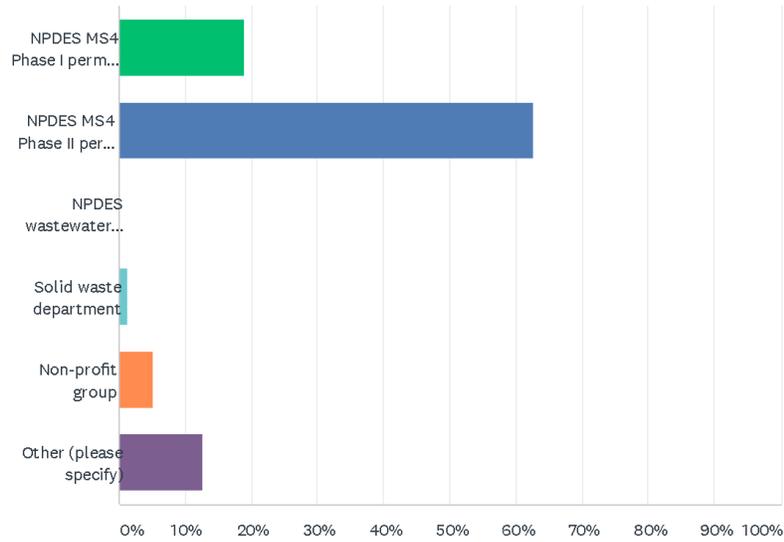
National Municipal Stormwater Alliance (NMSA) Stormwater and Litter,  
Trash, or Gross Solids Issues Survey

SurveyMonkey

ANSWER CHOICES	RESPONSES	
Re-organization/re-structuring between groups focused on stormwater and trash/litter	26.25%	21
Leadership training on stormwater and trash/litter topics and/or issues	38.75%	31
Webinar series on stormwater and trash/litter topics and/or issues	26.25%	21
Community of practice on stormwater and trash/litter topics and/or issues	33.75%	27
Manual of practice on stormwater and trash/litter topics and/or issues	11.25%	9
An online resource of information on trash reduction/capture that is regularly updated	32.50%	26
A crediting system under the state MS4 permit to gain credit for litter/trash reduction	33.75%	27
None of the above	3.75%	3
All of the above	7.50%	6
Other (please specify)	16.25%	13
Total Respondents: 80		

### Q9 What is the nature of your organization?

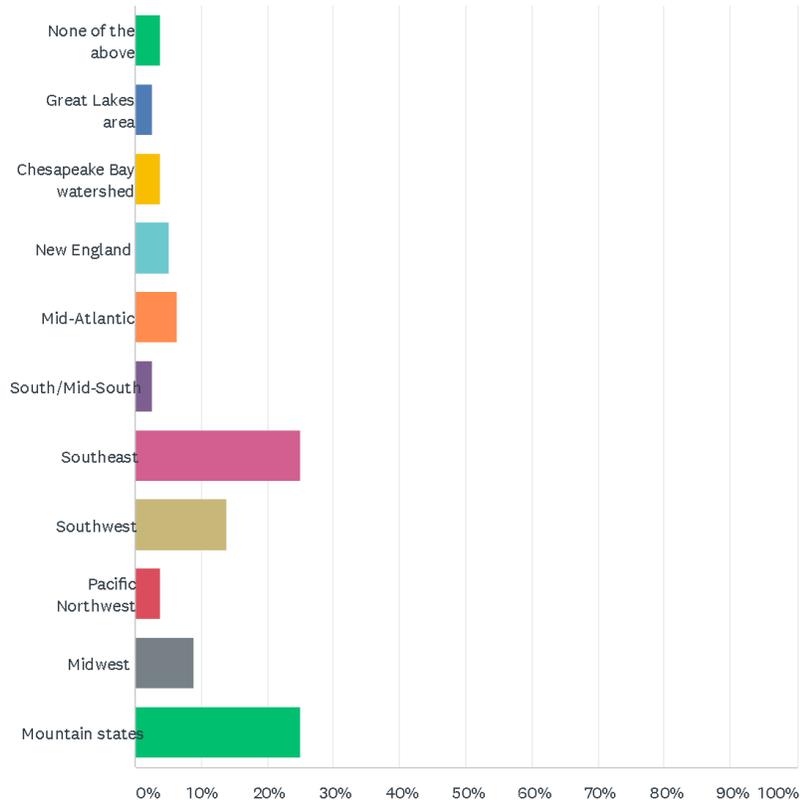
Answered: 80 Skipped: 0



ANSWER CHOICES	RESPONSES
NPDES MS4 Phase I permit holder	18.75% 15
NPDES MS4 Phase II permit holder	62.50% 50
NPDES wastewater permit holder	0.00% 0
Solid waste department	1.25% 1
Non-profit group	5.00% 4
Other (please specify)	12.50% 10
<b>TOTAL</b>	<b>80</b>

### Q10 What is your community's location?

Answered: 80 Skipped: 0





National Municipal Stormwater Alliance (NMSA) Stormwater and Litter,  
Trash, or Gross Solids Issues Survey

SurveyMonkey

ANSWER CHOICES	RESPONSES	
None of the above	3.75%	3
Great Lakes area	2.50%	2
Chesapeake Bay watershed	3.75%	3
New England	5.00%	4
Mid-Atlantic	6.25%	5
South/Mid-South	2.50%	2
Southeast	25.00%	20
Southwest	13.75%	11
Pacific Northwest	3.75%	3
Midwest	8.75%	7
Mountain states	25.00%	20
TOTAL		80