

TRASH- FREE WATERS PROGRAM
U.S. ENVIRONMENTAL PROTECTION AGENCY



AQUATIC TRASH PREVENTION NATIONAL GREAT PRACTICES COMPENDIUM

DECEMBER 2016



TABLE OF CONTENTS

INTRODUCTION..... 1

ALLEY CLEANING INITIATIVE 3

ANACOSTIA RIVER TRASH TRAP PROGRAM 5

BALTIMORE WATER WHEEL TRASH INTERCEPTOR 7

THE CITY OF OAKLAND’S ADOPT A DRAIN PROGRAM 9

DC BAG BILL..... 11

ESTABLISH AN ISLAND CULTURE OF RECYCLING TO REDUCE
MARINE DEBRIS IN SAIPAN’S WATERS 13

LITTER AND ILLEGAL DUMPING ENFORCEMENT MONTH..... 16

MARINE DEBRIS & PLASTIC SOURCE REDUCTION TOOLKIT
FOR CAMPUSES AND UNIVERSITIES..... 19

MUNICIPAL TRASH CAN PILOT 22

THE PORT OF NEW ORLEANS’ KEEP IT CLEAN CAMPAIGN 24

REEL IN AND RECYCLE - NATIONAL MONOFILAMENT
FISHING LINE RECYCLING PROGRAM..... 27

REGIONAL LITTER PREVENTION CAMPAIGN..... 30

RETHINK DISPOSABLE..... 32

STASH YOUR TRASH 35

STREETS AND WALKWAYS EDUCATION AND ENFORCEMENT PROGRAM (SWEEP) 37

TRASH FREE SCHOOLS PROJECT 39

TRAYLESS TUESDAYS IN NEW YORK CITY PUBLIC SCHOOLS..... 41

INTRODUCTION



Trash that is improperly disposed of—either intentionally or inadvertently—can enter freshwater and coastal ecosystems. This aquatic trash may eventually make its way to the ocean. Aquatic trash has become a pervasive problem in these environments, presenting a challenge to water quality and habitat protection, in addition to causing aesthetic blight, ecological effects, economic impacts, and possible public health risks.

The U.S. Environmental Protection Agency's (EPA) Trash Free Waters (TFW) program strives to reduce and prevent land-based aquatic trash from land-based sources. The TFW program engages with stakeholders across America and from many interest groups. We define a focused set of actions and catalyze projects that significantly reduce or even eliminate the volume of trash and litter entering watersheds, aquatic ecosystems, and the marine environment.

As a resource for our stakeholders, the TFW program has developed this National Great Practices Compendium. Contained within are outstanding activities, technologies, programs, policies, and initiatives that prevent trash from entering the aquatic environment and/or reduce the volume of trash. A great practice demonstrates measurable progress towards its stated trash prevention and/or reduction goals and shows a clear return on investment from such efforts. That is, these practices are results-driven, measurable, and achievable.

This compendium can serve as a single reference point for practices that show real results, enabling civic leaders and others to make informed decisions about their future trash prevention program investments based on the experience of others. Whether efforts are directed at addressing litter and mismanaged trash or even aquatic trash capture and removal, the great practices provided in this compendium offer a variety of approaches to consider. EPA intends for this compendium to help government officials at all levels and private sector stakeholders consider innovative new approaches without the need to reinvent the proverbial wheel.

COMPENDIUM DEVELOPMENT

The National Great Practices Compendium is a resource that expands upon the “Great Practices Compendium - Mid-Atlantic States,” published in October 2015. The success of the initial compendium led the TFW program to expand this resource to include great practices from across America. With these additional great practices, the TFW program creates a national compendium that will be updated periodically.

This compendium presents great practices in the United States with the following information template:

- Area of impact
- Description of activity
- Duration of activity
- Activity-related costs
- Measure(s) of progress
- Lessons learned
- Partners and participants
- Point of contact for more information

The information in this document was requested by EPA from principal organizations responsible for each practice. EPA may have edited the text provided by regional project leaders for purposes of clarity, consistency, and completeness. This document was prepared for informational purposes only. The information provided herein should not be cited or quoted as the endorsed views or policies of EPA.

GREAT PRACTICES

- [Alley Cleaning Initiative](#)
- [Anacostia River Trash Trap Program](#)
- [Baltimore Water Wheel Trash Interceptor](#)
- [The City of Oakland's Adopt a Drain Program](#)
- [DC Bag Bill](#)
- [Establish an Island Culture of Recycling to Reduce Marine Debris in Saipan's Waters](#)
- [Litter and Illegal Dumping Enforcement Month](#)
- [Marine Debris & Plastic Source Reduction Toolkit for Campuses and Universities](#)
- [Municipal Trash Can Pilot](#)
- [The Port of New Orleans' Keep It Clean Campaign](#)
- [Reel In and Recycle - National Monofilament Fishing Line Recycling Program](#)
- [Regional Litter Prevention Campaign](#)
- [ReThink Disposable](#)
- [Stash Your Trash](#)
- [Streets and Walkways Education and Enforcement Program \(SWEEP\)](#)
- [Trash Free Schools Project](#)
- [Trayless Tuesdays in New York City Public Schools](#)

ALLEY CLEANING INITIATIVE



AREA OF IMPACT

Baltimore, Maryland

DESCRIPTION OF ACTIVITY

The Alley Cleaning Initiative by the Bureau of Solid Waste (Bureau) is an effort to use technology (alley cleaning sweepers) to keep alleys clean and reduce trash and litter. Alleys in Baltimore are the main collection sites for trash and tend to be small, compact, and close together. As such, alleys are natural magnets and conduits for trash and litter.

Currently, the Bureau responds to dirty alley requests with a truck, driver, and laborers to physically clean dirty alleys reported. The aim of this initiative is two-fold:

1. Clean alleys quickly and effectively with one employee using one machine;
2. Clean alleys on a proactive basis before the problem builds and light trash and debris attracts more, and oftentimes heavier trash, including bulk items such as furniture and mattresses. When such trash items accumulate, additional resources must be committed to clean the site.

Since the start of the program on August 1, 2014, the Bureau has calculated the number of dirty alley service requests per month in the selected pilot neighborhoods and is tracking the trends.

DURATION OF ACTIVITY

The Alley Cleaning Initiative started on August 1, 2014 and continues operation.

ACTIVITY-RELATED COSTS

The initial capital outlay for the purchase of the three sweepers totaled \$551,526. The annual operating cost of the three sweepers, including personnel and maintenance, is approximately \$180,000.

MEASURE(S) OF PROGRESS

As of early 2015, there has been a 10% decline in the number of dirty alley service requests overall in the pilot neighborhoods since program inception in August 2014. Some neighborhoods have seen up to a 20% and 40% decline in the number of dirty alley service requests. The indirect benefits of the Alley Cleaning Initiative include increased neighborhood pride in seeing clean alleys throughout the community. Trash-filled alleys give the appearance of neglect and inattention, which creates an environment ripe for illegal activities that can only flourish in such civic blind spots. Those involved with this initiative indicated that an additional benefit of alley cleaning is the fostering of strong investments from within and outside the community.

PARTNERS AND PARTICIPANTS

The Bureau of Solid Waste, along with the Baltimore Sustainability Commission, the Waterfront Partnership, Blue Water Baltimore, and other environmental groups.

POINT OF CONTACT FOR MORE INFORMATION

Valentina I. Ukwuoma, valentina.ukwuoma@baltimorecity.gov, 410-396-5134.

ANACOSTIA RIVER TRASH TRAP PROGRAM



AREA OF IMPACT

District of Columbia

DESCRIPTION OF ACTIVITY

The Anacostia River has been listed for trash on the District of Columbia’s 303(d) list since 2006. In 2010, the District, in partnership with the State of Maryland and U.S. EPA Region III, finalized a total maximum daily load for trash in the Anacostia River.

Since 2009, the District has implemented a grant program, known as the Demonstration of Trash Reduction Technologies, to fund local non-governmental organizations to design and install best management practices to capture trash found in the Anacostia River and its tributaries. In 2009, this grant program awarded grants to two local non-governmental organizations, the Anacostia Watershed Society and Earth Conservation Corps, to install in-stream devices to capture trash. Since then, a total of six devices have been installed through this grant program. Design types have ranged from custom to proprietary designs. In terms of proprietary designs, The District’s two grantees have elected to install Bandalong litter traps, a design which originated in Australia. The District is the first jurisdiction in the western hemisphere to install this design.

The District targets hotspot sewersheds for installation. These highly piped areas of the city are part of the municipal separate storm sewer system. These sewersheds typically drain to three or fewer outfalls, allowing the District to collect trash originating from a large area. The Demonstration of Trash Reduction Technologies grant program has funded the installation of trash traps at two such hotspots.

DURATION OF ACTIVITY

Trash trap installation began in 2009. The District anticipates maintaining all trash trap devices indefinitely, pending available funding.

ACTIVITY-RELATED COSTS

Through the District's Demonstration of Trash Reduction Technologies grant program, six trash traps were acquired and installed. This grant program is primarily funded through revenue collected by the District's \$0.05 fee on plastic bags.

Project costs vary based on the type of trash trap installed. For the Bandalong Litter Traps, costs associated with designing, building, and installing the trap ranged from \$50,000 to \$100,000. These costs are highly dependent on the installation site's conditions. Annual maintenance costs for the Bandalong Litter Trap ranged from \$28,000 to \$44,000 per year. Such maintenance costs are dependent on the amount of trash captured by each trash trap. For custom design trash traps, costs associated with designing, building, and installing the trap ranged from \$6,000 to \$10,000. Only preliminary estimates were available regarding annual maintenance costs for a custom design trash trap, which ranged from \$27,000 to \$30,000 per year.

MEASURE(S) OF PROGRESS

Since the installation of the first trash traps in 2009, these traps have captured over 25,000 pounds of trash from the Anacostia River and its tributaries. The success of each trash trap is highly dependent on where it is installed. The District is also using these traps to capture important monitoring data on the types of trash found in its waterways. For example, the Anacostia Watershed Society has worked with community volunteers to remove 12,976 pounds of trash from the Nash Run trash trap between March 2009 and August 2014. Data from this trash trap shows a decline in the number of plastic bags entering the river since the implementation of the Anacostia River Clean Up and Protection Act of 2009 (commonly referred to as the "Bag Bill") in the District. Volunteers also produced photographs of collected trash that depict significant counts of Styrofoam consumer products, which aided in the enactment of a ban on polystyrene in the District and Montgomery County, Maryland.

PARTNERS AND PARTICIPANTS

The District Department of the Environment has partnered with local non-governmental organizations to design, install, and maintain these devices. Stormwater Systems, Inc., of Cleveland, GA, was sub-contracted by Earth Conservation Corps and Anacostia Riverkeeper to design and install all Bandalong Litter Traps. The non-governmental organizations that have participated in this program so far include the Earth Conservation Corps, Anacostia Riverkeeper, Anacostia Watershed Society, and Groundwork Anacostia River D.C. These volunteer efforts help keep public costs down and foster a greater sense of community pride and environmental awareness about the importance of litter prevention, particularly among young people in urban neighborhoods.

POINT OF CONTACT FOR MORE INFORMATION

Matt Robinson, Environmental Protection Specialist, District Department of the Environment, Stormwater Management Division, Program Implementation Branch, matthew.robinson@dc.gov, 202-442-3204.

BALTIMORE WATER WHEEL TRASH INTERCEPTOR



AREA OF IMPACT

Baltimore Inner Harbor, Maryland

DESCRIPTION OF ACTIVITY

In May 2014, the Waterfront Partnership, working with Clearwater Mills, installed the world's first ever solar-powered water wheel trash interceptor at the mouth of Jones Falls in Baltimore's Inner Harbor. The primary goal for this effort was to greatly reduce the amount of trash flowing from Jones Falls into Baltimore's Inner Harbor. The secondary goal was to show that water wheel trash interceptors are a cost-efficient way to remove trash from water.

Depending on precipitation, the Baltimore Water Wheel Trash Interceptor (Water Wheel) collects anywhere from 2 tons to 75 tons of floating debris from the Baltimore Inner Harbor every month. In the period between May 2014 and June 2015, the Water Wheel has collected 278 tons of trash consisting of 157,130 plastic bottles, 204,419 polystyrene containers, 5.7 million cigarette butts, 3,336 glass bottles, 81,420 grocery bags, 130,219 chip bags, and 940 sports balls.

So far, the Water Wheel has exceeded all expectations and is removing tons of trash from the Baltimore Harbor at a cost well below the cost of removing the same trash using alternative methods such as skimmer boats. Additionally, the Water Wheel is powered by renewable resources (solar and hydro) and operated via the Internet, thereby requiring fewer resource hours than skimmer boats.

DURATION OF ACTIVITY

The Baltimore Water Wheel Trash Interceptor was installed in May 2014 and is still in operation.

ACTIVITY-RELATED COSTS

The capital costs of the Baltimore Water Wheel Trash Interceptor were \$800,000. Ongoing operation and maintenance costs vary based on rain events but are estimated at \$130,000 annually.

MEASURE(S) OF PROGRESS

In addition to estimating the amount of trash removed by the Water Wheel from entering into the Inner Harbor, the progress is being tracked against the cost efficiencies of the trash skimmer operations of the Department of Public Works. While data is limited, initial findings show that the Water Wheel is a cost efficient technology for supplementing the work of skimmer boats when implemented in suitable locations. Water Wheels can capture the majority of trash and debris coming from a specific outfall, allowing skimmer boats to focus on other areas. The Baltimore Water Wheel Trash Interceptor removes trash at a cost of \$430 per ton.

Interestingly, all of the outreach and education that resulted from the popularity of the Water Wheel was an added bonus and was not part of the initial program intent. The Water Wheel has had a lot of media attention, including front page news stories on NBC, a story on National Public Radio, and a Ford Motor Company commercial focused on the Water Wheel.

PARTNERS AND PARTICIPANTS

Waterfront Partnership of Baltimore, Constellation Energy, the Maryland Port Administration, the Abell Foundation, and the Baltimore City Department of Public Works.

POINT OF CONTACT FOR MORE INFORMATION

Adam Lindquist, Manager, Healthy Harbor Initiative, Waterfront Partnership of Baltimore, Inc.
adam@waterfrontpartnership.org.

THE CITY OF OAKLAND'S ADOPT A DRAIN PROGRAM

AREA OF IMPACT

Oakland, California

DESCRIPTION OF ACTIVITY

Oakland's Adopt a Drain program is an effort to keep the city's 7,500 storm drains clean and clear of trash and debris. Oakland's storm drains can easily get clogged with trash and debris, which can lead to street and sidewalk flooding, pipe leakage, and untreated rainwater entering the San Francisco Bay.

Currently, 20 employees in the storm drain maintenance section of Oakland's Department of Public Works care for the city's storm drains, along with 402 miles of pipe, 7 pump stations, and 40 miles of creeks. The Adopt a Drain program allows individuals, families, businesses, and organizations to claim responsibility for maintaining one or more storm drains to help the Department of Public Works' staff.

Oakland's storm drains are mapped on an interactive website (www.AdoptaDrainOakland.com) and color-coded to distinguish the adopted storm drains from the unclaimed storm drains. Anyone can volunteer to adopt a drain simply by submitting their name, phone number, and email address. Oakland supports the volunteers by providing green waste and trash bags, instructions and volunteer guidelines, assistance with trash pickups, and notification of impending storm events. Oakland also can provide volunteers with tools such as rakes, pickup sticks, safety vests, and gloves for storm drain maintenance. Volunteers report their hours and the volume of trash collected from storm drains through the Track it Forward online and mobile phone application.



DURATION OF ACTIVITY

Oakland's Adopt a Drain program is ongoing since its implementation in 2002.

ACTIVITY-RELATED COSTS

The start-up costs for the Adopt a Drain program included those for the development of volunteer guidelines and outreach, purchase of tools and supplies, and staffing. Volunteer guideline development and outreach costs were minimal. It costs approximately \$200 to provide a full set of tools and supplies to a volunteer for storm drain maintenance; though many volunteers have their own tools and on average it cost \$40 to outfit a volunteer. One staff member of the Department of Public Works spends two to 10 hours a week assisting with volunteer management and communication. Staffing needs are highest during the rainy season from October through April.

Volunteers spend approximately 6,000 hours per year cleaning and clearing storm drains. Usually, volunteers clean and clear storm drains once a week during the rainy season from October through April and once or twice a month the rest of the year. Based on hours, this equates to more than three full-time city employees' time for a full year.

Oakland's Department of Public Works partnered with Code for America and Open Oakland to develop the Adopt a Drain program website. These two organizations work with the government to solve local problems and improve government service through technology. Volunteers built the website using open-source software, which is available at no cost. If Oakland did not use volunteers to build the website, hiring a computer programmer could cost approximately \$4,000 to \$6,000.

MEASURE(S) OF PROGRESS

With the help of the Adopt a Drain program, Oakland's storm drains overflows reduced 65% in the last five years. Over 750 volunteers have adopted over 1,000 storm drains. Having volunteers clean out storm drains decreases service calls and time spent by staff, as well as leads to less flooding and associated property damages, personal injury, and/or emergency service requests and traffic management.

Based on received volunteer reports, each volunteer is estimated to remove three to five 30-gallon bags of debris (trash and green waste) per year and the program removes from 90,000 to 150,000 gallons of debris per year.

The Adopt a Drain program is helping the California Water Quality Control Board achieve its goal of eliminating trash entering San Francisco Bay from storm water discharge by 2020.

LESSONS LEARNED

- The Adopt a Drain website has dramatically enhanced volunteer recruitment, communication, and coordination. After the launch of the website in February 2013, the Adopt a Drain program went from 96 to 203 volunteers in a few months. The website has made it easier for volunteers to register and for staff to administer the program. Prior to the launch of the website, volunteers had to submit a paper form and staff had to approve their request. This process was clunky and inhibited volunteer recruitment.
- Targeted communication helps the program gain volunteers, such as through social media and timely media coverage prior to and during storm events.
- Dedicated staff is essential for to the program to be able to respond to large volumes of new volunteer adopters, especially during the busy wet season.

PARTNERS AND PARTICIPANTS

Oakland's Adopt a Drain program staff are working with many other municipalities across the country to share and develop Adopt a Drain programs.

POINT OF CONTACT FOR MORE INFORMATION

Jennifer Stern, Environmental Program Analyst, Oakland Public Works, City of Oakland, jstern@oaklandnet.com, 510-238-6191.

Program website: www.AdoptaDrainOakland.org

DC BAG BILL



AREA OF IMPACT

District of Columbia

DESCRIPTION OF ACTIVITY

In 2009, the District of Columbia (District) enacted the Anacostia Restoration and Protection Act, or Bag Bill. This Act requires all District businesses that sell food or alcohol to charge a five-cent fee for each disposable paper or plastic bag distributed with any purchase. Restaurants with seating are exempt from this requirement. The District Department of Environment (DDOE) is responsible for enforcing the law; DDOE staff is responsible for inspecting whether District businesses are in compliance.

DURATION OF ACTIVITY

The law was officially implemented on January 1, 2010.

ACTIVITY-RELATED COSTS

For more information, please reach out to the point of contact provided below.

MEASURE(S) OF PROGRESS

In 2013, DDOE funded the Alice Ferguson Foundation and the Anacostia Watershed Society to conduct a survey to quantify changes in bag use since implementation of the Bag Bill. The survey also measured attitudes and experiences with the law. The following are major findings of the survey:

- 80% of District residents reduced their use of disposable bags since the law took effect.

- Households currently estimate using four bags a week versus ten bags a week before the law took effect.
- Businesses provide an average of 50% fewer bags.
- 67% of residents and 68% of businesses reported seeing less plastic bags found as litter today versus three or four years ago.
- 50% of businesses have saved money as a result of the Bag Bill.
- 83% of residents and 90% of businesses either support or are indifferent to the Bag Bill, with only 16% of residents and 8% of businesses feeling bothered by the law.

PARTNERS AND PARTICIPANTS

The District government continues to welcome the active participation by many local community groups to assist the public to develop a strong understanding of the Bag Bill. Local businesses provide opportunities for consumers to utilize alternatives to disposable paper or plastic bags. In addition, local non-governmental organizations and other District government agencies help aid in the enforcement of the law. For more information on these activities, contact Matt Robinson of the DDOE.

POINT OF CONTACT FOR MORE INFORMATION

Matt Robinson, Environmental Protection Specialist, District Department of the Environment, Stormwater Management Division, Program Implementation Branch, matthew.robinson@dc.gov, 202-442-3204.

ESTABLISH AN ISLAND CULTURE OF RECYCLING TO REDUCE MARINE DEBRIS IN SAIPAN'S WATERS



“The Adopt-a-Bin program helps to promote an island culture of recycling by removing thousands of pounds of mixed waste and recyclable items along our coastal areas. It reduces the amount of trash that remains on the beaches and prevented thousands of pounds of debris from entering our ocean. This program has encouraged companies and individuals to start small recycling efforts at home or in the office. Also giving local businesses the opportunity to go out and conduct at least two beach cleanups a year, one of the requirements to become a sponsor.”

—Jolly Ann Cruz, Program Coordinator, MINA.

AREA OF IMPACT

Saipan, Commonwealth of the Northern Mariana Islands

DESCRIPTION OF ACTIVITY

Littering and illegal dumping of trash is a primary source of marine debris in Saipan, the capital and the most populous (46,500 people) island of the Commonwealth of the Northern Mariana Islands. There are numerous barriers to proper waste management in Saipan, which lead to illegal dumping and littering.

With support from the National Oceanic and Atmospheric Administration's (NOAA) Marine Debris Program, the Mariana Islands Nature Alliance (MINA) spearheaded the initiative, Establish an Island Culture of Recycling to Reduce Marine Debris in Saipan's Waters. One of the initiative's long-term goals is to provide infrastructure for proper waste separation and disposal, thereby reducing the amount of land-based sources of marine debris by 70%.

MINA installed 20 public recycling and mixed waste bins at 17 of Saipan's most popular beaches. MINA partners with businesses to promote a community Adopt-a-Bin Program, where sponsors pay for recycling bin maintenance and waste hauling. MINA trained over 741 volunteers to monitor the bins throughout the week, collecting and disposing of any overflowing waste between trash collections.

The recycling bins are constructed of weather resistant materials that can hold three individual 55 gallon drums. It is important to use bins made of weather-resistant materials for an area like Saipan, which in 2015 weathered a Category 2 typhoon.

DURATION OF ACTIVITY

Recycling and mixed waste bin installation first began in March 2010. The program expanded in 2015 upon receiving NOAA funding to add bins to seven more sites and to create an education and outreach campaign.

ACTIVITY-RELATED COSTS

MINA received an initial grant of \$100,000 to pay for the recycling and mixed waste bins at seven sites. New Adopt-a-Bin sponsors pay \$1,500 to MINA for the first year for trash collection costs and logo printing. Sponsors pay an annual \$1,300 fee to MINA to renew their sponsorship for continued support.

MEASURE(S) OF PROGRESS

Prior to this program, Saipan was unable to provide public trash bins or regular collection services. MINA installed 20 public recycling and mixed waste bins.

By the end of 2015, 111,484 pounds of trash were removed from the bins, which collect aluminum, glass, and plastic waste separately.

LESSONS LEARNED

A challenge for implementing the Adopt-a-Bin program was improper use of the bins. Many times the bins overflow with trash and other household items from beach goers. To address this, MINA placed notices for household trash violations and also started monitoring the bins more frequently. Fortunately, the community is also concerned about proper trash disposal and helps keep Saipan clean and beautiful.

If someone is considering a similar program, it would be helpful to prepare for times when there are no sponsors of the bins. If a bin has no sponsor, funds should be set aside to pay for trash hauling services. There should also be extra funding available if a bin needs to be repaired.

PARTNERS AND PARTICIPANTS

MINA contracts a local trash service company, Artman Corporation, to provide the regular trash hauling services and monthly data that includes weight of trash collected under the categories of trash, aluminum, pet bottles, glass, tins,

and green waste. Celnaps Enterprise was contracted to fabricate the bins and install them at the beach sites. MINA works with Ideal Signs, a local printing company, to get the logos printed and installed, as well as the stickers that indicate where to insert the trash depending on whether it is metal, glass or plastic. Previously, MINA contracted Ericco Enterprises to construct the bins and provide regular trash hauling services.

Current Adopt-a-Bin Sponsors include Brabu Pharmacy, Bridge Capital, Bureau of Environmental and Coastal Quality, IP&E, IT&E, LaoLao Bay Pride Campaign, Marianas Trekking, Marianas Visitors Authority, Flame Tree TV, Northern Mariana Diver Operators Association, Saipan Computer Services & Ideal Signs, and Managaha Sanctuary Pride Campaign.

POINT OF CONTACT FOR MORE INFORMATION

Jolly Ann Cruz, Program Coordinator, minaoutreach@gmail.com, 670-233-7333.

Program Website: <http://www.minapacific.org>

LITTER AND ILLEGAL DUMPING ENFORCEMENT MONTH



AREA OF IMPACT

Maryland, Virginia, and District of Columbia

DESCRIPTION OF ACTIVITY

The Alice Ferguson Foundation and its partners work to raise awareness of the legal consequences of littering, illegal dumping, and related crimes. Further, the Alice Ferguson Foundation raises awareness of the social and environmental effects that littering has on our communities, our economy, and the Potomac Watershed. In addition, there are increasing enforcement efforts through Litter Enforcement Month and training of law enforcement officers about the importance of enforcing litter and litter-related laws. By increasing enforcement efforts, the hope is to educate the public and provide incentives for behavior change.

The mission of Litter and Illegal Dumping Enforcement Month is to raise awareness of litter, illegal dumping, and related crimes; the laws associated with them; and their social and environmental effects on our communities, our economy, and the Potomac River.

On March 22, 2011, the Litter Enforcement Working Group met at the Metropolitan Washington Council of Governments at which point goals for Litter Enforcement Month (LEM) were confirmed. Participating jurisdictions agreed to four actions and alternate for non-code enforcement agencies, such as Sheriff's offices, was added in 2012.

- **Public Education:** The communities served will be educated about the effects of litter and the legal ramifications of being caught. This can be done through a variety of outreach approaches using media outlets, posters, and community meetings.
- **Officer Education:** During LEM, officers will be encouraged to enforce litter and litter-related laws by being taught about the effects of litter and reminded how to enforce them. This can be accomplished by providing information during officer roll call announcements and officer training, as well as posting flyers.
- **Enforce and Track Citations:** Throughout LEM, participating jurisdictions will keep track of any citations, violations and other reports concerning litter, illegal dumping, and related laws which include Blight, Hoarding, Most-littered areas, Uncovered hauls, Graffiti, Abandoned Property, Illegal Tire hauling or piling, Loitering, and Snipe Signs.
- **Reporting Out:** Inform the Alice Ferguson Foundation of their efforts during LEM by completing a simple, online survey and sharing newsworthy stories.
- **Alternate activity for non-code enforcement agencies:** Engage Community Labor Forces or Alternative Incarceration Branches to participate in the Potomac Watershed Cleanup by reporting the trash picked up during the month of April.

DURATION OF ACTIVITY

This program has been implemented during the month of April each year since 2011. Additionally, the Alice Ferguson Foundation undergoes six months of event planning, preparation, and evaluation.

ACTIVITY-RELATED COSTS

Activity-related costs are roughly \$6,000 per year. This does not include the cost of training to participating groups.

MEASURE(S) OF PROGRESS

The success of LEM is tracked through various metrics including ongoing participation, number of citations issued, community outreach efforts, and the amount of trash picked up for the month of April. In 2015, the Metropolitan Washington Council of Governments Police Chiefs Committee unanimously endorsed LEM. The 2014 LEM gave out 348 citations for activities including littering, abandoned property, and illegal dumping. This is a decrease in citations issued when compared to 643 citations issued in 2013 and 850 citations issued in 2012.

In 2014, 400 Metro Transit Police were reminded about LEM activities. The effort has also attracted attention from news outlets with LEM 2014 being featured in 4 local newspapers and a radio show.

PARTNERS AND PARTICIPANTS

Fourteen agencies from nine jurisdictions participated in LEM 2014:

- **Maryland:** Montgomery County Police and Prince George's County Police.
- **Virginia:** City of Alexandria Police, Code Administration, Sheriff's Office, and Transportation and Environmental Services; Prince William County Police and Neighborhood Services; Falls Church City Police; and Manassas City Police.
- **Additional Agencies:** The District of Columbia Metropolitan Police; Metro Transit Police; and the United States Park Police.

POINT OF CONTACT FOR MORE INFORMATION

trash@fergusonfoundation.org, 301-292-5665.

Program Website:

<http://fergusonfoundation.org/trash-free-potomac-watershed-initiative/litter-enforcement/litter-enforcement-month/>

MARINE DEBRIS & PLASTIC SOURCE REDUCTION TOOLKIT FOR CAMPUSES AND UNIVERSITIES

“Packaging makes up a large portion of marine debris and contributes to the huge gyres of trash that exist in our oceans, harming both marine life and human health. The adoption of this toolkit by other universities could have a major impact on reducing marine debris in coastal watersheds, which would convey immense promise in the movement to rid our waterways of excess plastic.”

—Scott Cassel, Chief Executive Officer at the Product Stewardship Institute



AREA OF IMPACT

California

DESCRIPTION OF ACTIVITY

The Marine Debris & Plastic Source Reduction Toolkit for Campuses and Universities is designed to assist college campuses and other institutions, such as hospitals, libraries, hotels, restaurants, and schools, cut their plastic waste to help reduce marine debris and coastal pollution. Funded by a grant from EPA, the toolkit serves as a detailed how-to guide for reducing plastic waste. The toolkit includes:

- a calculator to determine a campus’s plastic footprint;
- a source reduction plan to eliminate the use of disposable plastic items;
- a guide to changing a campus’s purchasing practices by switching to less environmentally impactful products; and
- steps to establishing campus-wide plastic waste reduction policies.

The guidance in the Marine Debris & Plastic Source Reduction Toolkit resulted from a successful two-year pilot project conducted by the Product Stewardship Institute (PSI) at three coastal University of California (UC) campuses in 2013: UC Santa Barbara, UC San Diego, and UC San Francisco. During the two-year pilot project, all three UC campuses dramatically reduced their disposable plastic use.

- At UC San Francisco, 59 hydration stations were retrofitted with goose neck spouts to fill reusable water bottles more easily.
- At UC San Diego, two hydration stations were installed. The pilot project also worked with the Subway® franchise on campus to negotiate plastic bag reduction.

- At UC Santa Barbara, the installation of two hydration stations reduced the purchase of disposable plastic bottles on campus. The pilot project also worked with the Subway franchise on campus to reduce the plastic bags being handed out with each purchase.

DURATION OF ACTIVITY

The pilot project at the three University of California campuses lasted two years (2013-2015). Many of the practices put in place during the project period are still active at all three campuses. For example, campus Subway stores at both UC San Diego and UC Santa Barbara no longer offer plastic bags, eliminating over 1 million plastic bags per year.

ACTIVITY-RELATED COSTS

Costs of the pilot project implementation varied based on the campus and the source-reduction element of the project:

- At UC San Francisco, the installation of 59 goose neck spouts cost \$25,500 for parts, labor, and administrative costs.
- At UC San Diego, the installation of two hydration stations cost \$3,200 for equipment, parts, and labor. Negotiations for plastic bag reduction with the Subway franchise cost \$18,468, including UC San Diego staff salary hours.
- UC Santa Barbara did not provide cost information; however, all initiatives were driven by student volunteers.

At UC San Francisco, no additional operations and maintenance costs due to the goose neck retrofits are expected.

MEASURE(S) OF PROGRESS

All three UC campuses dramatically reduced their plastics use (single-use water bottles, plastic bags, straw sleeves) during the two-year pilot project.

- UC San Francisco's retrofitting of water fountains with gooseneck spouts cuts campus purchasing of single-use plastic water bottles by 50 percent and saves \$27,500 each year. The payback period was less than 1 year.
- UC San Diego's Subway store prevents the use of over 1 million plastic bags per year and saved \$14,000 annually. The payback period was 1 year and 4 months. By promoting campus hydration stations, the campus also eliminated over 120,000 single-use plastic water bottles.
- UC Santa Barbara's Subway store ceased purchasing 35,000 plastic bags per year, resulting in a 97 percent decline in plastic bag use by campus food establishments as a whole. By promoting campus hydration stations, the campus also eliminated over 60,000 single-use plastic water bottles.

LESSONS LEARNED

- Obtaining commitments from collaborating campuses or other institutions takes a significant amount of time and resources.
- Longstanding vendor agreements significantly influence campus purchasing decisions. Many campuses have multi-year agreements with particular vendors, which can make switching from plastic to other alternatives cumbersome. The Plastic Footprint Calculator helps a campus or institution identify multiple plastics to target, which can help advocates circumvent longstanding contracts by targeting other types of plastic for reduction.

- On-campus champions are vital to success. Partnerships with environmental groups, sustainability departments, dining services, facilities management, and professors are critical to creating successful plans and policies that work within a campus' unique structure.
- Each campus or institution is unique. The three campuses that participated in the pilot project each had their own unique physical structure, staffing and departmental organization, agreements with vendors, and city-wide and campus-wide plastic reduction policies among other differences. It is vital to take these differences into account when creating a source reduction plan or writing procurement policies.
- Mix long-term changes with short-term initiatives for faster results. Each campus was eager to reduce the use of disposable water bottles. This source reduction option is relatively easy to implement and yields a visible result. On the other hand, it was more difficult to gain traction for longer-term source reduction options, such as implementing a reusable container system. Pursuing both simultaneously ensures greater long-term success.

PARTNERS AND PARTICIPANTS

Plastic Pollution Coalition, California Product Stewardship Council, Clean Water Fund California, and As You Sow. County of Santa Barbara Public Works Department, San Diego Environmental Services Department, and San Francisco Department of the Environment for their input on source reduction policies.

POINT OF CONTACT FOR MORE INFORMATION

Scott Cassel, Product Stewardship Institute, scott@productstewardship.us.

Anna-Marie Cook, EPA Region 9, cook.anna-marie@epa.gov.

You can [find the toolkit and additional information about the toolkit on EPA's Web page](#).

MUNICIPAL TRASH CAN PILOT



AREA OF IMPACT

Baltimore, Maryland

DESCRIPTION OF ACTIVITY

The Municipal Trash Can Pilot is an important effort to reduce litter and improve city cleanliness. The distribution of 9,250 carts on wheels (trash cans with a 65 gallon holding capacity) and recycling bins (with a 25 gallon holding capacity) to select neighborhoods in the Belair Edison and the Mondawmin areas is an effort to gauge whether keeping trash in containers can drastically reduce litter and improve the cleanliness of these neighborhoods.

The Bureau of Solid Waste (Bureau) conducted a baseline assessment of the pilot areas for sanitation service requests before the pilot started on July 2, 2014. Service requests for illegal dumping, dirty streets, dirty alleys, and rat abatement were calculated for the target neighborhoods.

The Bureau will continue to track these numbers and will compare them monthly from year to year to look for improvements in the number of service requests created. Trash bags that are not contained in trash cans with tight-fitting lids are prone to rip open, spilling the contents. This leads to the trash being spread across the alley and/or street. It also provides food for rodents, as well as stray cats and dogs, which can further spread the trash through the neighborhoods. The intent of the Municipal Trash Can Pilot is to demonstrate how providing contained trash cans and recycling bins to residents will eliminate this problem, reduce litter, and increase neighborhood cleanliness.

DURATION OF ACTIVITY

The Municipal Trash Can Pilot started on July 2, 2014 and continues operation.

ACTIVITY-RELATED COSTS

Project-related costs came to \$600,000 when carried out in select neighborhoods. A city-wide roll out of the program is estimated to cost between \$10 and \$12 million.

MEASURE(S) OF PROGRESS

Since the pilot began in July 2014, there have been 108 fewer calls for rat eradication from the pilot neighborhoods and 23 fewer requests to clean dirty alleys, when compared to the same time period the previous year. Additionally, the pilot neighborhoods have shown a 26% to 37% increase in recycling when compared to the same time period the previous year.

It is assumed that a city-wide roll out would lead to significant reductions in the rat population and generally cleaner alleys and streets. Further, reductions to the rat population would likely result in fewer workers' compensation claims and other public health benefits. While definitive cost savings cannot be calculated at this time, it is believed that potential savings in these areas would easily cover the initial outlay of funds necessary to expand the program.

PARTNERS AND PARTICIPANTS

The Bureau of Solid Waste; Greater Mondawmin Coordinating Council; Belair-Edison Neighborhoods, Inc.; Belair Edison Neighborhood Association; and Healthy Neighborhoods.

POINT OF CONTACT FOR MORE INFORMATION

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THE PORT OF NEW ORLEANS' KEEP IT CLEAN CAMPAIGN

“The Port is a public asset and so are our waterways. Ownership is collective and we must take pride and responsibility in our community.”

—Amelia Pellegrin, Port of New Orleans

AREA OF IMPACT

New Orleans, Louisiana

DESCRIPTION OF ACTIVITY

The Port of New Orleans (Port) is a major U.S. port along the Gulf of Mexico. Trash and litter are a major problem for the Port. In collaboration with EPA's Trash Free Waters Program, Port tenants, and community stakeholders, the Port developed an initiative to reduce and prevent trash on the Port's property, as well as its release and transport into the Mississippi River, Lake Pontchartrain, and Gulf of Mexico. To help address the aquatic trash issue, on September 14, 2015, the Port launched the Keep it Clean Campaign.

The Keep it Clean Campaign aims to increase water literacy and change littering behavior at the Port. The Port worked to develop the Keep it Clean message with a group of 25 stakeholders that included Port staff; Port tenants; local, state, and federal government agencies; community organizations; and businesses. The campaign's message is that the Port and its waterways are a public asset. The tagline “Your Port • Your Water • Your NOLA” is intended to give ownership and responsibility to the reader: readers should take pride in keeping the Port clean.

The campaign uses media to create high-visibility messaging. Branded signage is placed in specific areas of high volumes of roadside debris on the Port's property. The campaign also uses media to build awareness of the new dumpster location, such as through mile markers placed along the Clarence Henry Truckway telling truck drivers to hold their trash, “Dumpster in 500 feet.” The dumpster was installed at the container yard truck entrance for convenience. Since a lot of trash on the Port's property originates from truck drivers, the campaign launched with a series of events and giveaways at the 2015 National Truck Driver Appreciation Week.

In 2015, the campaign received the American Association of Port Authorities Environmental Award for Stakeholder Awareness, Education, and Involvement. In 2016, the campaign received the Louisiana Department for Environmental Quality Environmental Leadership Program Achievement Award in Community Environmental Outreach.



DURATION OF ACTIVITY

The campaign is ongoing since its launch in September 2015.

ACTIVITY-RELATED COSTS

The costs of the campaign have been nominal with \$7,000 spent to develop the signage. The Port uses a vendor to provide the dumpster and trash hauling services. It costs \$200 to remove and replace the dumpster every two to three weeks.

MEASURE(S) OF PROGRESS

Prior to the campaign's inception, the Port spent approximately 800 labor hours or \$30,000 annually collecting trash. The campaign's multi-faceted approach has demonstrated a visible reduction of roadway litter and fewer hours are spent picking up roadway litter by Port maintenance staff. The Port has received positive feedback from the trucking industry as well as tenants, who are requesting additional receptacles for trash and recycling at the river terminals.

The dumpster's effectiveness has increased slightly, based on pickup volume, since it was first installed. According to the pickup receipts, there has been over 10,000 pounds of trash picked up so far in 2016 from this dumpster that would otherwise potentially have been roadway litter.

LESSONS LEARNED

- Involvement from industry partners is critical for the success of the campaign.
- Truck driver input is some of the most valuable information for the campaign's messaging.
- It is effective to engage truck drivers one-on-one or in small groups when speaking about the effects of litter and track and steps the community can take to reduce it.
- Rather than blaming truck drivers for the trash on the Port's property, the Port encourages them to make positive changes to keep the Port and the surrounding waterways clean.
- When trying to build a strategy to reduce trash and litter on a port's property, there is value in convening a diverse stakeholder group.

PARTNERS AND PARTICIPANTS

The design firm JCW Productions worked with a group of 25 stakeholders to design the slogan and logo of the Campaign. The group of stakeholders includes:

- Audubon Aquarium of the Americas
- City of New Orleans
- Coastal Cargo Company
- Southern Recycling
- Harbor Police
- Horizon Water Initiative
- Global Maritime Ministries
- Institute for Local Innovation
- Jefferson Parish Government

- Lake Pontchartrain Basin Foundation
- Louisiana Department of Environmental Quality
- Louisiana Trucking
- New Orleans Business Alliance
- New Orleans Regional Planning Commission
- New Orleans Terminal
- Nicholls State University
- National Oceanic and Atmospheric Administration
- Ports America
- Sewerage and Water Board of New Orleans
- TCI Trucking & Warehousing
- Triple G. Express
- U.S. Risk Management
- U.S. Environmental Protection Agency (HQ)
- U.S. Environmental Protection Agency (Region 6)
- University of New Orleans

POINT OF CONTACT FOR MORE INFORMATION

Amelia L. Pellegrin, Environmental Services Manager, Port of New Orleans, pellegrina@portno.com.

REEL IN AND RECYCLE - NATIONAL MONOFILAMENT FISHING LINE RECYCLING PROGRAM

AREA OF IMPACT

National

DESCRIPTION OF ACTIVITY

The Reel In and Recycling Program, created by the BoatU.S. Foundation, is a public/private partnership that raises awareness of the impacts of, and provides alternative disposal infrastructure for, lost or discarded monofilament fishing lines. The program was initially funded by grants from the National Oceanic and Atmospheric Administration’s (NOAA) Marine Debris Program and the National Fish and Wildlife Foundation (NFWF). In five years, the program established a network of over 2,000 monofilament recycling bins distributed and installed at over 700 locations across the country. These bins are placed in busy fishing and boating areas, such as boat launch ramps, marinas, and fishing piers. Additional bin installation locations include tackle and bait shops. The network has grown to over 6,000 bins nationally.



Local groups are responsible for the installation and maintenance of the bins. With grant funding, these groups were provided with materials and training on installation and outreach for the bins, as well as instructions for disposal/return of the monofilament fishing lines collected. Today, groups purchase their own materials to build a bin, but signage and support are available from the BoatU.S. Foundation. The monofilament fishing lines collected in the bins are sent to Berkeley Conservation and its parent company, Pure Fishing America, for recycling. Berkeley Conservation recycles and repurposes the fishing lines to create various products, such as spools for fishing lines, tackle boxes, and freshwater fish habitats.

DURATION OF ACTIVITY

The program was first initiated in 2006. Grant support from the NOAA Marine Debris Program and NFWF was provided until June 1, 2012. Although no longer supported by grant funding, the program is still in operation. The program is funded by donations to the BoatU.S. Foundation from BoatU.S. members and the general public.

ACTIVITY-RELATED COSTS

The NOAA Marine Debris Program and NFWF provided funding to support and implement the program, which was also supported by donations made to the BoatU.S. Foundation. Three grants were distributed to the program, totaling just over \$250,000. BoatU.S. Foundation matched these funds, bringing the total funding to \$558,758.66. These funds were used to create an online reporting tool, program websites, outreach and educational activities, focus group efforts, and bin construction materials and signage. Bins are easily constructed from PVC pipe that cost about \$35 per unit.

MEASURE(S) OF PROGRESS

Volunteers record the quantity of fishing lines collected at each recycling bin, and the BoatU.S. Foundation maintains an online tracking system to report the quantity of collected lines. To date, nearly 6,000 miles (3,731 pounds) of fishing lines have been reported recycled through the program.

The 3,731 pounds of monofilament fishing lines collected and reported is actually a conservative estimation of the true amount collected. It is recognized that only a small percentage of bin owners submit the quantity of fishing lines they collect from the recycling bin.

LESSONS LEARNED

- Funds to incentivize installation of bins were not needed. In the early stages of the program, many groups were eager to participate, especially if the bins were given to them at no cost.
- At early stages of the program, the need and demand for recycling bins were higher than expected. BoatU.S. Foundation reallocated grant funds to build more bins and purchase additional signage. During the time the program was supported with grant funding, there was a waitlist to receive pre-made bins.
- Groups are willing to construct their own bins, which saves BoatU.S. Foundation time and money.
- The program can be maintained without grant funding. Grant funding helped to build the infrastructure and lay the groundwork for a program that has now taken on a life of its own and is thriving at the grassroots level without external funding support. Additional funding could support program innovation or improvements.
- In order for the program to be successful, you need buy-in from the fishing and boating community as well as the conservation community.

PARTNERS AND PARTICIPANTS

During the grant phase of the program, the Reel In and Recycling Program built partnerships with over 447 groups at the federal, state, and local levels as well as with the private and nonprofit sectors. Key state partnerships exist with California, New Jersey, Ohio, Oregon, and Virginia. Many bins are installed at National Wildlife Refuges and Army Corps of Engineers locations. In the five years since grant funding ended, BoatU.S. Foundation provided support and signage to, on average, 100 groups each year.

POINT OF CONTACT FOR MORE INFORMATION

Susan Shingledecker, BoatU.S. Foundation; 703-461-2878; sshingledecker@boatus.com.

Program website: <http://www.boatus.org/monofilament/>

REGIONAL LITTER PREVENTION CAMPAIGN



AREA OF IMPACT

Maryland, Virginia, and the District of Columbia

DESCRIPTION OF ACTIVITY

Recognizing the importance of public education and awareness in creating behavior change, the Alice Ferguson Foundation created the Regional Litter Prevention Campaign to change littering behaviors of residents in the Potomac Watershed. The campaign consists of a toolkit that includes advertisement, visuals, communication, and community outreach pieces. These are meant to fit effortlessly into existing programs. The Campaign is designed to be implemented at the community grassroots level, as well as the broad jurisdictional level, in order to best reach the target audience of litterers, community leaders and members, local businesses, and the media.

The Campaign allows communities and jurisdictions to build awareness of residents and local businesses to the harmful nature of litter, which will help to drive behavior change among litterers in their area. The end goal of the Campaign is to create a lasting reduction of litter in the Potomac Watershed by educating and inspiring a positive change in littering behavior. In order to achieve this goal, the Alice Ferguson Foundation is looking for new jurisdictions and communities to implement the Campaign for the message to have widespread impact. The Campaign implementation occurred as follows:

- 2008-2010: The Alice Ferguson Foundation conducted social research in order to develop a regional public outreach and education campaign to understand the root causes of littering and to change littering behaviors.
- 2010: Media and message consultants were hired to research, develop, and implement campaign plans and materials based on the findings from the social research.
- 2011: The Campaign was piloted with grassroots outreach strategies in the community of Deanwood and through a broader jurisdictional approach in Montgomery County, Fairfax County, Arlington County, the District of Columbia, and Prince George's County.
- 2012: The Campaign expanded to the communities of Forest Heights and Oxon Run, both in Maryland.

- 2013: The grassroots Campaign effort was further expanded to include Capitol Heights South to Forest Heights in Prince George's County and the District of Columbia Wards 5, 6, 7, and 8.

DURATION OF ACTIVITY

The Regional Litter Prevention Campaign was launched in winter 2011 and continues.

ACTIVITY-RELATED COSTS

The total costs for this Campaign approximated \$776,000 during the timeframe of 2008 to spring 2014. Of those costs, 17% were in-kind donations.

Of the total amount, approximately 38% was spent on research and development, approximately 51% was spent on implementation, approximately 9% was spent on evaluation, and approximately 1% was spent on other activities.

MEASURE(S) OF PROGRESS

Evaluating of the Campaign deployment (both scope and scale) is done via regular contact with partners and tracking outreach efforts of staff.

Three methods used to evaluate the effectiveness of changing behavior include phone interviews, door-to-door interviews, and direct behavioral observations. The first two aforementioned methods were not effective ways at evaluating effectiveness due to biases related to self-reporting and because many of the people reached had not been exposed to the Campaign. The direct behavioral observations were effective because it was done at sites in close proximity to where Campaign material was posted, increasing the likelihood of the pedestrians being exposed to the Campaign.

A 45% reduction in the number of litterers and a 77% increase in the number of people throwing trash into litter cans were observed after the Litter Campaign materials were posted at four sites in Prince George's County in 2013.

PARTNERS AND PARTICIPANTS

County Partners include The District of Columbia, Arlington County, Fairfax County, Montgomery County, and Prince George's County.

Community partners include businesses, civic associations, schools, community groups, faith-based organizations, citizens, parks, recreation centers, libraries, and others.

POINT OF CONTACT FOR MORE INFORMATION

trash@fergusonfoundation.org, 301-292-5665.

Program Website:

<http://fergusonfoundation.org/trash-free-potomac-watershed-initiative/education/litter-prevention/>

RETHINK DISPOSABLE

“Saving businesses money through reducing disposables is a model that sells itself once you show people the numbers. The program is expanding and we’re getting increasing numbers of inquiries about how businesses can save money and go green by reducing their waste from packaging. We look forward to stopping more trash before it starts by preventing it at the source.”

—Samantha Sommer, Rethink Disposable Program Manager for Clean Water Action and Clean Water Fund



AREA OF IMPACT

San Francisco Bay Area, CA

DESCRIPTION OF ACTIVITY

ReThink Disposable is a technical assistance program developed by Clean Water Fund (CWF) that partners with local government, businesses, and corporate and academic institutions to reduce waste and prevent litter. ReThink Disposable works directly with caterers, mobile food vendors, restaurants, and institutions to identify opportunities to reduce food and beverage packaging and save money. The program provides technical assistance to implement best practices for reducing disposables and also measures and reports results. The program also provides customer engagement support and promotes participating businesses within communities.

ReThink Disposable was, in part, driven by the results of CWF’s 2011 litter assessment surveys. In 2011, CWF conducted litter assessments in six San Francisco Bay Area communities and found that, discounting cigarette butts, food and beverage packaging comprised 67% of the 13,000 pieces of trash collected during the study. This research concluded that 13% of beverage packaging and 27% of food packaging could be eliminated by promoting reusable beverage containers and replacing disposable food ware with reusable food containers. ReThink Disposable targets food and beverage packaging because it identified these products as the one of the two most significant components of litter that enters the ocean as trash in urban runoff.

ReThink Disposable is a three-step process:

1. Conduct baseline inventory of quantity and costs of disposable products used.
2. Implement recommended practices to reduce the use of disposable food service ware.
3. Conduct a follow-up inventory to measure reductions and cost savings.

CWF launched ReThink Disposable in the San Francisco Bay Area and will expand its operations to three other states in 2016-2017. CWF is also developing a greenhouse gas calculator for source reduction of food ware and food packaging. ReThink Disposable won the 2015 Governor's Economic and Environmental Leadership Award and the 2016 California Resource Recovery Association's Outstanding Waste Prevention Award. Several business participants have received awards and recognition from local government agencies, mayors, and city councils.

DURATION OF ACTIVITY

ReThink Disposable has been in operation since 2012 and continues to work with businesses to implement source reduction solutions.

ACTIVITY-RELATED COSTS

CWF currently manages this program through grant funds and in-kind matching of approximately \$300,000 per year. These funds are used for staffing, program development, and implementation.

Operation and maintenance costs vary by business. The main operating costs incurred are for the purchase of reusable products with a proven payback period. Small food business operators save an average of \$3,000 to \$5,000 annually after initial investments to implement and on-going costs to maintain the program.

MEASURE(S) OF PROGRESS

As of December 2015, ReThink Disposable has worked with 112 food businesses and four institutions in the San Francisco Bay Area and this number continues to grow. Overall, the program reduced disposable products usage in small food businesses by over 10 million products annually and prevented approximately 120,000 pounds of waste each year. Results from just 30 audits of small food businesses include:

- Preventing the production of 29,596 pounds or 14.8 tons of waste (an average of 987 pounds per business per year).
- Reducing disposable food ware items by an average of 70.
- Saving participating businesses an average of \$3,033 per year.

Two case studies are presented below—Bishop O'Dowd High School and The Sacred Wheel, a café and cheese shop—both located in Oakland, CA. The case studies were completed in 2014 and 2015.

Additional case studies showcasing varied types of food business operations can be found on the program website at www.rethinkdisposable.org.

CASE STUDY 1: BISHOP O'DOWD HIGH SCHOOL CAFETERIA

The cafeteria implemented two recommendations:

- Replace disposable 9-inch oval plates with reusable baskets.
- Replace disposable 9-inch round plates with reusable baskets.

These changes resulted in an annual savings of \$6,459 in disposable food ware costs after the payback period of 21 days, and a reduction of 3,376 pounds (1.69 tons) of waste annually.

Bishop O'Dowd High School was awarded the 2016 Green Ribbon School Designation by the U.S. Department of Education, which cited waste prevention as a key metric to achieving campus sustainability.

CASE STUDY 2: THE SACRED WHEEL

The café implemented many recommendations:

- Replace disposable tasting spoons, cups, bowls, cutlery, and condiment cups with reusable dishware for on-site dining.
- Offer napkins in a self-serve dispenser.
- Make straws available upon request only.
- Ask before giving customers optional disposable items, such as utensils and napkins, for to-go orders.

The Sacred Wheel saved \$2,652 annually from these interventions in disposable item costs, and \$1,116 in waste hauling costs. The café reduced waste production by 602 pounds annually.

The Sacred Wheel was awarded the 2014 StopWaste Business Efficiency Award for Waste Reduction Excellence by a Restaurant.

LESSONS LEARNED

- Working with a busy service industry is challenging and requires significant time and a flexible process that can be adapted to varying situations.
- Corporate chains are the biggest source of litter-prone disposable packaging.
- The best local government partners are the ones who are willing to devote resources to the program and couple the program with similar types of outreach and assistance programs to local businesses.
- Correlating ReThink Disposable's measurable reductions of packaging inside the business with measurable reductions of litter-prone food service packaging in the environment outside and around participating businesses proves to be a challenge.

PARTNERS AND PARTICIPANTS

Support for ReThink Disposable is provided by US EPA San Francisco Bay Water Quality Improvement Fund and Source Reduction Assistance, NOAA Marine Debris Prevention Program, StopWaste (Alameda County), California Coastal Commission Whale Tail Grant, Santa Clara Valley Water District, Alameda County Clean Water Program, Lisa and Douglas Goldman Fund, Roy A. Hunt Foundation, Klean Kanteen, AVEDA, and Clif Bar Family Foundation. Partners include the City of Cupertino Department of Public Works, City of Oakland Department of Public Works, City of Sunnyvale Environmental Services Department, County of San Mateo Department of Public Works, San Francisco Department of the Environment, San Jose Department of Environmental Services, South San Francisco Department of Public Works, StopWaste (Alameda County), and City of Palo Alto Public Works Watershed Protection.

POINT OF CONTACT FOR MORE INFORMATION

Clean Water Fund, cacwa@cleanwater.org, 415-369-9160.

Samantha Sommer, ReThink Disposable Program Manager, ssommer@cleanwater.org, 415-369-9174.

Program Website: www.rethinkdisposable.org

STASH YOUR TRASH



AREA OF IMPACT:

Missouri

DESCRIPTION OF ACTIVITY

The Stash Your Trash Program, administered by the Missouri Department of Conservation's Stream Team Program provides mesh trash bags to river recreationists, mostly through canoe-rental operations, to prevent trash from being improperly discarded in Missouri's rivers.

The outfitters provide free mesh bags to customers with their canoe rental. These mesh bags are designed for convenience: They drain water easily, can be cinched and secured in case the canoe overturns, and can be reused multiple times. Each mesh bag can carry an average of ten pounds of trash. The Missouri Stream Team encourages customers to not only use the mesh bags for their own trash, but also for trash seen during their float trips. At the end of their float trip, customers give the mesh bags back to the outfitter for proper trash disposal.

The Stash Your Trash Program also includes an educational component to increase public awareness of the need for litter control.

MEASURE OF PROGRESS

The Stash Your Trash Program began as a pilot project in 1986 with only a few participating outfitters. In 2016, the program had 140 participating outfitters. Approximately 300,000 mesh bags are distributed to outfitters each year, and since 1998 more than six million mesh bags have been distributed. The educational component of the program reaches roughly 1.3 million river recreationists annually. It is estimated that this program has potentially prevented more than 25,000 tons of trash from entering Missouri waterways in 18 years.

ACTIVITY-RELATED COSTS

The Stash Your Trash Program has an operating budget of \$80,000 annually dedicated to the purchase of mesh trash bags that are then distributed free of charge.

DURATION OF ACTIVITY

Pilot versions of the program began in 1986 and 1987. The Missouri Stream Team Program began to administer the program in 1999 and the program continues to exist.

LESSONS LEARNED

- A challenge in implementing the Stash Your Trash Program is cost. Each year, the cost of mesh bags increases while the budget remains the same. Outfitters are encouraged and reminded each year to recycle the mesh bags.
- Outfitters are encouraged to find or build an appropriate storage area for mesh bags. Mesh bags should be stored in areas away from sunlight, as sunlight causes them to quickly degrade. Storage is a challenge for outfitters whose operations are mainly outdoors.
- When ordering mesh bags, it is important to keep the outfitters' seasonal schedule in mind. The entire process of ordering mesh bags to receiving the mesh bags can take eight to nine months. The Stream Team thus begins the ordering process in August, before many of the outfitters shut down for the off-season. This allows for the mesh bags to be shipped by March or April, when the outfitters open back up for their on-season.

PARTNERS AND PARTICIPANTS

The Stash Your Trash Program is sponsored by the Missouri Department of Conservation, the Missouri Department of Natural Resources, and the Conservation Federation of Missouri. River recreation in Missouri attracts over 1.3 million visitors each year.

POINT OF CONTACT FOR MORE INFORMATION

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Program website: www.mostreamteam.org

Facebook: www.facebook.com/mostreamteams

STREETS AND WALKWAYS EDUCATION AND ENFORCEMENT PROGRAM (SWEEP)



AREA OF IMPACT

Philadelphia, Pennsylvania

DESCRIPTION OF ACTIVITY

Streets and Walkways Education and Enforcement Program (SWEEP) is a city-run program created in June 1991 to educate Philadelphia citizens about their responsibilities under the Sanitation Code. SWEEP initially focused on commercial areas, but has expanded to other areas over time. Through education and enforcement, SWEEP supports and enhances individual and community efforts to maintain a clean city.

The program costs approximately \$2.3 million annually and employs 60 SWEEP officers. These officers enforce the law against violators through intensified street patrols by uniformed litter enforcement officers, computerized tracking of code violation notices, and speedy adjudication of violations. In cases of non-compliance, SWEEP officers will issue warnings and citations to the appropriate individuals. SWEEP officers also work with residential communities to address problem locations. Specially trained civilian officers meet with the individuals responsible for the operation of businesses and apartment buildings to review cleanup responsibilities.

DURATION OF ACTIVITY

SWEEP was created in June 1991 and continues to be implemented.

ACTIVITY-RELATED COSTS

The program costs approximately \$2.3 million annually.

MEASURE(S) OF PROGRESS

The SWEEP program has helped to reduce litter and increase recycling in Philadelphia.

In each of the past several years, SWEEP issued fewer citations for littering than the previous years. SWEEP issued 145,300 citations in 2014, down slightly from a high of 155,500 in 2013. In 2015, SWEEP is on track to issue even fewer citations, with a projection of 128,000. This decrease in citations is one indication that SWEEP is working.

Philadelphia's Litter Index supports the conclusion that the amount of littering in the city is decreasing. In 2009, the Litter Index reported that 72 out of 109 (66%) index areas were Significantly Littered, Excessively Littered, or "Extremely Littered. By 2014, only 8 out of 109 (7%) index areas were Significantly or Excessively Littered, with no Extremely Littered areas.

Further, Philadelphia substantially increased its volume of recycled materials since the inception of SWEEP. Recycling has increased from an average of 45,000 tons per year in the 1990s to approximately 127,000 tons in Fiscal Year 2014. This increase is in part due to SWEEP education and outreach efforts.

Additionally, SWEEP maximizes every opportunity to educate residents, community groups, businesses, churches, and schools on the importance of the city's Streets Department rules and regulations. SWEEP officers formally educate the public in a variety of ways including community meetings and school presentations; conducting media events and interviews; staffing special events; hosting seminars; issuing formal print and e-letters; and posting press releases. Informal educational opportunities include engaging citizens by canvassing door-to-door and disseminating information to patrol, phone, email, and social media contacts.

Finally, SWEEP has a built-in, targeted learning process. For instance, in 2006, a pilot study was conducted in the lowest performing recycling areas of the city to determine what form of enforcement stimulated residents to recycle: education, warnings, or a citation. The study revealed that people are more likely to recycle after receiving a warning.

PARTNERS AND PARTICIPANTS

Philadelphia More Beautiful Committee, Keep Philadelphia Beautiful, UNLITTER US, and RECYCLEBANK.

POINT OF CONTACT FOR MORE INFORMATION

Keith Warren, keith.warren@phila.gov.

TRASH FREE SCHOOLS PROJECT



AREA OF IMPACT

Maryland and the District of Columbia

DESCRIPTION OF ACTIVITY

The Trash Free Schools Project works to educate and empower students, faculty, and staff to reduce each school's waste footprint by providing education and resources, including a comprehensive guidebook, to aid in rethinking, reducing, reusing, and recycling. As part of the project, students and staff at K-12 schools will have the resources needed to investigate an environmental issue while implementing a strong waste reduction and litter prevention strategy. An easy eight-step process guides schools in creating a green team and building momentum from year to year.

The Trash Free Schools Project:

- Creates an active and environmentally-aware school culture by increasing participation and engagement among the school body.
- Fosters environmental stewardship through student action by teaching the process of how to recognize, investigate, and take action on an environmental issue.
- Allows schools to gain recognition as an environmental leader among schools and establish a starting point for other green certification programs.
- Integrates waste reduction and environmental themes into lessons and curricula.
- Provides service learning opportunities for students.

DURATION OF ACTIVITY

This project runs throughout the school year from late August until the middle of June.

ACTIVITY-RELATED COSTS

The activity-related costs are roughly \$15,000 annually. The program is free for participating schools.

MEASURE(S) OF PROGRESS

Participating schools are graded on their activities using the Trash Free Schools Report Cards. This self-study, conducted at the end of the school year, measures action items, including school-wide education, effectiveness of a recycling program, and sustainability of the program in subsequent years. Points are assessed based on how well each program performs, and schools are given a letter grade to assess their progress. All reporting schools indicate a new Trash Free indicator to be incorporated each year. Examples of an indicator can include recycling bins in each classroom, bin monitoring for appropriate materials, and organizing a schoolyard cleanup. Trash Free Schools currently reaches 5,500 students in Maryland and 3,000 students in the District of Columbia each year.

PARTNERS AND PARTICIPANTS

Although many partnering schools join through educational outreach programs and the Regional Litter Prevention Campaign, which is also an initiative by the Alice Ferguson Foundation, any school can participate. As of August 2015, 23 schools participate in this program. A list of currently participating schools can be found on the program website provided below.

Additional partners include the National Oceanic and Atmospheric Administration, District of Columbia Department of the Environment, District of Columbia Schools, Prince Georges County Public Schools, Montgomery County Public Schools, Prince George's County Department of Parks and Recreation, and Horton's Kids of District of Columbia.

POINT OF CONTACT FOR MORE INFORMATION

trash@ferqusonfoundation.org, 301-292-5665.

Program Website:

<http://ferqusonfoundation.org/trash-free-potomac-watershed-initiative/education/trash-free-schools/>

TRAYLESS TUESDAYS IN NEW YORK CITY PUBLIC SCHOOLS

“Trayless Tuesdays is an excellent first step towards eliminating toxic and polluting styrene foam trays from school cafeterias. The lunch tray, used by some students for as many as 3 meals per day, is a personal item. By making the switch to environmentally friendly and healthy food service ware, school districts have the opportunity to educate students and staff right in the cafeteria, transforming the lunch period into a sustainability education opportunity by raising REDUCE, REUSE, and RECYCLING awareness within school communities.”

—Debby Lee Cohen, Director of Cafeteria Culture.

AREA OF IMPACT

New York City, NY

DESCRIPTION OF ACTIVITY

The grassroots organization Cafeteria Culture, founded in 2009 as Styrofoam Out of Schools, partnered with the New York City (NYC) Department of Education (DoE) SchoolFood Directors, concerned parents, educators, and Parsons School of Design to launch their first initiative, Trayless Tuesdays, towards reducing styrene foam tray use by 20% from NYC schools in one year's time. The goal of Trayless Tuesdays was to divert styrene foam from landfills and incinerators by using lunch trays that can be recycled or composted.

On Tuesdays, styrene foam trays were replaced with boat-shaped paper containers in 1,700 public schools across NYC. Paper boats have a smooth clay polymer coating to prevent foods from leaking through and are both compostable and recyclable when clean and dry (or have less than 10% putrescible waste). DoE SchoolFood adjusted the Tuesday menu to accommodate the paper boats by serving non-saucy food, such as sandwiches. This initiative immediately reduced the amount of styrene foam tray use by 20% without any additional cost to the city. Schools began using paper boats to serve breakfast, pizza, and other non-saucy meals.

In 2010, Cafeteria Culture Director, Debby Lee Cohen, received the United Federation of Teachers Green Schools Award for catalyzing Trayless Tuesdays. In 2013, Trayless Tuesdays earned Cafeteria Culture an EPA Region 2 Environmental Quality Award.

DURATION OF ACTIVITY

In March 2010, Trayless Tuesdays launched throughout all 1,700 NYC public schools. As of September 2015, all NYC public schools use compostable trays, negating the need for Trayless Tuesdays.

ACTIVITY-RELATED COSTS

Cafeteria Culture (formerly Styrofoam Out of Schools) started as a volunteer-run grassroots organization with no funds. The organization spent one year and seven months working with Parsons School for Design at the New School and SchoolFood Directors exploring design concepts for alternatives to the styrene foam lunch tray.

Replacing styrene foam lunch trays with paper boats was cost neutral (both products cost approximately \$0.03-\$0.04 each). NYC SchoolFood was already purchasing paper boats; therefore, there was no need to go through the lengthy process of initiating a new contract for this item.

MEASURE(S) OF PROGRESS

Within five years of implementation of Trayless Tuesdays citywide, the initiative eliminated over 100 million styrene foam trays from production, landfills, incinerators, and student lunches, at no additional cost to NYC. Because of Trayless Tuesdays, 2.4 million plastic foam trays per month were diverted from landfills and incinerators.

The implementation of Trayless Tuesdays throughout NYC was a first step towards the city's 2013 decision to completely eliminate styrene foam trays from all NYC schools, leading NYC SchoolFood directors to initiate a collective purchasing agreement with the five other largest U.S. urban school districts of Chicago, Los Angeles, Miami-Dade, Orlando, and Dallas. These partnered districts formed the Urban School Food Alliance to use their combined purchasing power to drive down the cost of a compostable alternative. As of September 2015, styrene foam school trays have been replaced with compostable plates in all NYC public schools and the five other partnered urban school districts, resulting in the elimination of almost half a billion styrene foam trays per year from landfills, incinerators, and student meals across the U.S.

When Trayless Tuesdays was first implemented, most NYC schools were not a part of a city-run composting program. In 2012, only 67 NYC schools participated in the city's Organics Collection Pilot Program. The number of schools composting increased when Local Law 77 of 2013 was passed, which required the NYC Department of Sanitation to initiate a school Organics Collection Program. As of 2015, 722, or roughly half of, NYC public schools participate in the Organics Collection Program, making it possible for these schools to compost, rather than throw away, the new alternative plates.

LESSONS LEARNED

Some challenges in implementing Trayless Tuesdays in NYC schools were:

- Bringing related NYC government agencies on board with the initiative.
- Effectively communicating operational changes to food staff, custodians, and students.
- Gaining the support of busy school principals to publicize this initiative.

Trayless Tuesdays is not a perfect solution, but an excellent first step towards complete elimination of styrene foam trays from K-12 school cafeterias.

Although Trayless Tuesdays was a cost neutral initiative, the increased cost of purchasing compostable plates (rather than paper boats) in order to accommodate all menu types, was a roadblock. Cafeteria Culture's staff needed to persuade local government officials to look beyond the school system budget alone and consider long-term gains of the elimination of styrene foam lunch trays within a citywide budget and reaching NYC's sustainability goals. Through inter-agency collaboration, NYC can potentially reduce rising waste exportation fees and meet greenhouse gas emission reduction targets.

To gain initial support for eliminating styrene foam trays from schools, Cafeteria Culture requested a quote from a children's health expert, since this initiative would both reduce children's potential exposure to the toxic chemical styrene, which is a primary component of the foam food containers, as well as benefit the environment for future generations.

Trayless Tuesdays can:

- Provide an opportunity for the entire school community to visualize how eliminating styrene foam lunch trays and composting tray alternatives can significantly reduce school cafeteria garbage on a daily basis.
- Lead to other waste reduction and waste sorting efforts in the cafeteria, such as improved sorting of all waste items, composting, and reducing the volume of garbage, which, in turn, saves money by reducing plastic garbage bag usage (\$.40 per bag) and labor time of staff emptying bins during lunch periods.
- Serve as a catalyst for school administrators, parent-teacher associations, teachers, and students to jumpstart other school sustainability initiatives, such as a student-led Cafeteria Ranger program (see www.sort2save.org), Green Teams, and classroom recycling.

PARTNERS AND PARTICIPANTS

New York City Department of Education, Office of SchoolFood; New York City, Department of Sanitation; NYC public school parents; Parsons School of Design, the New School; The Fund for the City of New York; EPA Region 2.

POINT OF CONTACT FOR MORE INFORMATION

Debby Lee Cohen, Cafeteria Culture, dl@cafeteriaculture.org.

Program Website: <http://www.cafeteriaculture.org/trayless-tuesdays.html>