



**Global Reach. Local Benefit.**  
**Flotsam & Jetsam: Leading Environmental  
Restoration in Cleveland Harbor**

October 17, 2013

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# The Cuyahoga River has a rich history

**Site of Rockefeller's Standard Oil (1870's)**

**It burned a few times (1950's and 1960's)**

**Was a catalyst for the EPA Clean Water Act (1972)**



# The River is cleaner now

Remains a key industrial artery

Has become a recreational asset

Improved plant, fish and wildlife



# Today's challenge

## Floating debris is an environmental stressor

- Organic materials (90%)
- Street litter (10%)

**Cleveland harbor sees about 200 tons of debris per year**

**Debris is often introduced via storm drains and CSO discharge during heavy rain events**



# It comes in all shapes and sizes

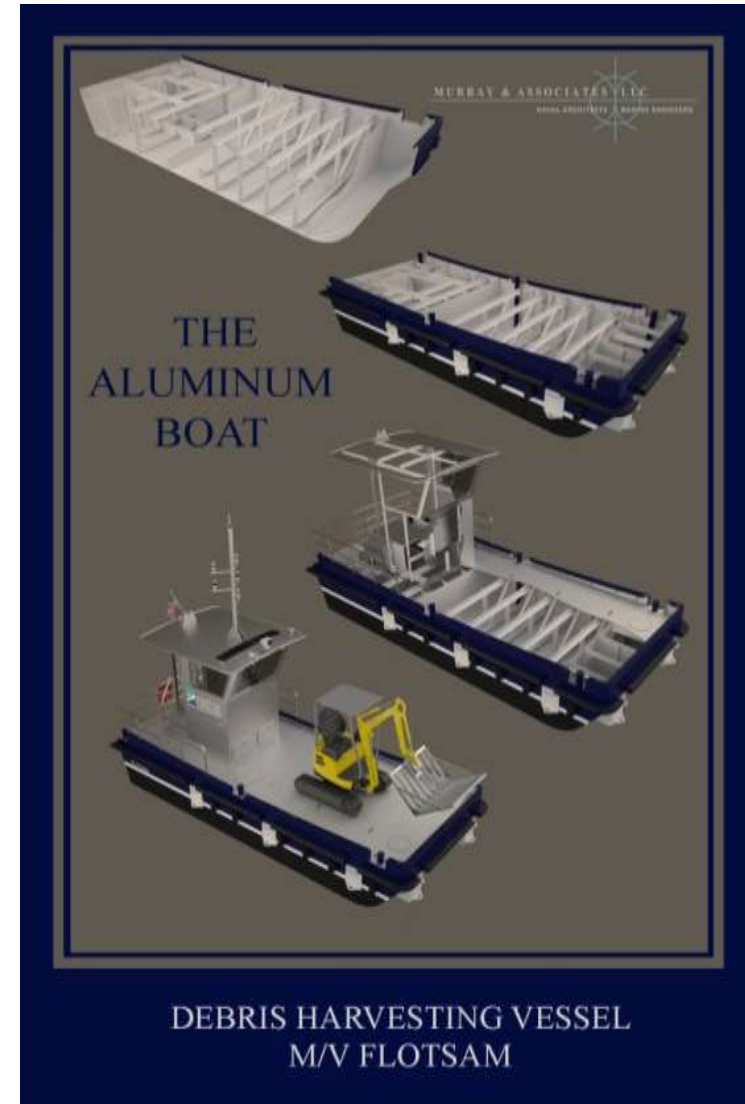


# The Port's solution

Develop a vessel(s) that can capture, tow, remove and transfer debris to land

Port conceptualized and designed a system, had it manufactured, then commissioned it

Secured a US EPA Great Lakes Restoration Initiative Grant in 2011 for \$425k



# Conceptual design for Debris Harvester Vessel System



# The boats were commissioned on 17 October 2012





# Complex undertaking



- Crewing
- Landside support locations
- Debris disposal
- Admiralty law and Jones Act considerations
- Agreements and exchanges
- Safety and training
- Maintenance
- Equipment
- Insurance

# The boats were immediately put to the test when Superstorm Sandy hit





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# 2013 – First full year of service

## Debris capture and removal

- 430k lbs. / 462 cubic yards / 170 Bagsters®
- 60 logs (large – 20+ feet long)

## Forged better relationships with local partners

- Recreational, environmental, industry, government, USCG, and visitor and convention bureau

**Visibility and public awareness > [Flotsam & Jetsam on NBC WKYC](#)**



**Thank You**  
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# Specifications

Vessel Specification	Flotsam	Jetsam
Construction Material	Marine Grade 5/16 Aluminum	Marine Grade 5/16 Aluminum
Length Overall (LOA)	25 feet, 10 inches	25 feet, 10 inches
Beam (Width)	Hull 10 feet; 11 feet including rub-rails	Hull 10 feet, 11 feet including rub-rails
Displacement (loaded)	15,950 lbs.	16,570 lbs.
Loaded Draft	1 foot, 2 inches	1 foot, 2.56 inches
Engine	Inboard 160 hp diesel with outdrive	Inboard 160 hp diesel with outdrive
Maximum Speed	6.5 knots	6.5 knots
On-board Equipment	Pilot house, Bobcat mini-excavator	Pilot house, deck mounted, hydraulic knuckle boom crane with grapple, debris holding area (for Bagster® or dumpster)
Crew	Boat chief, excavator operator, deck hand(s)	Boat chief / hydraulic crane operator, deck hand(s)
Designed by	Murray and Associates, Naval Architects, Ft Lauderdale, FL	Murray and Associates, Naval Architects, Ft Lauderdale, FL
Built by	Lake Assault Boats, Superior, WI	Lake Assault Boats, Superior, WI
Manufacture Date	2012	2012

*Each year, more than 400 cubic yards of debris is introduced into Cleveland Harbor. Floating debris in the Cuyahoga River ship channel is an ongoing aesthetic nuisance and a U.S. Environmental Protection Agency designated environmental stressor. It is also an eyesore and a potential hazard.*



<http://www.wkyc.com/video/2566491717001/52747301001/Cleaning-the-Cuyahoga-River-after-storms>

<http://www.wkyc.com/video/default.aspx?bctid=2566491717001>

<http://www.wkyc.com/news/story.aspx?storyid=265588>