



Camp Dresser & McKee

**Northeast Ohio Regional Sewer District
CSO Floatables Control Facilities**

October 26, 2001

Final Project Report

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CSO Floatables Control Facilities
Operation and Maintenance Services Contract**

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To: Dave Klunzinger, NEORS D

From: Ed St. John, CDM

Date: 26 October 2001

The purpose of this report is to summarize the performance of the CSO Floatables Control Facilities during Camp Dresser & McKee's (CDM) tenure in which CDM supplemented District staff in the operation and maintenance (O&M) of the five netting facilities. With the help of Clean Harbors, CDM provided O&M services from early June 1999 through early August 2001. These services included facility monitoring and recordkeeping, removing and installing nets (referred to as changeouts), boom truck operating, pressure washing, removing and installing chicken wire, and miscellaneous site cleanup. A site-by-site assessment is provided below. Figures are attached at the end of this report to illustrate the results.

Performance Evaluation Parameters

The performance of each facility was measured based on the amount of floatables collected, the removal efficiency achieved, and the physical condition of the facility after a CSO event. The nets used to collect the floatables were weighed with a crane scale during each changeout. The removal efficiency was estimated based on the volume of floatables trapped by the PVC boom curtains that were installed just downstream of two netting facilities - East 55th Street site (spanning the mouth of the cove) and the Kingsbury Run site (spanning the outfall channel bank to bank) or by visually inspecting the sewer pipe or waterway downstream of the unit. The purpose of the boom curtains was to trap floatables that bypassed the units. The physical condition of the facilities was inspected on a regular basis after CSO events. The bag contents were also visually inspected to develop a composition profile. An average composition of material collected was estimated in terms of organic waste (leaves, branches, twigs, etc.), plastic waste (bottles, bags, packaging, etc.), paper waste (paper, cardboard, etc.), and miscellaneous waste (glass bottles, cans, toys, etc.).

Kingsbury Run

A floating end-of-pipe netting facility was installed at the Kingsbury Run site consisting of two modular pontoon structures with each having two nets to catch floatables. The unit was put on-line on October 15, 1999. Approximately 39,730 pounds (or 59 cubic yards) of floatables were

collected from 10/15/99 through 8/6/01. Twenty-four changeouts were performed. An average of 1,655 pounds of floatables was collected per changeout. The average composition of the floatable material collected at this facility was 41%-Organic Waste, 26%- Plastic Waste, 18%-Paper Waste, and 15%- Miscellaneous Waste. The removal efficiency was in the 85 to 95 percent range. See Figure 3 for a pie chart showing the average composition of the floatables collected at the site. The facility stood up well to the CSO events that occurred during the said time period with minor adjustments. Of the five facilities this unit required the least maintenance. On a few occasions the stream had to be cleaned (using row boats and garbage bags) due to the boom curtain downstream of the unit becoming detached, which allowed debris from the Cuyahoga River to enter Kingsbury Run.

Shaw Brook

An in-line netting facility was installed at the Kirby Avenue site consisting of two precast concrete chambers with two nets per chamber. This unit was the first to be put on-line, which was on July 8, 1999. Approximately 35,820 pounds (or 53 cubic yards) of floatables were collected from 7/8/99 through 8/6/01. Thirty changeouts were performed. An average of 1,194 pounds of floatables was collected per changeout. The average composition of floatable material collected at this facility was 45%-Organic Waste, 24%- Plastic Waste, 21%- Paper Waste, and 10%- Miscellaneous Waste. The removal efficiency was in the 90 to 95 percent range. See Figure 4 for a pie chart showing the average composition of the floatables collected at the site. The facility also stood up well to the CSO events that occurred during the said time period with minor adjustments. A few unusually heavy storm events caused some of the baskets to unseat and overturn and/or loose the nets and the basket floor pins to bend, requiring replacement. The site required a lot of attention with regard to maintenance, including activities such as pressure washing after every other changeout and frequent replacement of plastic cable ties.

U.S.S. Cod/ Hornblowers

An in-line netting facility was installed at the U.S.S. Cod/ Hornblowers site consisting of two precast concrete chambers with two nets per chamber. The unit was put on-line on March 15, 2000. Approximately 7,680 pounds (or 11 cubic yards) of floatables were collected from 3/15/00 through 8/6/01. Fourteen changeouts were performed. An average of 550 pounds of floatables was collected per changeout. The average composition of the floatable material collected at this facility was 33%-Organic Waste, 33%- Plastic Waste, 25%- Paper Waste, and 9%- Miscellaneous Waste. The removal efficiency was in the 85 to 95 percent range. See Figure 5 for a pie chart showing the average composition of the floatables collected at the site. On the average, the facility performed well during CSO events that occurred during the said time period. Some of the unusually heavy storm events ripped the nets (due to bricks, timber, etc. coming down the pipe), overturned the baskets, and bent the basket floor pins. On one occasion, one of the baskets unseated and went through the trash rack and into Lake Erie. It was retrieved from the lake via a diver and crane but was damaged and replaced. As with Shaw Brook, the site required a lot of attention with regard to maintenance, including the same activities stated above but performed more frequently.

East 55th Street

A floating end-of-pipe netting facility was installed at the East 55th Street site consisting of a modular pontoon structure equipped with two nets to catch floatables. The unit was put on-line on August 17, 1999. Approximately 12,290 pounds (or 18 cubic yards) of floatables were collected from 8/17/99 through 8/6/01. Twenty -six changeouts were performed. An average of 473 pounds of floatables was collected per changeout. The average composition of floatable material collected at this facility was 28%-Organic Waste, 30%- Plastic Waste, 23%- Paper Waste, and 19%- Miscellaneous Waste. The removal efficiency was in the 90 to 95 percent range. See Figure 6 for a pie chart showing the average composition of the floatables collected at the site. The facility performed well during CSO events that occurred during the said time period with minor adjustments. The unusually heavy storm events forced flow up on top of the unit and over the side curtains, which led to the installation of chicken wire in front of the unit to aid in collecting floatables during such events. On a few occasions the cove area had to be cleaned (using row boats and garbage bags). A PVC strip curtain was installed on the face of the outfall conduit to help dampen the velocity of the flow exiting the conduit; however, it was not too effective.

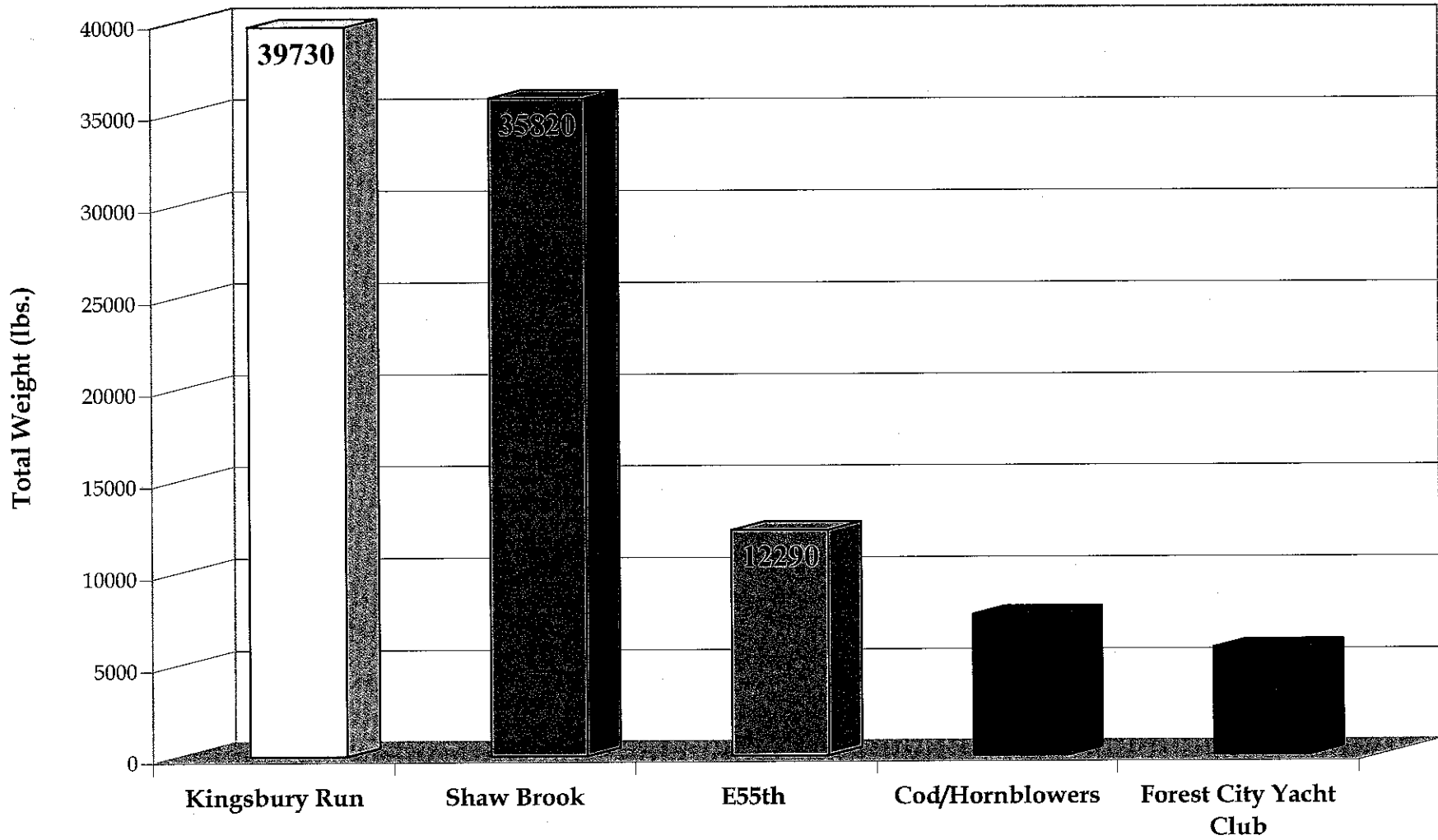
Forest City Yacht Club

A floating end-of-pipe netting facility was installed at the Forest City Yacht Club site consisting of a modular pontoon structure equipped with two nets to catch floatables. The unit was put on-line on August 30, 1999. Approximately 5,855 pounds (or 9 cubic yards) of floatables were collected from 8/30/99 through 8/6/01. Seventeen changeouts were performed. An average of 345 pounds of floatables was collected per changeout. The average composition of floatable material collected at this facility was 30%-Organic Waste, 37%- Plastic Waste, 25%- Paper Waste, and 8%- Miscellaneous Waste. The removal efficiency was in the 90 to 95 percent range. See Figure 7 for a pie chart showing the average composition of the floatables collected at the site. The facility performed well during CSO events that occurred during the said time period with minor adjustments. The unusually heavy storm events forced flow up on top of the unit and past it, which also led to the installation of chicken wire in front of the unit. However, for the most part the unit did well in keeping floatables out of the marina.

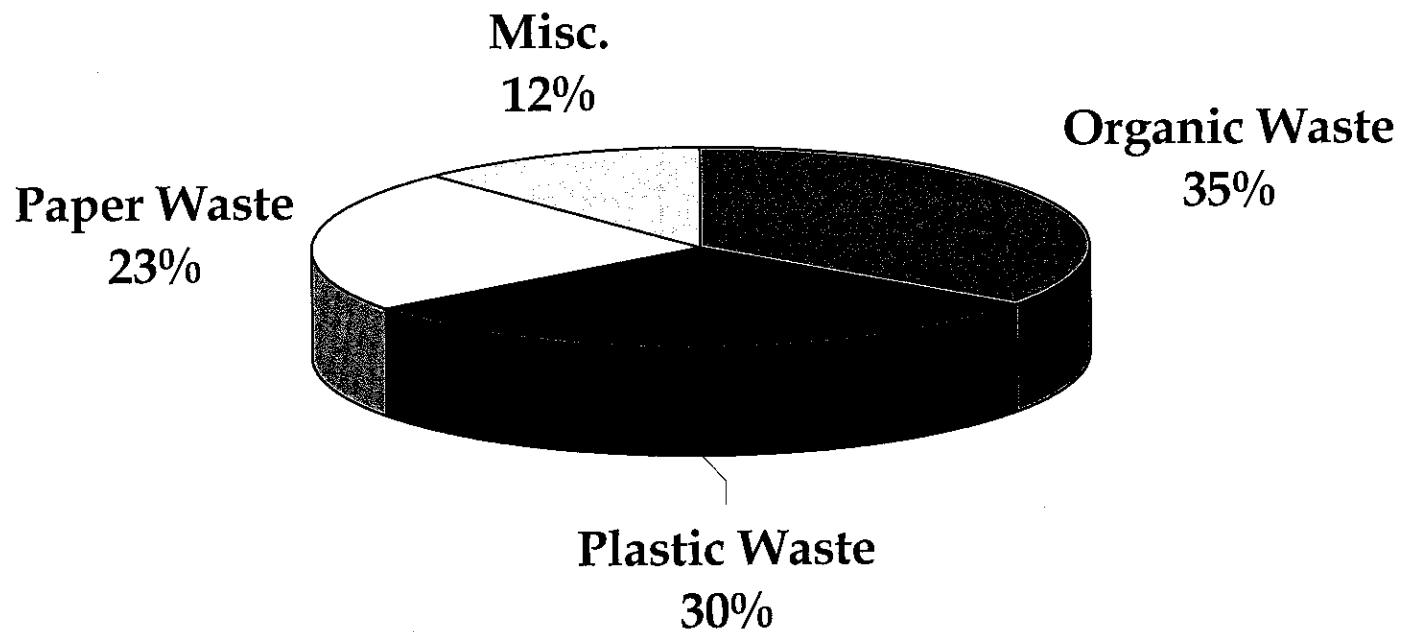
Final Wrap-up

Overall, the project was a successful endeavor to control CSO floatables, satisfying one of the Nine Minimum Controls as dictated in the U.S. EPA's CSO Control Policy. The CSO Floatables Control Facilities collected a total of approximately 101,375 pounds or 150 cubic yards of floatables, since the first unit was put on-line on 7/8/99. A bar chart showing the total pounds of floatables collected per netting facility is on Figure 1. The overall average composition of floatable material collected was 35%-Organic Waste, 30%- Plastic Waste, 23%- Paper Waste, and 12%- Miscellaneous Waste (see Figure 2). Finally, the bar chart in Figure 8 illustrates the number of changeouts required at each facility during the time period of April 2000 through April 2001. Figure 8 indicates that two changeouts per month per site are typically performed from April through September.

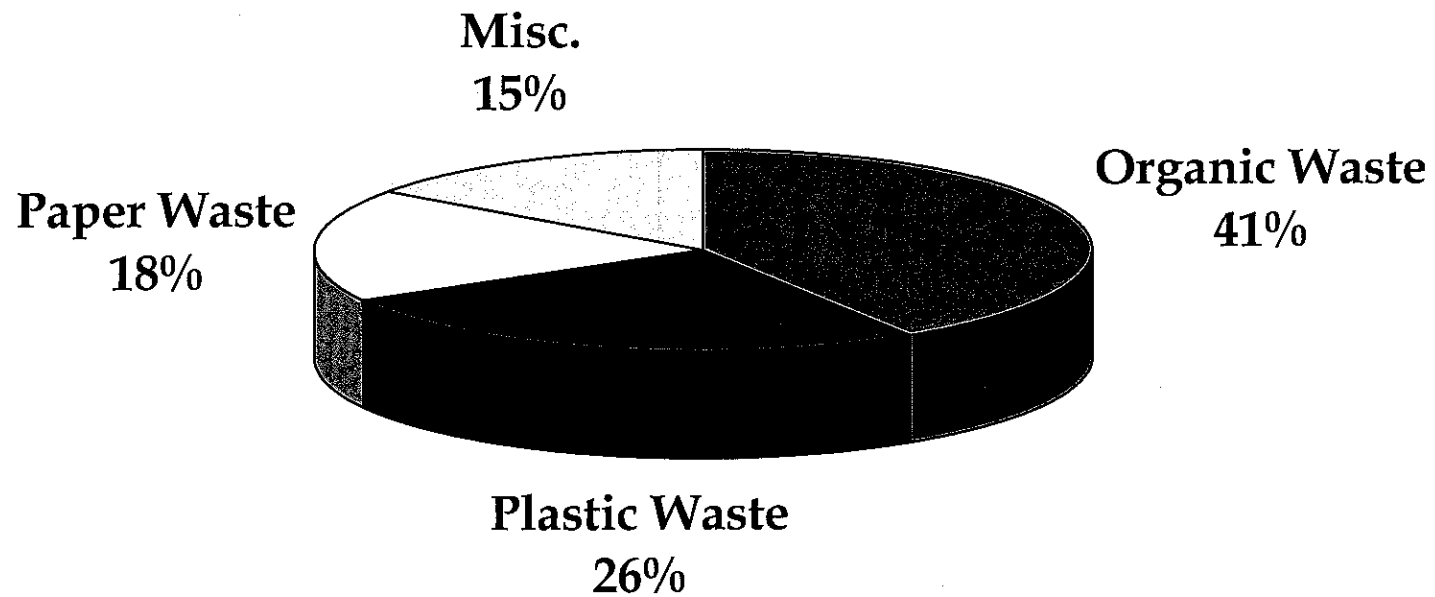
Figure 1 - Total Pounds of CSO Floatables Collected Per Netting Facility



**Figure 2 - Average Composition of CSO Floatables
Collected at All Netting Facilities**



**Figure 3 - Average Composition of CSO Floatables
Collected at Kingsbury Run**



**Figure 4 - Average Composition of CSO Floatables
Collected at Shaw Brook**

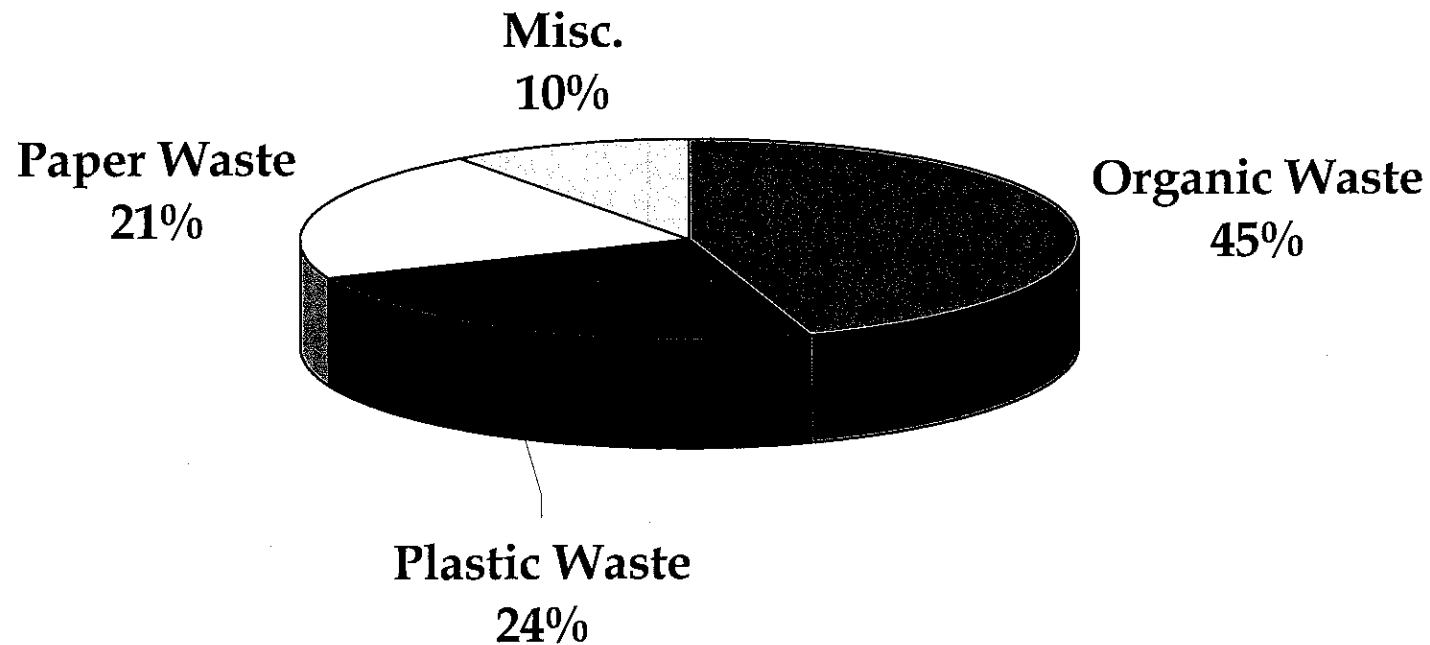
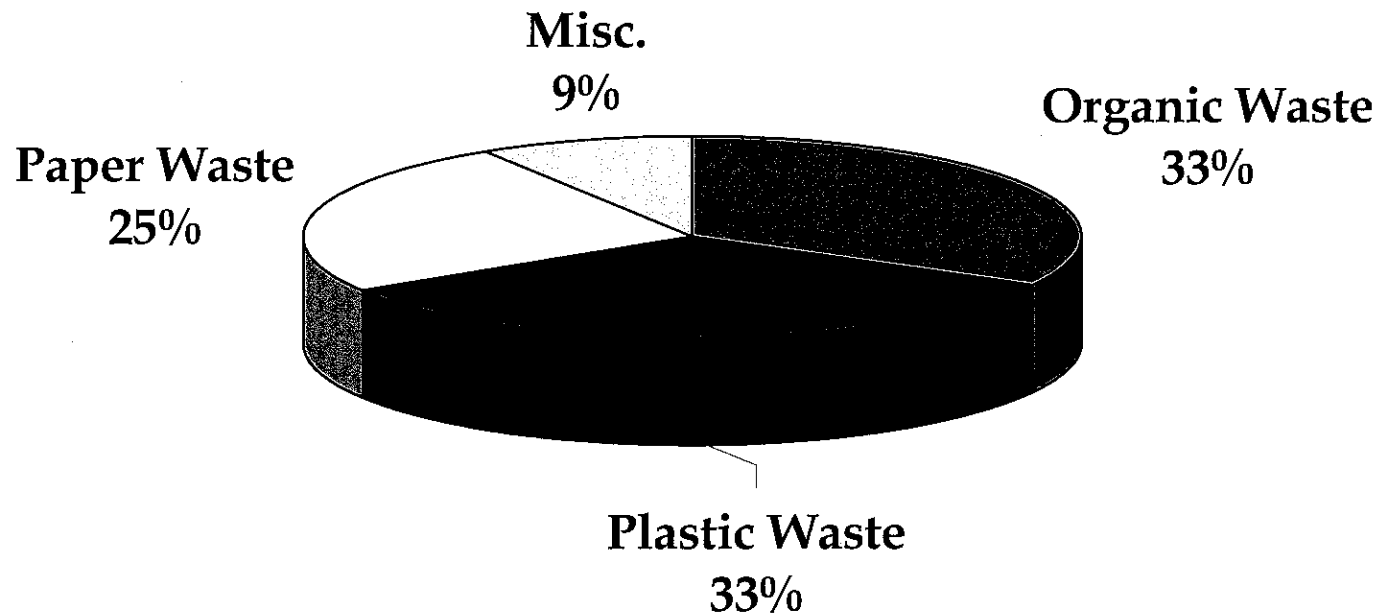
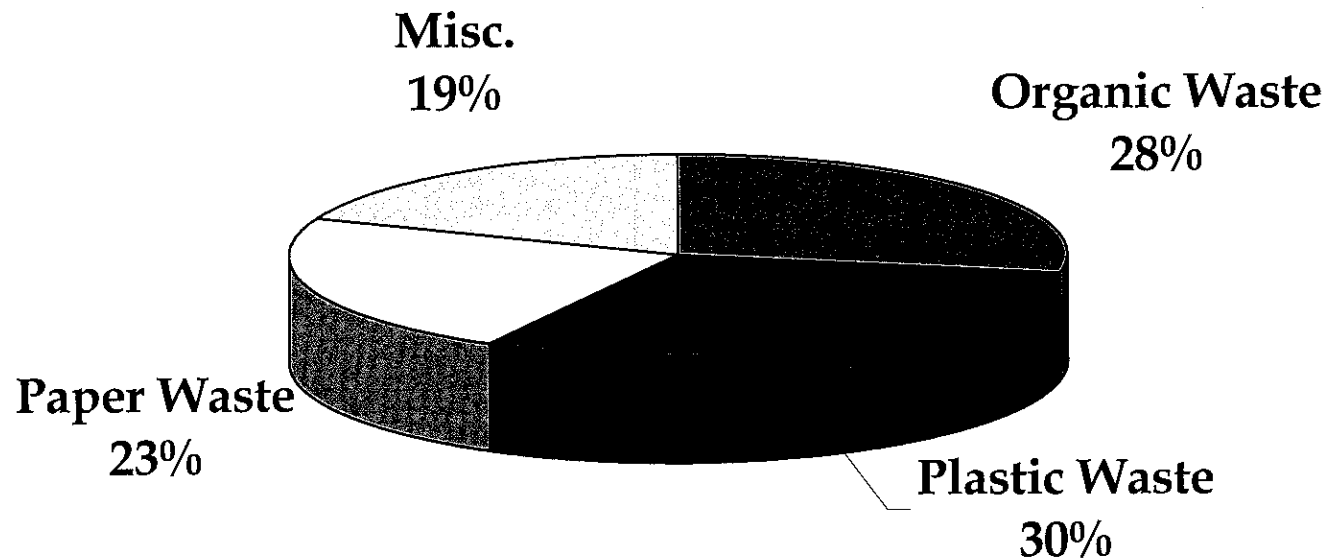


Figure 5 - Average Composition of CSO Floatables Collected at Cod/Hornblowers



**Figure 6 - Average Composition of CSO Floatables
Collected at E55th Street**



**Figure 7 - Average Composition of CSO Floatables
Collected at Forest City Yacht Club**

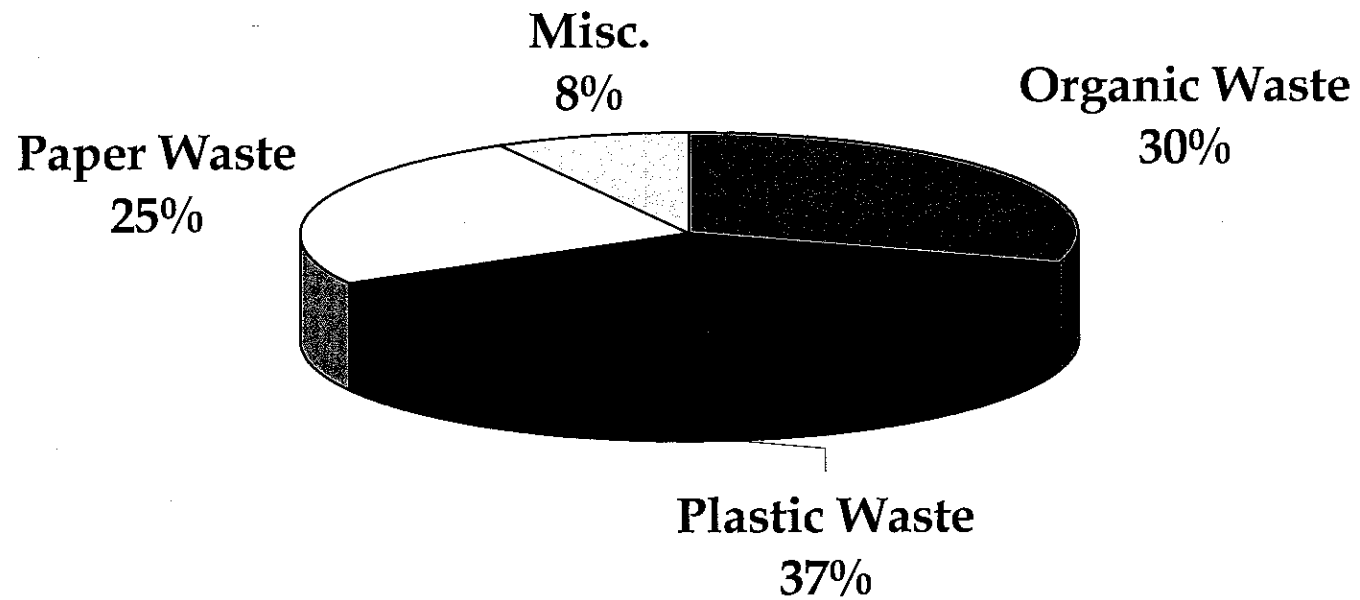


Figure 8 - Changeouts Per Month Per Netting Facility
From 04/00 to 04/01

