

A Trash Biography

*Friends of the Los Angeles River's Trash Report
2012 Update*



Discarded debris collected during the 2011 Willow Street Clean-up.

**Friends
of
the
LOS ANGELES
River**

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ABSTRACT

Starting in 2004, Friends of the Los Angeles River (FoLAR) has conducted trash sorts at different points in the river in an effort to find out the composition and perhaps even the source of the trash found there. For 2012, these sites were Sepulveda Dam, Bette Davis Park, Steelhead Park, Compton Creek, and Willow Street. A randomly selected subset of trash collected at each site was sorted into categories and then weighed. Volume was estimated as number of bags. By both weight and volume, plastics of all types, consistently dominate the total mix of trash, especially plastic films most commonly in the form of plastic bags and candy packaging. FoLAR's main recommendations remain the same: the use of closed-top trash cans such as the Big Belly Solar Compactor and the creation of anti-litter educational programs at the supermarkets, convenience stores and fast food restaurants from which most of the LA River trash presumably originates. FoLAR applauds the recently expanded ban on plastics in grocery stores, but would like to see it eliminated in totality. FoLAR also highlights the importance of monitoring and working to reduce the smaller pieces of plastic found in the River's flow that are still able to make it through the mesh of the trash-excluding screens that have been installed in the LA River stormwater system. The Los Angeles River Trash Total Maximum Daily Load (TMDL) and the associated governmental efforts to cut down on trash in the waterway has brought the goal of a trash-free LA River closer than ever before. With this achievement in sight, FoLAR emphasizes the continued importance of trash-reduction efforts.

INTRODUCTION

Beginning at Canoga Park where the Arroyo Calabazas and Bell Creek conjoin, the 51-mile Los Angeles River runs straight through the heart of the LA Basin until it meets the Pacific Ocean at the Long Beach Estuary, in the process crossing through many neighborhoods and cities like Atwater Village and Compton that have once depended on it as a source of freshwater. Today the Los Angeles River seems more like a repository for waste than a river ever since most of it was encased in concrete by the U.S. Army Corp of Engineers in the 1940's and 1950's. It remains mostly a concrete-paved conduit that collects much of the refuse generated within these very neighborhoods and cities, especially during rains via its many tributaries and storm drains.

The Friends of the Los Angeles River (FoLAR) and other sponsors began the Great Los Angeles River Clean-Up in 1990 with the goal of bringing people to the banks of the LA River and giving them the chance to see it in a new light: as a part of the local environment that must be maintained. A trash-free LA River has long been a goal of FoLAR. Our efforts have been successful in removing many larger items from the river, and efforts to clean up the river have ramped up. A recent convergence of governmental and non-governmental efforts to clean up the river has brought this goal closer to reality than ever before.

In September 2001, the Environmental Protection Agency adopted the Los Angeles River Trash Total Maximum Daily Load (TMDL), a mandate requiring Southern California cities to reduce their trash contribution to the LA River by 10% each year for a period of 10 years with the goal of zero trash by 2015. The TMDL defines trash as debris of human origin that is trapped by a 5 mm mesh screen, encompassing all improperly discarded waste material including grass clippings and other yard wastes. These goals have thus far been achieved through public outreach, street sweeping, and most importantly the installation of catch basin inserts that catch trash within the stormwater system and prevent it from being carried into the river. Proposition O, passed in November 2004, has also provided funding for projects that cut down on trash carried by stormwater into the Los Angeles River. Most recently, on May 2012, Los Angeles City Council voted to ban plastic bags in supermarkets throughout the city. Coupled with the plastic bag ban in Los Angeles County that was voted the year prior, the scale is unprecedented.

FoLAR began conducting trash sorts at various sites along the river during its Great Los Angeles River Clean-Up and River School Day in 2004 to investigate the composition of LA River trash. In addition to removing trash from the river, FoLAR was curious about what types of trash are in the river, how it is getting there and how the amount of trash in the river can be reduced most effectively. Past trash sorts have taken place at Steelhead Park, Lake Balboa in the Sepulveda Basin, the Willow Street Estuary, and at Fletcher Drive in the Glendale Narrows. FoLAR conducted a trash sort for the first time at Compton Creek in 2011.

This report builds on from last year's so as to examine which types of trash continually find themselves numerous in the river and to improve the discussion on curbing this environmental problem.

METHODOLOGY

The volunteers who have sorted trash for FoLAR over the years have gradually refined the trash sort methodology, resulting in its present form. In the past, only weight or volume was recorded along with the brand names of different items. In its current form, however, both volume (in number of standardized trash bags) and weight (in pounds) of each trash category is recorded, along with the names and numbers of brand name items collected. In addition, FoLAR now uses 15 instead of the original 10 trash classes, giving a more detailed breakdown of the trash collected.

As it stands now, FoLAR's trash sort takes place according to the following system. First, about 20% of the total number of trash bags are randomly selected and brought to the trash sorting area for sampling (depending on how much total trash is collected and how many volunteers are available to help sort the trash). Then, these selected bags are broken open and sorted on a tarp into each of the following fifteen categories:

- Food Service Packaging (clamshells, cups, etc.)
- Snack and Candy Packaging
- Bottles and Cans (California Redemption Value or "CRV" beverage containers)
- Non-CRV Containers (other beverage containers)
- Molded Plastic (non-beverage containers)
- Metal (non-beverage containers)
- Glass (non-beverage containers)
- Cigarette Butts
- Polystyrene (Styrofoam, etc.)
- Paper bags, newspapers, etc.
- Plastic Film, non-grocery bags
- Plastic Film, single-use grocery bags
- Plastic Film, tarps
- Clothes and Fabric
- Other

These smaller piles of each class of trash are then sorted into other trash bags of uniform size, a rough measure of volume. Though other litter surveys have explicitly measured the dimensions of each trash item, this methodology is expensive and time-consuming. FoLAR has chosen to use the number of trash bags of each trash class to measure volume due to time and financial constraints. As items with legible brand names are put into these bags, the brand names are recorded. Once all of the trash has been sorted into the individual bags for each class, they are weighed. Once the data have been collected, the sorted trash is disposed of with the rest of the cleanup trash.

Though both weight and volume were measured, volume was taken to be a better a measure of quantity since weight tends to overestimate quantity in certain cases - for example, even small amounts of metal appear heavy due to the material's high density - and underestimates quantity in others, as in the case of plastic, a very light-weight

material. Also, items of clothing had a tendency to be wet and thus weigh more, while plastic bags were often filled with wet sand, giving both the illusion of being heavier than they actually were.

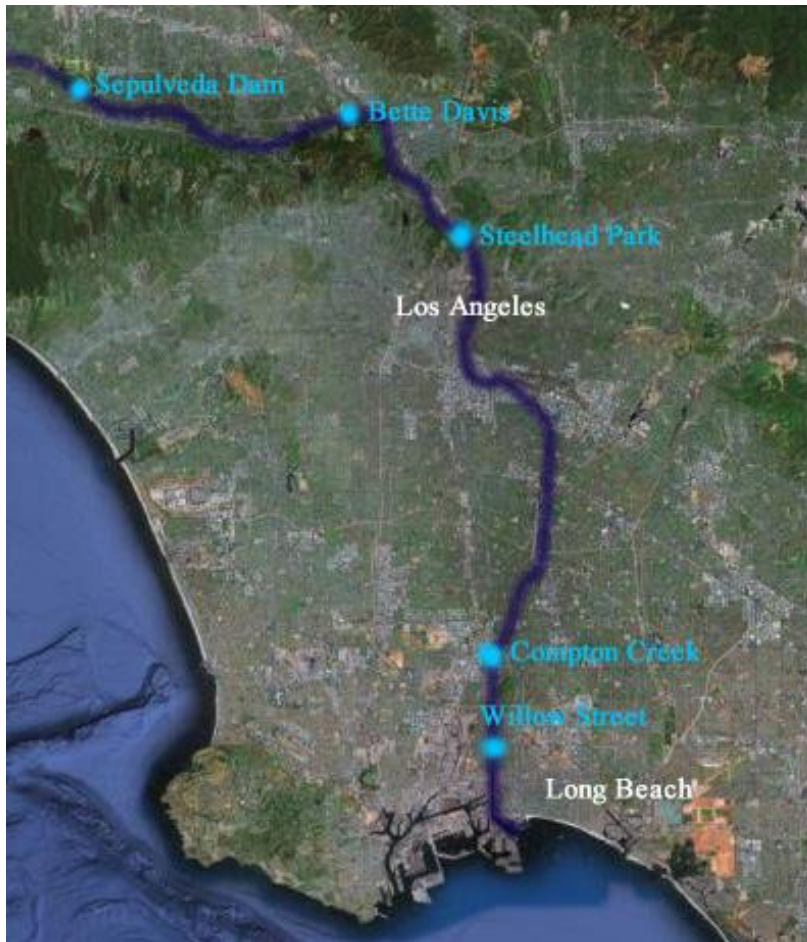


Figure 1. A map of FoLAR’s trash sort sites for 2012.

FoLAR has successfully sorted trash at five locations: Lake Balboa, Fletcher Drive, Steelhead Park, Compton Creek and Willow Street (see map above). All five sites are within natural-bottomed sections of the river where trash tends to collect. They were chosen to provide data from a diverse group of locations from the San Fernando Valley (Lake Balboa), the Glendale Narrows (Fletcher Drive and Steelhead Park), and Compton Creek and Willow Street near the mouth of the river.

Trash in the water of the Los Angeles River (i.e., in the laminar flow) was not collected, though FoLAR hopes to measure this in the future in addition to its current trash sort activities. Laminar flow, as opposed to turbulent flow, is characterized by fluid that flows in parallel layers without disruption or lateral mixing, allowing for estimation of densities of trash particles.

Lake Balboa, Sepulveda Basin

About Lake Balboa

The Lake Balboa trash sort site is located at Lake Balboa Park in the San Fernando Valley. The site is within the Sepulveda Basin upstream of the Sepulveda Dam, one of the three natural-bottomed segments of the LA River. It intercepts trash from upstream areas of the San Fernando Valley, including the communities of Reseda, Winnetka, Warner Center and Canoga Park.

Lake Balboa Trash Categories

By weight, clothes & fabric took the lead with 27%, leaving metal as second place with 19%. Plastics in general constituted 42% of total trash weight.

By volume, the breakdown was much more even, this time with plastic film (“all other bags”) taking the lead with 17%, clothes & fabric and plastic film (tarp) tied for second with 12%. Plastics in general constituted 51% of total trash volume.

The most common corporate brand found was Frito-Lay (count: 32), with Taco Bell at second (count: 19) and both Mars, Inc and Nestlé at third (count: 17).

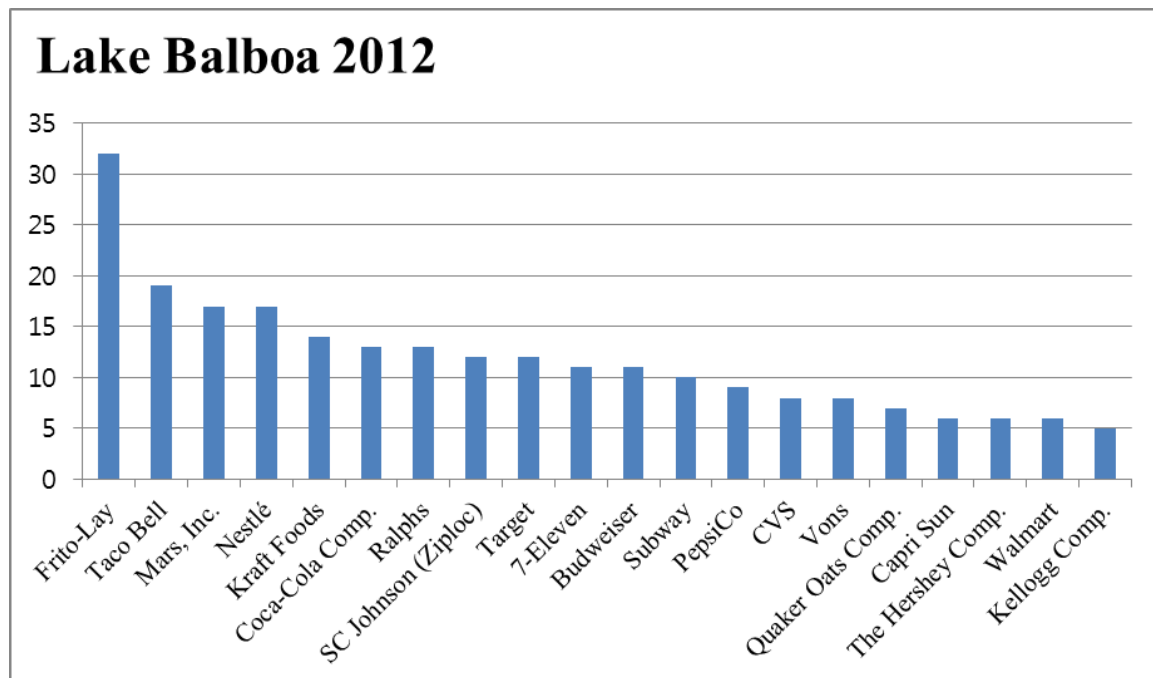


Figure 2. Top twenty corporate brands found in Lake Balboa trash.

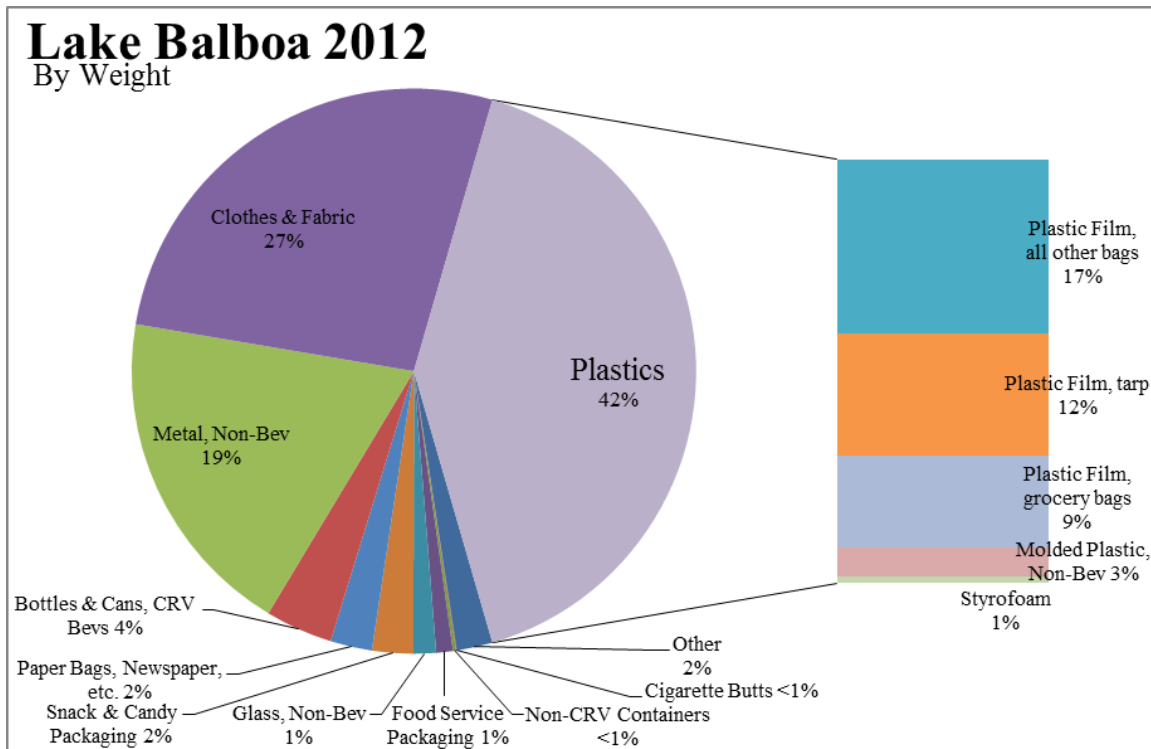


Figure 3. A break-down of the trash sorted at Lake Balboa in 2012 by weight.

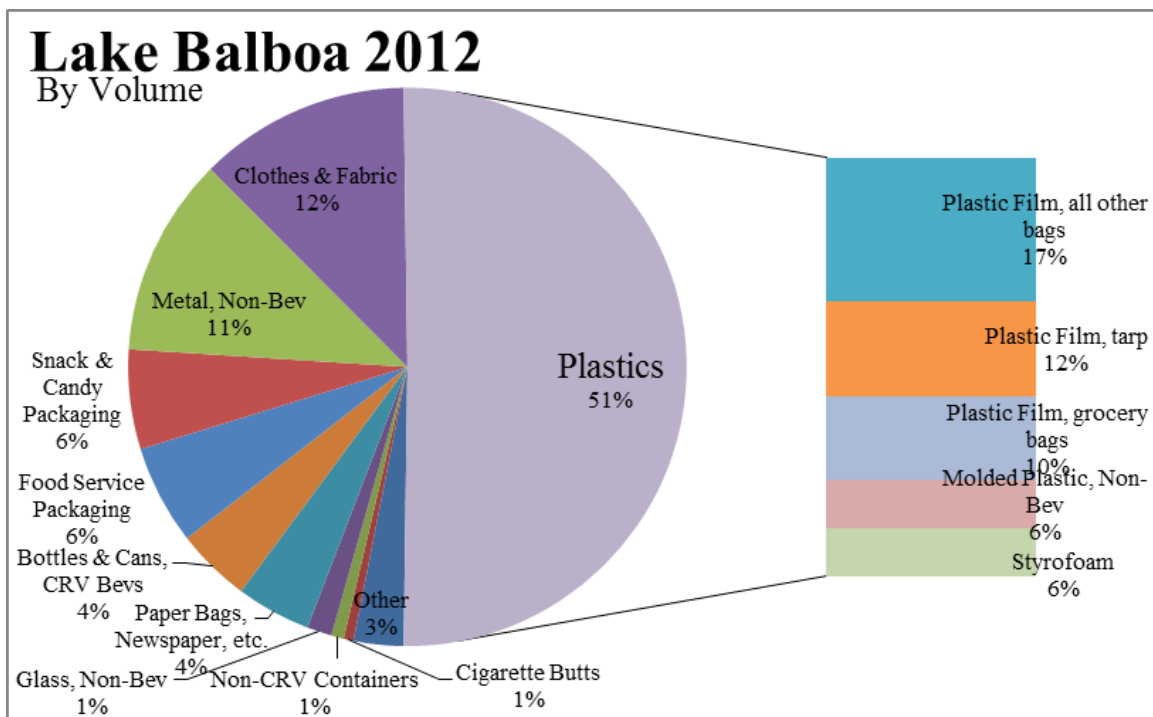


Figure 4. A break-down of the trash sorted at Lake Balboa in 2012 by volume.

Bette Davis Picnic Area

About Bette Davis

Situated next to the Los Angeles Equestrian Center and across from Griffith Park to the south, Bette Davis Picnic Area is where Verdugo Wash empties its waters onto the LA River. Thanks to its earthen bottom, this area of the river enjoys a diverse variety of birds, aquatic animals, and vegetation just like those found in the not-too-distant Glendale Narrows 2.1 miles downstream. As the park's name seems to imply, many studios are located here including Warner Brothers and ABC.

Bette Davis Trash Sort 2012

By weight, Clothes & Fabric came in first with 27%, followed by Plastic Film (grocery bags) with 16% and Plastic Film (all other bags) with 14%. Plastics in general constituted 42% of total trash weight.

By volume, Plastics overshadowed all other categories, with Plastic Films (grocery bags) at 19%, Plastic Film (all other bags) 17%, and Plastic Film (tarp) at 9%. Plastics in general constituted 48% of total trash volume.

The most common corporate brand found was Frito-Lay (count: 12), with Capri Sun and Pepsi Co sharing the distant second place (count: 4).

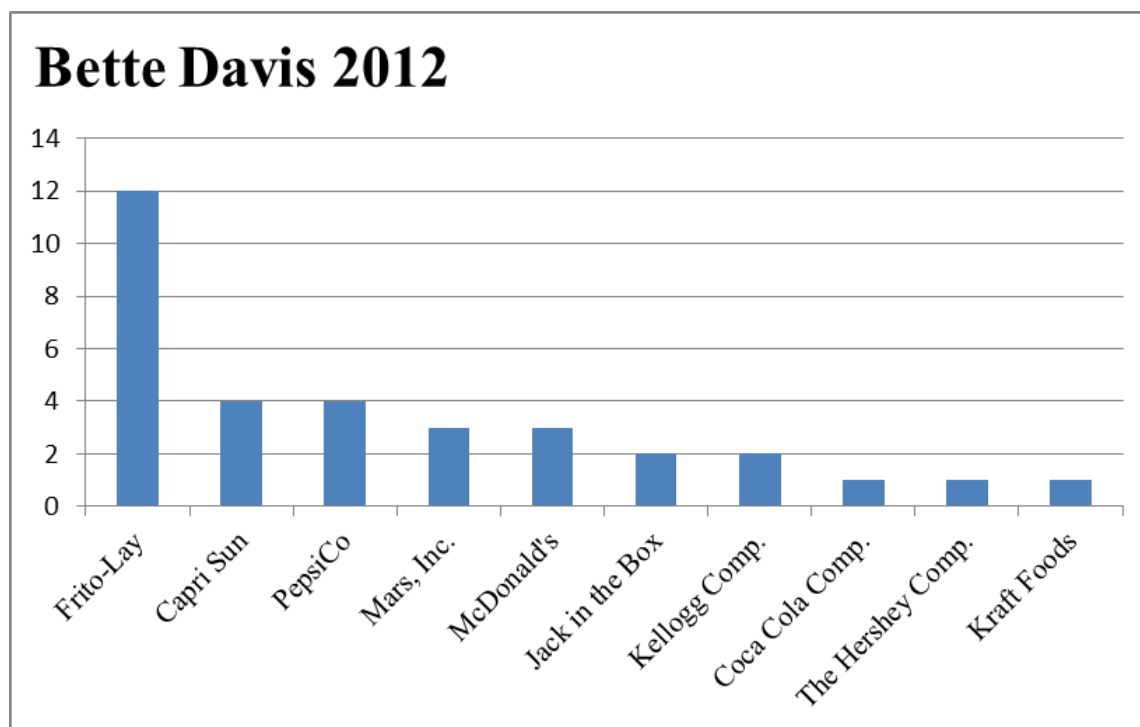


Figure 5. Top ten corporate brands found in Bette Davis trash.

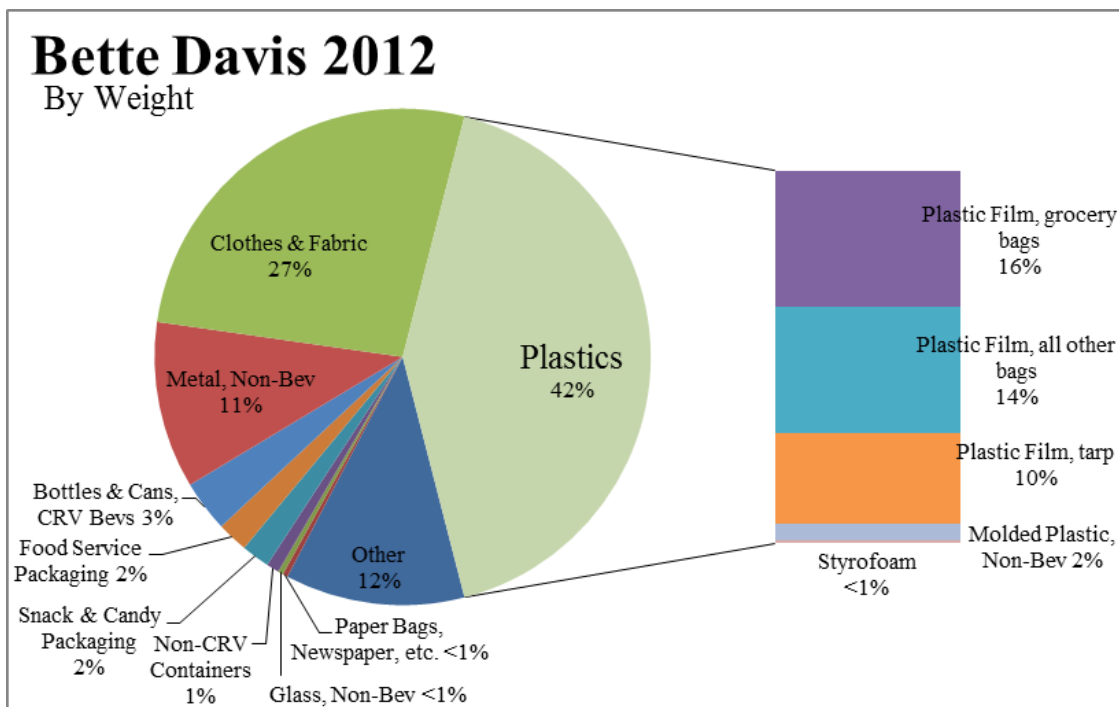


Figure 6. A break-down of the trash sorted at Bette Davis in 2012 by weight.

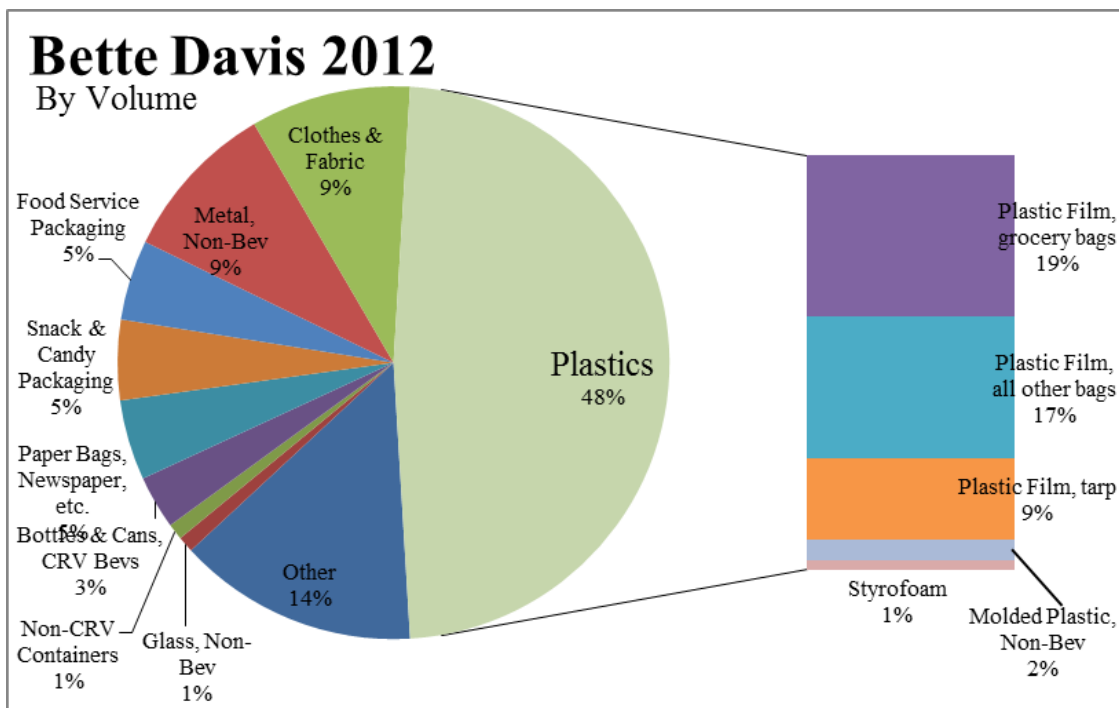


Figure 7. A break-down of the trash sorted at Bette Davis in 2012 by volume.

Steelhead Park

About Steelhead Park

Steelhead Park, a small, riverside pocket park designed by North East Trees, is located in the Glendale Narrows. It features native vegetation, a small outdoor classroom, and gates commemorating the steelhead trout. The park is located in one of three natural-bottomed sections of the river, and has trees and other vegetation that capture trash passing through from the San Fernando Valley and riverside towns in the Narrows. It is immediately downstream of the communities of Elysian Valley, Glassell Park, Atwater Village, Silver Lake, Los Feliz as well as the Fletcher Drive trash sort site, and upstream of the LA River's confluence with the Arroyo Seco.

Steelhead Trash Sort 2012

By weight, plastic film (grocery bags) took first place with 22%, clothes & fabric coming in second with 18%. Plastics in general constituted 56% of total trash weight.

By volume, plastic film (all other bags) and plastic film (grocery bags) took first place with 18%, twice the amount of clothes & fabric, snack & candy packaging, and molded plastic, which tied for second. Plastics in general constituted 53% of total trash volume.

The most common corporate brand found was Frito-Lay (count: 79), with Mars, Inc. at distant second (count: 19) and The Hershey Company at third (count: 13).

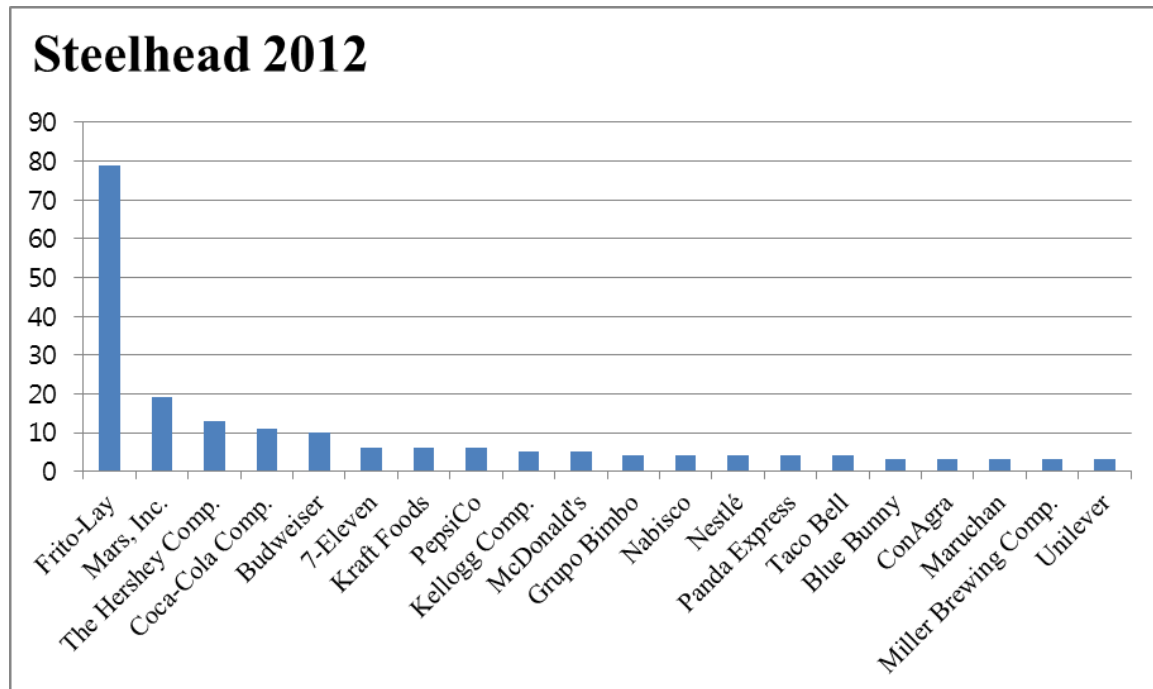


Figure 8. Top twenty corporate brands found in Steelhead Park trash.

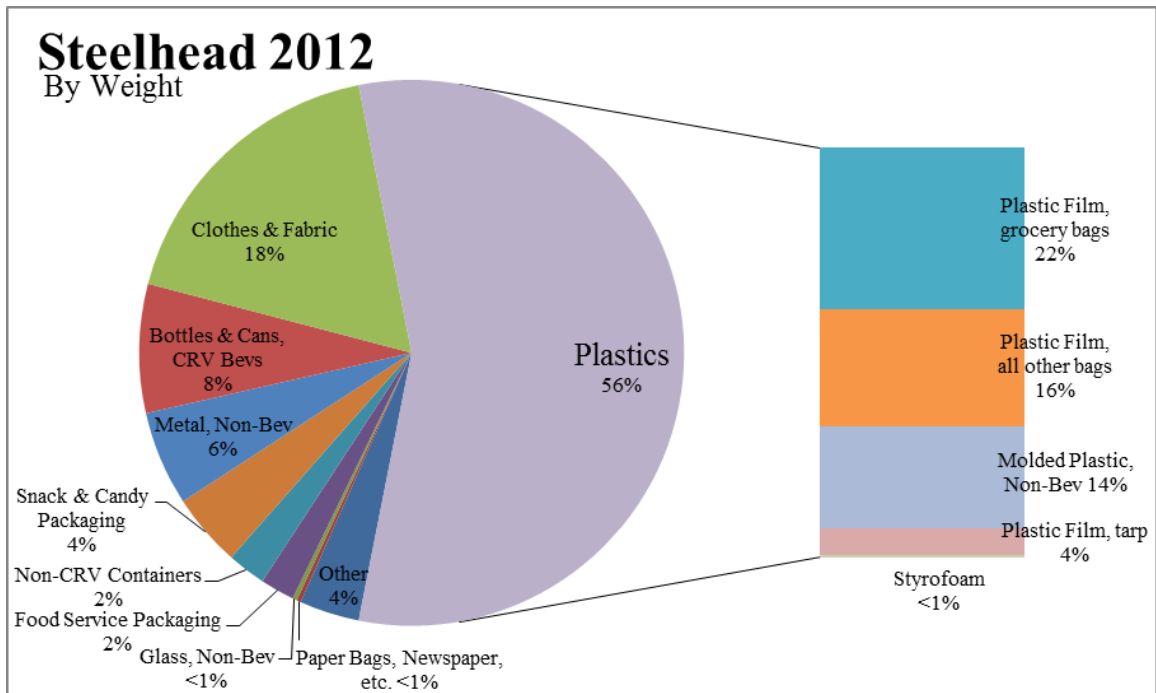


Figure 9. A break-down of the trash sorted at Steelhead Park in 2012 by weight.

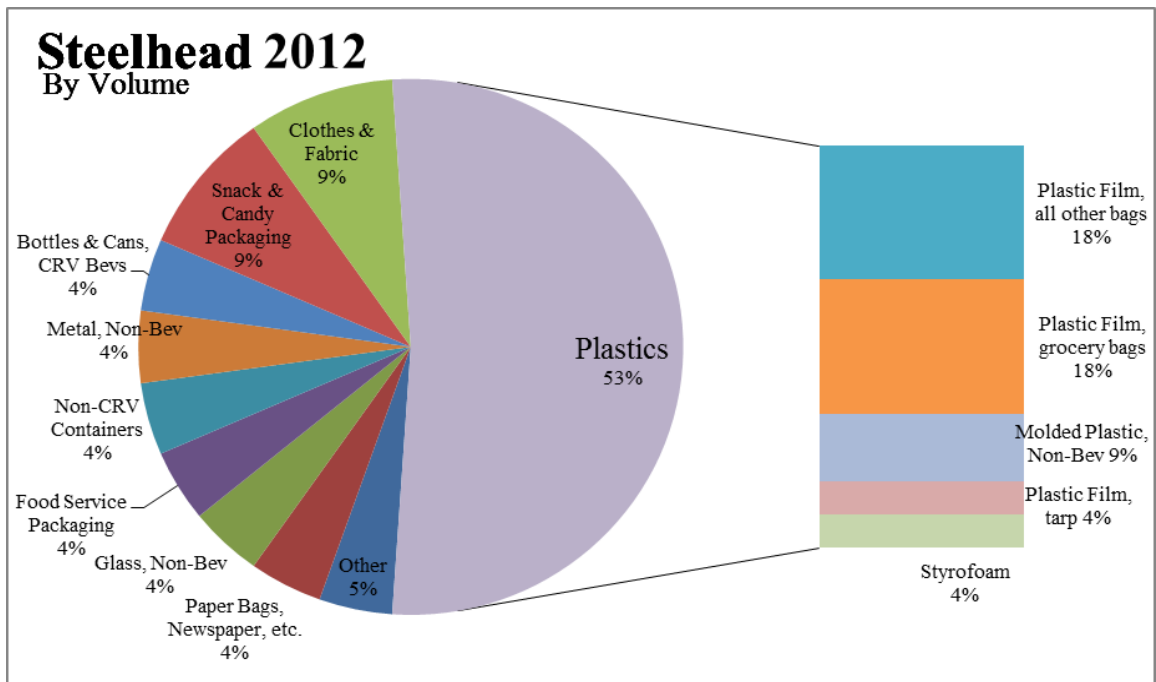


Figure 10. A break-down of the trash sorted at Steelhead Park in 2012 by volume.

Compton Creek

About Compton Creek

Compton Creek is a major tributary of the LA River located in Compton, California that drains a 42 square mile area of South Central LA including parts of South Central Los Angeles as well as the community of Willowbrook. The Compton Creek clean-up and trash sort site is located in lower Compton Creek near where it joins the LA River in a natural-bottom area next to the Metro Blue Line Station on Del Amo Boulevard.

Compton Creek Trash Sort 2012

By weight, plastic film (tarp) took first place with 14%, clothes & fabric coming in second with 12%. Plastics in general constituted 56% of total trash weight.

By volume, Food Service Packaging took first place with 23%, Plastic Film (grocery bags) coming in second with 13% and Plastic Film (all other bags) in third place with 10%. Plastics in general constituted 42% of total trash volume.

The most common corporate brand found was Frito-Lay (count: 109), followed by Capri Sun (count: 74) and Kraft Foods (count: 32).

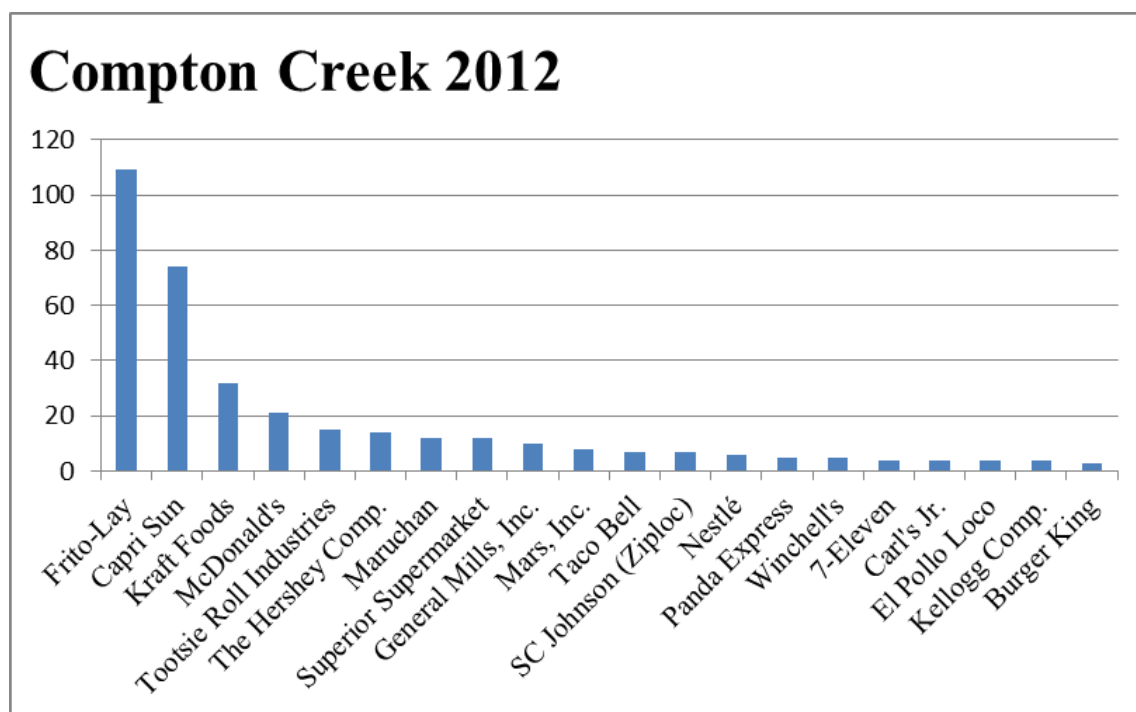


Figure 11. Top twenty corporate brands found in Compton Creek trash.

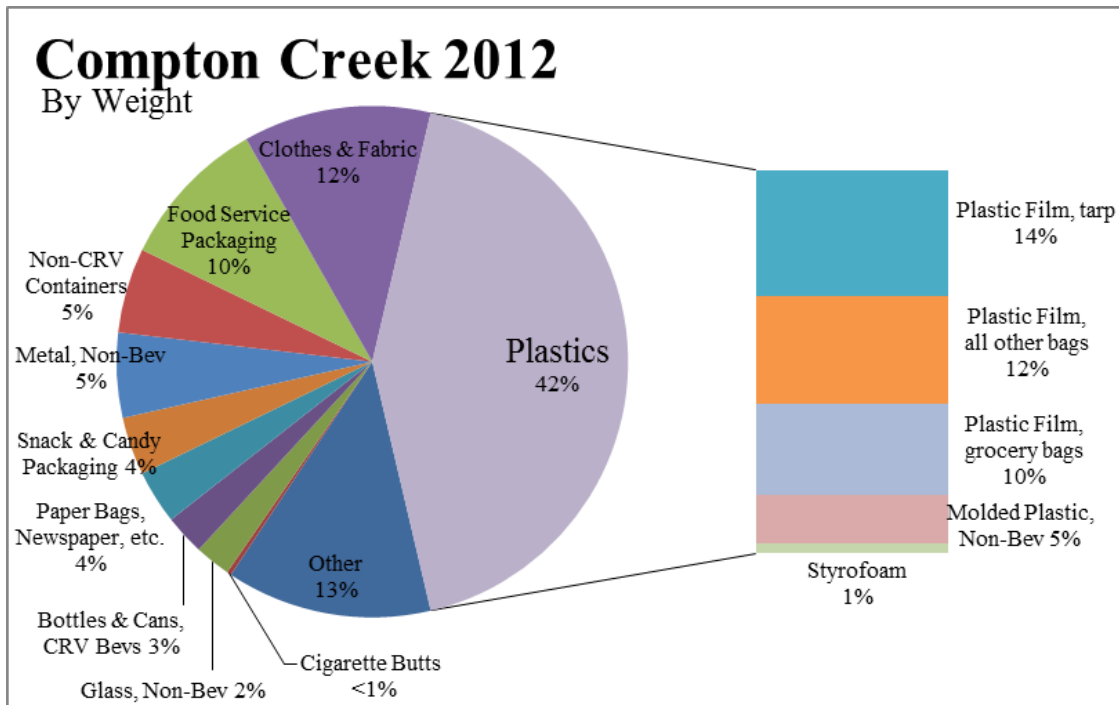


Figure 12. A break-down of the trash sorted at Compton Creek in 2012 by weight.

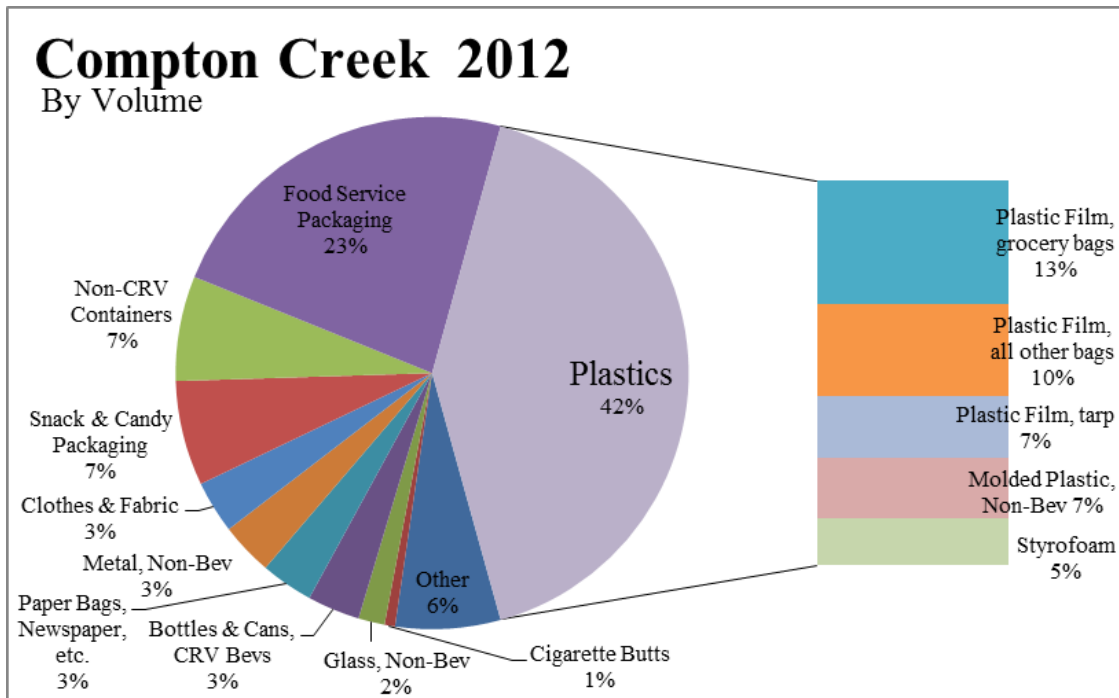


Figure 13. A break-down of the trash sorted at Compton Creek in 2012 by volume.

The Willow Street Estuary

About the Willow Street Estuary

The Willow Street Estuary is located in Long Beach where the concrete bottom of the LA River ends and the freshwater of the river meets the saltwater of the ocean. The trees and brush that grow in the channel area intercept any trash that has made it past the other natural-bottomed areas, as well as that flowing from Compton Creek, a major tributary of the River. It is an ecologically vibrant area frequently visited by ducks, cormorants, egrets, herons, stilts, and other seabirds and waterfowl. Immediately upstream of the site are the Cities of Compton, Paramount, Lynwood and Downey.

Willow Street Estuary Trash Categories

By weight, plastic films dominated the total trash composition with 33%, with metal coming in second with 20%. Plastics in general constituted 51% of total trash weight.

By volume, the breakdown was a little more evenly spread, with food service packaging taking the lead with 21% and metals, plastic film (tarp), and Styrofoam each amounting to 14%. Plastics in general constituted 43% of total trash volume.

The most common corporate brand found was Rust-Oleum (count: 14), with Frito-Lay and Living Essentials (5-Hour Energy) sharing second place (count: 8).

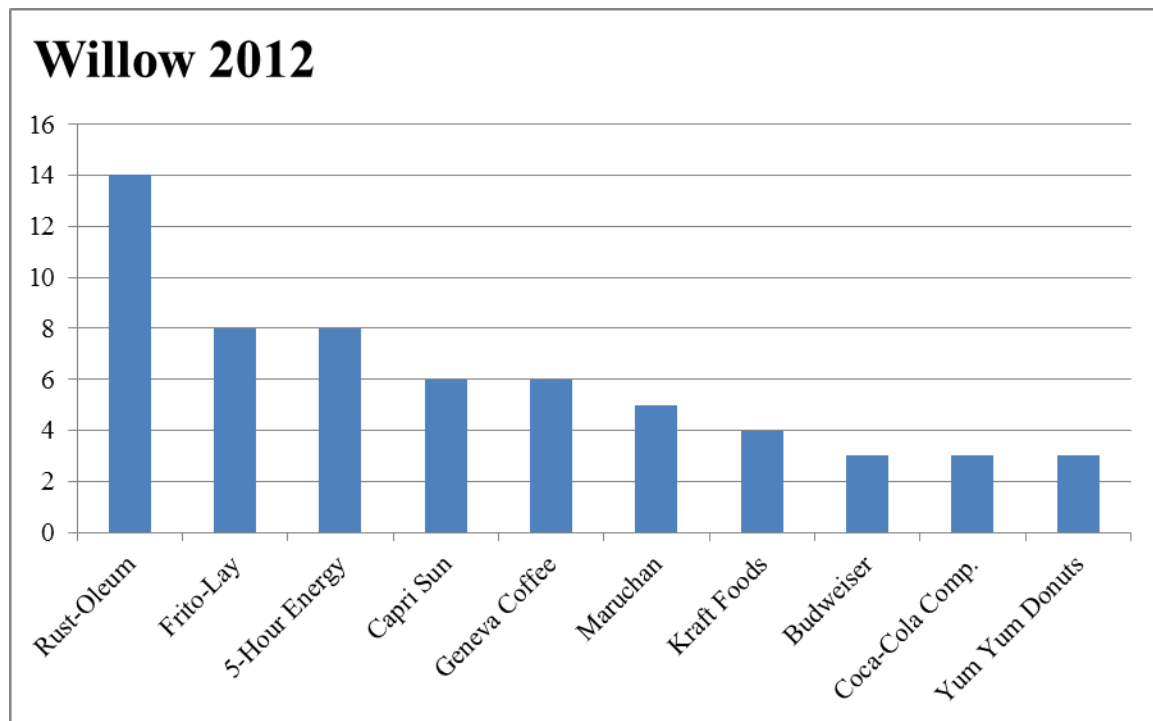


Figure 14. Top ten corporate brands found in Willow Street Estuary trash.

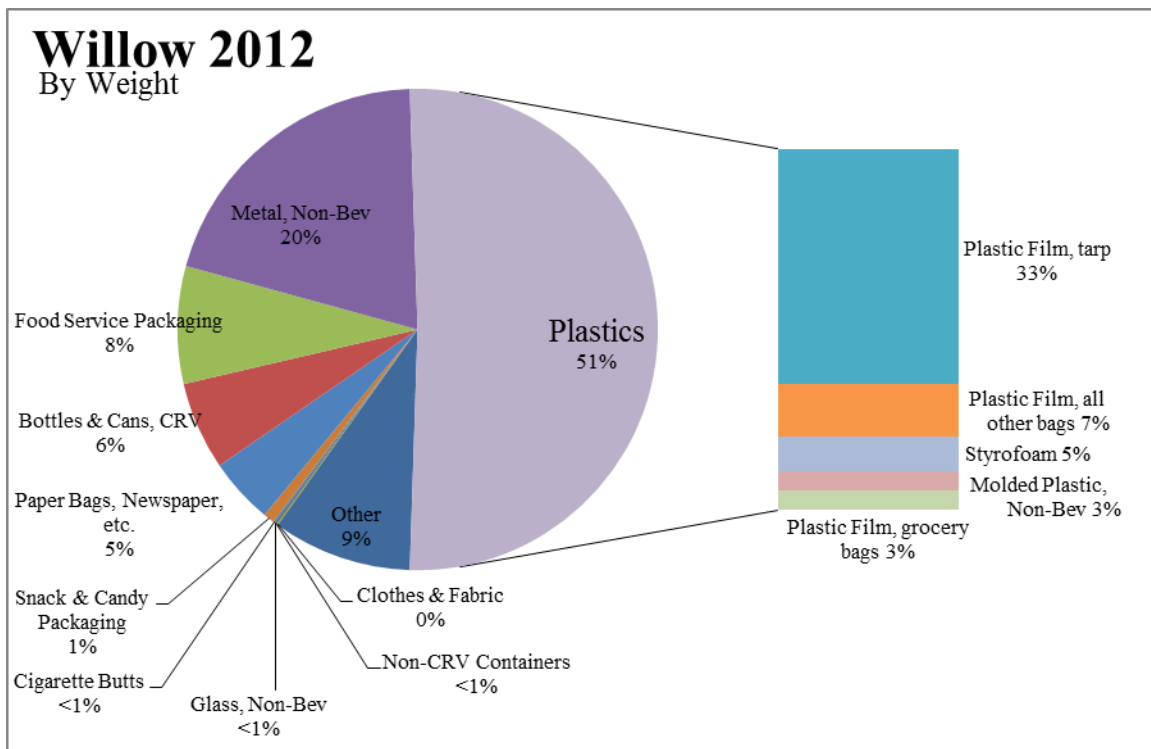


Figure 15. A break-down of the trash sorted at the Willow St. Estuary in 2012 by weight.

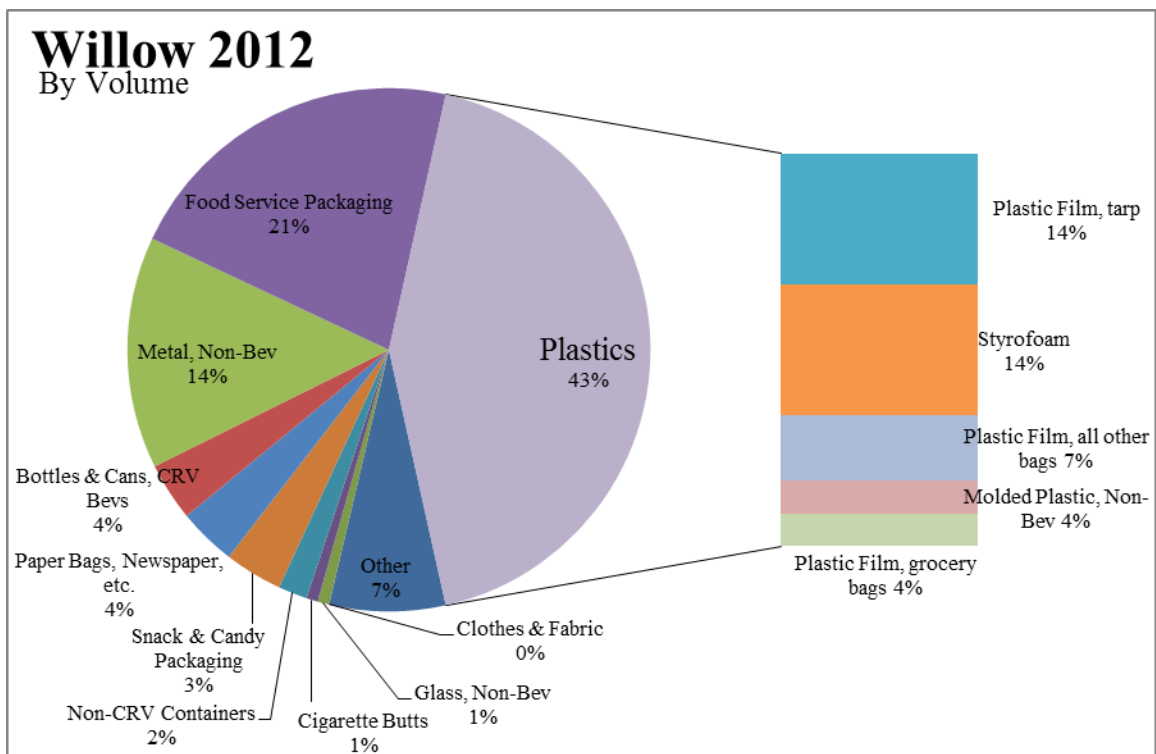


Figure 16. A break-down of the trash sorted at the Willow St. Estuary in 2012 by volume.

RESULTS/DISCUSSION

Consistent with the data collected in the years past, plastics were, again, found to be the most abundant item by both weight and volume, with plastic films leading the pack. It would be interesting, therefore, to see the impact the recent plastic bans in both the County and the City will have on the overall composition of the river trash in the future.

With the exception of the Willow St. Estuary site, Frito-Lays far outnumbered all other corporate brands of trash. Among the most popular were Doritos, Cheetos, and Funyuns. It is necessary to mention that no corporations are necessary at fault for their brand of trash being found in the river; however, these data should prompt these companies to make their packaging bio-degradable and environmentally friendly so as to minimize their impact on the river ecology as much as possible.

The sizable presence of plastics in the river implies the huge presence food-related industries have on the river, as much of it comes from food service packaging. For example, the bar graph enumerating the corporate branded trash for Compton Creek reveals that most of the trash comes not only from packaging for processed foods like Frito-Lays and Kraft Foods, but also from fast food chains and convenience stores like Taco Bell, McDonalds, and 7-Eleven. This fact is worrying in that the city plastic bag ban, which only applies to supermarkets, is clearly not far reaching enough. This ban does not cover either the prepackaged processed foods or these fast-food/convenience stores, the fact which makes it difficult to expect a significant decrease of plastic-related trash in the river.

Though Clothes & Fabric category has the tendency to dominate the trash makeup when broken down in terms of weight, it must be noted that part of this has to do with the fabric soaking up the river water and not being properly dried before the weight was recorded. Even with this caveat in mind, however, the volume breakdown still shows that Clothes & Fabric category constitutes a significant portion of the trash.

Metal was also found commonly in the river, especially in the Willow St. Estuary area where it made up 20% of the total weight of trash found there. As evinced by the bar graph, this can be attributed to the number of Rust-Oleum cans deposited in the estuary.

The more exotics items in the Other category include shopping carts, a manhole cover, traffic cones, and tires. These items yet again indicate that dumping is still an issue for the LA River since these items could not have been carried through the stormwater system nor blown into the waterway.

Though Los Angeles City and County have made great strides in meeting with TMDL requirements and banning plastic bags, it is clear that there needs to be much more effort in improving the conditions of the river, as discussed above. There still exists many holes to be covered and hence the following are our recommendations.

RECOMMENDATIONS

Trash Reduction:

1. **Expanded plastic bag ban** - A large number of plastic bags were found at trash sort sites along the LA River. In 2009, plastic bags made up nearly half of the trash items sorted by volume. Expanding the plastic bag ban from unincorporated Los Angeles to the rest of the county would help reduce the number of plastic bags in the river drastically, many of which most likely blow in from where they are left on the street.

2. **Covered trash cans** – Overflowing trashcans are a major source of trash items that potentially blow into the Los Angeles River. Investing in better trash infrastructure in all riverside parks and other areas within one or two miles of it could greatly reduce the amount of trash that blows into the River. One option is expanding the use of devices such as the Big Belly Solar Compactor, a closed-top trashcan that reduces how often trash must be collected by utilizing the power of the sun to compact its contents.

3. **Compostable fast food containers** – The use of compostable fast food containers coupled with well-marked repositories would cut down on the amount of polystyrene and other non-biodegradable food service packing material ending up in the LA River. LA should concurrently work to improve its composting infrastructure.

4. **Education** – Littering near the LA River could also be reduced by developing an anti-litter signage campaign in conjunction with river-adjacent communities - many of which already have educational campaigns - and by working with gas stations and convenience stores near the river to educate customers about recycling and littering.

5. **“Nurdles” reduction** – If further work reveals significant numbers of small pre-production plastic pellets in the LA River, the City should pinpoint where they are coming from and work with the source facilities to develop better Best Management Practices to reduce the number that end up in the River.

6. **Corporate responsibility** – FoLAR encourages corporations to take part financially and with their personnel at Los Angeles River clean-ups, particularly those whose products consistently show up in the river.

Monitoring:

1. **Laminar flow** – In the past, FoLAR’s trash sort has focused exclusively on trash big enough that volunteers are able to spot it and bring it to the trash sorters during cleanups. However, in the future it will become more and more important to measure the amount of small pieces of trash in the water column, particularly preproduction plastic pellets (“nurdles”) and post-production plastic fragments less than five millimeters in diameter, as these are able to bypass the trash excluders installed in the stormwater system.

2. **Overall abundance** – Quantitative measurements of how the overall abundance of trash is changing in the LA River should be developed in order to measure the success of efforts to comply with the LA River Trash TMDL.

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