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Aeration Fountains continued...

has been cleaned recently from the aeration fountains.

Around \$4.5 million of Measure DD funds have been allocated to improving Lake Merritt water quality by installing trash barriers and aeration fountains, installing wildlife waste cleanup elements, retrofitting storm drain inlets, and implementing other actions to reduce water pollution. Approximately \$1 million has been spent to date on aeration fountains, continuous deflection stormwater filters, a pilot aeration bubbler system, and pilot inlet filters.



Glen Echo Fountain



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Aeration Fountains in Lake Merritt

By Lakshmi Rajagopalan

Dissolved oxygen is a major contributor to water quality. Fish and other aquatic animals need oxygen, and it is vital to oxygen-breathing aerobic bacteria that decompose organic matter. When oxygen concentrations become low, anoxic (lack of oxygen) conditions may develop which can decrease a water body's ability to support life.

Runoff after a major rain into storm drains brings in leaves and other materials, which use up oxygen in the water through chemical and biological reactions. Lake aeration is a process that pumps air bubbles into the water to increase the oxygen content. Aeration speeds up the process of oxidizing organic and mineral pollution and is often required in lakes that suffer from anoxic conditions. Diffusers pump compressed air out to the bottom of a lake; rising air bubbles and friction caused in the water will bring bottom water to the surface. Water releases noxious gases to the atmosphere and picks up oxygen while circulating at the surface. Fountains improve water quality in the area around each fountain. While in the air, water droplets absorb oxygen, which is then dispersed as the water falls. Fountains enhance the aquatic setting by increasing dissolved oxygen levels, providing needed circulation and decreasing unwanted odors.

Natural bacteria are stimulated by aeration and circulation. Bacteria will feed on organics and the food that normally fuels algae blooms or aquatic plant growth. The increased oxygen can limit algae growth at Lake Merritt. Lake Merritt has aeration fountain units located at the end of Trestle Glen Arm,

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Bandstand Cove, the E. 18th Street Pier and the Glen Echo Arm. They are lit from dusk to midnight. The Lake Merritt Institute installed two units (E.18th Street Fountain and Bandstand Beach Fountain) in 2003 with the help of donor contributions. These fountains incorporate several new design features and improvements. The Glen Echo Fountain, installed with the help of grant funds, has been extensively renovated, but is of an outdated design and subject to frequent clogging. The Embarcadero Fountain is designed for maximum aeration and is located at the confluence of the Lake's three largest storm drain outfalls. This fountain brings oxygen to the water to compensate for the decay of leaves and other organic matter from these storm drains.

The Lake Merritt Institute provides maintenance to keep the fountains clean and in operating condition. Maintenance includes frequent power washing to remove barnacles, mussels and tubeworms. The accumulation of barnacle growth

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Cleanup of aeration fountains after winter

Save The Bay Tours Lake Merritt's Waste Technology

By Kaletha Patterson

'Waste not, want not.' This antiquated yet familiar message, defined as not wasting what one has in order to reserve for the future, is certainly a lesson that many people can benefit from learning, particularly in relation to public waste.

In applying this motto to our waters, advocates of waste prevention have noted serious effects that can destroy our bays and oceans. Two local parties took proactive measures last month by taking volunteers on a Trash Removal Technology Tour and Cleanup site visit of storm drain filters along Lake Merritt to experience the problem on a firsthand basis.

Dr. Bailey of the Lake Merritt Institute and Athena Honore, a policy associate with Save The Bay, gathered approximately 30 members of Save The Bay and the public to learn about the advanced trash capture technology installed at the Lake. "[This device] at Lake Merritt is a great example of technology. It works quietly underground to separate trash from water flowing through storm drains, and no power is required. A vacuum truck drives up and sends the hose down to clean the trash out," Honore expressed, further stating the device works through hydrology as opposed to electricity.

On what was described by Honore as a very wet and very cold day, the group observed the method in which one of four storm drain separators operates. Resembling a colander, the device takes the storm drain flow and spins it through a cylinder, which separates the trash and prevents it from flowing into the Lake. Dr. Bailey provided the group with a bird's-eye view of the operation by opening a trapdoor on the storm drain separator.

"It had been very rainy in the weeks prior. Though it wasn't raining hard enough for us to see a ton of flow at that moment, we could see the buildup of trash items that the rains had flushed down and which would ordinarily have gone to the Lake, had the separator not been there," Honore explained.



The group clustered around the vortex separator
Photo provided by www.dansullivanimages.com

Based on the amount of waste in our waters, it would be fair to conclude many people are unaware that trash not only pollutes our environment, but careless dumping of consumer products and packaging can impact water quality and endanger wildlife.

According to Honore, wildlife can ingest and/or become entangled in trash that seeps into waters, such as the birds she's seen strangled by rubber bands. "The Bay is a microcosm of what's going on in the Pacific Ocean. There are swirling areas of plastic trash, brought together by tidal action, that are twice the size of Texas," she highlighted.

Although many people don't litter, it is important for everyone to know that all nondegradable items can be flushed into the nearest waterways by wind, rain, sprinklers and various other causes of urban runoff. Harmful pollutants also include oil, pesticides, metal and lead.

In addition to cigarette butts and snack wrappers, Honore has also seen forks, knives, shoes, tennis balls and a surprising number of recyclables in the Bay. Another toxic substance that flows through storm drains and particularly affects Lake Merritt is soap suds floating on the surface from people washing their vehicles in the summer.

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The Monthly Bird Report

By Hilary Powers

Not Quite Spring

One Double-crested Cormorant perched at the top of a bare island tree on February 27, looking around with his (or her; there's no way to tell) two crests flared like rabbit ears, and clearly proclaimed, "I got here first! I get the best spot! Come mate with me!" but no one who mattered (meaning no other cormorant) was there to see. By the first week in March, the trees should be full of nests.

Most of the winter visitors are still here. In the flock by the Nature Center, greater scaup and lesser scaup crowd together, close enough to make them almost easy to tell apart. All the female lesser scaup are brown with a lot of white around the base of the beak, and all the males have white wings, brindled gray backs, and iridescent black heads. The greater scaup have round heads and the males have a sort of black mustache at the end of the blue beak. Lessers look like they just took off a baseball cap – leaving a sort of rumpled look at the back of the head – and the end of their beak has a vertical black stripe. (Does the size make a difference? Not so that you can tell by human eyeball.)

Along with the scaup, there was one male Tufted Duck hanging out and waiting for people to throw in seed – notable for having an inky black back and being smaller, more aggressive, and able to stay underwater much longer than his scaup cousins. The tufted duck are also noted for having a splendid pony tail at the back of the head. If this is the same bird we saw earlier in the year, he's grown a lot of tuft feathers over the winter. The female Redhead is still hanging out there, too. She's all brown with no white feathers at the base of the bill, but a white stripe out near the far end like a rubber band.

Some very unusual birds have been sighted from the Nature Center this winter – American pintails and northern shovelers and even a Long-tailed Duck – but the 4th-Wednesday Golden Gate Audubon trip saw only the usual suspects. The group spotted 41 species; low for this time of year, but we spent a lot of time at the Lake itself, watching the Western and Clark's Grebes (the big ones with the long black-



A Townsend's Warbler

and-white necks) starting to court, and missed out on most of the tree-hopping species that hang out near the fountain across Bellevue. We did see a pair of Townsend's Warblers that were working the trees right beside the Lake itself – showing off their handsome yellow faces and black burglar's masks, and in the fenced garden we picked up a buzzing Bewick's Wren and a male Nuttall's Woodpecker in the same group of trees. And the weather was lovely – almost hot – and all in all it was another grand day at the Lake.

Save The Bay continued...

Trash prevention measures

"These stormwater units have been very successful, but they are not a cure-all," states Lesley Estes, Stormwater Quality Program Manager for the City of Oakland. "City streets crowded with underground utilities and other feasibility issues prevent installation of these large structures in many areas. Additionally, they are an end-of-pipe solution and do not address trash problems upstream. Nonetheless, the units are an effective component of a comprehensive strategy to clean our waterways. Other strategies employed in Oakland include floating booms at creek outlets, targeted enforcement of illegal dumping, increased street sweeping, bans on plastic shopping bags and Styrofoam, litter fees and enforcement to increase cleanups near and around fast food outlets and convenience stores, and manual removal of trash from creeks and Lake Merritt by organized volunteers."

People can learn more about Bay trash, and help get more storm drain separators installed around the Bay Area, by going to www.saveSFbay.org/baytrash and clicking Take Action.