

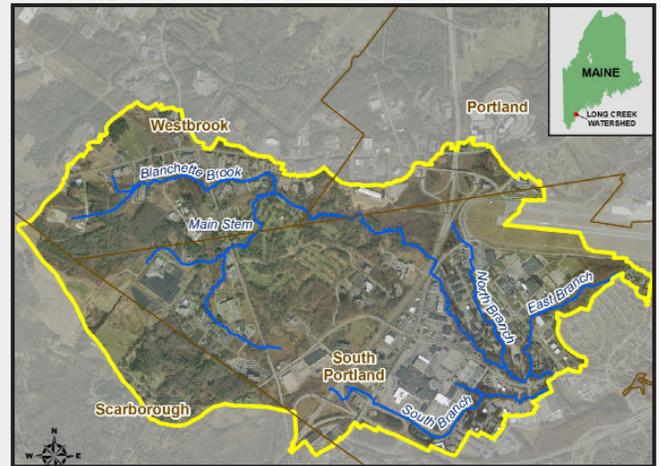
NEW ENGLAND TRASH STUDY: LONG CREEK WATERSHED



BACKGROUND: LONG CREEK WATERSHED

Over a decade ago, the Long Creek which runs through several municipalities in Southern Maine was identified as an urban impaired watershed. In 2007, with guidance from the Maine Department of Environmental Protection along with funding from the Environmental Protection Agency, the community came together as part of a restoration project led by a steering committee comprised of area municipalities, local businesses, state agencies and other stakeholders.

Since then, a number of stormwater treatment solutions such as tree box filters, media filters, storage chambers, pervious pavement, bioretention cells, detention basins and gravel wetlands have been implemented as part of the cleanup. Despite those stormwater efforts, the area surrounding the Long Creek is still a highly commercialized retail stretch that amasses a significant amount of trash. During storm events, that debris will make its way into drainage lines and from there into the stream if it's not appropriately screened out.



LONG CREEK IS A 3.45 SQUARE MILE WATERSHED IN PORTLAND, SOUTH PORTLAND, WESTBROOK AND SCARBOROUGH, MAINE

THE PROBLEM: THE EFFECTS OF TRASH IN WATER

Non-biodegradable trash is an eyesore on land but one way or another, much of it will end up where it will arguably do the most damage to the environment—in water.

Aquatic life found in the lakes, rivers and oceans where most unscreened trash will eventually find its way is vulnerable to these floating pollutants that can deceptively look like food. Once consumed, birds, fish and other wildlife are either poisoned or unable to effectively digest the material, can become ill or die.

While these pollutants may spell the end for that particular animal, the life of that plastic bottle cap, food wrapper or beverage straw has only just begun. After the animal decomposes, those same pollutants are once again free to reenter the ecosystem by way of a rain event or other means and can threaten the life of another animal and another.

Eighty percent of trash in water is generated on land.¹ A 2016 City of Los Angeles study of the composition of trash found on land compared to trash in the water showed that plastics make up a significantly higher percentage of trash found in water.²

Most waterborne trash reaches bodies of water via stormwater drainage systems. While some states (California) and cities (Baltimore) have a zero tolerance for trash TMDLs (Total Maximum Daily Loads) discharging from their runoff, most areas of the country leave it to the discretion of the civil engineers overseeing development/redevelopment projects to decide if trash screening is necessary. If it's not specifically required of them and there is an additional cost to their clients, many engineers are unlikely to recommend a screening option, especially if they know that another screen may already exist further down the drainage line.

No amount of trash can safely be assimilated into a natural ecosystem. Until legislation catches up to this important issue, engineers and contractors have an important opportunity to protect area wildlife from centuries of harm.



¹ National Resources Defense Council: Waste in Our Waterways. August 2013. <http://www.nrdc.org/oceans/files/ca-pollution-in-waterways-IB.pdf>

² Chen, D. and Kjaraghani, S. Stormwater Magazine. Surf and Turf: Characterization of trash in water and land. Jan/Feb 2016. <http://foresternetwork.com/daily/water/stormwater/surf-and-turf-2/>

NEW ENGLAND TRASH STUDY: LONG CREEK WATERSHED



TRASH STUDY: COMMUNITY CLEANUP USES TRASH FOR ENVIRONMENTAL RESEARCH

Hydro International worked with the CCSWCD (Cumberland County Soil and Water Conservation District), LCWMD (Long Creek Watershed Management District), United Way, Fairchild Semiconductor and the City of South Portland to do a trash cleanup of the high-traffic area in and around the Long Creek Watershed in May of 2016. The waste collected during the collaborative volunteer day was used in a research study to help enhance water quality treatment across the country and the world.

The research study took place within Hydro International's hydraulics laboratory in Portland, ME. This facility is one of the largest manufacturer-owned testing facilities in the country and has been used for water quality performance verification for the New Jersey Department of Environmental Protection (NJDEP), the Massachusetts STEP (Stormwater Technology Evaluation Project), the Maine Department of Transportation as well as many industrial facilities operating under a storm-water discharge permit.

Hydro International will use the trash study data to inform smarter designs for future stormwater treatment systems such as screens, separators and filters. Knowledge of the material types that are more prevalent regionally and how various materials break down will shape product development for treatment devices used across the United States and around the world.



The City of South Portland, CCSWCD, LCWMD, United Way, Fairchild Semiconductor and Hydro International were all involved in the volunteer cleanup day in May of 2016.



RESULTS:

- Number of bags collected: 54
- Pounds of trash collected: 583
- Average weight per bag: 11
- Gallons (by volume) of trash collected: 1,890

39% OF COLLECTED LITTER WAS A FORM OF FOOD OR BEVERAGE CONTAINER

