SUPERFUND REPORT: THE DSC MCLOUTH STEEL GIBRALTAR PLANT

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INTRODUCTION

In June of 1995 fifteen migratory birds were found on the DSC McLouth Steel Gibraltar Plant in Gibraltar, Michigan. This instance of environmental harm spurred the involvement of the Environmental Protection Agency (EPA) to require the cleanup of hazardous waste on the site. It was not until nearly twenty years later that this site was put on the National Priorities List (NPL) within the EPA Superfund Program. The history of this steel plant extends nearly 50 years before the signs of environmental degradation were noticed in 1995. Between the 1990s and 2015, there were several changes in ownership of this site, multiple court orders issued, and several attempts to remedy the hazardous waste that was leaking from the steel plant's lagoons and treatment ponds. The proximity to a nearby international wildlife refuge in the same watershed likely led to the placement of this site on the National Priorities List and from there the EPA began treatment of the site and footing the bill. Currently, the property containing the Superfund site is on the market but not fully remediated, and the steel processing plant has been severed from the Superfund designation and is owned by HyCAL Corporation. Understanding the wrought history of Superfund site is crucial to understanding how to expedite future processes for environmental degradation due to industrial waste and reduce damage to wildlife.

HISTORY OF SITE

Environment

Before there was the DSC McLouth Steel Gibraltar Plant and before there was the city of Gibraltar, the land where this Superfund site is located could be one of several ecosystems. According to the Michigan Department of Natural Resources, vegetation cover around the site was likely Great Lakes marsh, oak-hickory forest, and black ash swamp. The site is less than a mile from the U.S. Fish and Wildlife Service Detroit River International Wildlife Refuge, which

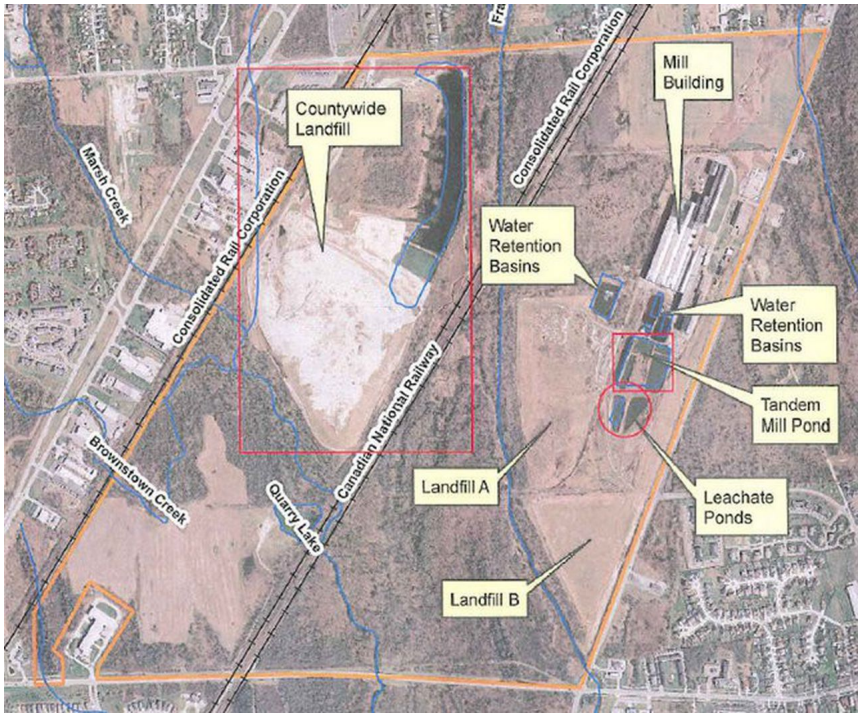
includes “the last mile of natural shoreline along the U.S. mainland portion of the Detroit River” known as Humbug Marsh (USFWS Humbug Marsh). This wildlife refuge hosts numerous endangered and threatened plant and animal species. This includes *Hibiscus moscheutos*, known as the swamp-rose mallow and considered a special concern species (USFWS Humbug Marsh Plants). Other marsh species in the wet meadow zone include bluejoint (*Calamagrostis canadensis*), lake sedge (*Carex lacustris*), and another special concern species: hairy-fruited sedge (*Careex trichocarpa*). In deeper waters of emergent marsh, you can find narrow-leaved cattail (*Typha angustifolia*), bulrush (*Scirpus atrovirens*), and water smartweed (*Persicaria amphibia*) (Slaughter and Penskar, 2015). The site also may have been an oak-hickory forest as suggested by the DNR and the oak-hickory forest in the international wildlife refuge. Some key species of this diverse forest type are swamp white oak (*Quercus bicolor*), bur oak (*Q. macrocarpa*), red oak (*Q. rubra*), and white oak (*Q. alba*), as well as shagbark, bitternut, and pignut hickories (*Carya ovata, cordiformis*, and *glabra*, respectively) (USFWS Humbug Marsh Plants).

This site and the nearby habitats are home to threatened animal species, along with several migratory bird species. The endangered peregrine falcon inhabits the international wildlife refuge and likely other areas in the vicinity, including the Superfund site. Other threatened species include red-shouldered hawk (*Buteo lineatus*), common loon (*Gavia immer*), bald eagle (*Haliaeetus leucocephalus*), black-crowned night heron (*Nycticorax nycticorax*), and osprey (*Pandion helianthus*) (USFWS Humbug Marsh Birds). Besides birds, this area contains the endangered eastern fox snake (*Elaphe vulpine gloydi*) (USFWS Humbug Marsh Reptiles & Amphibians), lake sturgeon (*Acipenser fulvescens*) (USFWS Humbug Marsh Fisheries), Indiana bat (*Myotis sodalis*), and the freshwater mussels threehorn wartyback (*Obliquaria reflexa*) and

northern riffleshell (*Epioblasma torulosa rangiana*). There is evidence of exposure to bird species listed here at the DSC McLouth Steel Gibraltar Plant, as dead birds are often found near the treatment ponds onsite (EPA CERCLA Re-Assessment Report, 2013). Many of the species that live near this Superfund site are already in danger and dwindling in numbers, and the hazardous waste at the Superfund site exacerbates the threat.

Companies and Production

Firstly, we must understand the components of this Superfund site to understand the fractured history of its ownership. The site consists of: Treatment Ponds, Landfill Areas A and B, The Tandem Mill Pond area (TMP), and the Countywide Landfill (CWLF). This site began as a steel finishing facility owned and operated by McLouth Steel Company, where annealing, pickling, and cold rolling processes occurred onsite starting in the early 1950s until 1996 (Kelly and Lippert, 2015). Then, the ownership and asserts were briefly transferred to Hamlin Holdings, Inc. Soon thereafter in the late 1990s, Michael Wilkinson acquired the property from Hamlin through two corporations: The Gibraltar Land Company (GLC) which acquired the CWLF and the Detroit Steel Company (DSC) to acquire the treatment ponds, Landfills A and B, TMP area, and the cold rolling mill. In 1999, close to twenty



migratory birds were found dead in the TMP area and the EPA issued an administrative order for the imminent and substantial endangerment that the leachate and oil accumulation was incurring to the environment.

When McLouth controlled the CWLF they did not properly maintain it and operated with improper licensing for the industrial waste they deposited there. The leachate that resulted from runoff that went through rubble in this landfill is supposed to go through the treatment lagoon system, but Landfills A and B generate around 100,000 gallons of leachate each week, and spring thaws result in leachate overflow into the Frank and Poet Drain (see left photo of a leachate outbreak in February 2012). The leachate from the steel processing contains phenolic compounds and is a highly corrosive, alkalinic liquid.

The EPA issued a noncompliance letter to DSC in 2007 after the MDEQ found free oil in the surface water of the TMP and nearby soils. The GLC and DSC were financially unable to rectify the environmental hazard that McLouth created once these corporations took control of the property, and the MDEQ had to provide a trust fund to these companies to continue treating the lagoon system. By 2015, DSC informed Wayne County that it was abandoning its properties and the EPA listed this Superfund site on the National Priorities List (NPL) (Kelly and Lippert, 2015).

POLLUTANTS

The leachate produced by industrial waste at this Superfund site is highly corrosive and contains phenolic compounds. The leachate comes from the landfills and is held in treatment ponds shown in the image to the right. Phenolic compounds can be naturally found in many fruits and vegetables used by humans, but the chemically synthesized phenols that can be found in high concentrations in wastewater can have significant short- and long-term effects on human and wildlife health. According to a study by Anku *et al.* focusing on the sources, treatment, and effects of phenols, the phenols in this case are likely coming from the municipal and industrial waste in the CWLF. Phenols in water can absorb into human skin, be metabolized, and bond with proteins in the body which results in toxic effects. Certain phenols are carcinogenic and damage red blood cells, heart, kidneys, and the liver. Other dangers include phenols acting as endocrine disruptors and altering mammary gland development in exposed animals; this can even delay pubery onset in girls. Drinking water with high phenol concentrations can cause GI tract problems, muscle tremors, and difficulty walking. Phenols are even known to cause DNA damage (2017).

According to the EPA, a liquid can be deemed hazardous if it has a pH below 2 or above 12 because this makes the liquid highly corrosive. The leachate was found to have a pH of up to

12.71 and an average of 12.5. If living tissue or other materials come into contact with such a highly alkalinic substance they can be burned or destroyed (Jerie, 2016). A study by Hartnett *et al.* in 2011 found corrosive substances have the potential to dissolve bones, teeth, hair, fingernails, and skin. Leachate this toxic and this corrosive could reak havoc on the surrounding aquatic ecosystems that exist near the Superfund site and that the Frank and Poet Drain filters into.

CLEANUP AND MITIGATION

Past Cleanup Efforts

Since the MDEQ notified the EPA in 2008 about the potential leachate breakthrough threatening the nearby Frank and Poet Drain, the EPA has assisted in mitigating an environmental disaster. In 2011, the EPA built a leachate treatment lagoon and installed three aerators, as well as filling other existing treatment ponds with stone and covering them with clay. They also seeded exposed areas of the CWLF and capped Landfills A and B as an emergency response. Additionally, data was collected to consider the site for the NPL. After this response, the MDEQ implemented a new leachate collection system where they removed and disposed of leachate from the CWLF collection system. By 2015, the EPA was also removing leachate from Landfills A and B and the treatment ponds, treated this leachate, and moved to Advanced Resource Recovery in Inkster for disposal. The site was also put on the NPL in 2015. As of 2020, the EPA and MDEQ are still monitoring releases from the DSC McLouth Steel Gibraltar Plant (Kelly and Lippert, 2015).

Future Efforts

It appears that the EPA and MDEQ already have successfully prevented major environmental degradation from this Superfund site, but there are more processes to halt toxifying nearby waterways, at least in the case of the phenolic compounds. These chemicals can be removed or destroyed using several methods including: photocatalytic degradation; ozonation; extraction; microbial or enzymatic methods; adsorption (Anku *et al*., 2016). Each of these processes have costs and benefits to each that the EPA and MDEQ should explore for future mitigation efforts.

FUNDING

The DSC and GLC are the liable parties to pay for the cleanup of the DSC McLouth Steel Gibraltar Plant, but are not currently viable because they lack financial resources. In 2015, these companies told Wayne County they were essentially abandoning the site. Michael Wilkinson, the creator of DSC and GLC and a principle shareholder, is not liable due to a U.S. Supreme Court decision in *United States v. Bestfoods* (1998). Thus, the EPA is responsibile for the funding for site cleanup, with a bill of approximately $1.773 million. Some mitigation efforts were paid for by a perpetual care fund but that fund was exhausted in 2015. Unfortunately, this means the cleanup is sponsored by the American taxpayer. It seems this is the case of Superfund sites with no viable parties to reimburse the EPA.

The mayor of Gibraltar, James Gorris, is hoping that the property the Superfund site exists on can be sold and positively utilized similar to the steel mill site directly adjacent, which was bought by Ferragon Corp. in 2015. There is hope for a total cleanup and reuse of this area, and the large acreage (more than 500 acres) zoned for heavy industrial use may be useful for a business or manufacturing company. Anyone who seeks to buy the property would not be liable

for the contamination already there (Gardner, 2017). Essentially, the mayor is hoping that even though this property contains a Superfund site, the right developer could create a positive outcome from its purchase.

If I had to write a letter to garner a quicker, more appropriate response to ensure the remediation of this site's environmental damage I would address the Wayne County Commission and target the Public Services committee. I would focus my letter on how the county needs to step up and aid the MDEQ and EPA in their efforts to restore the DSC McLouth Steel Gibraltar Plant, because otherwise, the ecologically important international wildlife refuge they have in their county will be damaged. This would reflect poorly on the county, who could not protect the internationally recognized ecosystems in this refuge. I would emphasize that even though the refuge is owned by the USFWS, the county has a responsibility to maintain a safe environment surrounding the federally protected lands.

PEOPLE IMPACTED

The EPA conducted an Environmental Justice (EJ) analysis for this Superfund site. The EPA, according to the EJSCREEN Technical Documentation (2019), defines "environmental justice" as:

> Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. … Fair treatment means that *no group of people should bear a disproportionate share of the negative environmental consequences* resulting from industrial, governmental and commercial operations or policies.

The data this analysis obtained from environmental and demographic information of the area around the site showed low potential for EJ concerns (Kelly and Lippert, 2015). I reviewed

demographic data collected by the EPA for a one-mile radius around the site and found little to suggest an environmental justice concern to the surrounding community. The majority of the population, up to 96%, are white, English-speaking households. There is a large portion of the population owning houses, having some college education, and a per capita income of about $31,000 (EJSCREEN ACS Summary Report, 2017). Therefore, it does not appear that surrounding community has a large population of marginalized people.

Ultimately, when examining demographic and environmental data it appears that the timeline of this site's cleanup efforts was more to do with the proximity to federally protected lands and important water resources; the human population seems less at risk to the Superfund site.

CONCLUSION

The DSC McLouth Steel Gibraltar Plant does not have a linear history of its pollution and eventual cleanup. Responsibility was passed to different corporations to a point that only the EPA could provide the resources to remediate this Superfund site. Going forward, the health of a vital ecological refuge is still at stake until a complete and optimum solution for the hazardous waste at the site is put in action.

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