



Geographic location of the Hercules manufacturing site (Brunswick Plant) and associated Superfund Sites (Hercules 009 and Terry Creek)

# December 2021 Ground Water Pollution Ongoing at Hercules 009 Landfill

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## Site Background



The Hercules 009 Landfill Superfund Site is located in a commercial/residential area along the eastern side of the Golden Isles Parkway (Georgia-25 Spur), north of Benedict Road and south of the Nalley Brunswick automotive dealership.

Initially, the Site was home to a ‘borrow pit’ or an area created to remove sediments for use in another location. Excavated material was used for nearby roadbeds, and the borrow pit was later abandoned and naturally filled with water to become a pond.

From 1948 to the early 1980s, Hercules manufactured Toxaphene (a carcinogenic pesticide now banned in the U.S.) at its Brunswick facility located near Highway 17 and the Saint Simons Island causeway. From 1976 to 1980, Hercules operated a permitted industrial landfill near the former borrow pit, about three miles from the Brunswick manufacturing plant. Wastewater sludge and other manufacturing wastes were dumped into six lined

cells until the Georgia Environmental Protection Division (GA-EPD) cancelled Hercules’ landfill permit and required closure of the landfill. Poor disposal practices at the Site resulted in soil, surface water, and ground water contamination.

The U.S. Environmental Protection Agency (EPA) designated it a Superfund Site in September 1983. EPA compelled Hercules to investigate the Site beginning in 1988. Toxaphene, benzene, and other contamination was found at levels which required cleanup of the surface soil, surface water, and ground water at the Site.

Ground water beneath the Site includes the surficial aquifer and the underlying Floridan Aquifer (the primary aquifer for irrigation and municipal supplies in the area). Only the surficial aquifer was contaminated by the landfill. The surficial aquifer consists of: 1) the shallow ground water zone which extends from about 8 feet to 35 feet below ground surface and reportedly flows to the

east, and 2) the deep ground water zone which occurs from about 60 feet to 100 feet below ground surface and reportedly flows to the southeast. A semi-confining layer of less permeable sediments generally separates the shallow and deep zone of the surficial aquifer.

Surface cleanup actions began in 1984 with removal of about 8,000 cubic yards of contaminated surficial soil from the residential area. Between 1991 and 1992, municipal water lines were extended to the area south of the landfill along Nix Lane and Benedict Road to provide a new water supply for nearby homes and a church which had relied on local ground water. In 1996, an additional 6,000 cubic yards of contaminated soil was removed from the drainage ditch and areas near Altama Elementary School along the landfill entrance road.

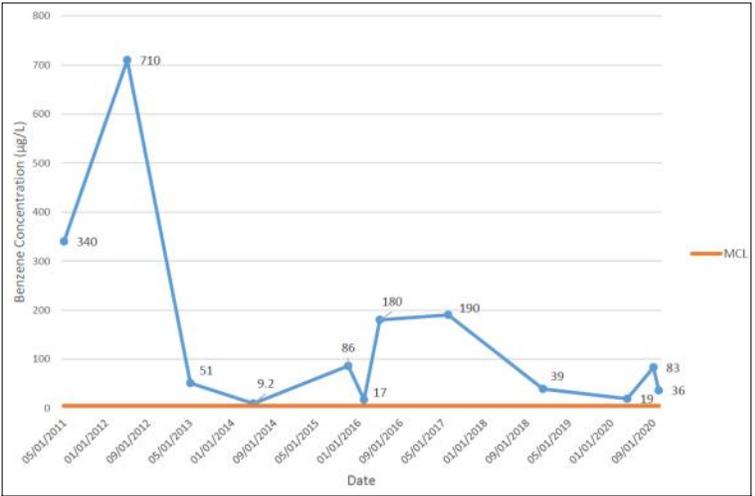
Landfill remediation began in 1998 with *in-situ stabilization* (solidifying soil) and treatment of wastes in the disposal cells down to the water table by mixing with cement to reduce the mobility of pollution and prevent further leaching by rainfall-runoff. Contaminated soil that had been removed from off-site areas was mixed with cement, then placed and compacted on top of the stabilized waste cells to serve as a cap. Cover soil was placed on top of the cap, then graded and seeded to establish protective vegetation over the former landfill. In 2005, the Nalley Brunswick automotive dealership leased a portion of the Site from Hercules and built an asphalt-covered parking lot on top of the northern part of the covered landfill cells.

### ***Historical Off-site Ground Water Contamination***

Annual ground water monitoring has been conducted since 1995 to watch for contaminants leaking from the treated wastes within the landfill and to observe an anticipated downward trend of benzene concentration levels until remediation goals were met. Benzene levels in off-site ground water have been ***higher than the remediation goal the entire 26-year post-cleanup period.*** The goal for benzene is 5 ug/L (micrograms per liter, or ppb - parts per billion), the Maximum Contamination

Level set by EPA for benzene in drinking water.

Close to the landfill, benzene concentrations have consistently been detected at high levels since monitoring began in 1995. Benzene in one permanent ground water monitoring well was 710 ppb in 2011, dropped to a low of 9.2 ppb in 2014, ranged from 180 to 190 ppb in 2016-2018, and ranged from 19 to 83 ppb in 2020 (see below).



**Monitoring well N-5 benzene concentration trend graph from 2011 to 2020. Ref: 2021 EPA Five-Year Review.**

After the remediation was completed, Hercules was required to investigate off-site ground water that flows east from the landfill beneath the adjacent undeveloped property. In September 2010, contamination exceeding the remediation goal for benzene was found in six shallow ground water samples and in four deep ground water samples collected on the adjacent property. Access was not granted by the property owner for installing permanent monitor wells so the off-site ground water and accompanying benzene contamination was not studied any further for almost ten years (until 2019).

EPA recently published two significant reports that document the current status of the Site and the continued off-site migration of ground water contamination: the August 2021 EPA *Five-Year Review Report*; and the October 2021 *Groundwater Assessment Report* prepared for Hercules by consulting firm Antea Group.

## **U.S. Environmental Protection Agency 2021 Five-Year Review**

EPA conducts a review at the Site every five years because the remediation left waste in the landfill and ground water contamination remains above cleanup goals. The purpose of the review is to determine if the cleanup continues to be protective of human health and the environment. This fifth Five-Year Review (FYR) was conducted by a team of EPA staff beginning in October 2020. Data from the annual ground water monitoring program and all other observations from post-cleanup

activities were reviewed and evaluated.

EPA concluded that the remedy is “protective of human health and the environment because municipal water lines from the Brunswick water system were extended to well users in the area...” and, overall, “protective of human health and the environment in the *short term.*” EPA also reports that “current human exposures at the Site are under control” and “current groundwater migration is under control.” However, EPA also concluded that “over

the *long term*, additional off-site groundwater investigations and an evaluation of additional pilot scale treatment options is appropriate.” In a June 2021 letter to EPA, GA-EPD countered “It does not appear that [ground water] migration is under control since analytic results indicate benzene has migrated off-site.”

The Five-Year Review also contains a residential risk-based screening-level vapor-intrusion evaluation which

“indicates that the maximum concentrations of benzene on and off-site slightly exceed EPA’s cancer risk management range... and the EPA’s noncancer threshold.” Furthermore, the Five-Year Review also states that “there are no buildings above the groundwater contamination on or off-site” which is blatantly contradicted by data included in the October 2021 *Groundwater Assessment Report* (detailed below).

## 2021 Groundwater Assessment: Benzene Found Off-site

After nearly a decade of no access, Hercules reportedly was granted access to the eastern off-site adjacent property in 2019 to further investigate the benzene under EPA’s oversight. The October 2021 *Groundwater Assessment Report* documented the work and the results of laboratory analyses of the ground water samples. Although no Toxaphene was detected, some samples having high levels of benzene were found as far as 500 feet away from the boundary of the Superfund Site.

### *Benzene ‘Field Screening’*

Field screening was conducted between May and September 2020 by installing eight temporary ground water wells, then collecting and immediately analyzing ground water samples for benzene. Multiple field screening results exceeded the maximum contaminant level of 5 ppb at various locations and depths below ground surface, including samples taken on the roadside of Merchants Way (near the Walmart Supercenter) and on the property boundary of the Legacy Apartments residential area. The highest levels of benzene were found in field screening samples collected at the farthest-downgradient locations (i.e. the farthest off-site sampling locations).

### *New Monitoring Well Installations*

Nine new monitor wells were installed off-site after the screening was performed: two deep wells, two very shallow wells (screened across the top of the water table about 4 to 10 feet below ground surface), and six deeper wells. The highest levels of benzene found in the ground water samples from the new wells was 210 ppb at a well located very close to the landfill; 110 ppb at the most-distant downgradient well located near or at the Legacy Apartments property; and 86 ppb at the well located across Merchant’s Way near the Walmart Supercenter development.

The figure from the report (see the next page) shows the monitor wells, with a contour line portraying the extent of the underground benzene contamination above 5 ppb (bright green line) based only on monitor well samples. That depiction, however, is not representative of the extent of the contamination when the ground water field screening sample results are included in the analysis. The majority of the contour line is dashed, indicating an “inferred” extent, acknowledging that there is not much confidence with this representation of the extent of the benzene based on the limited data available.

## The Bottom Line

The Glynn Environmental Coalition discussed these two reports with EPA in November 2021 and our concerns about continued migration of contaminated ground water off-site. We stressed these major points:

- Monitoring data has shown that off-site ground water has been contaminated significantly above remediation goals since the remedial action at the landfill was completed (for more than 25 years);
- The most-recent investigations found the highest levels of benzene at the farthest-downgradient locations (i.e. farthest off-site) tested to date, beyond the eastern-adjacent off-site property, encroaching on or at commercial and residential areas;

- Very little information has been provided concerning the hydrogeology of the off-site area of interest, including the area between the landfill and the elementary school, south of where recent investigations focused;
- Hercules and EPA both have failed to appreciate the seriousness of the high levels of benzene at increasing distances from the landfill. EPA’s conclusions that “current groundwater migration is under control” and “Current human exposures at the Site are under control, is an inadequate response.

The Glynn Environmental Coalition will continue to push EPA to require Hercules to conduct additional off-site



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investigations. Additionally, Hercules should be required to thoroughly characterize the hydrogeology of the off-site area, delineate the full nature and extent of benzene

contamination, and adequately assess vapor-intrusion risks for nearby properties and structures.



**Approximate benzene ground water contamination based on new ground water monitoring data (does not include field screening results). Note the extent of the bright green line off-site. Ref: October 2021 Groundwater Assessment Report.**