



Above: Roseate Spoonbills found near the weir at the Terry Creek Superfund Site.

# Annual Superfund Site Update

January 2020

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## The Superfund Process

Thousands of contaminated sites exist nationally due to hazardous waste being dumped, left out in the open, or otherwise improperly managed. Congress established the Comprehensive Environmental Response, Compensation and Liability Act in 1980. This act, which is informally called the Superfund program, allows the United States Environmental Protection Agency (EPA) to clean up contaminated sites.

The Superfund cleanup process has many steps and each Superfund site in Brunswick is at a different place in the process. Below defines key steps of the cleanup process and terms that will be referenced throughout this report.

### **Key Terms**

**Operable Unit:** When a site is divided into distinct areas depending on the complexity of the contamination, those areas, or media (such as ground water), are referred to as Operable Units.

**Potentially Responsible Party:** An individual or company responsible for or contributing to a spill or other contamination at a Superfund site. Sites with no Potentially Responsible Party are considered ‘orphan’ sites.

**Remedial Investigation:** An investigation intended to gather data necessary to determine the nature and extent of contamination at the site, establish cleanup criteria for the site, estimate risks posed by the contamination, and support the feasibility study.

**Feasibility Study:** A study of a hazardous waste site intended to identify potential cleanup technologies, evaluate alternative site remedies from technical and environmental perspectives, consider remedies that appear to be the overall best choice for cleanup, and develop conceptual designs and cost estimates.

Proposed Plan: Provides a brief analysis of cleanup alternatives under consideration, identifies EPA's preferred alternative, and provides members of the public with information on how they can participate in the cleanup selection process.

Record of Decision: Explains which cleanup alternative has been selected.

Consent Decree: Agreement between the federal government, EPA and Department of Justice (DOJ), and the Potentially Responsible Party. The settlement agreement lodged with the court specifies how the site will be cleaned up and who pays for the remediation.

Remedial Action Plan: A planning document that identifies projects which are necessary for restoration of a hazardous waste site.

Operations and Maintenance: Site activities associated with a remedy that must be performed after the completion of a remedial action.

Five-Year Review: Required when hazardous substances remain on site; provides an opportunity to evaluate the performance of a cleanup to determine whether it remains protective of human health and the environment.

## Brunswick Wood Preserving Superfund Site



### Background

The 84-acre Brunswick Wood Preserving Superfund site is located approximately one and a half miles west of Interstate 95 exit 38. Railroads border the site to the east and west, Perry Lane Road borders the site to the north and residences and wooded areas border the site to the south. Burnett Creek, a tidally influenced stream, is located on the western end of the site.

From 1958 until 1991, a wood treatment facility operated at the site. Operations included the three major types of wood treating and preserving operations: creosote, pentachlorophenol, and chromium/copper/arsenic. Chemicals of concern include polycyclic aromatic hydrocarbons (PAHs), such as naphthalene (pronounced nap-tha-lean), benzene, and semi-volatile organic compounds.

EPA placed the site on the Superfund program's National Priorities List in 1997 because of contaminated ground water, soil and sediment resulting from facility operations which requires a long-term cleanup. The cleanup is managed in two parts: Operable Unit 1 addresses contaminated soils, sediments, and ground water; and, Operable Unit 2 addresses the ecological risks, primarily to Burnett Creek. Because this is an 'orphan' site, there is no company to pay for the clean up, both EPA and the Georgia Department of Natural Resources - Environmental Protection Division (EPD)

share the cost of the clean up.

Hazardous wastes and contaminated soil were removed and disposed off-site, and residual contaminated soil was stabilized in place and contained by subsurface barriers and engineered caps. A ground water collection and treatment system was installed to recover contaminants from within the containment zones. Institutional controls were placed on the site to restrict future land and ground water use.

In 2017, EPA completed the second Five-Year Review, a progress report describing the current condition of the site and any changes since the last investigation in 2012. In the Five-Year Review, EPA must indicate if the containment or cleanup is still working and confirm that human health or the environment are no longer affected by the contaminants from the site. The second review noted the importance of continuing to monitor ground water near the western containment area for potential contaminant migration.

### Current Activities

EPD has taken over post-cleanup Operations and Maintenance of the Brunswick Wood Preserving Site and will follow specifications laid out in EPA's 2018 Operations and Maintenance Plan. EPD will inspect and maintain the site on a routine basis to ensure that all elements of the cleanup activities perform as designed, and that deed restrictions are enforced.

Below: November 2018 aerial photograph of site. Approximate boundaries of Eastern and Western Containment areas are shown.



This includes the containment walls, ground water recovery and treatment systems, security fencing, vegetative cover and engineered caps, and linings in ditches along the site perimeter. Annual ground water monitoring will be performed also.

In September 2019, EPD and its Operations and

Maintenance contractor inspected the site and evaluated operations of the remedial and monitoring systems. The Glynn Environmental Coalition (GEC) and our Technical Advisor are looking forward to learning about the inspections findings and accompanying EPD on a site inspection sometime soon.

## LCP Chemicals Superfund Site



### **Background**

The LCP Chemicals Superfund site is located between the Turtle River and New Jesup Highway, just northwest of the Brunswick city limits. The northern boundary of the site runs along Blythe Island Highway and the southern boundary meets with the property line of the active Georgia Pacific Pulp and Paper Mill. The Potentially Responsible Parties for this site are Honeywell and Georgia Power.

The 813-acre site has a long history of industrial activity from the 1920s through 1994, including an oil refinery, coal-fired power plant, and both chemical and paint/varnish manufacturing plants. Past activities contaminated soil, ground water, adjacent surface waters, and marshlands until operations ceased in 1994.

These industries polluted the site with polychlorinated biphenyls (PCBs), mercury, lead, dioxins, and PAHs. High levels of some contaminants are still present at the site and remediation efforts are ongoing.

Between 1994 and 1998, approximately 130,000 cubic yards of contaminated soil and industrial wastes were removed from the site. This work was done in the marsh, around the mercury cell buildings, and at numerous former operations areas in the Upland portion of the site. Many former industrial buildings and facilities were demolished, including the above-ground portions of the mercury cell buildings.

Due to the complexity and size of the site, the cleanup is being managed in three parts: Operable Unit 1 - the estuary and salt marsh; Operable Unit 2 - the cell buildings area and ground water; and, Operable Unit 3 - the upland soils and sediments where industrial activities took place.

### **Current Activities in Operable Unit 1 - Marsh and Estuary**

Major elements of the selected remedy for this part of the site includes the following:

- Dredging seven acres in the LCP Ditch and Eastern

Creek to a target depth of 18 inches, backfilling dredged areas with 12 inches of clean material, and disposing of dewatered dredged material at licensed off-site facilities;

- Replanting disturbed vegetated marsh areas;
- Placing an engineered sediment cap on three acres in Domain 3 Creek and three acres in Purvis Creek;
- Placing thin-layer sand cover on 11 acres;
- Sampling and analyzing dioxins/furans to confirm co-location with PCBs; and,
- Implementing institutional controls including a fishing advisory, installation of signs, public outreach, and implementation of a plan to gauge the effectiveness of these measures.

### **Pre-design Investigation for Dredging and Capping**

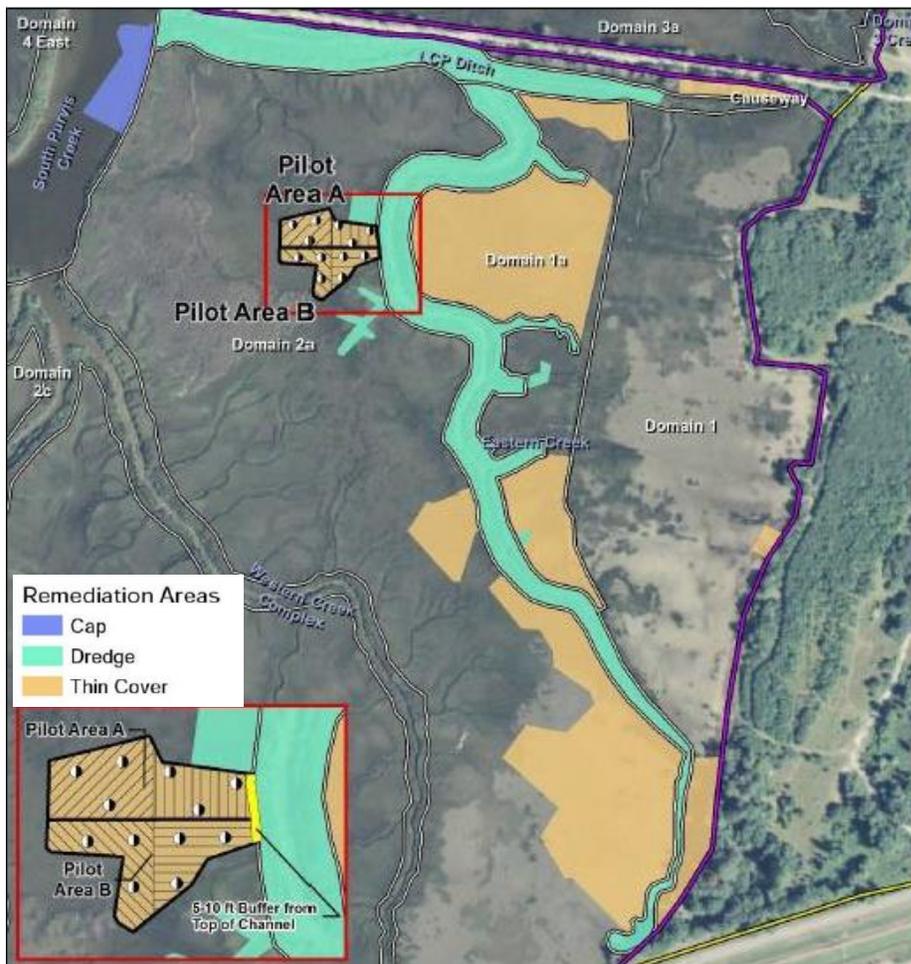
Honeywell's consultant submitted the April 2019 Pre-Design Investigation (PDI) Evaluation Report to EPA. Critical information was obtained to complete the design for remedial actions for contaminated marsh sediments.

Findings presented in the report include the following:

- The thickness of the marsh clay in areas to be capped was found to average 3.5 feet, which previously was generally considered to be more than 2 feet;
- Marsh sediments were confirmed to be silts, clays, and fine sands, consistent with previous explorations in the marsh;
- Areas to be dredged contained soft, fine grained, high plasticity sediments; and,
- Sediment and porewater (or water contained in pores in soil) samples collected from areas to be capped contained concentrations of mercury, PCBs, lead, PAHs, and total organic carbon (TOC) that were generally within or below the range of concentrations observed during previous investigations.

Results of a Treatability Study conducted to evaluate methods for handling and disposal of dredged materials

**Below: Site map showing remediation areas within the marsh and estuary, including the area where Thin Layer Cover Pilot study is being conducted. Ref: Thin Cover Pilot Study, 18-Month Inspection Summary, November 2019**



are also presented in the PDI report. Bulk sediment samples were collected and tested to identify appropriate means for handling, stabilizing, transporting, and disposing of dredged materials.

In the Treatability Study, sediment dewatering methods were found to be effective, and several additives were tested and found to adequately stabilize dewatered sediments for transportation. Testing of stabilized and dewatered sediments showed the material has relatively low levels of contaminants. Therefore, the dredged and treated sediments should not require special, hazardous waste disposal procedures.

### **Thin Layer Cover Pilot Study**

A pilot study for determining the best design for the Thin Layer cover is underway, testing two types of material ("fine-grained material" and "sand"); and two thicknesses of each material (six-inch-thick and nine-inch-thick covers). The test plots for these alternative covers were placed in the marsh by March 22, 2018.

The schedule for the Thin Layer Cover test plots inspection specifies subsequent inspections every six months through March 2020. In November 2018, Honeywell's consultant reported its first observations of the condition of the Thin Layer Cover test plots (6-Month Inspection Summary, September 2018). Honeywell summarized the six-month observations as follows:

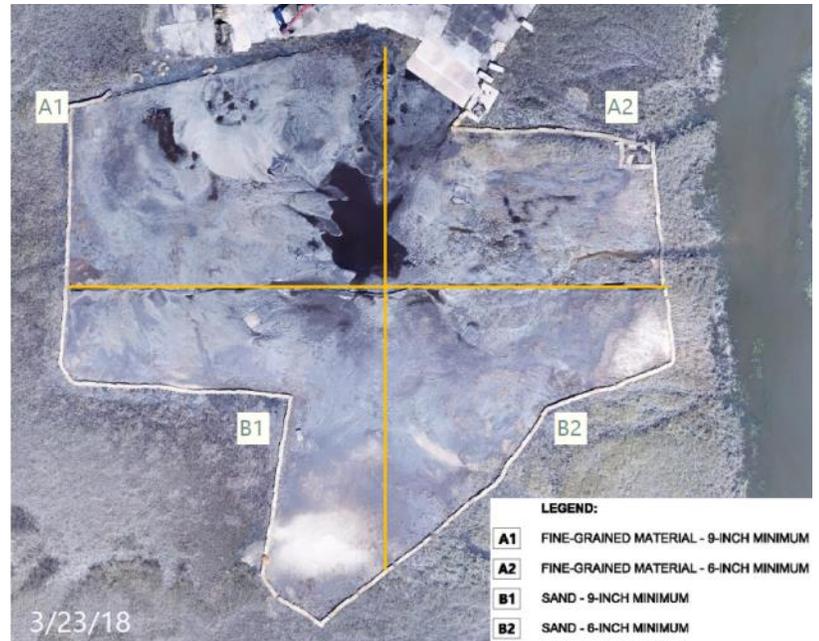
- No significant changes were observed in the placed materials;
- Material appeared to be stable, with no erosion or material loss noted;
- Natural recolonization of vegetation is expected to occur over several growing seasons (no vegetative recovery was expected during this initial timeframe);
- Vegetative recovery appeared strongest along the east portion of the pilot area, where cover material application was well dispersed with reduced energy resulting in lower initial stress to existing vegetation; and,
- Aerial imagery collected following the passage of Hurricane Florence in early September did not show any observable damage or impact associated with the storm.

Subsequent inspections at twelve and eighteen months showed recovering vegetation, no significant erosion, and no significant mobility of sediment contaminants upwards into the thin cover.

**Below: Pilot Study Marsh area 18-Months after application.  
Ref: Thin Cover Pilot Study, 18-Month Inspection Summary,  
September 2018**



**Below: Aerial images of Pilot Study Marsh area and Thin Layer Cover immediately after application. Ref: Thin Cover Pilot Study, 6-Month Inspection Summary, September 2018**



### ***Current Activities in Operable 2 - Cell Buildings and Ground Water***

In 2019, additional investigations of contamination were conducted at the Cell Buildings Area and in and around the subsurface caustic brine pool. Deep soil borings to the base of the surficial soil layer at the site (about 50 feet of primarily sands with shells, silt and clay at its base) were sampled to define the extent of metallic mercury in the subsurface. Ground water was characterized to define the extent of the high-pH ground water making up the caustic brine pool. After a northern area of high-pH ground water was identified, carbon dioxide was again injected into the ground water.

Robert Pope, EPA remedial project manager, informed GEC's Technical Advisor that Honeywell had briefed EPA on the results of this work in early November 2019. Mr. Pope reported that the pH of the ground water in the "northern lobe" area had reached a stable neutral level (pH of about 7) after the carbon dioxide injection was completed. The reduction in pH also reduced dissolved mercury and other metals in the ground water, meaning higher levels of metals will now be present in the soil.

A Characterization Report on this work will be submitted for EPA review sometime around the second quarter of 2020. The data and findings will be incorporated into a Remedial Investigation and Risk Assessment Report which is expected to be completed sometime in 2021.

**Below: CO<sub>2</sub> treatment zone shown in the blue shaded region.  
Points indicate locations of ground water wells.**

**Ref: Work Plan For Caustic Brine Pool Removal Action: Post-Phase 3, Rev. 1 November 2018**



### ***Current Activities in Operable Unit 3 - Upland Soils***

In August 2019, EPA issued the Proposed Plan for the Upland Soil portion of the LCP site. EPA proposed that no further remedial action be taken to protect human health and the environment from residual soil contamination. EPA's preferred remedy is based on three premises:

- No unacceptable human-health and ecological risks from residual soil contamination unless people live there in the future;
- Contamination known to be present at the cell buildings area is not included in this action; and
- Future development of the site could be for industrial uses only unless additional sampling and/or cleanup work is done.

In a separate but coordinated action, EPA would use its authority under an existing agreement with the Potentially Responsible Parties to create Institutional Controls for this part of the site. The controls would prevent future residential development in the form of a universal environmental covenant. This would be a deed restriction and a permanent part of the property records, enforceable by State and local government agencies.

EPA held an availability session and Public Meeting in Brunswick on September 11 and 12, 2019 to explain the Proposed Plan and hear concerns from the community. EPA set a date of December 2, 2019 as the end of the public comment period on the Proposed Plan. EPA will then decide to move forward with this proposal, or a modified plan, after considering public comments.

### **GEC Concerns about Proposed Plan**

GEC has several concerns with Proposed Plan. Most Proposed Plans present a summary of multiple alternatives for remediation, including No Action, highlighting costs and benefits of each alternative that were evaluated previously in a Feasibility Study. This is how EPA demonstrates why it selected the preferred alternative.

Previous removals of soil and industrial waste conducted in the 1990s were judged to be adequate in reducing risks to acceptable levels for future industrial use. Therefore, other alternatives were not considered for the Upland Soils at LCP. Alternative remedies, however, might have included removal of localized areas of residual soil contamination, containment of soil contamination under engineered barriers, or more-specific institutional controls targeted at the areas of residual contamination, to prevent unacceptable risks in the future.

Furthermore, GEC has pointed out to EPA that the Proposed Plan appears to be inconsistent with the findings of the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Assessment of the LCP Upland soil contamination, published in 2014.

ATSDR evaluated the site much more closely than the Superfund risk assessment, and identified "hot spots" – localized areas of higher residual PCBs, mercury, and/or carcinogenic PAHs in soil – at nine, one-half-acre parcels that could harm the health of future commercial and/or industrial workers.

GEC asked EPA at the September 12, 2019 public meeting about the ATSDR findings compared to the Superfund risk assessment. EPA noted the basic differences in the risk assessment assumptions, such as exposure durations and sizing of exposure parcels (i.e., 40-acre parcels for industrial uses vs. one-half-acre parcels for residential uses), that produce different results. EPA believes that average contaminant concentrations for 40-acre parcels is realistic for exposure scenarios for industrial uses vs. the one-half-acre parcels used by ATSDR. EPA did not assess risks for potential future commercial uses, however, which would likely use land parcels smaller than 40 acres.

In follow-up conversations with GEC's Technical Advisor, EPA clarified that it did not consider future commercial use as a realistic future exposure scenario because current site zoning is strictly for industrial uses. The Superfund risk assessment, therefore, did not consider potential human health impacts from hypothetical future commercial uses. The Proposed Plan does not specify prohibition of future commercial uses, which suggests that EPA's institutional controls (environmental covenant) would prohibit commercial uses as well as residential use.

## Terry Creek Superfund Site



### Background

Since 1911, industrial wastewater has been discharged into Dupree Creek, which flows into Terry Creek. From 1948 to 1980, the ditch was a discharge point for untreated wastewater containing toxaphene from the former Hercules pesticide plant. The chemical plant wastes from the past 108 years are still present in the outfall ditch sediments, Terry and Dupree Creek sediments, and dredge disposal areas.



Above: Left - Example of New Ditch; Right - Conceptual Drawing of Interim Remedy. Ref: EPA PowerPoint, August 2018

Toxaphene is a dangerous mixture of over 970 chemicals that was banned in the U.S. in 1990. In the past, toxaphene uses included killing insects on cotton plants and unwanted fish in lakes, and as cattle dip. Humans come into contact with toxaphene when they are exposed to water, soil, and food contaminated with the chemical.

The Terry Creek Superfund site has been divided into three Operable Units: Operable Unit 1 is the Outfall Ditch; Operable Unit 2 is the Wood Storage and Dredge Spoil Areas, and Operable Unit 3 is Dupree and Terry Creeks.

### Current Activities in Operable Unit 1 - Outfall Ditch

On November 27, 2019, U.S. District Judge Stan Baker made his final decision to accept the consent decree for

the outfall ditch. The remedy consists of removal of a limited quantity of contaminated sediment, removing the existing ditch/outfall, constructing a new concrete-lined ditch and outfall, backfilling with soil of known quality where necessary, and implementing institutional controls to prevent disturbance of the remediated areas.

The Consent Decree, filed initially in May 2018 had a 120-day comment period which ended on September 20, 2018. Many parties in their comments submitted to EPA supported removal of more contaminated sediment and supported the City of Brunswick in their requests for the alternative including the four-box culvert.

In July 2018, EPA published Provisional Peer-Reviewed Toxicity Values for Technical Toxaphene, Weathered Toxaphene, and Toxaphene Congeners. The toxicity report summarized the available scientific information



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about adverse health effects on humans and animals from exposure to these substances. The new “screening toxicity values” appear to indicate weathered toxaphene would cause adverse health effects at lower doses than technical toxaphene. However, EPA cautioned that the high degree of uncertainty about weathered toxaphene due to a severe lack of data prevents estimating with any confidence the actual difference in toxicity, if any. So, EPA did not modify the remedy selected in the June 2017 Interim Record of Decision. In August 2019, EPA and DOJ filed an unopposed motion to move forward

with the remedy selected for the Terry Creek outfall ditch.

EPA responded to comments received and DOJ filed a motion to enter the consent decree with the court. The City of Brunswick also filed a brief with the court, DOJ and Hercules submitted responses. Judge Baker explained in his final decision it is not the role of the court to substitute it’s judgement for the judgement of EPA on these technical decisions. The role of the court is to accept or reject the consent decree.

**Community Outreach**

GEC and EPA held a workshop on June 22, 2019, to explain how EPA assesses chemical toxicity and human health risks at Superfund sites. In addition, our Technical Advisor interpreted the new toxaphene toxicity information released in July 2018 (EPA published Provisional Peer-Reviewed Toxicity Values for Technical Toxaphene). The majority of comments made by workshop attendees supported removal of more contaminated sediment than was proposed in the remedy selected by EPA in the May 2018 Terry Creek Consent Decree.

While awaiting the court’s final decision on the consent decree, the GEC was communicating with EPA, the City of Brunswick, and Hercules to arrange meetings to assist in developing a unified vision for redevelopment. In 2020, we expect discussions to continue. Conversations with Hercules have revealed that the company is amenable to including aspects of requests from the City, specifically the box culvert, in the remedial design to address community concerns.

**Breaking News:** GEC Executive Director, Rachael Thompson, won EPA’s 2019 National Citizen Excellence in Community Involvement Award!