

# ***2017 RCRA Permit Application***

## ***Section E – Closure Plan, Post-Closure Plan, and Financial Requirements***

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## **E. CLOSURE PLAN, POST-CLOSURE PLAN, AND FINANCIAL REQUIREMENTS**

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This section of the permit renewal application addresses requirements contained in 40 C.F.R. §§ 270.14(b)(13), (14), (16), and (18) relating to closure and post-closure obligations for hazardous waste management units, post-closure cost estimates, and, where appropriate, proof of coverage by a State financial mechanism. These requirements are referenced in 40 C.F.R. § 270.28 (relating to information requirements for applications for post-closure permits).

As described in Section B of this permit renewal application, storage of hazardous waste by the Permittees for longer than 90 days at the Facility is no longer necessary. Accordingly, the permit application does not seek continued authorization for such storage as a permitted activity. Hazardous wastes generated at the Facility will be temporarily stored on-site for 90 days or less in accordance with requirements applicable to large quantity generators of hazardous waste.

The area authorized by the hazardous waste permit for the Facility where storage of hazardous wastes for longer than 90 days is permitted is referred to as the hazardous waste storage unit (“HWSU”), located on the Hercules owned portion of the Facility. Under the current terms of the hazardous waste permit, 56,320 gallons of hazardous wastes in containers can be stored at the HWSU. Upon renewal of the permit, the HWSU will be converted to a Central Accumulation Area (“CAA”) for purposes of staging hazardous wastes generated on-site for 90 days or less. Once the CAA (i.e., the converted HWSU) receives its final volume of hazardous wastes, the CAA will be closed in accordance with a closure plan designed to meet the closure provisions for container storage areas in 40 C.F.R. Part 264, Subpart G and 40 C.F.R. § 264.178 (relating to closure of container storage areas) and for hazardous waste accumulation areas in 40 C.F.R. § 262.17(a)(8). Hercules will also maintain appropriate financial assurance for the unit until closure is complete. These requirements are addressed in greater detail below.

In addition, five closed surface impoundments are present on the Hercules owned portion of the Facility. The surface impoundments historically were used to hold wastewater resulting from production of toxaphene. Production of toxaphene ceased in 1980 and no hazardous wastes were placed in the impoundments after July 26, 1982. The impoundments were subsequently “closed by removal” in accordance with applicable standards under 40 C.F.R. Part 265 by removing all materials associated with the impoundments. The closure process was completed in 1984. In 1987, the United States Environmental Protection Agency (“EPA”) promulgated regulations pursuant to the Hazardous and Solid

Waste Amendments of 1984 retroactively imposing more stringent closure standards on certain hazardous waste management units that had already completed the closure process and had achieved “clean closure.” Based on these more stringent closure standards, the closed surface impoundments subsequently became subject to post-closure requirements. The post-closure plan for the closed surface impoundments is described below.

No other regulated hazardous waste management units are present at the Facility.

Note that Pinova has not stored any facility-related hazardous wastes in the HWSU since January 2010, when the current Pinova property was sold by Hercules and has no plans to use this unit (the CAA) in the future. Pinova manages hazardous wastes associated with permitted activities which are generated on an episodic basis when doing any soil disturbance type of activities and production-related wastes which are not associated with permitted activities in accordance with requirements governing accumulation of hazardous wastes by large quantity generators for 90 days or less.

Therefore, the closure plan described in this section of the permit renewal application covers the converted HWSU (the CAA) only. The former surface impoundments are already closed. A post-closure plan for the closed surface impoundments is also included in this section of the permit renewal application.

## **E.1 CLOSURE PLAN FOR CONVERTED HWSU (CAA) [40 C.F.R. § 270.14(b)(13)]**

Under 40 C.F.R. § 270.14(b)(13), a permit application is to include any closure plan required under 40 C.F.R. § 264.112. In this case, because the closure plan covers an area where containers of hazardous wastes have been and are being temporarily stored, the specific requirements for closure of container storage areas set forth in 40 C.F.R. § 264.178 are addressed along with requirements for closure of hazardous waste accumulation areas in 40 C.F.R. § 262.17(a)(8). The key elements of the closure plan for the converted HWSU (i.e., the CAA) are presented below.

### **E.1.1 Closure Performance Standard**

Once the CAA receives its final volume of hazardous wastes, closure requirements are triggered. Closure under the standards set forth in 40 C.F.R. § 264.111 is designed (1) to minimize the need for further maintenance; (2) to control, minimize or eliminate, to the extent necessary to protect human health and

the environment, “post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere;” and (3) to meet the requirements contained in 40 C.F.R. § 264.178 (relating to closure of container storage areas). The requirements contained in 40 C.F.R. § 264.178 provide that at closure of a container storage area, “all hazardous waste and hazardous waste residues must be removed from the containment system [and] [r]emaining containers, liners, bases and soil containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed.” The performance standards for closure of hazardous waste accumulation areas under 40 C.F.R. § 262.17(a)(8) are substantially similar. The closure plan for the CAA specifies removal of all hazardous wastes and residues at closure. Such removal ensures that the CAA will not require further maintenance and controls after closure is completed and certified. Potential threats to human health and the environment will be minimized or eliminated. Any post-closure releases of hazardous waste, hazardous waste constituents, leachate or contaminated rainfall to ground or surface waters or to the atmosphere will be avoided.

## **E.1.2 Partial Closure and Final Closure Activities**

### **E.1.2.a Key Elements of Closure Activities**

The converted HWSU (the CAA) is a prefabricated steel waste storage building with integrated secondary containment and approximate dimensions of 26 feet wide, 8 feet deep, and 8 feet high. It is secured to a reinforced concrete slab that is approximately 110 feet x 50 feet in size. A figure depicting the CAA is attached hereto as Figure E-1. The CAA has full walls on three sides and a wall with access door on the fourth side. The floor of the CAA is constructed of removable perforated steel slats. The slats are removable to allow for inspection and cleaning of the secondary containment sump below the floor. The integrated secondary containment is constructed of steel with fully welded seams and has a capacity of 757 gallons. The CAA is designed to store up to 48 drums or 2,400 gallons of hazardous waste (55 gallons x 48). This quantity is the maximum inventory of hazardous wastes that may be temporarily stored at the CAA. Because the CAA is now being used solely to temporarily store investigation-derived wastes (“IDW”) qualifying as hazardous wastes from the corrective action process at the Facility, the actual volumes of hazardous wastes currently being temporarily stored at the CAA are approximately 1,760 gallons or less.

Containers are stored directly on the steel slat floor or are stored on wooden pallets that are approximately 44 inches long by 52 inches wide by 5 inches high. The wooden pallets hold up to four drums and each pallet has a load bearing capacity of approximately 2,500 pounds.

Partial closure of the CAA is not planned. Final closure activities include removal and disposal of the hazardous waste inventory and decontamination of the structure in which containers of hazardous waste are temporarily stored to meet the performance standards detailed in Section E.1.1. Additionally, upon closure of the CAA, soil samples at the entrance to the concrete slab area and emergency egress points, below any cracks in the concrete floor, and immediately outside of the 5 cuts in the concrete curb will be analyzed and evaluated to determine if hazardous constituents have been released to the environment. Soil containing hazardous constituents from operations at the CAA at concentrations above EPD approved levels will be excavated and transported to an appropriate permitted offsite facility for treatment and/or disposal, and the excavated area will be backfilled, graded and seeded.

The CAA will be closed when Hercules no longer generates IDW at the Facility. For planning purposes, closure is assumed to occur within twenty years, or 2037. EPD will be notified at least 45 days before closure of the CAA is expected to begin.

The removal and disposal of the final hazardous waste inventory in the CAA is anticipated to require a day to complete. Hercules will propose alternate hazardous waste management processes prior to initiating closure, given the amount of hazardous waste generated from regular corrective action activities can be transported to a certified storage and disposal facility in a single waste pickup. The decontamination of the CAA is expected to require 60 days to complete. The disposal of residues is expected to require 120 days to complete. The certification of completion of closure is expected to occur within 180 days after receipt of the final hazardous waste volume at the CAA. At this time, Hercules does not expect to need an extension of time for the closure period for the CAA.

#### **E.1.2.b Closure Procedures**

At closure, all containers holding hazardous wastes at the CAA will be transported by a licensed transporter to a permitted hazardous waste treatment or disposal facility. Any incompatible wastes stored at the CAA at the time of final inventory removal will be transported in separate vehicles. This is not anticipated to be an issue because waste streams from the corrective action process now being stored at the CAA are well categorized and compatible.

The concrete floor slab, curbing, and ingress/egress locations for the CAA will be visually inspected for the presence of visible cracks or gaps prior to initiating decontamination procedures. If cracks or gaps which exceed 1/16 inch in width or vertical displacement are encountered in the concrete floor slab or curbing,

soil samples will be collected from beneath such cracks using hand augurs. A concrete coring device or equivalent will be used to access the soil beneath the floor. The soil samples that are collected will be analyzed for volatile organic compounds ("VOCs") using EPA SW-846 Test Method 8260B, semi-volatile organic compounds ("SVOCs") using EPA SW-846 Test Method 8270D, RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) using EPA SW-846 Test Method 6020A and toxaphene using EPA SW-846 Test Method 8081B, or updated and validated SW-846 methods as applicable. The sampling results will be used to determine whether underlying soils have been impacted. Following completion of soil sampling activities, concrete cracks and/or locations where soil samples have been collected will be repaired with concrete patching and/or epoxy. The CAA will then be decontaminated as described below.

The concrete floor slab, curbing, ingress/egress areas of the concrete slab, and the prefabricated CAA building, will be visually inspected and steam/hot water cleaned using a bio-degradable citrus cleaner. Decontamination water will be contained within the curbed areas, collected, and placed in drums. Decontamination residues will be sampled and analyzed for VOCs, SVOCs, RCRA metals, and toxaphene using the analytical methods described above. If found to be characteristic hazardous waste, the decontamination residues will be packaged, properly labeled, and transported to a permitted hazardous waste treatment or disposal facility. If the material is aqueous and nonhazardous, it will be transported to an appropriate off-site, permitted facility. Booms and pads used during the cleaning of the CAA will also be drummed and properly managed. The CAA will be kept clean and free of spilled residuals at all times. It is anticipated that approximately ten 55 gallon drums of decontamination fluids may be generated during decontamination and closure activities.

Following completion of decontamination procedures, rinsate from ten locations (biased towards likely contaminated areas such as stained areas as conditions warrant at the time of closure) at exposed structural surfaces within the CAA and within the containment sump will be collected using drum thieves or squeegees and collection trays and analyzed to confirm decontamination of the CAA. The rinsate samples will be analyzed for VOCs, SVOCs and pesticides using the analytical methods described above.

After the CAA has been decontaminated, impacted soils will be removed as necessary and appropriate. Confirmation soil samples at both the entrance and emergency egress points, around the perimeter of the CAA, and below any cracks in the concrete floor slab will be analyzed and evaluated to determine if



hazardous constituents have been released to the environment. A concrete coring device or equivalent will be used to access the soil beneath the concrete paving. Soil samples will be collected utilizing a hand auger through the entirety of the vadose zone, if possible, at which point the soil cores will be screened with a photo-ionization detector (“PID”) in two foot intervals. A soil sample will then be collected, corresponding to the highest PID reading, in accordance with procedures defined in US EPA Region 4 SEDS Operating Procedure SEDSPROC-300R3. The soil samples will be analyzed for VOCs, SVOCs, RCRA metals and toxaphene using the analytical methods described above. Soils containing constituents at concentrations above risk-based levels developed with EPD will be excavated and transported to an appropriate offsite facility for disposal. A minimum of ten confirmation soil samples will be collected at the locations shown on **Figure E-2**.

As part of the final closure process for the CAA, hazardous waste and waste residues will be removed. All facilities and equipment will be decontaminated and all storage equipment will be visually inspected by a Hercules representative. A certification by Hercules and an independent professional engineer that the CAA unit has been closed in accordance with the approved closure plan set forth in this Section E.1 of the permit renewal application will be submitted to EPD.

## **E.2 POST-CLOSURE PLAN FOR CLOSED SURFACE IMPOUNDMENTS [40 C.F.R. § 270.14(b)(13)]**

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Under 40 C.F.R. § 270.14(b)(13), a permit application is to include, as applicable, any post-closure plan required under 40 C.F.R. § 264.118. In this case, because the post-closure plan covers five closed surface impoundments, the specific requirements for post-closure care of surface impoundments set forth in 40 C.F.R. § 264.228 are addressed. The key elements of the post-closure plan for the five closed surface impoundments are presented below.

### **E.2.1 Closure Process for Former Surface Impoundments**

Closure of the former surface impoundments was completed in 1984 in accordance with applicable requirements under 40 C.F.R. Part 265 (relating to interim status facilities). Copies of the closure plan that was implemented, closure certifications, and EPD approval of closure are included in **Appendix E-2**.

The closure activities included:



- Removing impounded water for treatment and disposal;
- Removing for treatment and disposal sludge and underlying unsaturated soils;
- Conducting verification soil sampling and analysis for EP Toxicity for toxaphene;
- Pushing in the impoundment berms, backfilling the impoundments with virgin soils from pine stumps serving as a raw material for production of rosins and other commodities (commonly referred to as “stump dirt”), grading the impoundment area and establishing a vegetative cover; and,
- Completing a certification of closure by a Georgia Registered Professional Engineer.

Following closure of the five former surface impoundments in 1984, additional stump dirt was added to the area to create a sound barrier for nearby neighbors from plant noises. Hercules discontinued the addition of stump dirt for purposes of constructing the sound barrier in August 1994. The cover over the closed surface impoundments is vegetated with various types and densities of vegetation. A topographic map of the cover and the surrounding area is shown on **Figure B-3**. The cover is designed to promote surface drainage in the area of the closed surface impoundments. The cover has also raised the surface elevation of the area where the closed surface impoundments are located so that the area is not within the boundaries of the 100-year floodplain.

### E.2.2 Key Elements of Post-Closure Plan

Because of the imposition of new, more stringent closure standards after the former surface impoundments had completed closure, the closed surface impoundments are undergoing post-closure care. The post-closure period is currently expected to continue for up to 30 years from September 29, 1995, or until all permit conditions are satisfied. The post-closure care plan describes the activities to be performed to manage the closed surface impoundments throughout the post-closure care period in accordance with 40 C.F.R. §§ 264.117 and 118. Groundwater monitoring activities are described in Section C of this permit renewal application. Post-closure groundwater monitoring activities for the closed surface impoundments have been integrated into the overall groundwater monitoring program for the Facility as described in Section C of this permit renewal application. Other elements of the post-

closure plan include requirements for inspection and maintenance activities as described below. These activities are managed and reported as part of the operating record maintained by Hercules.

A qualified trained technician inspects the closed surface impoundments quarterly and after major storm events. Following each inspection, a report is prepared which is uploaded to a central file server and kept on file at the Facility. The report includes the following:

- The date and purpose of inspection (i.e., routine or storm),
- The condition of surface water run-on and runoff control features,
- The condition of the vegetative cover and any erosion damage, and
- The condition of the visible portions of the groundwater monitoring wells.

Maintenance and repair activities associated with the closed surface impoundments are performed as required based on the inspections and inspection reports discussed above. Repair activities are promptly initiated. Maintenance activities include the following:

- Surface Water Run-on and Run-off Control: The existing soil cover over the area where the closed surface impoundments are located will be graded and shaped as necessary to promote surface drainage and limit run-on. Also, the drainage ditches and swales in the immediate vicinity of the closed surface impoundments will be dredged and shaped to allow discharge of surface water from the area into the NPDES N Street Ditch 001 outfall underneath US Route 17.
- Vegetative Cover: Reseeding, fertilizing and liming will be performed, as necessary, to maintain the vegetative cover to the extent required to control soil erosion.
- Groundwater Monitoring Wells: Monitoring wells that become damaged or non-functional will be repaired or replaced.

Because no hazardous waste remains, nor will any be added, security measures are not necessary at the closed surface impoundments to limit access to the public or domestic livestock. Nevertheless, 24-hour security is maintained at the Facility, including the area where the closed surface impoundments are

located, with access controlled via the main gate for the Facility. Security measures are discussed in Section D of this permit renewal application.

During the post-closure care period, the Hercules Contact/Representatives will be the primary contacts concerning post-closure activities. The present name, address and phone numbers of the Hercules Representatives are as follows:

Mr. Timothy Hassett  
Hercules LLC  
500 Hercules Road  
Wilmington, Delaware 19382  
(302) 995-3456

Mr. Ian McCary  
Hercules Site Representative  
Antea Group USA, Inc.  
2110 Stacy Street, Brunswick, Georgia 31520  
(912) 261-3516

### **E.3 NOTICES REQUIRED FOR CLOSED HAZARDOUS WASTE DISPOSAL UNITS [40 C.F.R. § 270.14(b)(14)]**

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Under 40 C.F.R. § 270.14(b)(14), permit applications are to include documentation that notices for hazardous waste disposal units that have been closed have been filed as required under 40 C.F.R. § 264.119. In the case of the closed surface impoundments, copies of the closure plan that was implemented, closure certifications, and EPD approval of closure are included in **Appendix E-1**. In addition, a surveyed topographic map (i.e., a surveyed plat) showing the location and dimensions of the closed surface impoundments with respect to permanently surveyed benchmarks has been sent to the local zoning authorities. The Facility is on the Georgia Hazardous Site Inventory and an affidavit has been sent to the Clerk of the Glynn County Superior Court. Documentation was also submitted to EPD that shows that a notation has been made on the deed for the property where the closed surface impoundments are located that notifies any potential purchaser of the property that the property has been used to manage hazardous wastes. Copies of these documents are included as **Appendix E-2**.

### **E.4 CLOSURE COST ESTIMATE AND FINANCIAL ASSURANCE MECHANISM [40 C.F.R. §§ 270.14(b)(15), 264.142 AND 264.143]**

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While not prescribed by 40 C.F.R. § 270.28 (relating to the contents of permit applications for post-closure permits), cost information for closure of the CAA (the converted HWSU) is presented herein in **Table E-1** in accordance with the requirements of 40 C.F.R. §§ 122.25(a)(15) and 264.142. Estimated closure costs (2017 dollars) for the CAA total \$172,972. The closure costs are presented by activity in **Table E-1**. The closure cost

estimate will be kept on file and will be revised when a change in the closure plan for the CAA affects the cost of closure. Costs will be adjusted annually (from the date of original development) to reflect changes in closure costs due to inflation. The most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce will be used to make inflation adjustments.

Hercules is providing financial assurance for closure costs in accordance with the requirements of 40 C.F.R. §§ 122.25(a)(15) and 264.143. Hercules currently provides financial assurance for closure costs using a combination of a performance bond and a letter of credit. Hercules provides liability coverage through an insurance policy. All the financial assurance mechanisms are and will continue to be compliant with 40 C.F.R. § 264.151. Where Hercules may in the future choose to alter the form of financial assurance, such financial assurance will continue to meet the requirements of 40 C.F.R. § 264.151 by being one of the prescribed assurance mechanisms, using prescribed language for the chosen mechanism, and being submitted to EPD. A copy of the current financial assurance letter is included as **Appendix E-3**. An updated financial assurance letter will be provided EPD following EPD review of this permit renewal application and prior to permit issuance.

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#### **E.5 POST-CLOSURE COST ESTIMATE AND FINANCIAL ASSURANCE MECHANISM [40 C.F.R. §§ 270.14(B)(16), 264.144 AND 264.145]**

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The post-closure cost estimate including annual estimated costs and the remaining 30-year estimated costs for post-closure care of the closed surface impoundments in 2017 dollars are included in **Table E-2**. The annual costs are \$61,493 with a 30-year cost of \$1,844,789.85. This cost estimate will be updated as appropriate to show increases or decreases in post-closure costs. A post-closure cost estimate for the CAA (the converted HWSU) is not required under 40 C.F.R. § 264.118(a) because all hazardous wastes and residuals will be removed during closure as discussed in Section E.1, above.

Hercules is providing financial assurance for post-closure care in accordance with the requirements of 40 C.F.R. §§ 122.25(a)(15) and 264.145. Hercules currently provides financial assurance for post-closure costs using a combination of a performance bond and a letter of credit. Hercules provides liability coverage through an insurance policy. All of the financial assurance mechanisms are and will continue to be compliant with 40 C.F.R. § 264.151. Where Hercules may in the future choose to alter the form of financial assurance, such financial assurance will continue to meet the requirements of 40 C.F.R. § 264.151 by being one of the prescribed financial assurance mechanisms, using prescribed language for the chosen

mechanism, and being submitted to EPD. A copy of the latest financial assurance letter is included as **Appendix E-3**.

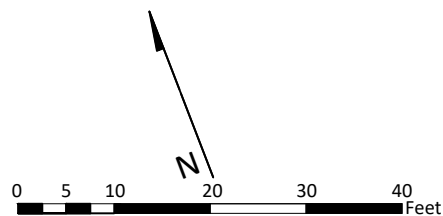
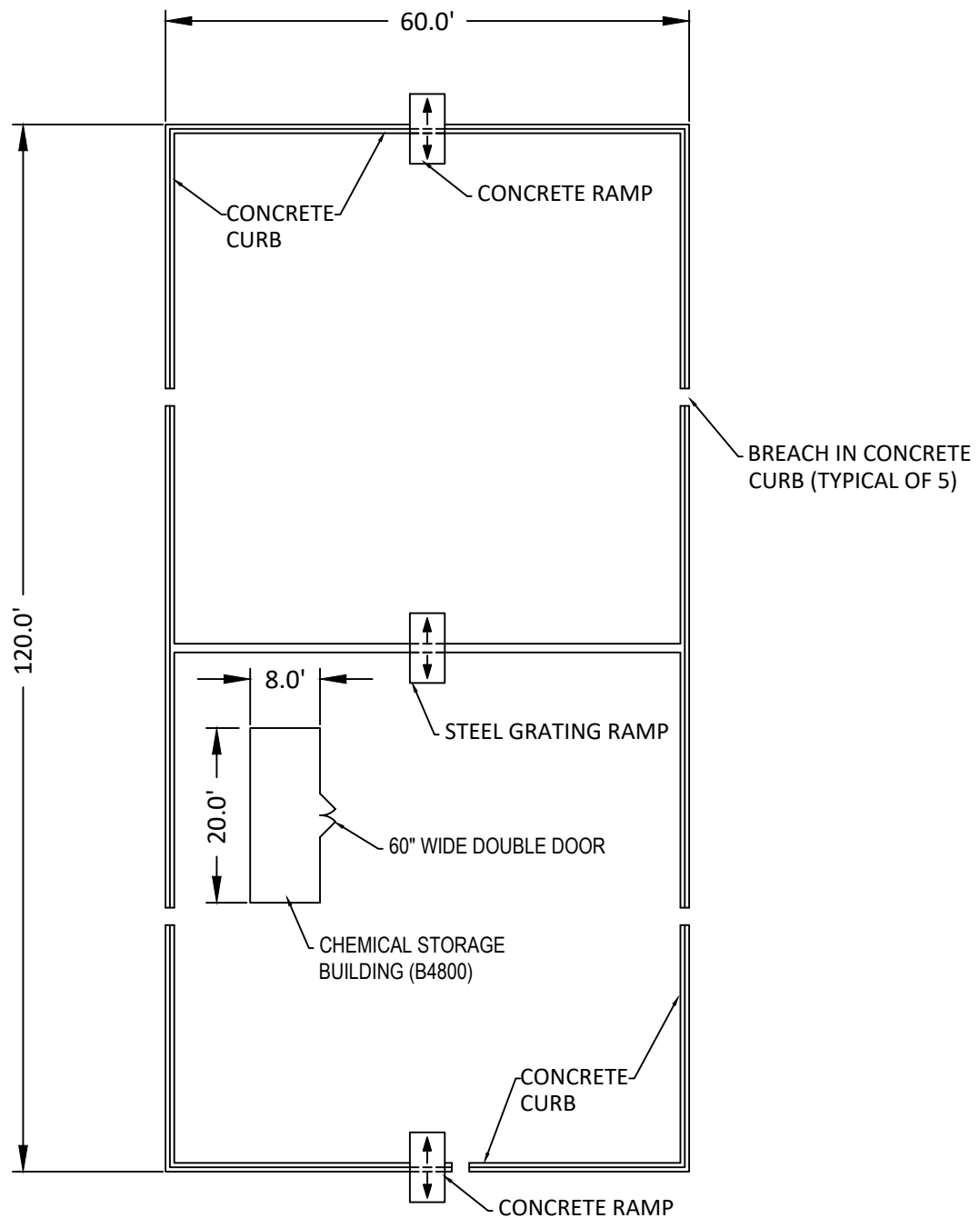
#### **E.6 STATE FINANCIAL MECHANISM [40 C.F.R. § 264.150(B)(18)]**


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Under 40 C.F.R. § 270.14(b)(18), a permit application is to include, where appropriate, proof of coverage by a State financial mechanism in compliance with 40 C.F.R. § 264.149 or 40 C.F.R. § 264.150. Hercules does not intend to ask the State of Georgia to assume financial liability for closure and/or post closure activities. Accordingly, this requirement is not applicable.

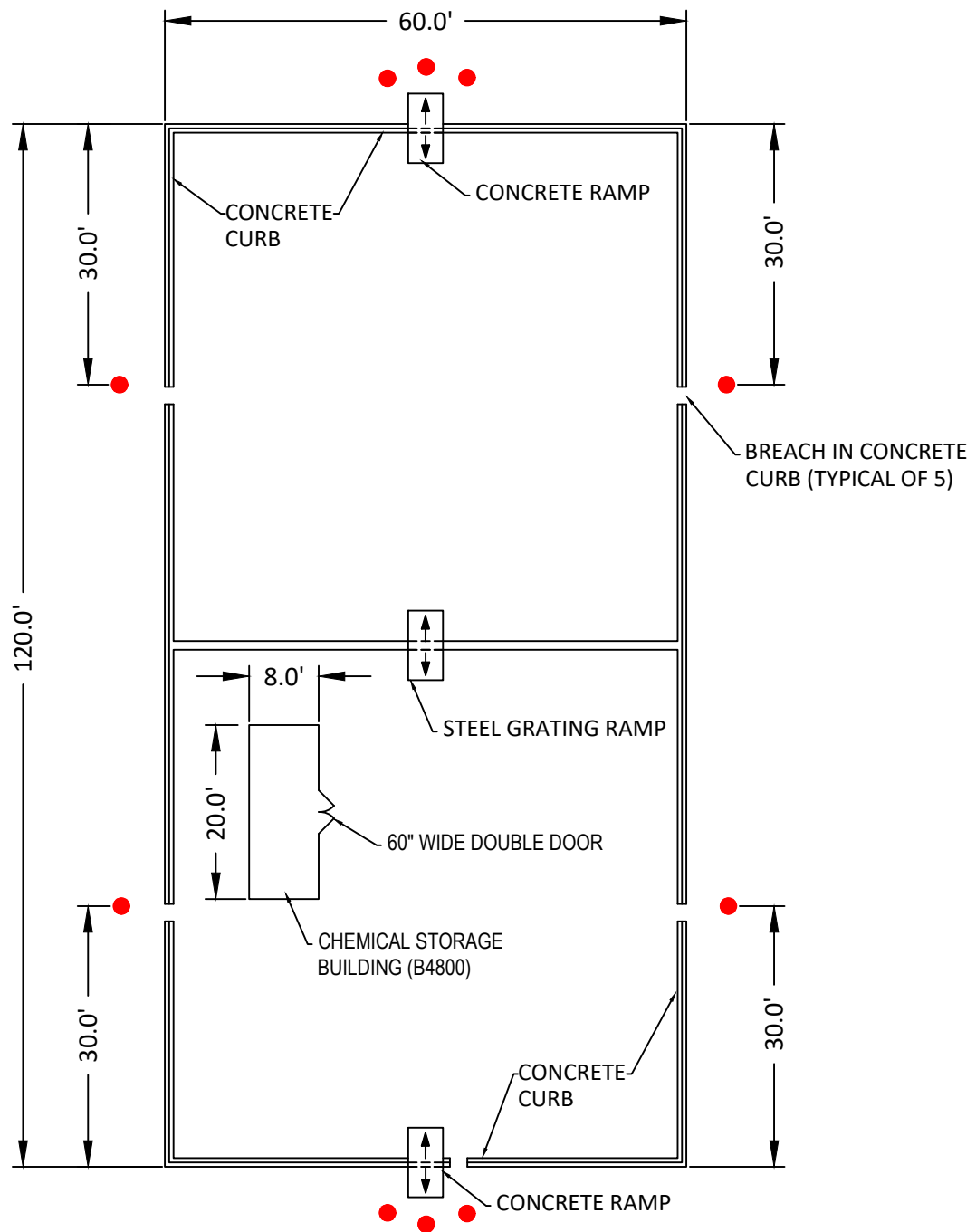
## ***Figures***

- Figure E-1      Central Accumulation Area (Former Hazardous Waste Storage Unit) Depiction  
Figure E-2      CAA Closure Soil Boring Locations



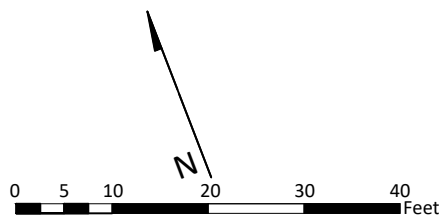
<p><b>FIGURE E-1</b></p> <p>CAA (FORMER HWSU) DEPICTION</p>		
<p>HERCULES LLC BRUNSWICK, GEORGIA HAZARDOUS WASTE STORAGE UNIT SAMPLING</p>		
PROJECT NO.: 18BRUNST1	DRAWN BY: LKO	 <b>anteagroup</b>
PREPARED BY: BR	DATE: 10/30/2018	
REVIEWED BY: BR	FILE NAME: BRUNSWICK.DWG	





#### LEGEND

● SOIL SAMPLE LOCATIONS



#### FIGURE E-2

CAA/HWSU CLOSURE SOIL BORING LOCATIONS

HERCULES LLC  
BRUNSWICK, GEORGIA  
HAZARDOUS WASTE STORAGE UNIT SAMPLING

PROJECT NO.: 18BRUNST1	DRAWN BY: LKO
PREPARED BY: BR	DATE: 10/30/2018
REVIEWED BY: BR	FILE NAME: BRUNSWICK.DWG



## ***Tables***

Table E-1	Closure Cost Estimate – Central Accumulation Area
Table E-2	Post-Closure Cost Estimate - Closed Surface Impoundments

Table E-1

Closure Cost Estimate  
Central Accumulation Area

<b>Task/ Phase</b>	<b>Phase Title</b>	<b>Labor</b>	<b>Expense</b>	<b>Estimated Total</b>
<b>CAA Closure Activities</b>				
<b>1001</b>	<b>Removal of waste</b>	\$614	\$1,590	\$2,204
<b>1002</b>	<b>CAA containment inspection</b>	\$1,755	\$5,400	\$7,155
<b>1003</b>	<b>Decontamination</b>	\$3,410	\$17,050	\$20,460
<b>1004</b>	<b>Soil Sampling/Rinsate Sampling and Analysis</b>	\$3,720	\$7,200	\$10,920
<b>1005</b>	<b>Removal of Soil</b>	\$6,575	\$45,062	\$51,637
<b>1006</b>	<b>Backfill and Grading</b>	\$5,431	\$23,069	\$28,500
<b>1007</b>	<b>Engineering Expenses (10%)</b>	\$0	\$12,088	\$12,088
<b>1008</b>	<b>Certificate of Closure</b>	\$11,180	\$0	\$11,180
	<b>Total</b>	<b>\$32,685</b>	<b>\$111,459</b>	<b>\$144,144</b>
	<b>Contingency Allowance (20%)</b>	\$6,537	\$22,292	\$28,829
	<b>Estimated Total (including contingency)</b>	<b>\$39,222</b>	<b>\$133,750</b>	<b>\$172,972</b>

**Note:** This cost estimate was prepared in current dollars.

Table E-2

Post Closure Cost Estimate  
Closed Surface Impoundments

<b>Task/ Phase</b>	<b>Activity</b>	<b>Quantity</b>	<b>Unit</b>	<b>Rate Per Unit</b>	<b>Annual Total</b>
<b>1001</b>	<b>Inspection and Inspection Reporting</b>	4	Inspection	\$2,872.34	\$11,489.36
<b>1002</b>	<b>Fertilizer and Liming</b>	9	Acre	\$275.17	\$2,476.53
<b>1003</b>	<b>Grading, Erosion and Ditch Repair</b>	100	Cubic Yard	\$17.95	\$1,795.00
<b>1004</b>	<b>Seeding and Reseeding</b>	0.5	Acre	\$4,187.37	\$2,093.69
<b>1005</b>	<b>Groundwater Monitoring Program</b>				
	Labor	2	Event	\$11,138.21	\$22,276.42
	Materials	2	Event	\$1,601.00	\$3,202.00
	Laboratory	30	Well	\$564.87	\$16,946.10
	Disposal	4	Drums	\$303.50	\$1,214.00
	<b>Annual Total</b>				<b>\$61,493.10</b>
	<b>30 Year Cost</b>				<b>\$1,844,792.85</b>
	<b>30 Year Cost with 15% Contingency</b>				<b>\$2,121,511.78</b>

Note: This cost estimate was prepared in current dollars.

## ***Appendices***

**Appendix E-1 Closed Surface Impoundments - Closure Documents**

**Appendix E-2 Property Deed Amendments**

**Appendix E-3 Financial Assurance Letter, May 2016**

## Appendices

Appendix E-1 Closed Surface Impoundments - Closure Documents



Hercules Incorporated  
P. O. Drawer 1517  
Brunswick, GA 31521  
(912) 265-3550

June 13, 1988

Mr. Behrooz Khaleghi  
Hazardous Waste Management Program  
Georgia Department of Natural Resources  
205 Butler Street, SE  
Floyd Towers East  
Atlanta, Georgia 30334

RE: Former 1% Toxaphene Sludge  
Surface Impoundments  
Assessment Plan

Dear Mr. Khaleghi:

Please find attached our assessment plan for the toxaphene clay-silica sludge surface impoundment formerly located at this facility. This assessment, in accordance with Mr. Jim Ussery's letter dated May 20, 1988, provides the background information concerning the operation and subsequent, certified closure by the Georgia Environmental Protection Division in 1984 of these five, contiguous impoundment basins. An up-to-date groundwater monitoring well analysis is also found in Appendix C.

Please call should you have any questions concerning this submittal.

Very truly yours,

Glenn R. Hoffmann  
Environmental Coordinator

GRH/cwd  
2547h

Attachment



ASSESSMENT PLAN  
FOR THE FORMER TOXAPHENE SURFACE IMPOUNDMENTS  
FOR  
HERCULES INCORPORATED  
BRUNSWICK, GEORGIA  
JUNE, 1988

SUBMITTED AS REQUIRED BY  
GEORGIA HAZARDOUS WASTE STORAGE PERMIT NO. H.W-052(2)  
SECTION III, PARAGRAPH A.1-3

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## ASSESSMENT PLAN FOR THE FORMER TOXAPHENE SURFACE IMPOUNDMENTS

### 1. TYPE OF UNIT

Five (5) contiguous unlined surface impoundments for the treatment of dilute hydrochloric acid produced during the manufacture of toxaphene were utilized.

### 2. LOCATION OF EACH UNIT

Figure 1 shows a plant map drawn to scale detailing the former surface impoundments and the former (S-1, S-2, N-1, N-2, E-1, E-2, W-1, W-2) and present (T-1-5, T-1, T-2, T-3, T-2, T-5, and T-6) groundwater monitoring wells. Figure 2 shows a topographic map of the plant and surrounding area with the approximate location of the former surface impoundments.

### 3. GENERAL DIMENSIONS AND CAPACITIES

The area covered is as shown on Figure 1. The depth of sludge in each impoundment varied during the life of the basin, but was generally found to be 1.5 to 4 feet deep during removal and disposal to a hazardous waste landfill in 1984.

#### 4. FUNCTION OF THE UNIT

The treatment facilities consisted of a series of five (5) contiguous unlined impoundments used for the treatment of dilute hydrochloric acid produced during the manufacture of toxaphene. The operation was based on neutralizing the hydrochloric acid with limestone, producing a calcium chloride solution that we discharged into the impoundments. Discharge from the lagoons was through percolation into the shallow aquifer, and evaporation. Impurities in the limestone resulted in a clay-silica sludge containing less than 1 percent toxaphene that accumulated in the lagoons. The lagoons were used on a rotating basis. When the sludge reached a certain level in the lagoon being used, the flow was diverted to another, allowing the sludge in the first to dry. The dried sludge was then removed and disposed off-site.

After some time, when available percolation was insufficient to handle the incoming wastewaters including calcium chloride solution formed, the excess water was drained to the "N" Street Ditch. Later, an amberlite-methanol treatment system was installed to further remove what minimal toxaphene remained in the wastewaters prior to discharge. This treatment system was operational until closure.

#### 5. DATES OF OPERATION

The surface impoundment treatment system began operation in late 1971 and continued through 1980.

## 6. WASTES PLACED INTO THE UNIT

Hydrochloric Acid (HCl) neutralized with limestone formed a calcium chloride solution which was discharged into the lagoons. The sludge that was formed, resulting from impurities in the limestone (clay and silica), also contained up to one percent toxaphene.

## 7. DESCRIPTION OF ANY KNOWN RELEASES OR SPILLS

Except for the planned percolation of wastewaters and subsequently, the direct and indirect (amberlite treatment system) wastewater discharge via the "N" Street Ditch, no specific "releases" or spills from the impoundments are known. The amberlite treatment system was used from 1978 through 1983. The "N" Street Ditch effluent monthly permitted average concentration (16 ppm as found in our NPDES Permit) has not been exceeded in several years.

In 1972, six shallow (6-10 feet deep) monitoring wells were installed around the perimeter of the lagoons. All but one western well (not shown on these drawings) were affected by salt water from the lagoons at one time or another. However, these wells were sometimes dry and were considered too shallow to intercept any potential waste plume.

A new series of groundwater monitoring wells was completed and put into service early in 1981. These wells were located 15 to 20 feet in depth and furnished with stainless steel casings and screens. The depth of each well was selected to place its bottom at the same absolute elevation, approximately 5.8 feet below sea level datum. The wells were installed in pairs on the north, east, south and west sides of the lagoons as shown in Figure 1. Each pair of wells was sampled for chlorides, pH and toxaphene on a weekly, rotating basis.

When no toxaphene contamination was found, the State of Georgia insisted that more, deeper groundwater monitoring wells be drilled before final closure could be granted. Seven (7) additional monitoring wells, designated T-1 through T-6 and T-1-shallow, were designed and located by a professional engineering contractor and approved by the Georgia Environmental Protection Division to supercede the previous shallow monitoring wells. The wells monitor an aerially extensive sand unit which constitutes the first useable aquifer underlying the site. Well T-1-shallow was completed in a shallower zone corresponding to the zone monitored by the 1981 series of wells. The wells were located in such a manner as to monitor the prevailing eastward direction of the groundwater flow as determined by the installation of the previous wells (See Figure 3). Wells T-2 through T-6 have never shown toxaphene concentrations above the drinking water standard and their sampling frequency was reduced by the Georgia EPD from quarterly to yearly. They will be tested again in June, 1988. Wells T-1 and T-1-shallow, located south of the impoundments and considered upstream wells, are less than three feet apart and were installed at the same time. The well driller, when developing the wells simultaneously, contaminated the wells with surface toxaphene dust and drilling mud. The toxaphene dust most likely came from an old toxaphene operator change house which used to occupy the site. Since installation, the concentration of toxaphene in these two wells has generally fallen. See Appendix 3 for the analyses of the latest series of wells.

IMPOUNDMENT CLOSURE  
8. DESCRIPTION OF ANY KNOWN RELEASES OR SPILLS

A closure plan was submitted to the Georgia EPD on December 9, 1983. Revisions to the plan were received from Mr. J. Leonard Ledbetter of the Georgia EPD on January 30, 1984, and were incorporated into the plan. This plan was followed by Hercules Incorporated. Certification of Closure by a certified professional engineer was completed in October, 1984, as detailed in our October 31, 1984 submittal to Mr. John D. Taylor of the Georgia EPD (See Appendix A). Closure of the toxaphene surface impoundments was approved by the Georgia EPD as evidenced by Ms. Jennifer Kaduck's letter to Hercules Incorporated dated December 14, 1984 (See Appendix B). Quarterly well monitoring was to continue until or unless the newly installed (1983 series) groundwater monitoring wells indicated toxaphene concentrations below the 5.0 ppb drinking water standard.

The following items highlight the closure effort undertaken. The entire toxaphene-contaminated sludge in the surface impoundments was removed and manifested to a hazardous waste disposal facility in South Carolina. The underlying soil in each impoundment was then composited into its own separate sample. This sampling and analysis for toxicity (Extraction Procedure Toxicity) was conducted by a contract laboratory. All analysis indicated toxaphene concentrations well below the contaminant levels permitted. Clean dirt was used to fill and contour the site. Grass was sown as a cover to minimize erosion and continues to grow there today.



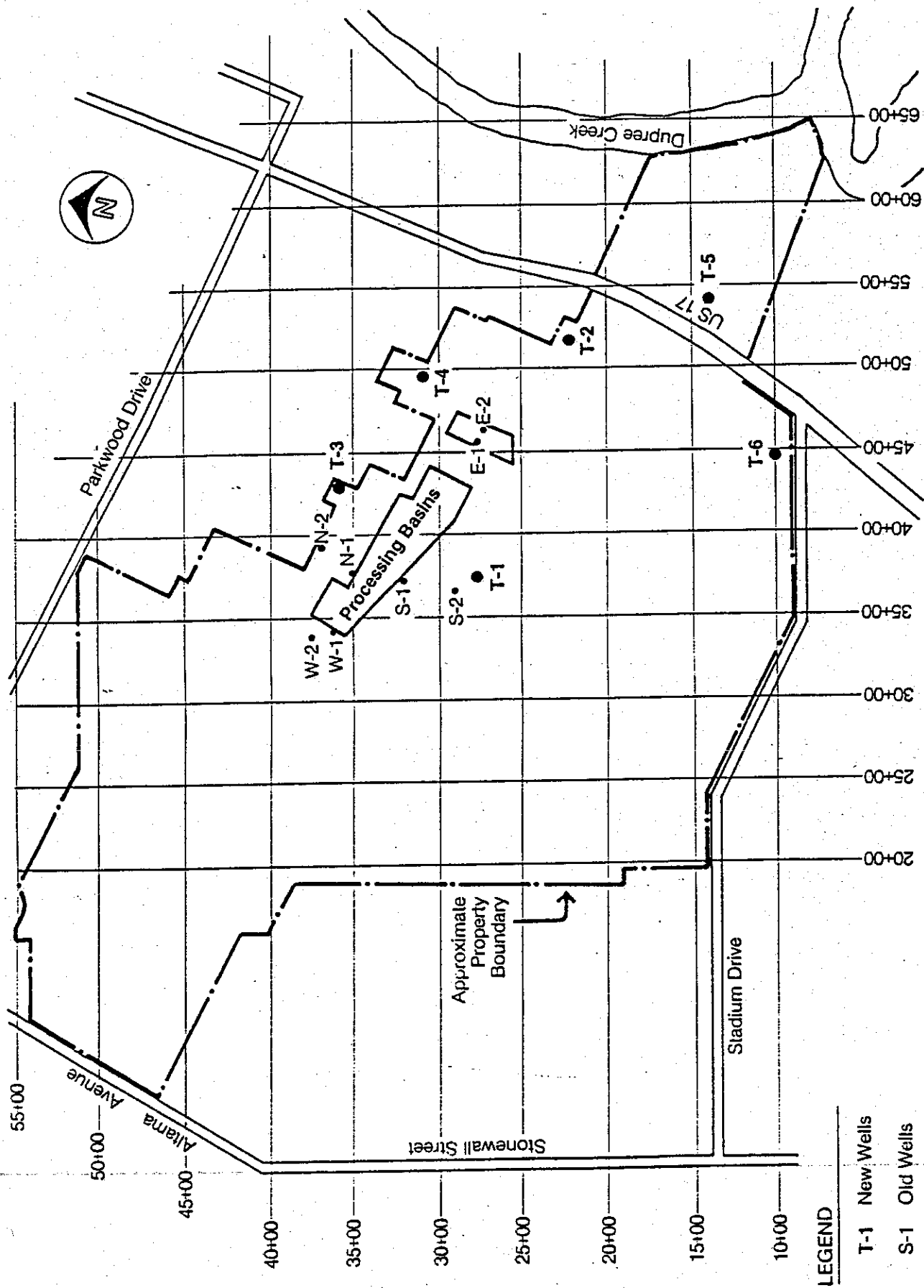
#### 9. PRESENT ASSESSMENT ACTIONS

Hercules Incorporated continues groundwater monitoring as detailed in Nos. 7 and 8 above. A contract laboratory certified by the State of Georgia, performs all analyses except for toxaphene which is run in-house. Periodic certification of our toxaphene analyses is performed by the State of Georgia.

#### 10. FUTURE ASSESSMENT PLANS

No prior or continuing release is evident from all the groundwater and soil sample analyses taken to-date. Therefore, we believe that the present sampling plan is more than sufficient to detect any toxaphene or chlorides migration should it be manifest. A significant and continued increase in toxaphene or chlorides at wells T-1 and T-1 shallow or an increase in toxaphene in wells T-2 through T-6 above the drinking water standard would indicate the need for additional assessment plans, more frequent monitoring, and possibly other abatement actions. A revised assessment plan will be written and submitted to the Georgia EPD within 30 days following the detection of a significant, verified increase in toxaphene or an indicator parameter as described above.

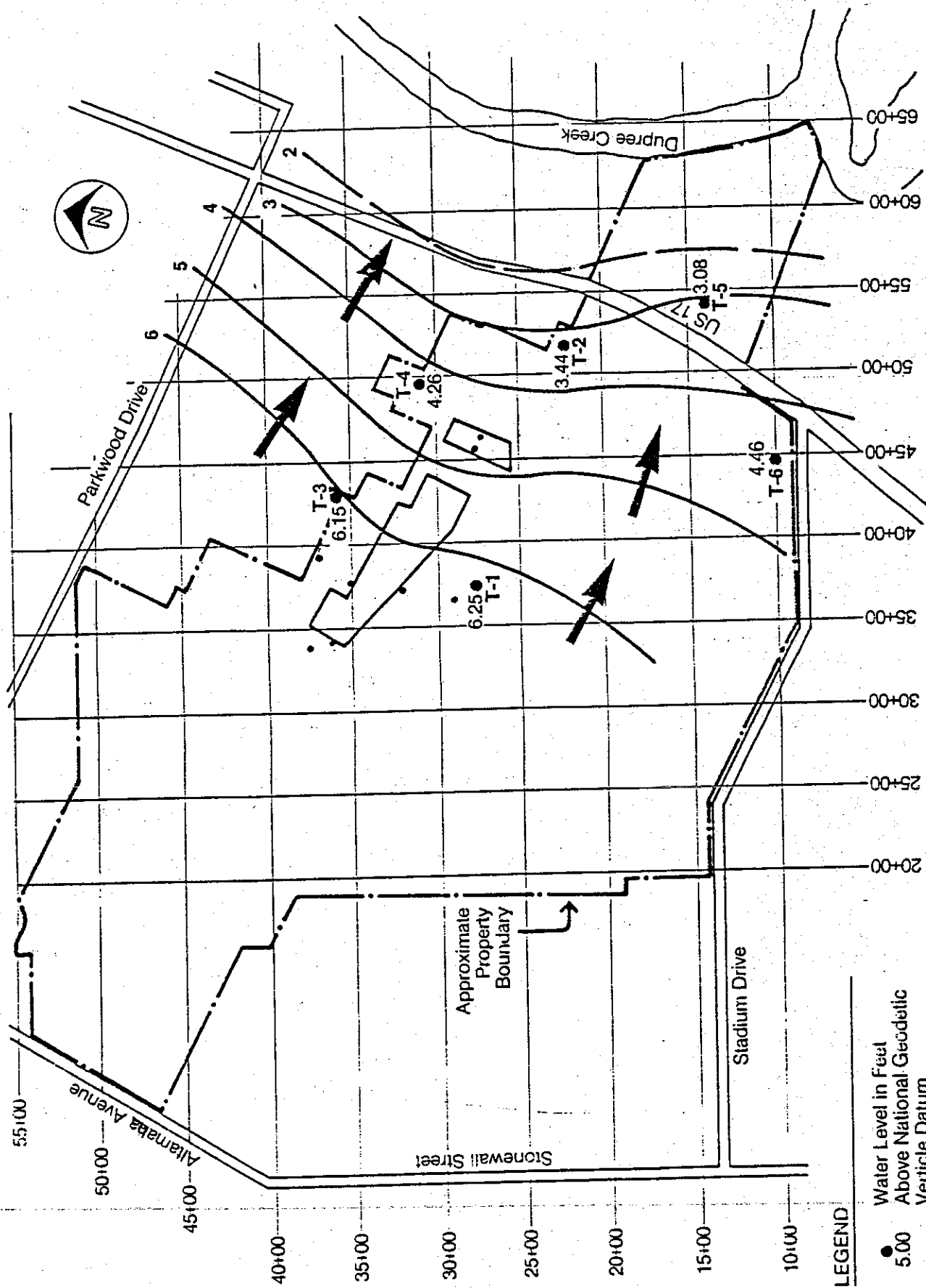
GRH/cwd  
2547h



**FIGURE 1.**  
Project Location Map.

31°07'





**FIGURE 3.**  
Water Levels in T-Series Wells January 31, 1984



APPENDIX A

Hercules Incorporated  
P. O. Drawer 1517  
Brunswick, GA 31521  
(912) 265-3550

October 31, 1984

Mr. John D. Taylor, Jr.  
Program Manager  
Industrial and Hazardous Waste Management Program  
Environmental Protection Division  
270 Washington Street  
Atlanta, Georgia 30334

RE: Toxaphene Surface Impoundments  
CLOSURE COMPLETED

Dear Mr. Taylor,

This letter is to inform you that Hercules Incorporated has completed closure of its toxaphene surface impoundments. Enclosed is the Professional Engineering Certification of Closure by Mr. Norman L. Francis, a professional engineer registered in the state of Georgia, detailing his review, observations and findings.

Closure of the Toxaphene surface impoundments was completed according to Hercules' Closure Plan dated December 9, 1983 with subsequent Environmental Protection Division revisions dated January 30, 1984 in Mr. J. Leonard Ledbetter's letter to Hercules. The walls of the surface impoundments have been pushed in. The impoundments were then filled with clean dirt and sloped to provide surface water runoff toward the perimeter of the old site. Grass seed has been sown and the grass is now sprouting. Hercules will continue to sample the seven groundwater monitoring wells yearly for four more years beginning in July, 1985. Analysis of these samples will be sent to your department within 45 days following sampling. Quarterly samples will be taken should these wells indicate significant ( $> 5$  ppb) toxaphene contamination.

Please call me if you have any questions concerning this matter.

Very truly yours,

K.T. Horton  
Plant Manager

KTH/gdl  
02521

CC: D.H. Maybury - Regional  
D.R. PYLE  
G.R. HOFFMANN  
C.R. CARTWRIGHT

Attachment

NORMAN L. FRANCIS  
REGISTERED PROFESSIONAL ENGINEER  
4219 THIRTEENTH STREET  
EAST BEACH  
ST. SIMONS ISLAND, GEORGIA 31522  
EQUIPMENT DESIGN FOR RESEARCH AND INDUSTRY  
(912) 638-3720

October 29, 1984

Hercules, Inc.  
Cook Street  
Brunswick, GA 31521

Attention: F.E. Patrick  
P.O. 79029

Gentlemen:

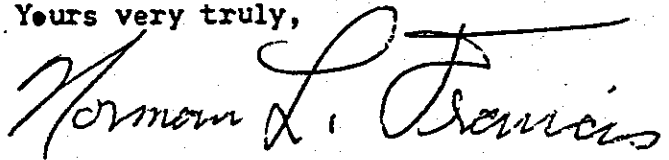
This is to certify the completion of the Toxaphene Surface Impoundment Lagoon closure plan. I have reviewed the closure plan and the CH<sub>2</sub>M Hill well installation and groundwater report. The sludge shipment manifests for 17,580,030 pounds of contaminated sludge and soil were inspected and found to be properly signed by the truck drivers (Willms Trucking, Charleston, S.C.) and by the landfill operators' technicians (SCA Services, Pinewood, S.C.)

The sampling plan and the report on the sample analysis (Savannah Laboratories and Environmental Services, Inc. Report #5214) were studied. The sampling was carried out in accordance with the closure plan, and the Chain-of-Custody records were properly signed by the sampler, Dr. James Andrews and the Laboratory Technician, Mary Letchas. Test results for ponds 1 through 4 yielded results from .03 ppm to .27 ppm. The samples from pond 5 apparently had interferences so that the results could only be reported as "less than 0.2 ppm".

The former lagoon areas were visually inspected several times. The dike walls were levelled, the lagoons were backfilled with dirt washed from as received stumps--a fine sandy loam. The grading forms a gentle slope from the perimeter to the center of the site to provide for settling and for surface water run-off. All areas have been seeded and pond areas 1, 2, 4 and 5 have sprouted grass as of Oct. 29, 1984.

I further certify that I am a registered professional engineer in the state of Georgia, registration Number 12431, dated 24 July 1980.

Yours very truly,

  
Norman L. Francis



APPENDIX B

# Department of Natural Resources

ENVIRONMENTAL PROTECTION DIVISION

270 WASHINGTON STREET, S.W.

ATLANTA, GEORGIA 30334

Commissioner

J. LEONARD LEDBETTER

Division Director

December 14, 1984

Mr. K. T. Horton  
Resident Manager  
Hercules, Inc.  
P. O. Drawer 1517  
Brunswick, Georgia 31521

RE: Closure of Toxaphene Surface  
Impoundment

Dear Mr. Horton:

In response to your letter of October 31, 1984, to Mr. Taylor, certification of closure is acceptable to EPD. However, we must take exception to your plan to..."sample the seven groundwater monitoring wells yearly for four more years beginning in July 1985." Per Mr. Ledbetter's letter of January 30, 1984, Section H(3) of the closure plan was revised to require quarterly sampling of wells with greater than 5 ppb toxaphene. According to the data submitted in your letter of September 19, 1984 to Mr. Dickinson, T-1 Shallow and T-1 Deep showed toxaphene levels of 14.5 ppb and 9.2 ppb respectively for the samples collected September 25 & 26, 1984.

Based on recent discussions with Mr. Hoffmann of your staff, Hercules did not sample T-1 Shallow and T-1 Deep in the fall round of sampling which was conducted for 009 landfill. During that discussion, Mr. Dickinson agreed not to require a special sampling for these two wells but to pick them up during the next quarterly sampling in January 1985. Hercules is required to conduct quarterly sampling on these wells until the toxaphene concentration falls below 5 ppb.

For the record, the parameters to be analyzed for are listed in Table 4 of the March 1984 CH 2 M Hill report (see page 35). The basis for these parameters is the reference in H(1) (of the approved closure plan) to the new alternate groundwater monitoring system described in that report.

If you or your staff have any questions about this matter please contact John Dickinson at (404)656-7802.

Sincerely,

Jennifer R. Kaduck  
Program Manager  
Industrial and Hazardous Waste  
Management Program

JRK/jd/w047

File: Hercules (R)



APPENDIX C  
INDICATOR PARAMETERS IN TOX. SURFACE IMPOUNDMENTS  
GROUNDWATER MONITORING WELLS

(October 6, 1983 - April 6, 1988)

CONSTITUENTS		DATE SAMPLED	T-1S (11.94)	T-1D (11.77)	T-2 (9.83)	T-3 (13.70)	T-4 (12.26)	T-5 (10.46)	T-6 (10.46)
Groundwater Elevation	Ft. above MSL	10/06/83	8.17	6.02	3.71	3.88?	4.40	3.93	4.08
		01/31/84	8.53	6.25	3.44	6.15	4.26	3.08	4.46
		04/25/84	8.36	6.17	3.89	6.05	4.53	3.94	4.40
		07/25/84	8.77	5.52	3.41	6.70	4.26	4.21	3.04
		10/31/84	X	X	X	X	X	X	X
		01/25/85	7.13	5.27	X	X	X	X	X
		04/19/85	7.48	5.56	X	X	X	X	X
		07/03/85	6.86	3.81	2.41	4.91	3.76	2.63	3.50
		10/17/85	7.44	5.77	X	X	X	X	X
		01/21/85	7.69	5.60	X	X	X	X	X
		07/02/86	6.69	5.56	1.66	2.95	1.69	0.38	1.04
		01/21/87	8.36	5.19	X	X	X	X	X
		06/24/87	6.36	3.77	1.58	3.16	1.59	1.09	1.79
		09/29/87	6.94	3.77	X	X	X	X	X
		12/30/87	5.52	3.44	X	X	X	X	X
		04/06/88	5.94	3.77	X	X	X	X	X
		06/21/88							
Toxaphene ug/L (Hercules)		10/06/83	77.6	40.6	< 2.0	2.8	< 2.0	< 2.3	< 2.0
		01/31/84	54.7	194.8	< 2.0	2.8	< 2.0	< 2.0	< 2.0
		04/25/84	65.8	49.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.1
		07/25/84	14.5	9.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
		10/31/84	X	X	X	X	X	X	X
		01/25/85	2.9	< 2.0	X	X	X	X	X
		04/19/85	< 2.0	< 2.0	X	X	X	X	X
		07/03/85	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
		10/17/85	4.3	2.9	X	X	X	X	X
		01/22/86	10.8	18.4	X	X	X	X	X
		07/02/86	4.3	25.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
		01/21/87	3.0	30.0	X	X	X	X	X
		06/24/87	12.4	5.9	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
		09/29/87	17.2	3.6	X	X	X	X	X
		12/30/87	12.7	4.3	X	X	X	X	X
		04/06/88	7.5	18.0	X	X	X	X	X
		06/21/88							
Total Organic Halogens ug/L		10/06/83	800	1750	29	18	170	120	92
		01/31/84	612	1295	24	61	377	58	87
		04/25/84	1400	800	< 20	92	190	< 20	73
		07/25/84	90	60	< 20	110	110	30	110
		10/31/84	X	X	X	X	X	X	X
		01/25/85	460	2300	X	X	X	X	X
		04/19/85	340	1900	X	X	X	X	X
		07/03/85	250	720	< 20	60	140	< 20	100
		10/17/85			X	X	X	X	X
		01/21/86	230	290	X	X	X	X	X
		07/02/86	190	240	< 20	< 20	50	< 20	50
		01/21/87	3300	400	X	X	X	X	X
E		06/24/87	240	420	29	37	26	20	51
E		09/29/87	270	540	X	X	X	X	X
E		12/30/87	290	575	X	X	X	X	X
E		04/06/88	261	540					
		06/21/88							

E = Enviropect Services, Inc.  
Jacksonville, Florida

INDICATOR PARAMETERS IN TOX. SURFACE IMFOUNDMENTS  
GROUNDWATER MONITORING WELLS

(October 6, 1983 - April 6, 1988)

<u>CONSTITUENTS</u>	<u>DATE SAMPLED</u>	<u>T-1S</u> (11.94)	<u>T-1D</u> (11.77)	<u>T-2</u> (9.83)	<u>T-3</u> (13.70)	<u>T-4</u> (12.26)	<u>T-5</u> (10.46)	<u>T-6</u> (10.46)
Total Organic mg/L Carbon	10/06/83	40.9	24.5	9.7	10.5	24.3	62.9	54.0
	01/31/84	612	1295	24	61	377	58	87
	04/25/84	23	23	33	220	36	100	120
	07/25/84	20	28	7.6	7.2	7.3	20	76
	10/31/84	X	X	X	X	X	X	X
	01/25/85	25	26	X	X	X	X	X
	04/19/85	21	28	X	X	X	X	X
	07/03/85	18	20	2.4	7.5	12	10	33
	10/17/85			X	X	X	X	X
	01/21/86	20	26	X	X	X	X	X
	07/02/86	20	20	5.4	11	8.8	19	33
	01/21/87	18	16	X	X	X	X	X
	05/24/87	18	16	3.9	22	11	24	45
	09/29/87	21.5	14.3	X	X	X	X	X
	12/30/87	74	94	X	X	X	X	X
	04/06/88	30	41	X	X	X	X	X
	06/21/88							
Chlorides, mg/L	10/06/83	2260	5400	40	178	2240	400	112
	01/31/84	560	4200	30	1900	1660	340	89
	04/25/84	1500	4600	36	1100	2300	390	120
	07/25/84	1900	4900	39	1800	2700	400	160
	10/31/84	X	X	X	X	X	X	X
	01/25/85	1200	4800	X	X	X	X	X
	04/18/85	2000	5300	X	X	X	X	X
	07/03/85	1500	4600	39	1600	1900	360	130
	10/17/85			X	X	X	X	X
	01/21/86	1000	4000	X	X	X	X	X
	07/02/86	1100	4100	28	2000	2900	440	900
	01/21/87	710	5500	X	X	X	X	X
	05/24/87	595	460	35	1100	2700	450	100
	09/29/87	450	7150	X	X	X	X	X
	12/30/87	500	6500	X	X	X	X	X
	04/06/88	315	6148	X	X	X	X	X
	06/21/88							
Sodium, mg/L	01/06/83	104	200	34	30	132	134	63
	01/31/84	77	162	19	104	72	133	43
	04/25/84	22	6.1	18	31	23	7.3	31
	07/25/84	81	180	24	69	81	170	84
	10/31/84	X	X	X	X	X	X	X
	01/25/85	74	850	X	X	X	X	X
	04/19/85	99	240	X	X	X	X	X
	07/03/85	95	250	23	79	62	120	130
	10/17/85			X	X	X	X	X
	01/21/86	92	310	X	X	X	X	X
	07/02/86	110	360	24	110	140	210	70
	01/21/87	68	280	X	X	X	X	X
	05/24/87	59.6	293	23.0	57.6	100	218	67.5
	09/29/87	103	332	X	X	X	X	X
	12/30/87	51.6	284	X	X	X	X	X
	04/06/88	51.6	287	X	X	X	X	X
	06/21/88							

INDICATOR PARAMETERS IN TOX. SURFACE IMPONEMENTS  
GROUNDWATER MONITORING WELLS

(October 6, 1983 - April 6, 1988)

<u>CONSTITUENTS</u>	<u>DATE SAMPLED</u>	<u>T-1S</u> (11.94)	<u>T-1D</u> (11.77)	<u>T-2</u> (9.83)	<u>T-3</u> (13.70)	<u>T-4</u> (12.26)	<u>T-5</u> (10.46)	<u>T-6</u> (10.46)
Sulfate, mg/L	10/06/83			NOT	RUN			
	01/31/84			NOT	RUN			
	04/25/84	23	34	< 5.0	< 5.0	< 5.0	< 5.0	8.2
	07/25/84	20	39	< 5.0	< 5.0	< 5.0	< 5.0	8.6
	10/31/84	X	X	X	X	X	X	X
	01/25/85	6.5	2.1	X	X	X	X	X
	04/19/85	18	260	X	X	X	X	X
	07/03/85	11	29	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	10/17/85			X	X	X	X	X
	01/21/86	36	7.5	X	X	X	X	X
	07/02/86	30	11	< 1.0	1.8	< 1.0	< 1.0	1.8
	01/21/87	26	13	X	X	X	X	X
	05/24/87	5.6	< 5	< 5	< 5	< 5	< 5	< 5
	09/29/87	21.5	8.5	X	X	X	X	X
	12/30/87	16.9	7.0	X	X	X	X	X
	04/06/88	66	12	X	X	X	X	X
	06/21/88							
Specific Conductance	10/17/85			X	X	X	X	X
	01/21/86	3000	14500	X	X	X	X	X
	07/02/86	3500	14000	500	5000	8000	1500	600
	01/21/87	2000	14000	X	X	X	X	X
	05/24/87	1950	15500	550	3200	7200	1850	550
	09/29/87	1690	14800	X	X	X	X	X
	12/30/87	1300	15400	X	X	X	X	X
	04/06/88	1200	15300	X	X	X	X	X
	06/21/88							
Calcium, mg/L	01/06/83	1050	2700	96	166	1160	185	49
	01/31/84	760	2400	101	1140	1080	194	101
	04/25/84	740	2200	100	630	1100	200	78
	07/25/84	870	2300	98	770	1400	200	69

DISCONTINUED

0701x

bcc: E. A. Ikenberry, 5160 NW, Plaza  
L. C. Deeg  
D. T. Smith, Jr.  
D. R. Pyle



Plat  
Recorded 12/4/2017 10:07 AM  
Ronald M. Adams  
Clerk of Superior Court  
Glynn County, GA  
Book 33 Page 480  
Participant IDs: 7409923292

# AREA AT TRACT 1B CONTAINING CLOSED SURFACE IMPOUNDMENTS THAT HELD HAZARDOUS WASTES

2801 COOK STREET, BRUNSWICK, GEORGIA 31520

BEARINGS SHOWN HEREON ARE BASED UPON GEORGIA  
COORDINATE SYSTEM, EAST ZONE, NAD-83, (SEE NOTE 4).

## NOTES:

- MOST IMPROVEMENTS SHOWN INSIDE OF TRACTS 1A, 1B & 1C WERE DIGITIZED FROM AERIAL PHOTOGRAPHY AND NOT FIELD SURVEYED. THESE IMPROVEMENTS INCLUDE BUILDINGS, WALLS, TANKS, DITCHES, CREEKS, ROADWAYS, RAILROAD TRACTS AND PARKING AREAS. EXISTING FEATURES SUCH AS PIPING AND UTILITIES WERE NOT REQUIRED TO BE FIELD LOCATED AND DEPICTED ON THE SURVEY.
- SURVEY REFERENCE:
  - SUBDIVISION SURVEY BY GARY R. NEVILL, GA. R.L.S. # 2401, TITLED "A PORTION OF THE HERCULES PLANT SITE", DATED 12/11/09, RECORDED AT P.B. 31, PG. 291.
  - ALTA SURVEY BY GARY R. NEVILL, GA. R.L.S. # 2401, TITLED "HERCULES PLANT SITE, 2801 COOK STREET, BRUNSWICK, GEORGIA 31520", DATED 11/19/08.
- THIS PROPERTY IS ZONED BI, BASIC INDUSTRIAL.  
SETBACKS:  
FRONT: . . . . . 30'  
SIDE: . . . . . 0'  
REAR: . . . . . 0'  
MINIMUM LOT SIZE: 5 ACRES
- THE GRID COORDINATES SHOWN HEREON ARE BASED UPON THE GEORGIA COORDINATE SYSTEM, EAST ZONE, AND WERE OBTAINED USING RTK-GPS TECHNOLOGY UTILIZING A TRIMBLE 5800 RECEIVER AND 'EGPS' SOLUTIONS. BEARINGS SHOWN ARE GRID AND DISTANCES ARE GROUND. MAXIMUM RELATIVE POSITIONAL ERROR WAS 0.03 FEET. THE CONVERSION OF GRID DISTANCE TO GROUND WAS APPLIED AT 311° 04.21984° N, 81°28' 58.17571" W WITH A SCALE FACTOR OF 1.0000543272.
- THE ADJOINING LAND OWNERS SHOWN ON THIS PLAT WAS TAKEN FROM THE GLYNN COUNTY GIS WEB SITE (WWW.GLYNNCOUNTY.GA.GOV).
- FOR ADDITIONAL DETAIL INFORMATION FOR IMPROVEMENTS ALONG THE PERIMETER PROPERTY LINE, SEE SURVEY PLAT BY GARY R. NEVILL, (SURVEY REFERENCE 2B).
- CLOSED SURFACE IMPOUNDMENT AREA AND CONTOUR INFORMATION SUPPLIED BY ANTEAGROUP. NO ADDITIONAL FIELD WORK WAS PERFORMED AT THIS TIME TO PREPARE THIS PLAT.

## OBLIGATION TO RESTRICT DISTURBANCE

OWNER/OPERATOR SHALL RESTRICT DISTURBANCE OF THE AREA  
CONTAINING CLOSED SURFACE IMPOUNDMENTS AT TRACT 1B  
AS SHOWN HEREON IN ACCORDANCE WITH APPLICABLE  
REQUIREMENTS OF 40 C.F.R. PART 264, SUBPART 'G'.

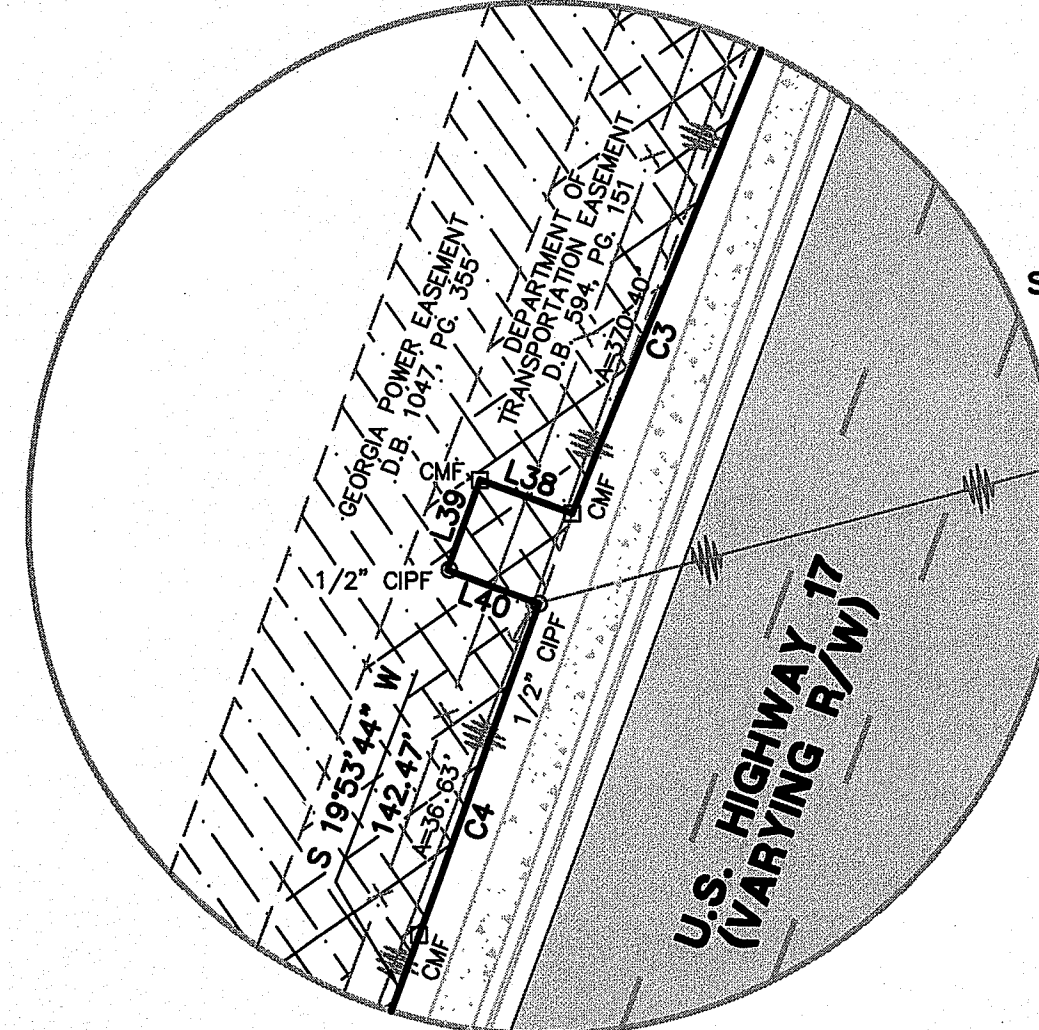
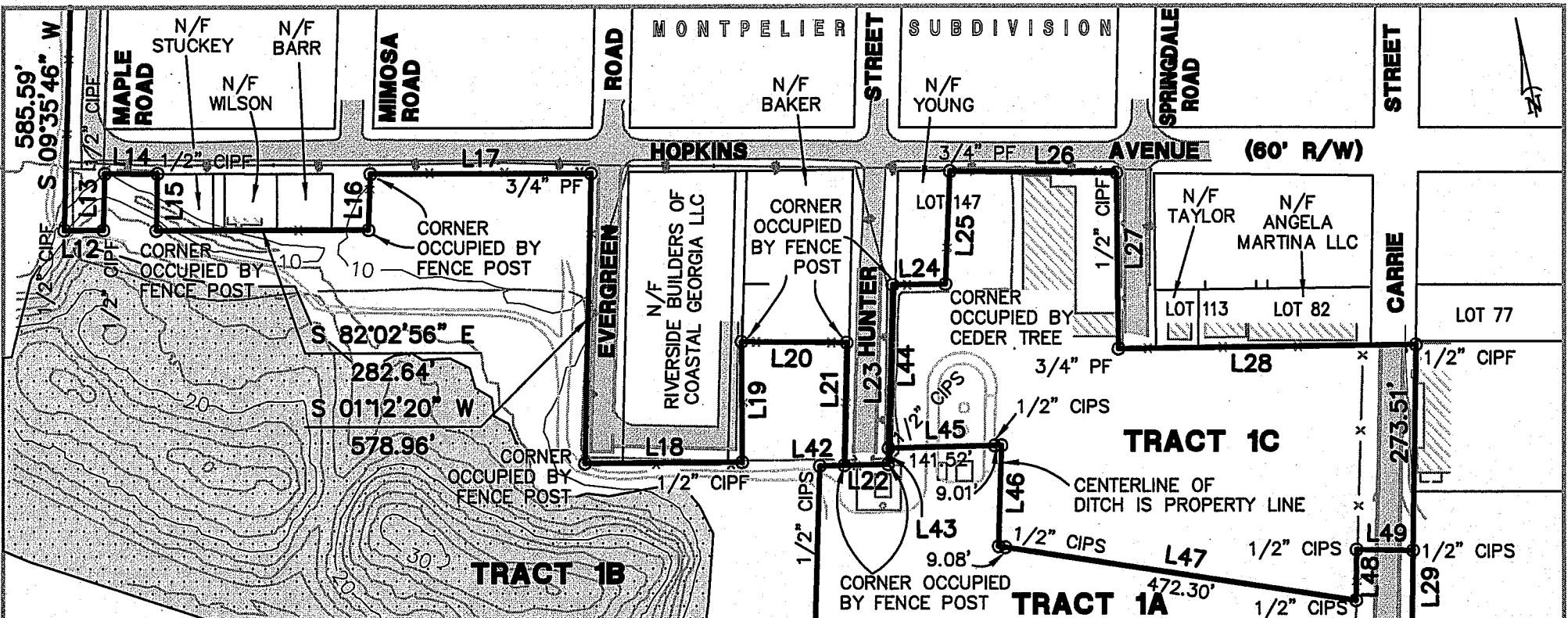
## LEGEND:

- CMF CONCRETE MONUMENT FOUND
- IPF IRON PIN FOUND
- MAGNF MAGNIFIED
- PF PIPE FOUND
- P.O.B. POINT OF BEGINNING
- CIPF CAPPED IRON PIN FOUND (SSC PC, LSF 317)
- CIPS CAPPED IRON PIN SET (SSC PC, LSF 317)
- N/F NOW OR FORMERLY
- CLOSED SURFACE IMPOUNDMENTS AREA

LINE	BEARING	DISTANCE
L1	S 38°52'36" W	36.82
L2	S 72°06'21" W	224.22
L3	N 17°56'13" E	202.50
L4	S 72°06'21" W	80.00
L5	S 17°56'13" E	202.50
L6	S 72°06'21" W	200.00
L7	N 17°56'13" E	202.50
L8	S 72°06'21" W	80.00
L9	S 17°56'13" E	202.50
L10	N 09°18'31" E	62.23
L11	S 09°38'33" W	119.47
L12	S 82°07'43" E	51.88
L13	N 09°42'31" E	75.33
L14	S 81°53'15" E	70.30
L15	S 09°11'19" W	75.99
L16	N 10°02'48" E	74.66
L17	S 81°59'50" E	294.29
L18	S 82°25'58" E	209.35
L19	N 07°42'05" E	159.73
L20	S 81°16'48" E	139.92
L21	S 09°07'20" W	163.03
L22	S 83°21'35" E	58.33
L23	N 09°32'44" E	238.27
L24	S 82°52'41" E	70.23
L25	N 10°11'15" E	150.72
L26	S 81°22'08" E	222.17
L27	S 07°19'14" W	234.20
L28	S 82°45'16" E	398.01
L29	S 08°48'14" W	598.90
L30	S 81°24'51" E	199.71
L31	S 08°05'38" W	99.73
L32	S 79°06'24" E	211.27
L33	S 81°24'51" E	60.00
L34	N 81°24'51" W	20.00
L35	S 08°35'10" W	74.83
L36	S 80°02'42" E	20.00
L37	N 08°35'10" E	75.17
L38	N 70°05'58" W	10.19
L39	S 20°08'27" W	10.00
L40	S 70°06'13" E	10.19
L41	S 20°16'26" W	99.81
L42	S 83°21'35" E	32.56
L43	N 09°32'44" E	21.19
L44	N 09°32'44" E	217.08
L45	S 83°21'35" E	150.53
L46	S 09°26'29" W	133.61
L47	S 72°21'24" E	481.39
L48	N 08°48'14" E	67.39
L49	S 81°11'46" E	75.00
L50	N 14°34'04" W	85.82
L51	S 07°48'12" W	125.93
L52	N 6°38'59" E	87.23
L53	N 80°42'55" E	184.35
L54	N 06°28'15" E	241.32
L55	N 41°07'18" W	27.90
L56	N 10°50'58" E	42.80
L57	N 20°57'45" E	61.29
L58	N 34°45'55" E	33.75
L59	N 52°32'44" E	16.91
L60	S 74°32'00" E	60.36

LINE	BEARING	DISTANCE
L61	S 83°30'30" E	125.57
L62	S 79°40'55" E	107.35
L63	S 87°19'41" E	57.25
L64	N 21°57'05" E	106.83
L65	N 41°28'11" E	46.70
L66	N 73°34'02" E	30.74
L67	S 64°36'13" E	90.39
L68	S 61°37'03" E	69.22
L69	S 74°33'56" E	71.14
L70	S 81°46'47" E	75.66
L71	S 14°59'57" E	59.27
L72	S 28°59'56" E	27.94
L73	N 49°47'12" E	23.13
L74	N 69°02'31" E	29.10
L75	S 88°53'57" E	23.56
L76	S 48°23'19" E	16.36
L77	S 85°07'29" E	37.28
L78	S 55°50'07" E	29.01
L79	S 08°23'59" E	27.91
L80	S 50°52'43" E	25.10
L81	S 00°00'00" E	24.80
L82	S 53°38'16" E	21.37
L83	S 14°18'42" E	23.62
L84	S 30°50'09" E	30.04
L85	S 08°03'51" E	30.04
L86	S 21°11'16" E	23.55
L87	S 59°39'42" E	23.06
L88	N 80°03'00" E	37.82
L89	S 75°11'06" E	30.00
L90	S 87°44'50" E	36.14
L91	S 87°44'50" E	44.12
L92	S 87°44'50" E	28.71
L93	S 31°49'49" E	26.42
L94	S 17°44'05" E	40.33
L95	S 11°24'15" W	92.87
L96	S 15°34'39" W	49.69
L97	S 39°44'31" W	24.15
L98	S 09°28'11" W	20.85
L99	S 20°44'26" W	22.60
L100	S 24°54'16" W	71.00
L101	S 82°04'46" W	45.73
L102	N 83°33'10" W	48.47
L103	S 43°43'49" W	26.96
L104	N 79°53'00" W	32.61
L105	N 79°19'25" W	30.92
L106	N 73°26'19" W	25.12
L107	N 48°42'00" W	102.47
L108	N 53°56'36" W	113.15
L109	N 65°36'10" W	147.88
L110	N 62°41'53" W	89.33
L111	N 63°48'35" W	265.02
L112	N 60°08'21" W	145.86
L113	N 70°07'54" W	113.58
L114	N 63°51'41" W	86.99
L115	N 75°14'36" W	68.97

DETAIL 'B'  
SCALE: 1" = 200'



DETAIL 'A'  
SCALE: 1" = 20'

## SURVEYORS CERTIFICATION

THIS PLAT IS A RETRACEMENT OF AN EXISTING PARCEL OR PARCELS OF LAND AND DOES NOT  
SUBDIVIDE OR CREATE A NEW PARCEL OR MAKE ANY CHANGES TO ANY REAL PROPERTY  
BOUNDARIES. THE RECORDING INFORMATION OF THE DOCUMENTS, MAPS, PLATS, OR OTHER  
INSTRUMENTS WHICH CREATED THE PARCEL OR PARCELS ARE STATED HEREON. RECORDATION OF  
THIS PLAT DOES NOT IMPLY APPROVAL OF ANY LOCAL JURISDICTION, AVAILABILITY OF PERMITS,  
COMPLIANCE WITH LOCAL REGULATIONS OR REQUIREMENTS, OR SUITABILITY FOR ANY USE OR  
PURPOSE OF THE LAND. FURTHERMORE, THE UNDERSIGNED LAND SURVEYOR CERTIFIES, TO THE  
BEST OF HIS KNOWLEDGE AND BELIEF, THAT THIS PLAT COMPLIES WITH THE MINIMUM  
TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN THE RULES AND  
REGULATIONS OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND  
LAND SURVEYORS AND AS SET FORTH IN O.C.G.A. SECTION 15-6-67.

GARY R. NEVILL, GA. R.L.S. # 2401  
DATE: 12-4-17

## SURVEY FOR:

HERCULES, LLC AND PINOVA, INC.

AREA AT TRACT 1B CONTAINING CLOSED SURFACE  
IMPOUNDMENTS THAT HELD HAZARDOUS WASTES

G.M.D. 26, BRUNSWICK, GLYNN COUNTY, GEORGIA

DATE: 12/11/09

DRAWN BY: SAC/JCH

SCALE: 1" = 300'

JOB #

EQUIPMENT USED:

FIELD CLOSURE:

PLAT CLOSURE:

08165A

NIKON DTM-522

MINIMUM 1" IN 10,000'

1" IN 71,162'

SHUPE SURVEYING COMPANY, P.C.

3837 DARIEN HWY.

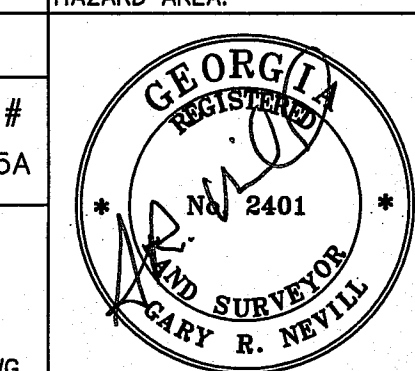
BRUNSWICK, GEORGIA 31525

912-265-0562

08165A-5-DWG



FEMA MAP NO. 13127C0236F  
DATED 9/6/06 INDICATES THIS  
PROPERTY TO BE IN ZONE X  
WHICH IS NOT IN A SPECIAL  
FLOOD HAZARD, AND ZONE AE,  
WHICH IS IN A SPECIAL FLOOD  
HAZARD AREA.





CERTIFICATION

Pursuant to 40 C.F.R. § 264.119, the undersigned hereby certifies the following:

The survey plat entitled "Hercules LLC and Pinova, Inc." prepared by Shupe Surveying Company, P.C. (certified December 4, 2017 by Gary R. Nevill, GA R.L.S.), and recorded in Book 33, Page 480 of the land record of Clerk of Superior Court, Glynn County, Georgia, depicts real property that has been used to manage hazardous wastes. The survey plat depicts an area of Tract 1B which contains closed surface impoundments that held hazardous wastes, the disturbance of which is restricted under 40 C.F.R. Part 264, Subpart G. Tract 1B is wholly owned by Hercules LLC.



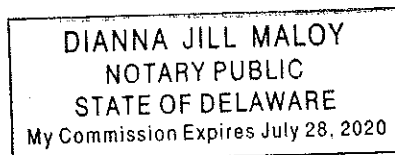
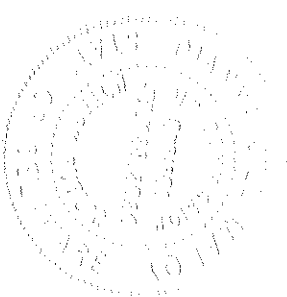
Name: Timothy Hassett  
Title: Remediation Project Manager  
Hercules LLC

Sworn to and subscribed before me, this 11<sup>th</sup> day of December 2017.

  
Notary Public

My Commission Expires July 28, 2020

(NOTARIAL SEAL)





**Mary A. Donahue**  
Senior Paralegal  
Environmental, Product Regulatory & Legal Trade Group

5200 Blazer Parkway  
Dublin, Ohio 43017  
Phone: 614-790-3319; Fax: 614.790.4268  
madonahue@ashland.com

**VIA FEDERAL EXPRESS**

*May 10, 2016*

James Sliwinski  
Georgia Department of Natural Resources  
Hazardous Waste Management Branch  
2 Martin Luther King Jr. Drive  
Suite 1154 East Tower  
Atlanta, GA 30334-0900

**Re: Financial Assurance – Annual Update  
Hercules Incorporated  
2801 Cook Street  
Brunswick, GA 31520  
EPA ID Number: GAD004065520**

Dear Mr. Sliwinski:

Enclosed please find Rider to Westchester Fire Insurance Company Bond Number K08181330, issued on behalf of Hercules Incorporated ("Hercules") and in favor of the State of Georgia. This Rider increases the bond amount to \$5,751,250.00, and provides the required RCRA financial assurance coverage associated with the above-referenced Hercules facility in Brunswick, GA.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

A handwritten signature in cursive script that reads "Mary A. Donahue".

Mary A. Donahue

Enclosure

cc: Timothy D. Hassett, Remediation Project Manager, Hercules Incorporated

## R I D E R

To be attached to and form part of:

Bond Number K08181330

dated 4/21/2008

issued by the WESTCHESTER FIRE INSURANCE COMPANY

in the amount of \$5,313,161.00

on behalf of HERCULES INCORPORATED  
(Principal)

and in favor of STATE OF GEORGIA,  
(Obligee)

Now therefore, it is agreed that in consideration of the premium charged, the attached bond shall be amended as follows:

**The BOND AMOUNT shall be amended:**

**FROM: \$5,693,743.00**

**TO: \$5,751,250.00**

It is further understood and agreed that all other terms and conditions of this bond shall remain unchanged.

This Rider is to be Effective this 21st day of April, 2016.

Signed, Sealed & Dated this 2nd day of May, 2016.

HERCULES INCORPORATED

(Principal)

By: 

WESTCHESTER FIRE INSURANCE COMPANY

(Surety)

By: 

Jennifer Williams, Attorney-in-Fact




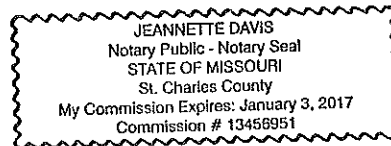
ACKNOWLEDGEMENT BY SURETY

STATE OF MISSOURI  
COUNTY OF ST. CHARLES

On this 2nd day of May, 2016, before me, Jeannette Davis, a Notary Public, within and for said County and State, personally appeared Jennifer Williams to me personally known to be the Attorney-in-Fact of and for Westchester Fire Insurance Company and acknowledged that she executed the said instrument as the free act and deed of said Company.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and year in this certificate first above written.

  
\_\_\_\_\_  
Notary Public in the State of Missouri  
County of St. Charles



# Power of Attorney

## WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the Commonwealth of Pennsylvania pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.


FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

Does hereby nominate, constitute and appoint Catherine L Geimer, Christina Baratti, Eric D Sauer, Jeannette M Davis, Jennifer Williams, Salena Wood, Susan R Schwartz, Thomas U Krippene, all of the City of SAINT LOUIS, Missouri, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Twenty million dollars & zero cents (\$20,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office,

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 9 day of June 2015.

WESTCHESTER FIRE INSURANCE COMPANY

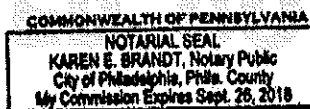


  
Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF PHILADELPHIA ss.

On this 9 day of June, AD. 2015 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.




  
Notary Public

I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 2<sup>nd</sup> day of May, 2016



  
William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER June 05, 2017.



**LIMITED POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS:

Ashland Inc., acting by and through Eric N. Boni, its duly authorized Vice President and Treasurer, does hereby appoint J. KEVIN WILLIS, DAVID B. MATTINGLY, ANNE T. SCHUMANN and STEVEN L. SPALDING, jointly and each of them severally, true and lawful attorneys-in-fact for Ashland Inc., and in its name:


To execute and deliver on behalf of Ashland Inc., in the ordinary and regular course of its business, bonds not in excess of U.S. \$50,000,000 made by it under its name, Ashland Inc., or under the designation of Ashland Specialty Ingredients, Ashland Performance Materials, Valvoline or any other division of Ashland Inc., or in the name of Hercules Incorporated or International Specialty Products Inc., or any other subsidiary of Ashland Inc. including, but not limited to, bonds required by governmental agencies for licenses and permits, bonds required in judicial proceedings, and bid bonds, provided, however, the authority granted as to bid bonds is limited to bid bonds not in excess of U.S. \$500,000.

This power of attorney shall be deemed effective as of January 1, 2016, is given only for the purposes herein specified and no other, and so long as such Attorneys-in-Fact remain employees of Ashland Inc., or unless sooner terminated, shall automatically terminate on **December 31, 2016**. Ashland Inc. may at any time terminate this power of attorney and all authority and powers conferred hereby.

Ashland Inc., effective January 1, 2016, hereby revokes any and all powers of attorney heretofore executed and delivered by it to any person or persons in respect of the matters above mentioned.

IN WITNESS WHEREOF, Ashland Inc. has caused its corporate name to be signed and its corporate seal to be hereunto affixed by its proper and duly authorized officer as of the 1<sup>st</sup> day of January, 2016.

ASHLAND INC.

BY 

Eric N. Boni  
Vice President and Treasurer