GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

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January 5, 2017

Via US Mail and Email
Hercules, LLC
c/o Timothy D. Hassett, Project Manager
500 Hercules Road
Wilmington, DE 19808-1599

Subject: Voluntary Remediation Program (VRP)
Semi-Annual Progress Report #7 (September 30, 2016)
Hercules Incorporated, Savannah Plant, HSI Site No. 10696 / VRP Site 1332420701
3000 Louisville Road, Savannah, Chatham County, Georgia 31415
(Tax Parcel Nos. 2-0734-01-001 and 2-0734-03-001)

Dear Mr. Hassett:

The Georgia Environmental Protection Division (EPD) has reviewed the subject submittal for the two properties known as the Hercules Inc. Savannah Plant Site, VRP Site 1332420701 (HSI No. 10696) and has the following comments:

1. **Ecological Risk Assessment (Section 4 of Subject Submittal):** Comments #1 through #4 of the May 11, 2016 EPD letter regarding Progress Reports #4 through #6 have not been adequately addressed. Therefore, EPD cannot concur with conclusions based on the screening-level ecological risk assessment (SLERA) presented in the March 27, 2015 Progress Report and in the referenced section of the subject submittal.

2. **Proposed Soil Remediation Goals/Cleanup Standards (Section 5.3 of the Subject Submittal)**: EPD does not agree with the proposed "remedial goals" for 1,1'-biphenyl and PCBs presented in Section 5.3. Under the Georgia Voluntary Remediation Program Act (Act), available cleanup standards are the Risk Reduction Standards (RRS) of §391-3-19-.07 of the Rules for Hazardous Site Response (Rules). The remedial goals presented in Section 5.3 are not consistent with the RRS criteria. Notably, the proposed remedial goal for PCBs exceeds a 10^{-5} cancer risk for direct exposure and leaching to groundwater was not evaluated for either 1,1'-biphenyl or PCBs.

3. **Risk Reduction Standards (Tables 1a through 1c of Subject Submittal):**
   a. Delineation standards in soil and groundwater have been proposed for *bis* (2-chloroethyl) ether and phenol on Table 1a of the subject submittal. However, these substances do not appear on Tables 1b or 1c summarizing residential (Type 1/2) and non-residential (Type 3/4) RRS for groundwater and soil, respectively. If a delineation standard is required for a specific regulated substance, then appropriate cleanup standards should be proposed unless it can be demonstrated that said substance has not been detected in soil or groundwater at concentrations above its respective delineation standards. Please note:

      i. Analytical results for samples representing *in-situ* soil were not summarized in the subject submittal. Please include a table summarizing the referenced soil analytical results in future progress reports as documentation that the referenced substances have

been analyzed in soil and to support conclusions regarding: 1) the need for cleanup standards for these substances in soil and/or 2) the extent of contamination greater than delineation standards and/or cleanup standards in soil.

ii. Table 1b and the analytical data report provided in Appendix C of the subject submittal indicate the two referenced substances were not included in the analytical suite for the groundwater samples collected in May 2016. Please provide an explanation as to why said substances were not included in the most recent groundwater analytical suite. These substances should be included as analytical parameters for groundwater samples collected in the future until it has been demonstrated that they are not considered to be contaminants of concern for the subject Properties *and* EPD provides written documentation concurring with said conclusion.

b. Table 1a of the subject submittal states the "detection limit" is the delineation standard for *bis* (2-chloroethyl) ether in groundwater. Please propose a specific value for the Type 1 RRS that is equivalent to the standard practical quantitation limit (PQL) for the analytical method used for said substance in future versions of the table (see the footnote associated with Comment #5 in EPD's May 11, 2016 letter).

c. Table 1a of the subject submittal includes delineation (the higher values between Type 1 and Type 2 RRS) standards for the referenced substances in soil; however, the applicant has not previously proposed said standards in the past and did not include the necessary documentation (calculations and input values with source references) in past submittals. Please provide said documentation in the next progress report for EPD review.

d. Compliance with Type 4 RRS, as referenced in Section 5.4 of the subject submittal, is based on a direct comparison of soil and groundwater analytical results with the approved Type 4 RRS as determined pursuant to §391-3-19-.07(9) of the Rules. Any areas where Hercules will depend upon institutional and/or engineering controls to prevent unacceptable exposure or impact to potential receptors (including the leaching to groundwater pathway) will need to demonstrate compliance with Type 5 RRS described in §391-3-19-.07(10) of the Rules.

4. **Groundwater Sampling Procedures:**

a. In addition to the information provided on groundwater field sampling records provided in Appendix B of the subject submittal, future field records should include a calculation of volume of water in the well (not just the sampling equipment) prior to purging and should indicate the method of sample collection (e.g., "straw method", "vacuum jug method", *etc.* for samples to be analyzed for SVOCs).

b. Comment #8 of EPD's May 11, 2016 letter has not been adequately addressed as neither the groundwater field sampling records for the May 2016 sampling event nor the narrative in Section 3.2.1 reference the use of a vacuum jug for SVOC sample collection. Please refer to the referenced May 2016 EPD comment for future groundwater sampling activities.

5. **Planned Delineation and Remedial Actions (Sections 5.1 and 5.4 of the Subject Submittal):**

a. Please review your soil analytical results and collect and analyze groundwater samples in each source area where soil contamination has not been delineated vertically above the water table. As has been stated in the past, if soil contamination is not vertically delineated by analytical results before encountering the water table in any source area, a groundwater sample should be collected and analyzed for those substances not delineated in soil at a minimum. Based solely on Figures 6 through 8c in the subject submittal, vertical delineation of contamination in soil has not been achieved before encountering groundwater in several

potential source/release areas on the VRP Properties. For example: PCBs and/or 1,1'-biphenyl have not been vertically delineated before encountering the water table at borings SB-122, SB-126 and -128, SB-137 and SB-202, SB-207, SB-204, *etc.* Please indicate the existing or proposed groundwater sampling locations to be used and superimpose these locations on the soil analytical summary figures. You may be able to use existing groundwater sampling locations if located properly, although these cannot be determined using Figures 7a through 7c, and Figures 8a through 8c.

b. EPD concurs that numerical modeling of the naphthalene groundwater contaminant plume is not necessary at this time as stated in Section 5.1 of the subject submittal. However, EPD requests that Hercules submit a mathematical analysis regarding plume stability *in lieu* of a numerical groundwater contaminant fate and transport model.

c. The current groundwater monitoring network is not sufficient to establish whether or not pH readings in the caustic substance release area have returned to acceptable levels. Please either: 1) collect additional groundwater pH readings in said area and summarize the results in a table *or* 2) provide a table summarizing historical field data acquired in the caustic release area subsequent to release discovery which demonstrates that pH in groundwater had returned to acceptable levels thereafter.

EPD is deferring further evaluation of conclusions regarding adequacy of contaminant delineation and groundwater or soil compliance with cleanup standards until comments within this letter have been adequately addressed.

6. **Groundwater Monitoring Schedule and Reporting (Sections 5.2, 6, and 7 of Subject Submittal):** Pursuant to §12-8-107(b) of the Act, "*The registered professional* (for the VRP Property) *shall submit at least semi-annual status reports to the director describing the implementation of the plan* (VIRP) *during the preceding period.*" Therefore, EPD cannot concur with the proposed annual reporting schedule proposed in Section 7 of the subject submittal. However, semi-annual groundwater monitoring is not specifically required by the Act, nor is EPD requesting it. EPD does request that *at least* one comprehensive groundwater monitoring event be conducted shortly prior to submittal of the final compliance status report (CSR), due on or before March 15, 2018, in order to establish baseline Property-wide conditions prior to: 1) execution of any environmental covenant and/or 2) removal of the Property(ies) from the Georgia Hazardous Site Inventory (HSI).

Please respond to the above comments in a response-to-comment format with the next semi-annual progress report due on or before March 15, 2017. If you have any questions, please contact Ms. Carolyn L. Daniels, P.G. at (404) 657-8646.

Sincerely,

David Hayes
Unit Coordinator
Response and Remediation Program

c: David Wilderman, P.G., Arcadis (*via* email)
Johnnie Quiller, Solenis (*via* email)

File: 242-0236 (VRP)