

# Georgia Department of Natural Resources

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## Reply To:

Response and Remediation Program  
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Mark Williams, Commissioner  
Environmental Protection Division  
Judson H. Turner, Director  
Land Protection Branch  
Mark Smith, Branch Chief

February 17, 2012

## VIA E-MAIL AND REGULAR MAIL

**COPY**

Bible Baptist Church, Inc.  
c/o Mr. Alan Tanner  
4700 Skidaway Road  
Savannah, Georgia 31404

Re: Voluntary Investigation and Remediation Plan and Application, October 27, 2011  
Martha's Dry Cleaners, HSI Site No. 10764  
4608 Skidaway Road, Savannah, Chatham County  
Tax Parcel: 2-0120-01-004

Dear Mr. Tanner:

The Georgia Environmental Protection Division (EPD) has reviewed the October 27, 2011, Voluntary Investigation and Remediation Plan (VIRP) submitted pursuant to the Georgia Voluntary Remediation Program Act (the Act). EPD has noted the following deficiencies:

### **Conceptual Site Model**

1. Section 6.2 proposes the use of monitored natural attenuation (MNA) in addition to the use of an environmental covenant to restrict the use of groundwater on the affected parcel. Please include an additional restriction for the parcel that either prevents any building to be constructed over the affected area, or requires that a vapor intrusion model be developed and submitted to EPD before any building construction can occur.
2. Groundwater is currently not delineated to the Type 1 Risk Reduction Standard (RRS) for tetrachloroethene (PCE) as required by the Act. Horizontal and vertical delineation must be completed within the timeframe provided in the checklist and VIRP acceptance letter dated February 17, 2012.
3. Section 5.1 of the report indicates that MW-23 is to be used as a Point of Demonstration Well (POD). EPD does not agree that this should be used as a POD well as it is not immediately downgradient of the former source area. The POD well should be located outside the furthest extent and along the centerline of the plume.
4. The existence of PCE's degradation products indicates that biotransformation is occurring for the existing plume. In addition to the collection of PCE and its degradation products, and the field measurements already collected, please collect the following parameters, at a minimum, to help determine the rate of biotransformation is occurring at the site and to ensure that MNA is a viable option for remediation at the site.
  - a. Dissolved Oxygen
  - b. Nitrate
  - c. Iron (II)
  - d. Sulfate



- e. Sulfide
- f. Methane
- g. Chloride

The Natural Attenuation Screening Protocol within Biochlor is a helpful tool in determining if there is strong or inadequate evidence for MNA to be viable at the site.

### **Fate and Transport Modeling**

5. Section 6.2 of the report indicates that the model for the site shows that the plume will only migrate approximately 180 feet downgradient before reaching levels below the Type 1 RRS. Please note that this statement is incorrect. Using Bible Baptist Church, Inc's (BBC) input values, the Biochlor model shows that the plume will extend well beyond 1000 feet and move as a slug and won't reach Type 1 RRS at the "source" area for 20 years. The model should show the maximum extent of migration of the plume at equilibrium, which is not necessarily in 5 years. Please reevaluate the model and resubmit as additional data is collected.
6. Since modeling is proposed to demonstrate that groundwater contamination will not extend beyond a point of demonstration as part of the selected corrective action, a discussion of the modeling should be included in the report. The discussion should include a definition of the study objectives, model calibration, model verification, and sensitivity analysis. The model should then be used to determine predictive scenarios to meet the study objectives.
7. Please provide references and the rationale for selection of input parameters. Note that unless measured on site, a default soil bulk density of 1.5 and a default fraction organic carbon ( $f_{oc}$ ) of 0.002 should be used for modeling purposes. These values are obtained from the EPA soil screening guidance (SSG). The  $k_{oc}$  values used are chemical specific values and should be obtained from the EPA Region 3 Regional Screening Level (RSL) tables available online. These tables are updated periodically and adjustments to the model may be necessary in future model runs.
8. A half-life of 720 years was used to predict biotransformation of PCE to TCE. Please note this value seems artificially elevated as typical half-life values range from 0.58 years to 9.9 years. Please update the model accordingly.

### **Well Installation and Groundwater Sampling**

9. Section 4.1 of the report and Appendix D of the report indicate that the wells were installed by using fine sand as a filter pack seal, before placement of neat grout cement. These wells were not installed according to the USEPA guidance document titled "Design and Installation of Monitoring Wells". Section 2.3.4 of the document states "where neat cement grouts are to be used, the placement of a bentonite pellet seal above the filter pack is mandatory to prevent the possibility of grout infiltration into the screened interval prior to setting. Bentonite chips or other sealing products should not be substituted in this application." Although EPD is not requiring the replacement of these wells at this time, please note that all future wells that are installed at this site or future sites in the state of Georgia, must contain a bentonite seal, whether it is in conjunction with a fine sand seal or by itself. For well installation guidelines for the state of Georgia, please refer to the USEPA guidance document mentioned above.



10. Section 4.3.1 of the Report indicates that stabilization was achieved if temperature remained constant for three consecutive readings and conductivity did not vary more than 10 percent. Please note that guidance on this has changed. The updated USEPA SEDS operation procedure document titled "Groundwater Sampling" states that stabilization occurs when specific conductance varies no more than approximately 5 percent. Temperature is no longer a stabilization parameter yet should still be collected as part of any sampling plan. Please review this document and update future sampling protocol as necessary.
11. The filed sampling logs provided in Appendix G are inadequate for determining whether sampling was conducted in accordance with the groundwater sampling procedures described in the USEPA guidance document referenced in Comment 9. In all future sampling events, record and follow the procedures outlined in the guidance document. Please note the following specific items and correct during future sampling events:
  - a. It is unclear if a submersible pump or a peristaltic pump was used to purge some of the wells.
  - b. Section 4.3.2 states that Teflon tubing was used to collect samples, while the field logs in Appendix G indicate polyethylene tubing was used. Please clarify and indicate on the field logs correct tubing used for sampling.
  - c. Section 4.3.1 states that well volumes were calculated for each well. In future reports please provide the well volume calculations on the field logs.
  - d. The pump rate was not included on the field logs.
  - e. PH was not within 0.1 for three consecutive readings for all wells with the exception of MW-23.
  - f. Specific Conductivity was not within 5 percent for wells MW-19 and MW-21S.
  - g. Turbidity less than 10 NTU has been shown to be easily achievable and attempts should be made to reach this goal when collecting samples.
  - h. EPD cannot verify if low flow/low stress methods as indicated in section 4.3.1 of the report were used to purge and collect samples from the site. For low flow/low stress, the pump intake should be placed at the top of the water column and a minimum of three well volumes should be removed. Please indicate on the field logs the volume of water removed during purging.
12. The field log for MW-21D states that a sheen was visible on the water inside the well casing. Please provide further explanation and additional investigation of this if necessary.

### General Comments

13. As required by Item 6 of the VIRP Checklist, in order to document the oversight of the VIRP development by a Professional Engineer or Geologist (PE/PG), a monthly summary of hours invoiced and a description of services provided to the participant must be provided as part of the application. The summary for all work completed to date should be included with the first semi-annual report.

14. In section 2.3.2 of the VIRP, Bible Baptist Church (BBC) states, "the 'water table' zone is the zone that is intersected by the mine operations." Please clarify what this statement means as EPD is unaware of mine operations occurring in the past at this location.
15. In future submittals, Figure 4 of the report should be updated to include MW-21S on the cross-section and Figure 5 should be updated to include MW-21D.
16. Please note, the values listed in Table 3 – Site Delineation Concentration Criteria for carbon disulfide and 1,1,2-trichloroethane are incorrect. The correct values are 4 mg/L and 0.005 mg/L respectively. Please note the corrections in future submittals.
17. Please note the figures and Table 4 of the Report refer to "trichloroethene" as "trichloroethane". Please correct in future report submittals.

BBC must address these comments to EPD's satisfaction in order to demonstrate compliance with the provisions, purposes, standards and policies of the Act. EPD may, at its sole discretion, review and comment on documents submitted by BBC. However, failure of EPD to respond to a submittal within any timeframe does not relieve BBC from complying with the provisions, purposes, standards and policies of the Act.

If you have any questions, please contact Greg Gilmore at (404) 463-0071.

Sincerely,



David Brownlee  
Acting Program Manager  
Response and Remediation Program

c: William S. Anderson III, P.E., Terracon Consultants, Inc. ✓

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