

**MDE****MARYLAND DEPARTMENT OF THE ENVIRONMENT**1800 Washington Boulevard • Baltimore MD 21230  
410-537-3000 • 1-800-633-6101Martin O'Malley  
GovernorRobert M. Summers, Ph.D.  
SecretaryAnthony G. Brown  
Lieutenant Governor

October 4, 2012

The Honorable Margo G. Bailey  
Town of Chestertown  
118 N. Cross Street  
Chestertown, MD 21620

Dear Mayor Bailey:

Thank you for your letter of July 17, 2012 to Susan R. Bull of the Maryland Department of the Environment's (MDE) Land Management Administration's Oil Control Program regarding the ongoing petroleum cleanup project at the Chester River Hospital Center (CRHC). Staff from MDE's Land Management and Water Management Administrations have jointly reviewed the issues raised in your letter and MDE is committed to ensuring close communication with the Town going forward. Both MDE and the Town share the same goal of a safe and protected water supply for Chestertown residents. Staff from both administrations are available to discuss with the Town issues touched on in this letter or any other issues that arise related to the groundwater contamination at the CRHC.

After receiving your letter, on July 24, 2012, Mr. Christopher Ralston, MDE's Oil Control Program Administrator, emailed a copy of the CRHC letter dated March 26, 2012 to you and Chestertown Manager, Mr. Bill Ingersoll. In his email, Mr. Ralston also offered that staff from MDE's Oil Control and Water Supply Programs would meet with the Town to review the decisions made with regard to the petroleum cleanup at the hospital and to review the Town's options for Well #8. Subsequently, Mr. Ralston and Mr. Ingersoll have discussed a number of the Town's concerns via email, however, MDE is still interested in meeting with the Town at your convenience.

In CRHC's letter (copy enclosed), they proposed a one-year trial shutdown of the remediation system with enhanced monitoring. The Department reviewed the plan and approved it with the additional requirements in the May 8, 2012 letter and in subsequent emails. The Department has also reviewed the monitoring data gathered prior to the shutdown on July 12, 2012, which was presented in the Pre-Shutdown Sampling Report dated July 2012, a copy of which the Department directed CRHC to send to the Town. On September 5, 2012, the Department issued additional monitoring requirements to the CRHC in order to effectively monitor the petroleum concentrations in the groundwater, and a copy of that letter was sent to the Town.

As noted in your letter, the May 8, 2012 letter from MDE to the CRHC, incorrectly stated that Town Well #8 (TW#8) was taken out of service in 1994. Usage of TW#8 apparently ceased shortly after former Mayor Elmer Horsey received the MDE letter dated May 17, 1991 (enclosed). In that letter, MDE recommended that use of TW#8 be discontinued because of the concern that pumping from that well could

accelerate the movement of petroleum from the CRHC property toward the well. The letter to Mayor Horsey also stated that the CRHC was directed to prevent any contamination from the site from reaching the Town's water supply wells. In Maryland, the party responsible for the release of petroleum is fully responsible for the cleanup of the petroleum to MDE's satisfaction. The Department reiterates to the Town of Chestertown and to the CRHC that the CRHC must continue to ensure that contaminants from the petroleum release do not reach the Town's wells.

MDE acknowledges that the Town wishes to redevelop TW#8 and is not opposed to the Town's redevelopment of TW#8. Staff from MDE's Water Supply Program are available to provide guidance regarding the well redevelopment and testing procedures upon request.

Addressed below are five key comments from Utilities Director Bob Sipes that were contained in your July 17 letter:

*Comment 1. The actions taken to promote the growth of bacteria in the aquifer, less than 1500 feet from our wells, and directly in our well head protection area, is cause for concern. Some of the possible ramifications to the aquifer is contamination from bacteria, including iron bacteria and chlorine resistant bacteria, such as cryptosporidium or giardia.*

**MDE Response:** The pilot test undertaken by CRHC was limited to one well. We would not expect any impacts beyond the area immediately around the injection site, and certainly not in the area of the Town well, which is nearly 1,500 feet away. Moreover, if oxygen were continued to be introduced, the result would actually be to reduce the amount of dissolved iron down gradient. Ultimately, groundwater testing following the pilot test indicated no measureable impacts beyond 28 feet from the well where oxygenated water was injected.

In addition, Cryptosporidium and Giardia are not associated with petroleum releases or technologies used to remediate petroleum releases. Both Cryptosporidium and Giardia are associated with surface water contamination related to animal wastes. This is an issue that staff can discuss more fully with Mr. Sipes, if requested.

*Comment 2. Sampling of their system should be more extensive before a course of action is determined. In your letter it is stated that 14 wells were sampled, 3 recovery wells and 11 monitoring wells. There are 39 monitoring wells, but the letter does not mention the quantity of recovery wells. (Perhaps the April Oil Remediation Effort Letter which the Town did not receive elaborates on this matter).*

**MDE Response:** On May 31, 2012, the 46 usable wells within the network were gauged for the presence of liquid phase hydrocarbons (LPH) (there are a total of 55 wells; 8 wells were previously abandoned; 1 well has a pump lodged in it and is unusable; therefore there are 46 usable wells in the network). Six of those wells exhibited between 0.01 and 0.23 feet of LPH, and the Department required that the remaining 40 wells be sampled prior to the treatment system being turned off. The data from the pre-shutdown sampling event was detailed in the Pre-Shutdown Sampling Report – July 2012.

*Comment 3. Instead of testing some wells for "select VOC constituents," all wells should be tested for the full VOC panel in order to get a better picture of the current situation. Gauging in September showed up to 9 inches of LPH (liquid phase hydrocarbons) in some of the wells. Significant contamination is still present.*

**MDE Response:** Prior to the system being turned off, all wells were sampled for full-suite volatile organic compounds (VOCs), including fuel oxygenates, using EPA Method 8260 and for total petroleum hydrocarbons diesel range organics (TPH-DRO) using EPA Method 8015B. Going forward, the Department is also requiring TPH gasoline range organics (TPH-GRO) analysis by EPA Method 8015B for all wells. A gauging event conducted last May 31 documented a maximum LPH thickness of 0.23 feet. Following the May 31 gauging event, samples collected on June 5-6 revealed the presence of benzene up to 1.1 parts per billion (ppb); naphthalene up to 210 ppb; and TPH-DRO up to 130 parts per million (ppm). There were a total of nine monitoring points that were non-detect for any petroleum constituents located between the most down-gradient detection of VOCs and the Chestertown well field. Since the system shutdown last July 12, the maximum LPH thickness documented in any well is 0.01 feet of LPH on August 23.

*Comment 4. Describing the treatment method as dissolved oxygen injection is misleading. It is actually bacteria promulgation. The dissolved oxygen does nothing except promote the growth of the bacteria they hope will break down the LPH.*

**MDE Response:** While it's certainly true that oxygen injection promotes growth of the bacteria that destroy hydrocarbons, "dissolved oxygen injection" is the common way to describe this method and in no way should be construed as misleading. Naturally occurring bacteria will consume the petroleum hydrocarbons regardless of the addition of oxygen or other biostimulation techniques (nutrient additions, etc.). The addition of dissolved oxygen works to allow aerobic bacteria to increase bioactivity and in turn consume petroleum hydrocarbons at a faster rate. With or without the addition of oxygen, populations of naturally occurring aerobic and anaerobic bacteria capable of degrading petroleum are present at the site and are consuming the petroleum. The question is how fast this is occurring. Generally, the aerobic pathway is much faster than the anaerobic pathway, which is why the addition of oxygen to a petroleum contaminated aquifer is a well documented, widely used remediation technique.

CRHC conducted a pilot test of injecting oxygenated water into an injection well and measured effects were seen through the data up to 28 feet from the injection point. However, the Department has not received a full scale proposal from CRHC to implement dissolved oxygen injection at the site. If CRHC wishes to expand the pilot study into a full scale remedial activity they would first require MDE's approval, and we will assure that the Town's input is solicited prior to any final decisions.

*Comment 5. In addition, the letter is vague as to actions to be taken if LPH is detected. Also the recovery operation has kept the contamination from spreading, if the hospital ceases recovery efforts, and the recovery pumping operation is shut down, it is possible the contamination will move off site, including the aerobic and anaerobic bacteria that has been promulgated.*

**MDE Response:** If LPH are detected, CRHC will be directed to recover any product through manual means (e.g. sorbent wicks, bailers, pumps) and, if necessary, to restart the treatment system. Again, bacteria are naturally occurring and the populations largely stay in place. There is no threat that a bacteria plume would spread from the immediate remediation area.



Turning off the treatment system has changed the site conditions, which is why the Department has required the CRHC to conduct extensive monitoring of the well network during the one-year trial shutdown period. Based on the results of that monitoring, MDE may require certain actions be taken by CRHC that could include restarting the system and/or implementing additional remedial methods. The monitoring may also show that contamination is not migrating significantly and therefore ongoing monitoring will be sufficient to ensure continued groundwater protection.

The Town has expressed interest in redeveloping TW#8, which would add another factor to the dynamics of the dissolved phase plume. Again, the Department would like to have more detailed discussions with the Town and CRHC on this subject to make sure that the necessary safeguards and monitoring are in place to accommodate this desire.

The Department will continue to copy the Town through Mr. Ingersoll, and has also directed that the CRHC and its consultants do the same. In the meantime, MDE remains available to discuss details of the petroleum cleanup at the CRHC. For additional information relating specifically to the oil remediation, please feel free to contact Mr. Ralston at 410-537-3470 or by email at [ralston@mde.state.md.us](mailto:ralston@mde.state.md.us). For specific water supply questions, please contact Mr. Saeid Kasraei at 410-537-3702 or by email at [skasraei@mde.state.md.us](mailto:skasraei@mde.state.md.us).

Thank you again for your letter. If you would like to discuss this matter further, please call me at 410-537-3084 or Mr. Horacio Tablada, Director of Land Management Administration, at 410-537-3304 or by email at [htablada@mde.state.md.us](mailto:htablada@mde.state.md.us).

Sincerely,



Robert M. Summers, Ph.D.  
Secretary

Enclosures

cc: The Honorable Jay Jacobs, Representative, Maryland House of Delegates  
Chuck Cook, Governor's Office of Intergovernmental Affairs, Eastern Shore Coordinator  
John Beskid, Kent County Health Department  
James Ross, Chief Executive Officer, Chester River Hospital Center  
Jay Sakai, Director, Water Management Administration  
Saeid Kasraei, Administrator, Water Supply Program  
Horacio Tablada, Director, Land Management Administration  
Christopher Ralston, Administrator, Oil Control Program

