



MARYLAND DEPARTMENT OF THE ENVIRONMENT

Oil Control Program, Suite 620, 1800 Washington Blvd., Baltimore MD 21230-1719

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Martin O'Malley
Governor

Robert M. Summers, Ph.D.
Secretary

Anthony G. Brown
Lieutenant Governor

June 1, 2011

Mr. Herbert M. Meade
Environmental, Health and Safety Director
Carroll Independent Fuel Company
2700 Loch Raven Boulevard
Baltimore MD 21208

RE: EXTENDED PILOT TESTING APPROVAL

Case No. 2005-0834-FR

Green Valley Citgo

11791 Fingerboard Road, Monrovia

Frederick County, Maryland

Facility I.D. No. 11836

Dear Mr. Meade:

The Oil Control Program recently completed a review of the case file for the above-referenced property, including the *Corrective Action Plan - March 15, 2011*. In November 2010, the Department approved pilot testing activities to evaluate in-situ chemical oxidation (ISCO) as a potential remedial technology. At that time, three nested pairs of dedicated injection wells (IW-1S/D, IW-2S/D, and IW-3S/D), two additional monitoring wells (MW-18S and MW-18D), and a vapor extraction well (VE-1) were installed in the vicinity of the former tank field and currently active second-generation underground storage tank systems. During initial ISCO pilot test activities, approximately 20 gallons of hydrogen peroxide solution was injected into IW-1S. Unfortunately, pilot testing was limited after it was determined that five of the injection wells would not allow for delivery of the hydrogen peroxide solution into the formation.

In December 2010, the Department approved the request to redevelop the injection well network in an attempt to establish a more thorough connection with the subsurface formation. Subsequent air sparging revealed that three of the redeveloped injection wells (IW-1S, IW-1D, and IW-2S) could be utilized as viable injection points and allow for additional ISCO pilot testing. Taking this into consideration, the *Corrective Action Plan* proposes the completion of extended pilot testing activities using a specified combination of ozone/ambient air injection and low-flow peroxide injection. The extended pilot testing will be completed over an 8-week period. During this time, weekly operation and maintenance inspections of the injection system will be completed as described in Section 5.4 of the *Corrective Action Plan*. After the first week of system operation and weekly thereafter, groundwater monitoring activities will include the evaluation of pH, dissolved oxygen, oxidation reduction potential, conductivity and temperature at monitoring wells MW-7, MW-8, MW-10, MW-13, MW-14S, MW-14D, MW-16, and MW-17.

After two weeks of ISCO system operation and again after five weeks, groundwater samples will be collected from monitoring wells MW-7, MW-10, MW-14S, MW-14D, MW-15, MW-17, MW-18S, and MW18D, as specified in the groundwater sampling plan. The resulting groundwater data will be used to evaluate the impact of the extended pilot test activities on the dissolved phase petroleum contaminant plume.

Based on our review of the *Corrective Action Plan* and considering the limited findings of the initial ISCO pilot test activities, the Department concurs with completion of the proposed 8-week ISCO pilot test. The Department understands a *CAP Implementation Plan* will be submitted for our review and approval prior to commencement of extended pilot test activities.

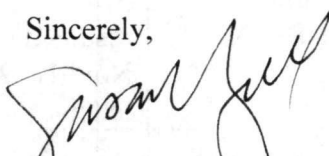
The Department remains concerned that the use of ISCO technology may facilitate off-site migration of petroleum constituents. The Department reminds CIFCO and its environmental consultant that continued protection of the nearby municipal and private drinking water supplies is of paramount importance. The Department hereby approves completion of the 8-week ISCO pilot test activities, pending review of the *CAP Implementation Plan* and contingent upon the following:

- 1) As part of the *CAP Implementation Plan*, the Department requires the development of a sampling plan designed to evaluate nearby private and municipal drinking water supplies during extended pilot test activities for the following parameters: volatile organic compounds (VOCs); total organic carbon (TOC); chemical oxygen demand (COD); dissolved iron; total iron; and chromium (CR+3 and CR+6). The Department understands that sample collection and monitoring of these parameters will not require direct access into the respective private drinking water wells. This sampling plan must be implemented prior to the start of the extended ISCO pilot test activities. At a minimum, the sampling plan must include the six impacted private drinking water supply wells with GAC filtration systems and municipal supply wells FR-94-1233 and FR-94-1281.
- 2) The Department requires that monitoring wells MW-14S and MW-16 be added to list of monitoring points at which groundwater sampling will include all laboratory analytical parameters as described in the proposed groundwater sampling plan and annotated in the tables on Pages 19 and 20 of the *CAP*.
- 3) In accordance with the Consent Order, the Department anticipates receiving the revised *CAP* in the form of a *CAP Implementation Plan* **no later than June 17, 2011**.
- 4) A *Site Management Schedule*, as required by the Consent Order, is enclosed for your review and approval. Please provide the case manager with any necessary additions or corrections.

Mr. Herbert M. Meade
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If you have any questions, please contact the case manager, Mr. Jim Richmond, at 410-537 3337 (email: jrichmond@mde.state.md.us) or me at 410-537-3499 (email: sbull@mde.state.md.us).

Sincerely,



Susan R. Bull, Western Region Section Head
Remediation and State-Lead Division
Oil Control Program

JWR/nln

Enclosure

cc: Mr. Steven M. Slatnick (Groundwater and Environmental Services, Inc.)
Ms. Jennifer Andrawos (Resident Agent)
Mr. Norman Handler (Resident Agent)
Robert S. Bassman, Esq. (Bassman, Mitchell & Alfano)
Dwight W. Stone, Esq. (Whiteford, Taylor, Preston)
Mr. George Keller (Frederick County Health Dept.)
Mr. Christopher J. Miceli (VERTEX)
Mr. John Grace (MDE-Water Supply Program)
Priscilla N. Carroll, Esq.
Mr. Christopher H. Ralston
Mr. Horacio Tablada

SITE MANAGEMENT SCHEDULE

Green Valley Citgo

2005-0834-FR

Facility I.D. 11836

Consent Order March 18, 2011

Remedial goals to be achieved in 5 years (**March 2016**)

Work to be Performed	Submittal/Implementation Deadline	Work Received
CIFCO- Continue execution of the Chemical Oxidation Pilot Test Work Plan	March 31, 2011 - Pilot test results due as referenced in Nov. 18, 2010 approval letter	
CIFCO will Develop a Corrective Action Plan (CAP)	March 31, 2011	March 16, 2011- CAP received including Chemical Oxidation pilot test results
MDE case manager will issue a Site Management Schedule within 30 days of Consent Order execution	April 19, 2011	
MDE- CAP approval/comments to CIFCO within 60 days of receipt of CAP	May 17, 2011	
CIFCO - submittal of revised CAP to MDE within 30 days of receipt of MDE's CAP comments	June 17, 2011	
MDE - approval of final CAP within 30 days of receipt of CAP revision		
CIFCO - CAP implementation Within 10 days of MDE approval		
Quarterly Monitoring Reports Includes sampling data, remediation progress- If OCP comments CIFCO has 60 days to respond for final approval or submit for dispute resolution	February 15 May 15 August 15 November 15	

SITE MANAGEMENT SCHEDULE

<p>Maryland Department of Environment Case Manager</p>	<p>Carroll Independent Fuel Company Case Manager</p>
<p>Mr. Jim Richmond 1800 Washington Blvd., Suite 620 Baltimore MD 21230 P: (410)-537-3337 F: (410)-537-3092 jrichmond@mde.state.md.us</p>	<p>Mr. Herbert M. Meade Environmental, Health and Safety Director Carroll Fuel Service 2700 Loch Raven Boulevard Baltimore MD 21208 P: (410)-261-5450 F: (410)-235-8720 herb.meade@carrollfuel.net</p>
<p>MDE Principal Point of Contact</p>	<p>CIFCO Principal Point of Contact</p>
<p>Mr. Christopher H. Ralston Program Administrator Oil Control Program Maryland Department of the Environment 1800 Washington Blvd., Suite 620 Baltimore MD 21230 P: (410) 537-3442 F: (410) 537-3092 cralston@mde.state.md.us</p> <p>and</p> <p>Priscilla Carroll Assistant Attorney General Office of the Attorney General Maryland Department of the Environment 1800 Washington Blvd., Suite 6048 Baltimore MD 21230 P: (410) 537-3039 F: (410) 537-3943 pcarroll@mde.state.md.us</p>	<p>Mr. John Phelps President Carroll Independent Fuel Company 2700 Loch Raven Boulevard Baltimore MD 21208 P: (410) 235-1066</p>