Addendum #2 to

Quality Assurance Project Plan: Shelton Cleaners and Laundry

September 2007

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SUBJECT: **ADDENDUM #2 TO THE QUALITY ASSURANCE PROJECT PLAN FOR SHELTON CLEANERS AND LAUNDRY**

PROJECT CODE: 04-064-05

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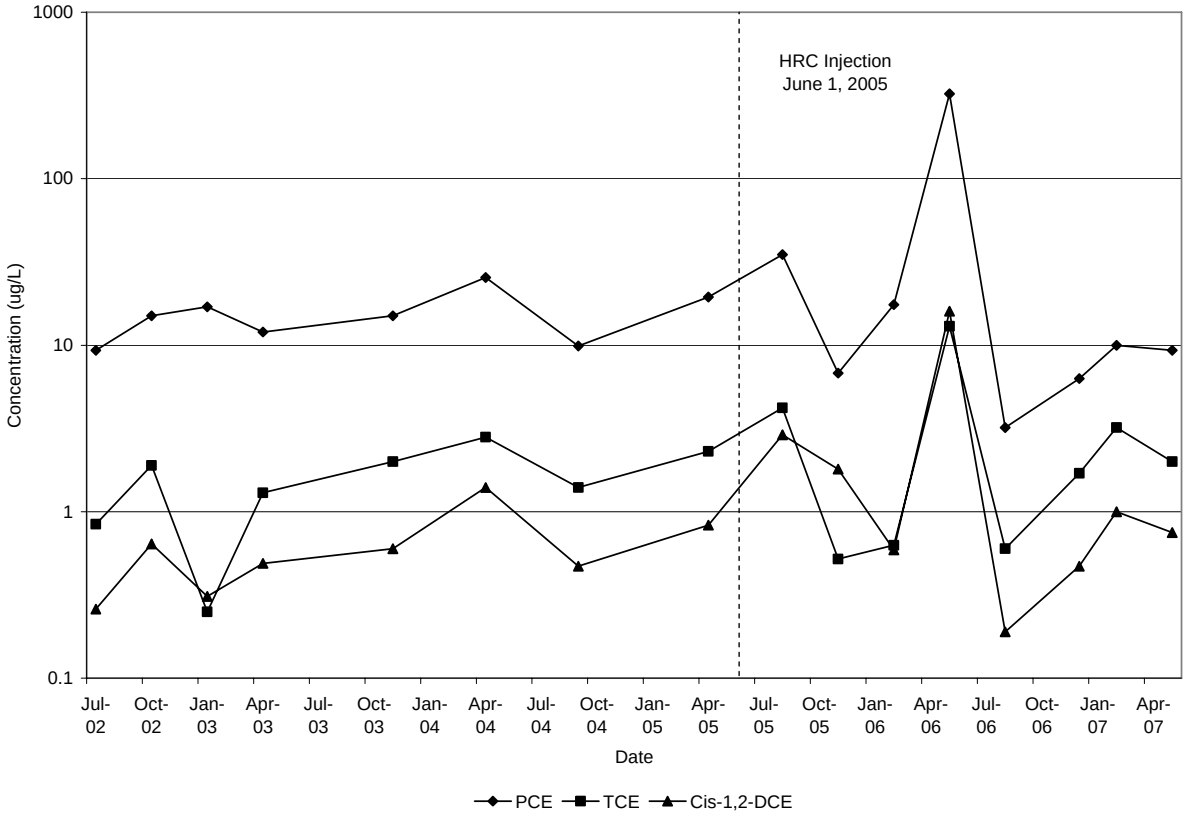
This addendum documents the extension of this project for an additional year while the feasibility of applying a second injection of a hydrogen release compound (HRC) to reduce contaminant concentrations is being considered.

This project originally entailed collecting groundwater samples to determine if tetrachloroethylene (PCE) and trichloroethylene (TCE) concentrations were above or below the Model Toxic Control Act (MTCA) cleanup level of 5 µg/L. The initial year of quarterly groundwater sampling from eight on-site monitoring wells, from July 2002 to April 2003, showed that contaminant concentrations in well 4W exceeded the MTCA cleanup level.

Because of this exceedence, the Washington State Department of Ecology (Ecology) continued to monitor groundwater quality at the site. Between July 2002 and April 2005, PCE concentrations in well 4W ranged from approximately 10 to 25 µg/L.

In June 2005, in an attempt to remediate the remaining contaminants, Ecology had a hydrogen release compound (HRC®) injected into the shallow groundwater near well 4W. Monitoring of five on-site wells continued on a quarterly basis from August 2005 through May 2007.

Groundwater monitoring since the HRC injection has shown concentrations of PCE, TCE, and cis-1,2-dichloroethylene (cis-DCE) fluctuating, as shown in the following figure. Results from the first year of monitoring after the HRC injection suggest that enhanced degradation was occurring. Even though concentrations spiked in May 2006, PCE and TCE concentrations decreased overall, while concentrations of cis-DCE, a by-product of PCE degradation, increased.



PCE, TCE, and cis-DCE Concentrations (µg/L – log scale) in well 4W
July 2002 through May 2007

Contaminant concentrations were at their lowest in August 2006, 15 months after the HRC injection, but have steadily increased since. Parallel increases in PCE, TCE, and cis-DCE concentrations suggest that the HRC is no longer effectively reducing the contaminant concentrations. HRC appears to have roughly a 12-18 month window of effectiveness. As the HRC injection was performed in June 2005, it is likely that any improvements resulting from the injection have already occurred.

Because the PCE concentration in well 4W remains above the cleanup level, monitoring of five on-site wells will continue on a quarterly basis while evaluating additional treatment options.

Schedule

Monitoring Period Extended an Additional Year

The monitoring program is being extended an additional year, on a quarterly basis, because PCE concentration in well 4W continue to exceed the MTCA cleanup level of 5 µg/L. During this time, project data will be evaluated to determine if the site would benefit from a second injection of a hydrogen release compound. Project milestones and projected dates of completion are listed below. At the end of the monitoring year, all data will be evaluated and summarized in a technical memorandum.

Milestone	*Date*
Second Quality Assurance Project Plan Addendum	September 2007
Groundwater Sampling	September 2007, November 2007, February 2008, and May 2008
Draft Memo	July 2008
Final Memo	August 2008

All field measurements and analytical data will be made available in electronic format on Ecology's Environmental Information Management System (EIM) data management system: www.ecy.wa.gov/eim/index.htm

Environmental Information System (EIM) Data Set (If Applicable)	
EIM Data Engineer	Tanya Roberts
EIM User Study ID	PMART001
EIM Study Name	Shelton Laundry & Cleaners
EIM Completion Due	July 30, 2008
Final Report	
Report Author Lead	Pam Marti
Schedule	
Report Supervisor Draft Due	Martha Maggi: July 2008
Report Client/Peer Draft Due	Lisa Pearson: July 2008
Report Final Due (Original)	August 2008

Budget

The estimated laboratory budget for one year of quarterly sampling totals $4,800, which covers the analytical costs for groundwater samples and laboratory quality assurance charges as shown in the following table. The Toxics Cleanup Program funds the analytical costs for this project. Estimates reflect the 50% discount that Ecology programs receive at Manchester Lab.

Estimated Laboratory Cost by Parameter Per Sample Quarter

Parameter	Predicted Number of Samples	Quality Control Samples	Cost Per Sample	Estimated Total Lab Cost
VOAs	6	2	$150	$1,200

cc: Stuart Magoon, Director, Manchester Environmental Laboratory
Bill Kammin, Ecology Quality Assurance Officer