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May 10, 2013

Ms. Dilan Roe
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94501-6577

Subject: **Addendum to Revised Draft Feasibility Study and Corrective Action Plan**
Crown Chevrolet Cadillac Isuzu
7544 Dublin Boulevard and 6707 Golden Gate Drive
Dublin, California
Fuel Leak Case No. RO0003014

Dear Ms. Roe:

Enclosed please find the *Addendum to Revised Draft Feasibility Study and Corrective Action Plan* for the Crown Chevrolet Cadillac Isuzu site at 7544 Dublin Boulevard and 6707 Golden Gate Drive, in Dublin, California (Fuel Leak Case No. RO0003014, GeoTracker Global ID T10000001616). This document was prepared by AMEC Environment & Infrastructure, Inc. (AMEC), on behalf of Crown Chevrolet Cadillac Isuzu.

I declare under penalty of perjury that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Please contact me at (925) 984-1426 or Avery Patton of AMEC at 510-663-4154 if you have any questions regarding this document.

Sincerely yours,

Terri Costello

Terri Costello
Betty J. Woolverton Trust

Attachment: Addendum to Revised Draft Feasibility Study and Corrective Action Plan

cc: Tondria Hendrix, Zurich North American Insurance
Thomas L. Vormbrock, Rimkus Consulting Group, Inc.
Susan Gallardo, AMEC Environment & Infrastructure, Inc.

May 10, 2013

Project OD10160070

Ms. Dilan Roe
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94501-6577

Subject: **Addendum to Revised Draft Feasibility Study and Corrective Action Plan**
Crown Chevrolet Cadillac Isuzu
7544 Dublin Boulevard and 6707 Golden Gate Drive
Dublin, California

Dear Ms. Roe:

AMEC Environment & Infrastructure, Inc. (AMEC), has prepared this *Addendum to Draft Feasibility Study and Corrective Action Plan* (Addendum) on behalf of the Betty J. Woolverton Trust and Crown Chevrolet Cadillac Isuzu (collectively, Crown) for the properties located at 7544 Dublin Boulevard and 6707 Golden Gate Drive in Dublin, California (the site). This Addendum has been prepared at the request of Alameda County Environmental Health (ACEH), who requested more information regarding the expected life span of the permeable reactive barrier (PRB) proposed in the Revised Draft Feasibility Study and Corrective Action Plan (FS/CAP), which was submitted to ACEH on March 25, 2013 (AMEC, 2013).[1]

This Addendum summarizes the anticipated life span of the PRB proposed in the FS/CAP. It assumes that the PRB will be designed and constructed properly, such that it will only be subject to typical factors that influence PRB life span, including flow rate, total dissolved solids, dissolved oxygen, carbonate, and sulfate concentrations, and corrosion. Design and construction issues are the most common reasons for PRB failure, including improper hydraulic characterization of a site (Henderson and Demond, 2007).[2]

The use history of PRB technology is relatively short relative to other, traditional remediation technologies, which limits in-field data regarding the longevity of PRB life spans. AMEC designed and installed the first full-scale commercial-used PRB, which has been operating since 1995 at the Intersil Corporation site in Sunnyvale, California. This PRB is the subject of one of the case studies in Appendix F of the FS/CAP (AMEC, 2013). Groundwater monitoring results from samples collected from the PRB performance wells from 1996 through 2006 indicate that, the cleanup goals have been consistently met throughout the 18 years the PRB has been in place.

[1] AMEC, 2013, Revised Draft Feasibility Study and Corrective Action Plan, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard and 6707 Golden Gate Drive, Dublin, California, March 25.

[2] Henderson, Andrew D. and Avery H. Demond, 2007, "Long Term Performance of Zero-Valent Iron Permeable Reactive Barriers: A Critical Review," in Environmental Engineering Science, Vol. 24, No. 4, November 4.

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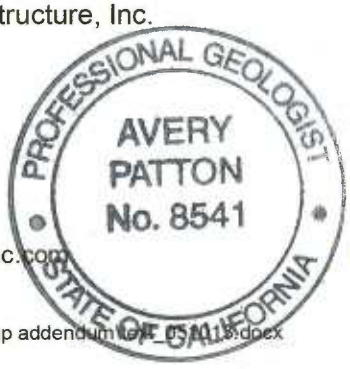
In 2005, the Interstate Technology & Regulatory Council (ITRC) produced a document that presented an evaluation of PRBs and provided lessons learned (ITRC, 2005).[3] This document indicates that the life span of a zero-valent iron (ZVI) PRB (like the one proposed in the FS/CAP) should range from 10 to 30 years, or more. However, these estimates are based on laboratory-scale testing and modeling. As indicated in the document, "no ZVI PRBs have reached the useful life of the media, therefore no data exist on which to base these estimates" (ITRC, 2005). The Henderson and Demond paper summarized various estimates of PRB life spans, ranging from 10 to 117 years (Henderson and Demond, 2007). They also note that laboratory-scale testing may underestimate the anticipated life span of a PRB, noting that "field experience suggests that PRBs are a more robust technology than one might anticipate based on laboratory column experiments" (Henderson and Demond, 2007).

Given the information cited above, it is anticipated that the ZVI PRB proposed for the site will meet its performance goals for at least several decades. An evaluation of the PRB performance and its required life span will be performed following the proposed 5 years of groundwater monitoring (AMEC, 2013). At this time the current and future need for the PRB will be evaluated relative to site conditions, including published and site-specific screening levels, site use in the vicinity of impacts (i.e., commercial or residential), source identification, and plume stability. Additionally, more site-specific data will be available regarding temporal concentrations of constituents of concern, and the presences of fouling agents and other factors that could reduce the PRB life span. Pending this analysis, recommendations for maintenance of the PRB could include replacement, or less intrusive options could be employed to break up precipitate formation (including ultrasound or using drilling augers, or a reagent flush). However, the technologies available will be evaluated at the time of PRB repair/replacement, if needed.

Sincerely yours,
AMEC Environment & Infrastructure, Inc.



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[3] Interstate Technology & Regulatory Council (ITRC), 2005, Permeable Reactive Barriers: Lessons Learned/New Directions, February.