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10 June 2016

Melanie Morash
Remedial Project Manager
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, CA 94105

RE: EPA Comments - Treatability Study for Bioremediation
811 East Arques Avenue, Sunnyvale, CA

Dear Ms. Morash:

This letter is submitted on behalf of Philips Semiconductors, Inc. (Philips) in response to the comments received on May 23 of 2016 in regards to the Enhanced Bioremediation Treatability Study Workplan and Response to Comments letter submitted to EPA on 8 April 2016.

Written responses to general and specific comments in Response to Comment Letter are provided below.

Responses to General Comments in Comment Response Letter

1. *General Comment 6*

Figure 17 still shows "Injection Wells" as the means to implement the EAB. As specified in the document, these are more appropriately "Injection Points." The wells and points associated with the EAB should be labeled as "Proposed." In addition, please consider changing the label "Proposed Treatment Area" to "Proposed Treatability Study Area".

Response: Changes to the text in Figure 17 have been made as suggested.

Responses to Specific Comments in Comment Response Letter

1. *SC 5*

There are two Sections labeled as "1.2" in the revised document. Please renumber these sections.

Response: Section labels have been corrected to read 1.2 and 1.3 (page 2).

2. SC 9

Section 3.2 references the use of injection wells for the direct push technology (DPT) injection of the bioremediation amendments along with the introduction of the abiotic amendment by DPT using injection points. The DPT injections should be described in the same manner unless there is a reason for specifying them differently, which should be detailed.

Response: The injection locations are now referred to as “injection points” in Section 3.2 and throughout the document.

3. SC 14

The last sentence in Section 2.6 states that “SRS-Z and TSI-DC will enhance the remedial performance by introducing an abiotic pathway.” TSI-DC is a bioaugmentation culture added to enhance the biological degradation of the chlorinated ethane contaminants. SRS-Z is added to enhance the abiotic removal of Freon-113. These products have been appropriately specified for use in the TS, but they are not intended to be used together. Please revise the statement.

Response: The statement has been revised as suggested (refer to the last three sentences on page 10).

4. SC 19

Section 3.2, second paragraph still includes a reference to DPT injection through injection wells, while the last paragraph refers to DPT injections through injection points. Please use a consistent reference to injection points when utilizing DPT for injections.

Response: The injection locations are now referred to as “injection points” in Section 3.2 and throughout the document.

5. SC 23b

The response references injections into existing wells which is not detailed in the revised document. The specifics for injections into existing wells should be detailed in the document, as the procedures and equipment will be different than with DPT injections to injection points.

Response: It is unclear where the reference to existing injection wells is made in the 8 April response. As clarified throughout the revision process, the injections will take place via direct push at injection points; existing wells will not be used.

6. SC 23d

Section 3.2.2.1 states that 45 pounds of sodium ascorbate will be used for water de-oxygenation. Please include a statement that the appropriate approvals from EPA, Santa Clara County, or other appropriate regulatory agencies will be obtained prior to usage of this chemical.

Response: A statement has been included with the requested information in Section 3.2.2.1 (refer to the last sentence of the first bullet on page 14).

7. SC 23g

Section 3.2.2.1 states that the injection boreholes will be sealed with bentonite upon completion of the DPT injections. Tremie-grouting the boreholes with neat cement containing 5% bentonite is recommended. Grouting with bentonite alone may not hold up to the pressurized injections at neighboring injection locations and create a daylighting passageway for the injectate.

Response: The suggested sealing material is now stated in the last bullet of section 3.2.2.1 (refer to the last bulleted paragraph on page 15).

8. SC 27

Please clarify the following entries in the "Data Use and Indications" column of the table imbedded in Section 3.3:

- *Chlorinated VOCs (8010 VOC List) – Please provide a site-specific contaminant list applicable to the EAB treatment evaluation*

Response: The eight site specific chemicals of concern plus PCE have been listed for analysis by EPA Method 8260 (page 19).

- *Ferrous Iron – Please replace ferric with ferrous, as an indicator of the reducing state of aquifer.*

Response: The parameter has been updated to ferrous iron as an indicator of reducing conditions (page 19).

- *TOC - "naturally total organic content". Please rephrase this description for total organic carbon (page 19).*

Response: The description of the parameter has been revised for clarity.

- *pH – pH range of 5-9 range is suitable to support reductive dechlorination, but not ideal across the range (page 20).*

Response: The description of the parameter has been revised to clarify between ideal and suitable pH ranges (page 20).

- *Specific Conductivity – Please change to "Specific Conductance". Increasing levels of specific conductance also act as an indicator of substrate distribution to the monitored location.*

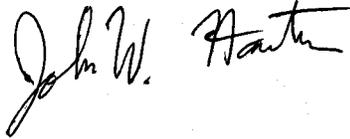
Response: Revisions have been made to the use of the monitoring parameter. The parameter will be used to gain evidence of the presence of substrate at sampling location (page 20).

- *DO – clarify statement "Indicator if reducing conditions." Please state that DO indicates the extent of aerobic or anaerobic conditions in aquifer.*

Response: Revisions have been made to the statement as suggested (page 21).

If you have any questions regarding this correspondence, please call me at (415) 799-9937.

Sincerely,

A handwritten signature in black ink that reads 'John W. Hawthorne'. The signature is fluid and cursive.

J. Wesley Hawthorne, P.E., P.G.
Senior Vice President

JWH/njl&lo

cc: (electronic copies)
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