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SITE ASSESSMENT, REMEDIATION & REVITALIZATION

CRB

GEOLOGICAL & ENVIRONMENTAL SERVICES, INC.

October 31, 2017

Ms. Jan Trent
Project Manager
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

RE: Feasibility Study – Pilot-Scale Remediation Proposal
Woven Electronics Corporation, Simpsonville, SC, BLWM File #418096

Dear Ms. Trent:

On behalf of Woven Electronics Corporation (WEC), CRB Geological & Environmental Services, Inc. (CRB) submits the following proposal for your approval to initiate the Feasibility Study at the above referenced site (the "Site"). The proposed Pilot-Scale Remediation Study (Pilot Study) is based on the preliminary discussion from our June 2017 meeting at the Site.

With approval of this proposal from the South Carolina Department of Health and Environmental Control (SCDHEC), a Pilot Study workplan will be prepared for the design, implementation, and monitoring schedule for three (3) remediation technologies described below. The remediation scenarios correspond to active treatment of tetrachloroethylene (PCE) in the source area, plume zone, and downgradient plume zone. Each of the pilot implementations will be used to determine technical feasibility and scope, schedule and cost for full-scale remediation at the site.

Sub-Slab Soil Vapor Extraction (SVE) – To be implemented in the source area under the building using approximately four or five (4-5) vapor extraction wells and an electric vacuum blower (see Figure 1). The effects of the SVE will be measured in MW-10 and sub-slab monitoring points. The SVE Pilot will be evaluated to estimate removal rates; Radius of Influence (ROI); sub-slab depressurization; and soil permeability for a possible full-scale SVE implementation.

Enhanced Reductive Dechlorination (ERD) – To be implemented at the downgradient edge of the source area near the southern boundary of the building at monitoring well MW-2 using two or three (2-3) injection wells or injection points (see Figure 2). This location was selected for a demonstration of ERD in order to determine the feasibility of bioremediation treatment of the plume below the building slab and primary plume area. The effects of ERD injections will be measured in nearby monitoring wells MW-2, and the MW-4 cluster. The ERD Pilot will be evaluated to estimate full scale implementation including Zone of Influence (ZOI); electron donor performance; injection pressure; and aquifer response to redox conditions.

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Air Sparging / Soil Vapor Extraction (AS/SVE) – To be implemented in the downgradient plume zone near monitoring well cluster MW-6 using two (2) air sparge injection wells and two (2) SVE wells (see Figure 3). In addition to evaluating PCE removal from the upper saprolite water-bearing zone, a specific critical parameter will include evaluating the removal rate of PCE from the underlying bedrock aquifer as a direct effect of shallow groundwater remediation. The effects of AS/SVE remediation will be measured in the MW-6 well cluster. The AS/SVE Pilot will be evaluated to determine AS injection pressure; radius of influence; and removal rates. The AS/SVE will also be evaluated to determine required SVE rates for vapor recovery and operating parameters.

The proposed schedule for implementation, monitoring and reporting for each of the Pilot Studies is 120-days. Although each of the technologies normally require additional time for complete remediation, the allocated time is expected to be adequate to measure the sub-surface response and feasibility for full-scale remediation.

As discussed in our meeting, an additional technology review for the forthcoming Feasibility Study will include a desktop cost and engineering determination for a ***Permeable Reactive Barrier*** envisioned as an alternative for the downgradient plume boundary.

We look forward to your review of this proposal. It is anticipated that a Pilot-Scale Remediation Workplan will be submitted within 30-days of your approval of this proposal. If you have any questions or comments, please don't hesitate to contact one of us at (864) 283-2000.

Sincerely,
CRB Geological & Environmental Services, Inc.

Frederick R. Baddour, PG
Senior Project Manager

Robert Workman
Project Manager

Attachments

CC: Brian Hackler, Woven Electronics Corporation
Thomas Gentner, P.E., Rockwell Collins



Figure 1

Pilot-Scale Remediation Proposal - Sub-Slab Soil Vapor Extraction
Woven Electronics Corporation
1001 Old Stage Road, Simpsonville, South Carolina

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Figure 2

Pilot-Scale Remediation Proposal – Enhanced Reductive Dechlorination
Woven Electronics Corporation
1001 Old Stage Road, Simpsonville, South Carolina

CRB

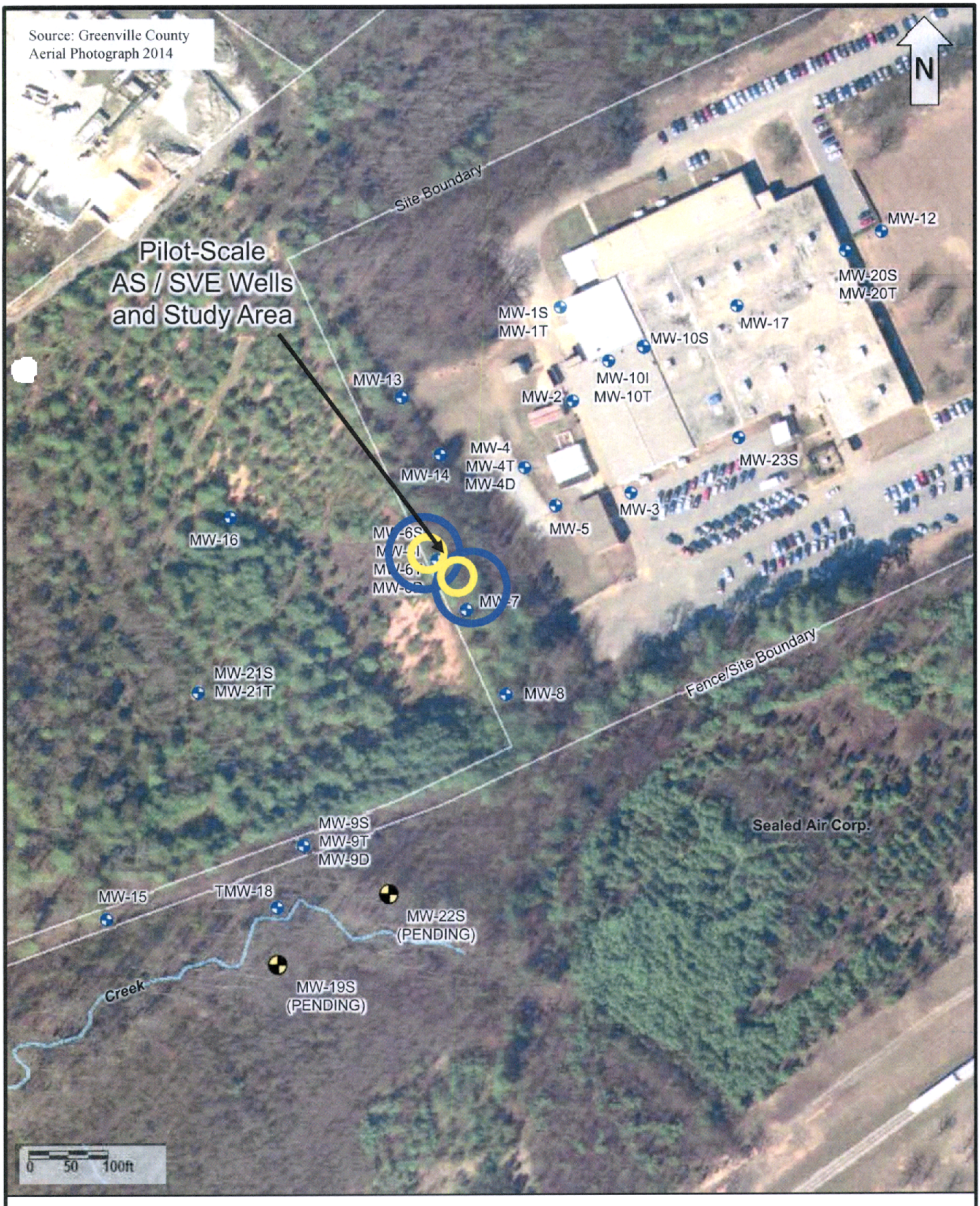

Figure 3

Pilot-Scale Remediation Proposal – Downgradient AS / SVE
Woven Electronics Corporation
1001 Old Stage Road, Simpsonville, South Carolina

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