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August 9, 2013

Transmitted via e-mail August 9, 2013

Tara M. Blum, P.E.
Environmental Engineer
NYSDEC Region 7
Division of Environmental Remediation
615 Erie Blvd. West
Syracuse, New York 13204-2400

Re: Carrier Corporation, Thompson Road Facility, Syracuse, New York
Corrective Action Order — Index No. CO 7-20051118-4
Former Building TR-1 Sub-Slab Investigation Work Plan, August 2013

Ms. Blum:

On behalf of Carrier Corporation, please find enclosed one hard copy and one electronic copy of the *Former Building TR-1 Sub-Slab Investigation Work Plan*. We have not yet scheduled field activities, but tentatively plan to mobilize early in October so that we can complete this and other planned investigations (Former TR1 Vault and Parking Lot R) thus gathering the necessary site data to better develop the site conceptual site model for PCB and VOC migration. Per the Order, we will notify you in advance of field activities, and certainly hope to have any comments you may have on our planned investigation prior to that.

Per email correspondence from your department on September 12, 2011, and follow-up email on October 25, 2011, a hard copy and an electronic copy of this letter will be submitted (via US Mail) to the New York State Department of Health contacts, Ms. Krista Anders (replacement for Mr. Steven Bates), with the Bureau of Environmental Exposure Investigation, and Mr. Mark Sergott (NYSDOH).

If you have any questions about this plan, please feel free to contact me or Shane Goodnight at (615) 255-9300.

Sincerely,

EnSafe Inc.

May M. Heflin

By: May Heflin, PE

cc: (hard copy and electronic copy):
Ms. Krista Anders — New York State Department of Health
Mr. Mark Sergott — New York State Department of Health

cc: (electronic copy only):
Mr. John Wolski — United Technologies Corporation
Mr. Nelson Wong — Carrier Corporation
Ms. Kathleen McFadden — United Technologies Corproation

FORMER BUILDING TR-1 SUB-SLAB INVESTIGATION WORK PLAN

CARRIER THOMPSON ROAD FACILITY
CARRIER PARKWAY
SYRACUSE, NEW YORK

EnSafe Project Number
0888813986

Revision: 0

Corrective Action Order – Index CO 7-20051118-4

Prepared for:

UTC Shared Remediation Services
United Technologies Building
Hartford, Connecticut 06101

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August 2013

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1.0 INTRODUCTION

Carrier Corporation, a wholly-owned subsidiary of United Technologies Corporation, has prepared this work plan for proposed subsurface investigation activities at three locations within the footprint of the former Building TR-1. The purpose of this work plan is to preliminarily assess the extent of soil and/or groundwater polychlorinated bi-phenyl (PCB) and/or volatile organic compound (VOC) contamination, and to delineate the extent of free-phase product in preparation for the completion of a Corrective Measure Study. However, complete horizontal and vertical delineation of contamination in accordance with New York State Department of Environmental Conservation (NYSDEC) Consent Order (CO) 7-20051118-4 may require additional investigation activities based upon findings of activities outlined herein. Historical operations in Building TR-1 included the use of transformers containing PCBs as well as degreasers containing chlorinated solvents. Previous investigation activities summarized in EnSafe's *Building TR-1 Sub-Slab Investigation Report* (October 2011) found three areas to warrant further investigation:

1. Former Substation I: Of the 12 former substation locations investigated in 2011, detectable PCBs were identified in soil at three locations (Substation B, Substation G, and Substation I). Of these, only Substation I had PCB concentrations above the NYSDEC Industrial Soil Cleanup Objective (SCO) of 25 milligrams per kilogram (mg/kg) Total PCB at a concentration of 26.4 mg/kg (A1260 in the 7-to 9-foot soil sample interval).

    - Free-phase product was identified in four of five soil borings advanced in the area of Substation I.

    - Fingerprint analysis of the free-phase product yielded a partial match for Fuel Oil #6 and a match for heavier petroleum product - motor oil range.

    - PCB analysis was not performed on the free-phase product.

    - One groundwater sample was collected from a soil boring that was converted to a temporary well. PCBs were not detected in the water sample.

    - An interim action (IA [soil removal]) was performed in August 2011 beneath and immediately adjacent to the former Substation I location. Flowable concrete was used to backfill the excavation. The *Substation I Interim Action Report* was submitted to NYSDEC on February 22, 2013.

2. Former Degreaser C/D: This degreaser was located at column line C/D.

   - Eight temporary wells were installed near the former degreaser location. Laboratory analytical results found PCBs (Aroclor 1254) ranging from not detected to 85.3 micrograms per liter.

   - Free-phase product was detected in one temporary well adjacent to the former Degreaser C/D.

   - Fingerprint analysis indicated the pattern was in the range of mineral spirits but too weathered for a definitive match, and a partial match for heavier petroleum product — motor oil range.

   - Laboratory analytical results for groundwater samples obtained from eight temporary wells installed adjacent to the former Degreaser C/D yielded volatile organic compound (VOC) detections but not at concentrations indicative of a chlorinated solvent source area.

3. Floor Drain at Column Line D2: A former floor drain extending from column A to column M was identified on historical drawings and the 2011 investigation focused soil borings and temporary wells, as needed, along its length.

   - One soil boring (SS@D2) advanced adjacent to this floor drain indicated VOC contamination in soil, but PCBs were not detected.

   - Five soil borings were advanced in the area around soil boring SS@D2 and converted to temporary wells. A groundwater sample was collected from each. Trichloroethene (TCE) was detected at concentrations ranging from 4.58 milligrams per liter (mg/L) to 76.5 mg/L, and therefore a potential non-aqueous phase liquid/dense non-aqueous phase liquid source area is suspected. Free-phase product was not detected in these wells.

2.0 INVESTIGATION STRATEGY

The strategy for investigation activities is to preliminarily assess the extent of soil and/or groundwater PCB and/or VOC contamination, and to delineate the extent of free-phase product in preparation for the completion of a Corrective Measure Study. The proposed investigation areas as well as proposed soil boring, monitoring well, and piezometer locations are depicted on Figure 1.

2.1 Former Substation I

The investigation near former Substation I will consist of the following work:

- Install one 4-inch diameter monitoring well (labeled as MW25 on Figure 1) near I1-D12 for free-phase product observation and recovery, if necessary. During the 2011 investigation, free-phase product thickness ranged from 0.13 to 0.14 feet in temporary monitoring well I2-D12TW and was measured at 0.43 feet in boring I1-D12. The placement of this well will be somewhat limited by the interim action (IA) previously completed at this location. This IA involved backfilling the excavation with flowable concrete from the top-of-concrete slab surface to an approximate 7- to 9-feet depth below ground surface (bgs). This well will not be advanced through the concrete backfill, but will be installed as close to the backfilled area as is possible.

- Install three 2-inch diameter monitoring wells (labeled as MW26–MW28 on Figure 1) surrounding the Substation I excavation area to define nature and extent of free-phase product and dissolved-phase contaminants. If evidence of free phase product is observed during drilling activities, 4-inch diameter monitoring wells shall be installed instead of the proposed 2-inch diameter monitoring wells. These wells will be placed outside the footprint of the concrete backfill.

- Install four 1-inch diameter piezometers (labeled as SSIPZ01–SSIPZ04 on Figure 1) near Storm Lines 1 and 2 surrounding the Substation I excavation area to assess whether product and/or contaminants are entering and/or flowing beneath the storm lines.

2.2 Degreaser C/D

EnSafe observed free-phase product at temporary well CDTW2 and surrounding temporary wells during the 2011 investigation. Free-phase product thickness ranged from 0.01 to 0.18 feet in CDTW2 and from 0.04 to 1.36 feet in CDTW4. In order to assess the nature and extent of free-phase product, PCB, and VOC impacts, investigation activities of the former Degreaser C/D area will consist of the following work:

- Install two 4-inch diameter monitoring wells (labeled as MW29 and MW30 on Figure 1) near CDTW2 and CDTW4 for free-phase product observation and recovery, if necessary.

- Install four 2-inch diameter monitoring wells (labeled as MW31–MW34 on Figure 1) surrounding the former degreaser location area to define nature and extent of free-phase product and dissolved phase contaminants. If evidence of free phase product is observed during drilling activities, 4-inch diameter monitoring wells shall be installed instead of the proposed 2-inch diameter monitoring wells.

- Install four 1-inch diameter piezometers (labeled as DCDPZ01—DCDPZ04 on Figure 1) near Storm Lines 1 and 2 to assess whether contaminants are entering and/or flowing beneath the storm lines.

- Install one 2-inch diameter deep groundwater aquifer monitoring well (labeled as MW35D on Figure 1) east of Storm Line 1 (near proposed monitoring well DCD3) to assess whether dissolved phase contaminants have migrated vertically to the deep groundwater aquifer.

  — The location of MW35D on the attached figure is approximate and may move based on groundwater flow direction.

  — Once the final location for the deep well is determined, EnSafe will install the deep groundwater aquifer monitoring well as a double-cased well to seal off potential vertical migration of shallow groundwater contamination.

2.3 Floor Drain at Former Building Column D-2

EnSafe observed elevated groundwater chlorinated VOC concentrations within temporary wells installed near a floor drain at former column D-2 during the 2011 Building TR-1 Sub-Slab Investigation. TCE concentrations ranged from 4.58 parts per million (ppm) in SSD2ETW to 76.5 ppm in SSD2WTW. Investigation activities for the Floor Drain at Former Building Column D-2 area will consist of the following work:

- Install one 4-inch diameter monitoring well (labeled as MW36 on Figure 1). Although free-phase product was not observed in this area during the 2011 Building TR-1 Sub-Slab Investigation, this point can be utilized for free-phase product observation and recovery, if necessary or for use as an extraction point during future corrective action activities.

- Install three 2-inch diameter monitoring wells (labeled as MW37—MW39 on Figure 1) surrounding the former floor drain location area to define nature and extent of dissolved phase contaminants.

- Install four 1-inch diameter piezometers (labeled as MWFDPZ01–MWFDPZ04 on Figure 1) near Storm Lines 1 and 2 to assess whether contaminants are entering and/or flowing underneath the storm lines.

- Install one 2-inch diameter deep groundwater monitoring well (labeled as MW40D on Figure 1) southwest of Manhole 204 (outside footprint of TR-1) to assess whether dissolved phase contaminants have migrated vertically to the deep groundwater aquifer.

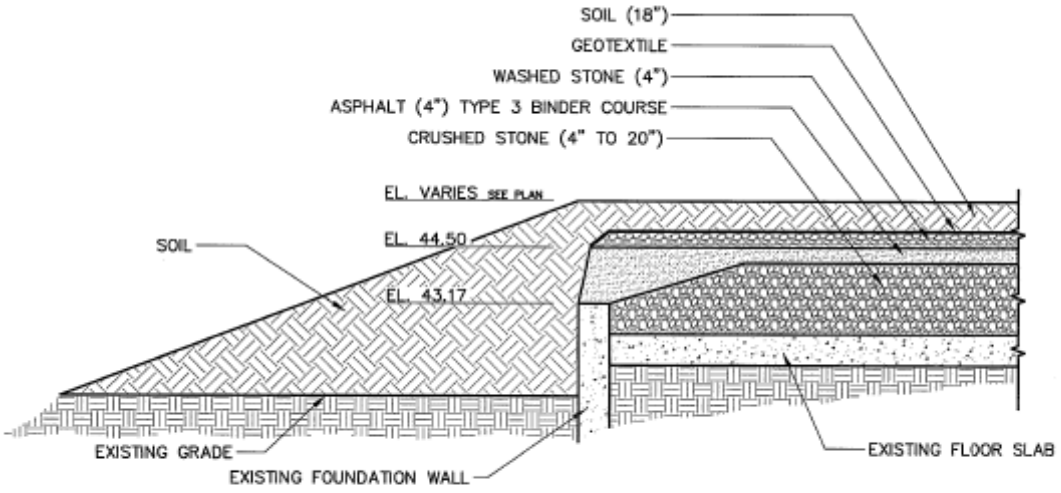
  — The location of MW40D on Figure 1 is approximate and may move based on groundwater flow direction.

  — Once the final location for the deep well is determined, EnSafe will install the deep groundwater aquifer monitoring well as a double-cased well to seal off potential vertical migration of shallow groundwater contamination.

3.0 SAMPLING AND ANALYSIS PLAN

Prior to subsurface boring activities, onsite utilities will be located and marked by Carrier personnel.

In 2010 and 2011, Carrier demolished Building TR-1 and covered and regraded the former building footprint. The TR-1 concrete slab remained in place. The cover system included 4 to 20 inches of crushed stone, 4 inches of asphalt, 4 inches of washed stone, geotextile, and 16 to 18 inches of topsoil. The inset below shows a typical fill detail for the cover overlying the 8- to 12-inch concrete slab.



FILL DETAIL AT PERIMETER OF TR–1 & TR–2

NOT TO SCALE

- Carrier shall remove enough of the cover materials to permit drilling equipment to freely access the investigation areas. Cover materials proposed for removal are the topsoil layer, geotextile and washed stone. Once these materials have been removed or pushed aside and stockpiled, drilling equipment/trucks (an air rotary drill rig is proposed) will be able to set up on asphalt and drill through the remaining cover materials (asphalt, crushed stone, and concrete).

- After drilling through the remaining cover materials, soil sampling and well installation activities will be conducted.

- All proposed monitoring wells will be: installed with a grout seal to prevent water infiltration through existing cover materials; installed to current surface elevations; and installed with a protective outer casing shall be emplaced for protection of the monitoring wells during restoration activities.

- Each of the investigation areas shall be restored to current conditions and elevations once drilling activities are complete.

3.1 Soil Sample Collection Methods and Analysis

Soil borings will be advanced using direct-push technology (DPT) and will be completed to a maximum depth of 20 feet bgs. Soil samples will be collected and logged continuously in each DPT boring to the termination depth. As each core is recovered from the DPT sleeve, each 2-foot interval will be sampled immediately with TerraCore kits for VOCs in accordance with United States Environmental Protection Agency (U.S. EPA) Method 5035 sampling procedures to a depth equal to the saturated zone. Additionally, soil from each 2-foot interval will be placed into zip-top bags for head space field screening with a calibrated photoionization detector (PID). The soil lithology will be visually described, examined for indications of contamination (i.e., petroleum staining and/or odors), and additional soil from each 2-foot interval to the termination depth will be collected and placed into laboratory-provided containers for additional laboratory analyses.

One soil sample from each boring will be submitted to a New York State certified laboratory for analyses per *NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation* requirements. Table 3.1 summarizes the analyses proposed for all soil samples collected.

- The soil sample will be collected from an interval above the saturated zone based on field screening parameters (PID readings, odor, visual staining, etc.). If field screening suggests no evidence of impact throughout the soil boring, then the sample interval just above the saturated zone will be submitted for laboratory analyses. Soil samples obtained from the unsaturated zone shall be immediately stored on ice and submitted to TestAmerica Laboratory (North Canton, Ohio) under chain-of-custody procedures for analyses per *NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation* requirements.

Table 3.1 TR-1 Sub-Slab Investigation Sample Analysis
Carrier Corporation
Syracuse, New York

Sample Matrix	VOCs (Method 8260)	SVOCs (Method 8270)	RCRA Metals (Method 6010)	Pesticides/ Total PCBs (Method 8081A/8082)	Fingerprint (Method 8015)
Soil (Unsaturated)	×	×	×	×	
Groundwater	×	×	×	×	
Free-Phase Product (if present)				×	×

Notes:
VOC = Volatile organic compound
SVOC = Semi-volatile organic compound
RCRA = Resource Conservation and Recovery Act
PCB = Polychlorinated biphenyl

3.2 Groundwater Sample Collection Methods and Analysis

Based on historic site-wide potentiometric surface data, shallow groundwater predominantly flows to the north in the proposed investigation area. However, this flow pattern is likely influenced by the presence of the Thompson Road Storm Line, Storm Line 1, and Storm Line 2 running south to north beneath the former building TR-1 concrete slab. EnSafe Inc. assumes groundwater flows to the north, with a potential northwesterly trend in the area of the investigation.

Upon completion, each monitoring well and/or piezometer will be developed using either a disposable polyethylene bailer or a polyvinyl chloride pump and dedicated tubing. Each monitoring well shall be allowed to recover for a minimum of 24 hours. Prior to sampling, a depth-to-groundwater and a free-phase product (if necessary) measurement will be made, and the monitoring well and/or piezometer will be purged using a peristaltic pump via low flow sampling techniques. During purging, water quality parameters (pH, conductivity, temperature, turbidity, dissolved oxygen, and oxygen-reduction potential) will be recorded using a Horiba U-22 water quality meter, or equivalent. Upon achieving stability, groundwater from each monitoring well and/or piezometer shall be obtained via the straw method and poured into laboratory-supplied 40-milliliter glass vials for VOC analysis. Additional groundwater will then be obtained by reconnecting the dedicated tubing to the peristaltic pump to collect groundwater for additional laboratory analyses.

The deep groundwater aquifer monitoring wells shall be developed, purged, and sampled using an electronic submersible pump in a similar method as described.

Groundwater samples shall be submitted to a New York State certified laboratory for analyses per *NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation* requirements. Table 3.1 summarizes the analyses proposed for all groundwater samples collected.

3.3 Free-Phase Product Sample Collection Methods and Analysis

If free-phase product is observed, it will be sampled and analyzed for Total PCBs using U.S. EPA Method 8082. A fingerprint (or similar) analysis using Method 8015 also will be conducted to determine the make-up of the product. Table 3.1 summarizes the analyses proposed for all free-phase product samples collected.

3.4 Documentation

All notes, descriptions, and observations will be recorded in a project field logbook. Following receipt of the laboratory analytical data, a summary report will be prepared documenting all field activities, boring logs, well construction diagrams, laboratory analytical results compared to applicable NYSDEC SCOs as well as the Surface Water and Groundwater Quality Standards, and conclusions/recommendations regarding the investigation.

3.5 Equipment Decontamination

All sampling equipment is anticipated to be disposable and/or dedicated; however, if sampling equipment is to be used in multiple locations, it shall be decontaminated manually in accordance with the following procedures:

- Wash equipment with tap water and laboratory (phosphate-free) detergent using a brush, if necessary, to remove particulate and surface film
- Rinse with tap water
- Rinse with distilled water
- Air dry
- If necessary, wrap in aluminum foil to prevent recontamination prior to use
- Decontamination rinsates will be disposed by pouring directly into Carrier's onsite water treatment system.

All downhole drilling equipment shall be decontaminated manually in accordance with the following procedures:

- Pressure wash equipment with tap water and laboratory (phosphate-free) detergent using a brush, if necessary, to remove particulate and surface film
- Rinse with tap water
- Rinse with distilled water
- Air dry

- Decontamination activities will be conducted within a plastic lined decontamination pad/basin so all rinsates can be collected and containerized in 55-gallon drums as investigation-derived waste (IDW).

It is assumed all soil and groundwater IDW will be managed according to Toxic Substances Control Act hazardous waste regulations (placed in 55-gallon drums and staged at a location designated by Carrier personnel). IDW shall be segregated according to the area of concern from which it was generated. Carrier personnel will coordinate/manage the proper disposal of the IDW based upon laboratory analytical results of representative samples collected from each waste type and/or investigation area.

4.0 HEALTH AND SAFETY PLAN

All field activities will be conducted in compliance with the site-specific Health and Safety Plan.

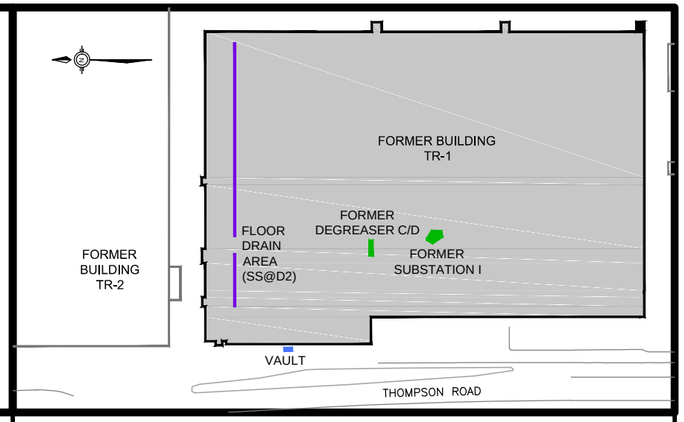
5.0 IMPLEMENTATION SCHEDULE

Mobilization related to the field activities described in this work plan will occur within 30 days of NYSDEC-approval of this plan, unless a delay is approved by NYSDEC. While Carrier does not anticipate a delay, Carrier is planning field investigations at other areas of the site concurrently. Carrier would like to minimize field mobilizations. In accordance with Consent Order requirements, Carrier will notify NYSDEC a minimum of 5 days prior to field investigation activities.

LEGEND

- 1" DIAMETER PIEZOMETER
- 2" DIAMETER MONITORING WELL
- 4" DIAMETER MONITORING WELL
- 2" DEEP AQUIFER MONITORING WELL
- FORMER TRANSFORMER LOCATIONS (SOURCE:1982 DRAWING ON WALL OF TR-7)
- TEMPORARY WELL (2011)
- SOIL BORING CONVERTED TO TEMPORARY WELL (SOIL SAMPLE AT INTERFACE COLLECTED AND GROUNDWATER SAMPLE COLLECTED – 2011)
- DPT SOIL BORING LOCATION – APPROXIMATE (2011)
- I2-D12N EXPANDED SOIL BORING LOCATION (2011)
- DEGREASER FORMER DEGREASER LOCATION – APPROXIMATE
- MH201 STORM SEWER LINES – APPROXIMATE
- 4" FLOOR DRAINS (FORMER LOCATION–SEALED) – APPROXIMATE
- INTERIM ACTION 2011

FORMER TR-1 AREA REFERENCE MAP



FLOOR DRAIN AREA
DEGREASER C/D
SUBSTATION I
STORM LINE 2
STORM LINE 1
STORM LINE
MH200
MH201
MH202
MH203
MH203A
MH204A
MH204
MH205
MH158
MH157
MH91
MH156
MH90
MH86TW
MH84
MH84B
MH84A
MH83A
MW-6
MW-19
FDPZ01
FDPZ02
FDPZ03
FDPZ04
MW39
SSD2ETW
SS@D2
SSD2STW
SSD2NTW
MW36
SSD2WTW
SSD2TW
MW38
MW40D
MW37
DCDPZ01
DCDPZ02
MW33
CDTW1
DEGREASER
MW32
CDTW5
CDTW2
CDTW3
MW31
MW29
MW35D
CDTW4
MW30
CDTW6
MW34
CDTW8
CDTW7
DCDPZ04
DCDPZ03
I1-D12
SSIPZ02
SSIPZ04
MW28
MW25
I3-D13
I2-D12N
I4-D13
I2-D12
MW26
I2D12TW
I2-D12W
MW27
SSIPZ01
SSIPZ03
A
AA
B
C
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1
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FORMER VAULT
(INVESTIGATION WORKPLAN SUBMITTED SEPARATELY TO NYSDEC ON JUNE 13, 2013
DRAFT PRELIMINARY
THOMPSON ROAD
0 30 60
APPROXIMATE SCALE

FIGURE 1
TR-1 SUB-SLAB NATURE AND EXTENT WORK PLAN
PROPOSED SAMPLING LOCATIONS
CARRIER FACILITY, THOMPSON ROAD
SYRACUSE, NEW YORK

REQUESTED BY:	S.G.
DRAWN BY:	J.L.
DWG DATE:	07/25/13
DWG NO:	9186 TR01

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