WEM

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March 2, 2012

Ms. Karen Cahill
NYSDEC
615 Erie Blvd. West
Syracuse, NY 13204

Re: Revised Groundwater Sampling Work Plan
Therm, Inc., Ithaca, New York
Job No. 8614848.5

Dear Ms. Cahill:

We have prepared a revised work plan for groundwater investigation on behalf of Therm, Inc. Therm has agreed to perform this work at the request of NYSDEC. Although Therm does not acknowledge responsibility for identified TCE and PCE anomalies, we are proceeding (in good faith and in response to NYSDEC requests) with certain focused investigations to further substantiate our positions.

This document presents a groundwater sampling work plan for proposed groundwater monitoring wells to be located at Therm's manufacturing facilities on Hudson Street Extension in Ithaca, New York. The objective of the sampling is to evaluate groundwater for volatile organic compounds (VOCs). Therm installed 10 groundwater monitoring wells in the early 1990s. The wells were last sampled in 1994 and Therm was asked by NYSDEC in 2011 to provide another round of groundwater samples for comparison of historical results. Of the original 10 monitoring wells installed by Therm in the early 1990s, only five were physically accessible, On August 5, 2011, GHD measured the well depths for all five accessible wells, as shown on the attached table. Compared to the well logs and measured depths from 1994, it appears that less than 8 inches of silt has accumulated in each well. However, the wells were found to have deteriorated significantly to the point where NYSDEC advised the wells could not be used to obtain reliable groundwater samples.

Proposed Well Installation

Following discussion with NYSDEC, GHD proposes that six groundwater monitoring wells be installed in deep and shallow pairs in the Therm parking lot, as shown on Figure 1 (attached). The shallow wells, designated MW-12S, MW-13S, and MW-14S, will be installed to a depth of 5 feet below competent bedrock or refusal in bedrock, whichever is higher, and will be screened with a 2-inch PVC10 slot screen from the bottom of the boring to 5 feet above competent bedrock, such that they are screened through the weathered shale and silt zone, if present. The deeper wells, designated MW-12B, MW-13B, and MW-14B, will be installed to a depth of 20 feet below the top of competent bedrock. The deep wells will be open hole to the 20-foot depth unless a water bearing zone is encountered during drilling. If this occurs, the boring shall be advanced slowly until the water volume diminishes. Well will be completed at this depth and screened to one foot below the depth of the adjacent shallow well within 2-inch PVC 10 slot screen.

Shallow wells will be installed using a hollow stem auger and completed with a 2-inch PVC riser to surface. During drilling of the shallow wells, soils will be classified and sampled in accordance with ASTM D-1586-67 and well logs will be developed for both wells.

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Deeper wells will be installed with both hollow stem auger and air rotary drilling methods. Initially, 6.25-inch inside diameter hollow stem augers will be used to drill through the overburden to the bedrock surface. If possible, the augers will be advanced approximately 2 feet into the bedrock surface to create a rock socket. If auger refusal is encountered in the shallow bedrock, the bedrock socket will be advanced using nominal 6-inch diameter air rotary tools. Next, a 4-inch inside diameter steel casing will be grouted in place to the bottom of the bedrock socket and the augers removed. Sufficient time will be allotted for grout to cure prior to resuming drilling. Subsequent to allowing grout to cure, a nominal 4-inch diameter bedrock borehole interval will be advanced to 20 feet beyond the bottom of the 4-inch casing. Then 2-inch diameter PVC well materials will be inserted to the bottom of the bedrock borehole. Deeper wells will be constructed with a 10-foot long screen from the bottom of the borehole and solid wall riser to grade.

All wells will be completed with lockable caps and flush-mounted covers.

Well Development

Wells will be developed utilizing dedicated, disposable polyethylene bailers and nylon rope. Prior to well development, the static water level will be measured using an electronic water-sensing probe to allow calculation of the wetted casing volume (i.e., the volume of groundwater standing in the casing under steady-state conditions). The wetted casing volume will be calculated based on the static water level, well diameter, and well depth. Following recording of initial water levels from each well, the wells will be developed by surging the water column with a bailer to flush the fine particles from the sand filter. Surging and purging will continue until five wetted casing volumes are removed or the well is purged dry. Purge water will be containerized in 55-gallon drums and staged on the Therm site pending analytical results. Information collected during well development activities will be recorded onto field notes.

All wells will be developed until the turbidity of the recovered groundwater is less than 50 NTUs. Field parameters, including pH, conductivity, and temperature, will be measured during well development activities. Development activities will cease when the turbidity has dropped below the 50 NTUs and/or field parameters have stabilized as follows for three consecutive readings: $\pm$0.1 for pH and $\pm$10 percent for conductivity. A brush will be used after the deep wells are advanced to the final depth in order to remove the rock pieces from the open borehole sides. There will be a minimum of at least one week between well development and well sampling.

Groundwater Levels

The six new wells (MW-12S, MW-12B, MW-13S, MW-13B, MW-14S, and MW-14B) will be used as piezometers for estimation of groundwater flow direction. Casing elevations will be surveyed to establish relative elevations. A permanent benchmark will be identified and located by the surveyor. Prior to sampling, static groundwater elevations will be measured for use in estimating groundwater flow direction.

Field Sampling Procedures

Field sampling of the six monitoring wells will be performed by a qualified technician from Upstate Laboratories, Inc. Groundwater monitoring wells will be purged by removing a minimum of three well volumes of water and allowed to recharge prior to sampling. All wells will be sampled using low flow sampling procedures. A low flow (e.g., 0.1 to 0.5 L/min) pump is suggested for purging and sampling. The pump intake will be set approximately a foot below the top of the water table, unless a water bearing zone is encountered during drilling. If this occurs, the pump intake will be set at the approximate depth the water bearing zone was encountered. If possible, a flow rate of 200 to 500 ml/min will be

maintained during purging. Water quality parameters, including pH, conductivity, temperature, dissolved oxygen (DO), and turbidity will be measured during sampling. A minimum of 1 L will be purged between readings, and samples collected after stabilization is achieved (three successive readings within ±0.1 for pH, ±3 percent for conductivity, and 10 percent for turbidity and DO). VOC samples will be collected at a flow rate between 100 and 250 ml/min. For QA/QC purposes, one duplicate sample and one matrix spike/matrix spike duplicate sample must be collected during sampling. Samples will be collected using dedicated bailers for each well and prepared for transportation to the laboratory using standard chain of custody forms. Samples processed for analyses will be packaged for shipment in accordance with current U.S. Department of Transportation (DOT) regulations.

Laboratory Analysis

Laboratory analysis will be provided under separate contract by an accredited laboratory. Each sample will be analyzed for USEPA Method 8260 Volatile Organics (TCL List-2005). Quality control/quality analysis procedures will be followed using a matrix spike and matrix spike duplicate. Quality control procedures will be reviewed to verify consistency with NYSDEC guidance. All sample bottles will be labeled individually. Each label will identify the site name, depth, matrix and sample location and date and time of sample collection.

The following analytical method references will be followed for any samples:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846
- *Standard Methods for the Examination of Water and Wastes* (most recent edition)
- *EPA Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-69-020

A sufficient number of trip blanks for volatile organic analysis, if required, will be prepared by the laboratory and delivered to the sampling team prior to each sampling event. One sealed trip blank will be carried into the field per day, along with the sample containers for each day that volatile organic samples are collected. Trip blanks will be transported and handled in the same manner as the actual samples. The results of the trip blank analysis will be reviewed to evaluate if the potential exists for sample contamination during transportation and handling.

The laboratory will perform all standard in-house QA/QC necessary to control the introduction of contamination in the laboratory and to ensure the accuracy and precision of the data.

Report

Groundwater sampling results will be summarized in tabular form supplemented by individual laboratory reports. Figure 1 will be revised to include estimated groundwater level contours.

Schedule

Assuming timely approval of this work plan, we anticipate commencing well installation activities during March 2012, weather conditions permitting. The proposed work plan schedule includes:

- initiate work after NYSDEC approval of this work plan
- install groundwater monitoring wells in March 2012
- Develop and sample monitoring wells in early April 2012

- GHD will submit laboratory results with tabular summary to NYSDEC within two weeks after receipt of final laboratory analysis reports from the laboratory.

With immediate approval by NYSDEC, we expect to submit a draft report on the findings of this investigation by May 31, 2012.

Please contact me if you have questions regarding this work plan.

Sincerely,

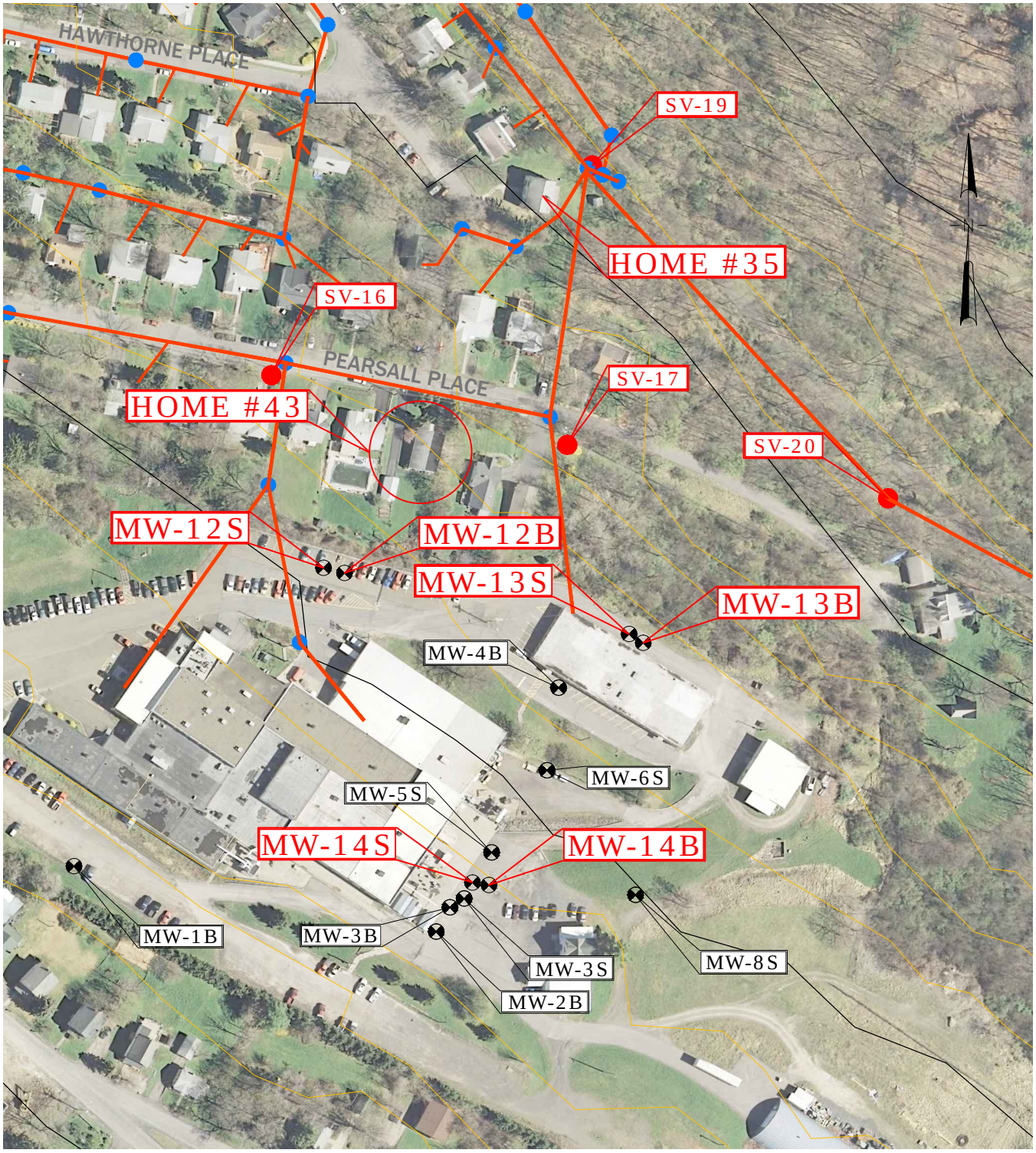
GHD CONSULTING ENGINEERS, LLC

Wayne E. McFarland, P.E., BCEE
Principal

WEM/jas:kan

Enclosure

cc: Doreen Simmons, Esq., Hancock & Estabrook (w/enc.)
David Folkes, P.E., EnviroGroup Limited (w/enc.)



0 75' 150' 225'

SCALE 1"=150' AT ORIGINAL SIZE

GHD

THERM, INC

MONITORING WELL LOCATIONS

Job Number	8612339
Revision	A
Date	01/12

Figure 01

One Remington Park Drive, Cazenovia NY 13035 USA **T** 1 315 679 5800 **F** 1 315 679 5853 **E** cazmail@ghd.com **W** www.ghd.com

Plot Date: 16 February 2012 - 8:47 AM Cad File No: G:\86\12339\10\Drawings\Fig\81225F01 sfb.dwg