ENERGYSOLUTIONS

September 5, 2013
Ref. No. 137015-105

Mr. Jaspal Walia
Project Manager
New York State Department of Environmental Conservation, Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

Subject: Building Interior Groundwater Monitoring Well Installation Work Plan
Leica, Inc. Site; Erie County, Cheektowaga, NY
Inactive Hazardous Waste Disposal Site No. 915156

Dear Mr. Walia:

This letter presents a work plan prepared by Energy*Solutions* on behalf of Leica, Inc. for installation of additional groundwater monitoring wells within the main warehouse area of the former Leica facility (the Site) in Cheektowaga, New York, as shown in Figure 1 entitled "Site Location Map". Specific well locations are shown on Figure 2 entitled "Proposed Groundwater Monitoring Wells".

These additional wells will be installed in order to further delineate the volatile organic compound (VOC) contamination identified in groundwater samples collected from the temporary wells INT-1 through INT-5 installed within the main warehouse area in June of 2011 and additional groundwater samples collected from wells INT-10- through INT-13 installed in September of 2012.

Background Information

Groundwater investigation in the northeast corner of the building was originally initiated in response to the presence of a former dry well located immediately to the east of the main facility loading dock in the northeast corner of the building. Data collected from MW-16R and MW-16A indicated that chlorinated solvents had been discharged from the dry well and the resulting groundwater plume was migrating to the southwest under the building. Wells MW-24 and MW-24A installed in March of 2008 confirmed this proposed transport model; contamination from the drywell was moving in a southwesterly direction, migrating beneath the main facility warehouse. In November of 2010 EnergySolutions submitted a Vapor Mitigation Plan to the NYSDEC designed to address the potential indoor air issues associated with this groundwater contamination. As an integral part of this plan, Energy*Solutions* proposed the installation of the five temporary wells mentioned above in order to assess the possible presence of VOC contamination to the southwest of the MW-24 well pair in the central portions of the building.

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The analyses of the samples collected from the five temporary overburden wells INT-1 through INT-5 in June of 2011 indicated that groundwater with elevated VOC concentrations in excess of the site specific Remedial Action Objectives (RAOs) was present beneath the central portions of the building to the south and west of the MW-24 well pair. Trichloroethene (TCE) was detected in samples collected from the shallow wells at concentrations up to a maximum of 82,000 ug/l (sample INT-2). In 2012, additional temporary shallow wells INT-10 through INT-13 were installed in several areas of the main facility warehouse including the south central, southeastern and northern areas of the building. Data collected from well INT-13 (TCE at 210 ug/l) appeared to delineate the northern limits of the groundwater plume, and data collected from well INT-12 with concentrations of TCE at 2400 ug/l, suggested that the original plume from the loading dock drywell might not be the only contribution to the 82,000 ug/l TCE concentration in well INT-2.

Based on this existing data, it was determined that additional vertical delineation of the contamination beneath the building was needed. In particular, all INT wells were installed in the overburden and therefore limited information was available regarding the presence of contamination in the bedrock groundwater beneath the building. The proposed plan includes the installation of new bedrock wells at locations INT-2, INT-10 and INT-11.

Objectives

There are three primary objectives for the activities covered under this work plan:

- further define the vertical extent of chlorinated VOCs in the groundwater beneath the building within the bedrock aquifer;
- assess the possible need for and/or potential extent of groundwater remediation beneath the building in these areas; and
- determine the correlation, if any, between elevated concentrations of VOCs under the building and elevated concentrations of VOCs in the MW-2 well pair and the MW-6 well pair.

Scope of Work

The following Scope of Work includes the installation and sampling of three new bedrock monitoring wells. Existing temporary overburden monitoring wells (INT-10 and INT-11) will be paired with new shallow bedrock monitoring wells (INT-10A and INT-11A). The abandoned temporary overburden well INT-2 will be re-installed as a permanent well (INT-2R) and will also be paired with a new bedrock monitoring well (INT-2A).

The new bedrock wells will be installed to approximately the same depth as the MW-24A well. Once the new bedrock wells have been installed, they will be sampled along with

the existing shallow temporary wells and the new INT-2R well, and then during the subsequent semi-annual sampling events.

Overburden Well Installation

One overburden well (INT-2R) will be installed in the former location of interior monitoring well INT-2. INT-2 was abandoned in 2011 after sampling in accordance with the well installation work plan. The objective for the completion of this new overburden well is to intercept the shallow groundwater in the same location and depth of the original INT-2. Location INT-2R is shown on Figure 2.

The floor in the location of the former well will be cored to allow access for tooling to advance drilling equipment within the unconsolidated sediments. INT-2R will be drilled using direct push technology to remain consistent with wells INT-10 and INT-11. INT-2R will be installed using five feet of 0.010" slot PVC screen located immediately above the bedrock and PVC riser extending from the top of the screen up to existing floor surface. The annulus around the PVC in INT-2R will be filled with filter sand extending from the bottom of the well up to two feet above the screen. The annulus above the sand will be grouted using a bentonite slurry creating a seal above the screen/filter pack. The new monitoring well INT-2R and the existing shallow wells INT-10 through INT-13 will be completed at the surface with well seal and a road box cemented flush with the building floor. Each well will be surveyed to the same datum as previous wells for this project.

Bedrock Well Installation

One bedrock well will be installed adjacent to each of the three shallow overburden wells INT-2R, INT-10 and INT-11. The objective for the completion of the bedrock wells is to intercept groundwater within bedrock fracture zones.

Well installation will include the setting of a surface casing to isolate the bedrock aquifer from the unconsolidated overburden aquifer. The well will be advanced using hollow stem augers within the unconsolidated sediments. When auger refusal at the top of bedrock is encountered, the augers will be removed and a temporary 6-inch steel casing will be pounded into the bedrock. A socket will be drilled approximately three to five feet into the top of competent bedrock using a 5-7/8-inch roller bit. A nominal 4-inch inside diameter (ID) steel casing will be lowered into the socket and grouted into place. The temporary casing will be removed and the grout will be allowed to cure for a minimum of 24 hours before continuation of drilling for the remainder of the bedrock well. Drilling through bedrock will be completed using a 3-7/8-inch roller bit and the cuttings will be flushed from the hole using fresh water. The well will be completed as an open borehole well in the bedrock with no well casing installed. The monitoring wells will be completed at the surface with well seal and a road box cemented flush with the building floor. Each well will be surveyed to the same datum as previous wells for this project. Locations for wells INT-2A, INT-10A and INT-11A are shown in Figure 2.

Soil samples will be collected from three distinct areas within the overburden at each well location during drilling operations. Samples will be collected continuously in two foot intervals while drilling the overburden. The samples will be placed in zip lock bags in a way that minimizes the disturbance to the sample and the headspace in the bag will be monitored with a PID. One sample will be collected from the bag representing the interval with the highest PID reading within the overburden clay layer, and a second sample will be collected from the interval at the water table or within the sand layer just above bedrock. The third sample will be collected in native overburden directly beneath the fill layer for the concrete slab. The purpose of this sample is to evaluate whether any surface spill has occurred historically especially in the central courtyard area. Samples will be collected from the bags or from the sand layer using the EPA 5035 collection and preservation methods and submitted to the laboratory for EPA 8260 VOC analysis. Overburden logs will be completed by EnergySolutions staff as well as the drilling contractor. Samples will be labeled, logged onto chain of custody documents, and submitted to an ELAP certified laboratory for analysis. Samples collected for VOC analysis using the EPA 5035 method, will be frozen within 24 hours (either by the lab or EnergySolutions personnel).

Well Development

Wells will be developed by the driller following installation. Development of the wells will be by pumping and surging. The driller will alternately pump water from the well at a high rate and surge the well using a surge block in order to draw water through the screen to settle the sand pack and flush out the fine sediment that may be present. Well development will be considered sufficient when turbidity of the purge water is <10 NTU. If conditions exist that prevent lowering the turbidity down to 10 NTU, alternative development methods may be utilized.The purged water will be collected into 55-gallon drums for disposal through the on-site groundwater recovery system discharge.

Groundwater Sampling and Analysis

One round of groundwater samples will be collected from the new monitoring wells approximately one week after installation and development. Following collection of this first round of samples, the new wells will be added to the monitoring program and sampled during the next scheduled semi-annual sampling event.

Water level measurements will be made from the top of the surveyed point in each well to the top of the water table using an electronic probe. Sampling of each well will be conducted using low flow sampling techniques. Field groundwater quality parameters (pH, specific conductance, temperature, dissolved oxygen, turbidity, and oxygen reduction potential) will be measured and recorded as water is drawn from the wells. Water quality will be monitored until the readings stabilize and then the groundwater will

be sampled. Stabilization will be considered complete when the following conditions have been met and drawdown of the well has been minimized to less than 0.3 feet.

Parameter	Allowable variance	Number of Successive readings
pH	+ or – 0.1 pH units	3
Specific Conductance	+ or – 3 %	3
Dissolved Oxygen	+ or – 10 %	3
Turbidity	+ or – 10% NTU (if turbidity is greater than 10 NTU)	3
Oxidation-reduction Potential	+ or – 10 millivolts	3

Groundwater samples will be collected into the appropriate clean laboratory-supplied glass containers and preserved with the appropriate preservative. Samples will be labeled, logged onto a sample data sheet and onto chain of custody documents, and stored on ice for submittal to an ELAP certified laboratory for analysis. Samples will be prevented from freezing and compromising the sample container. Groundwater samples will be collected and submitted for VOC analysis by EPA Method 8260B and Total Organic Carbon (TOC) by EPA Method 9060.

Soil Cuttings and Rinse Waters

All soil cuttings will be collected into drums and temporarily stored for characterization and future disposal. Rinse and purge waters also will be collected and containerized in drums and then discharged through the onsite groundwater recovery system.

Disposal of investigation derived waste (IDW) will be arranged by Energy*Solutions*, on behalf of Leica, Inc. All IDW will be disposed according to applicable state and federal regulations.

Laboratory

Columbia Analytical Services, Inc. of Rochester, New York, an ELAP-certified laboratory, will analyze groundwater and soil samples for VOCs by EPA Method 8260B

Sampling Quality Assurance/Quality Control

Field Sampling

Trip blanks, duplicates and equipment blank samples will be collected and submitted to the laboratory along with the groundwater/soil samples for the purpose of quality assurance/quality control (QA/QC) monitoring.

Trip blanks for VOCs will be collected for each day of groundwater and soil sampling to determine whether samples have been exposed to contamination as a result of sample container handling and transport. The trip blanks will be supplied by the laboratory and will accompany the sample containers from the time they leave the laboratory until the time they are returned to the laboratory as a sample. The trip blank will be labeled as a sample and submitted blind to the laboratory for analysis.

Duplicate samples for laboratory analysis will be collected for the groundwater and soil samples to check the reproducibility of the laboratory analysis. Based on the anticipated number of samples to be collected for each sampling round, one duplicate sample will be collected and submitted to the laboratory.

Equipment blanks are collected for each groundwater and soil sampling event to assess the effectiveness of the equipment decontamination process. It is anticipated that all groundwater and soil sampling equipment will be either disposable or decontaminated between sampling locations. If samples are collected using all new equipment and materials, blanks will not be collected. We do anticipate collection of duplicates for soil samples based on the reuse of the drilling equipment from boring to boring. If collected, equipment blanks will be collected for each event.

Laboratory Reporting

The laboratory will provide complete data packages as defined under the requirements of the NYSDEC Analytical Services Protocol Category B or EPA Contract Laboratory Program deliverables. Groundwater data will be reviewed, validated, and verified in terms of their ability to satisfy quality assurance requirements. Quality control procedures will be reviewed to verify consistency with NYSDOH guidance (as presented in the NYSDEC guidance for development of a Data Usability Summary Report).

Reporting

A letter report summarizing the well installation and groundwater sampling activities will be prepared following the completion of the initial groundwater sampling event. The report will summarize the activities conducted and a brief explanation of the laboratory data and will include field sampling data, laboratory analytical data, data summary tables, and figures as appropriate. Reporting of subsequent sampling events will be included in the appropriate annual reports.

Schedule

We are prepared to begin the implementation of this Work Plan as soon as approved by the agencies. Groundwater analytical results and the associated data package are expected to be received within three weeks of sample delivery to the laboratory.

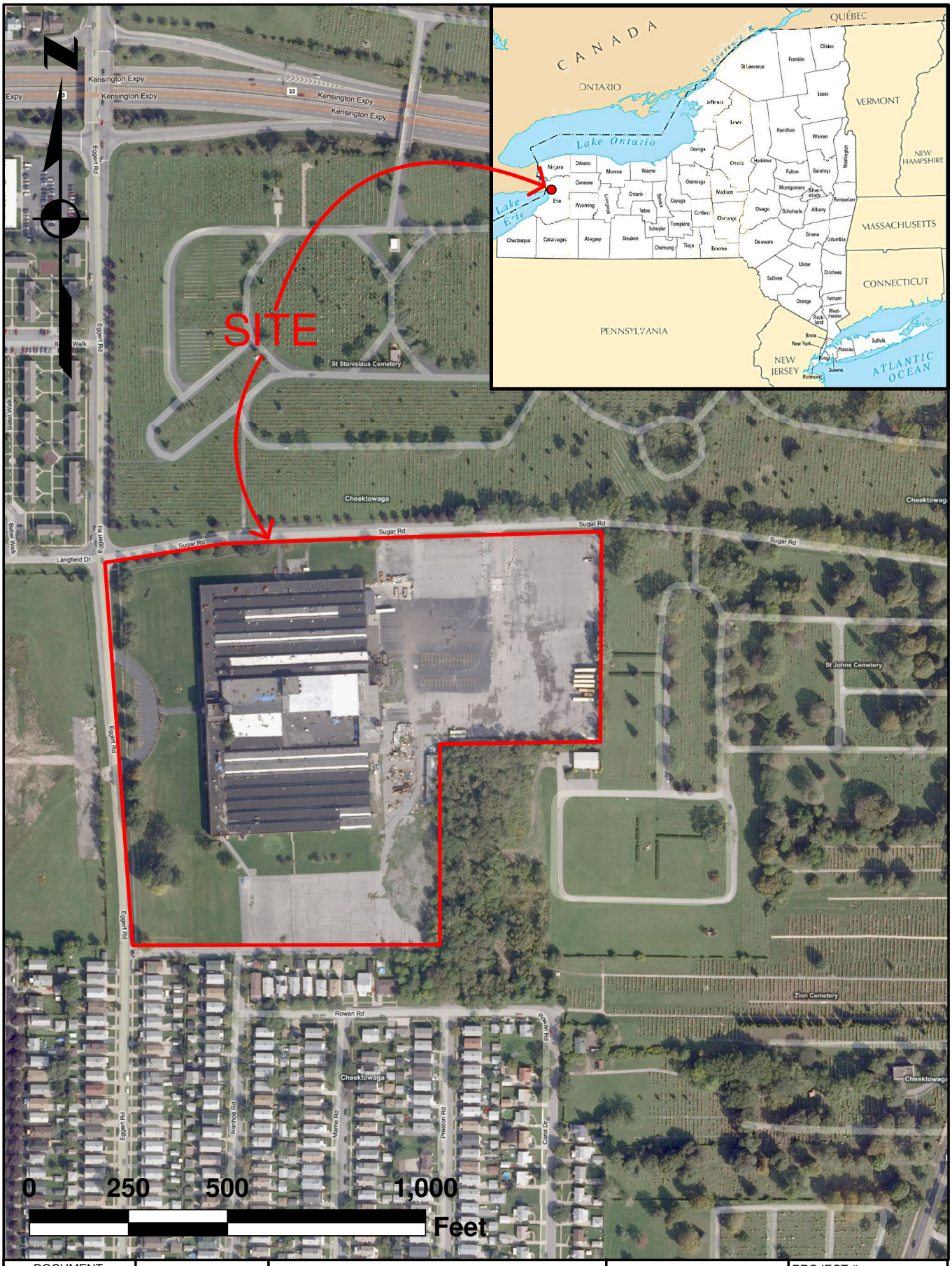
If you have any questions or would like to discuss this Work Plan, please feel free to call me at 801-303-1092.

Sincerely,

Robert E. McPeak, Jr., P.E., LEP, LSRP
Department Manager, Environmental Services

REM/lhc
Enclosures
cc: J. Egan
C. Grabinski

Figure 1
Site Location Map



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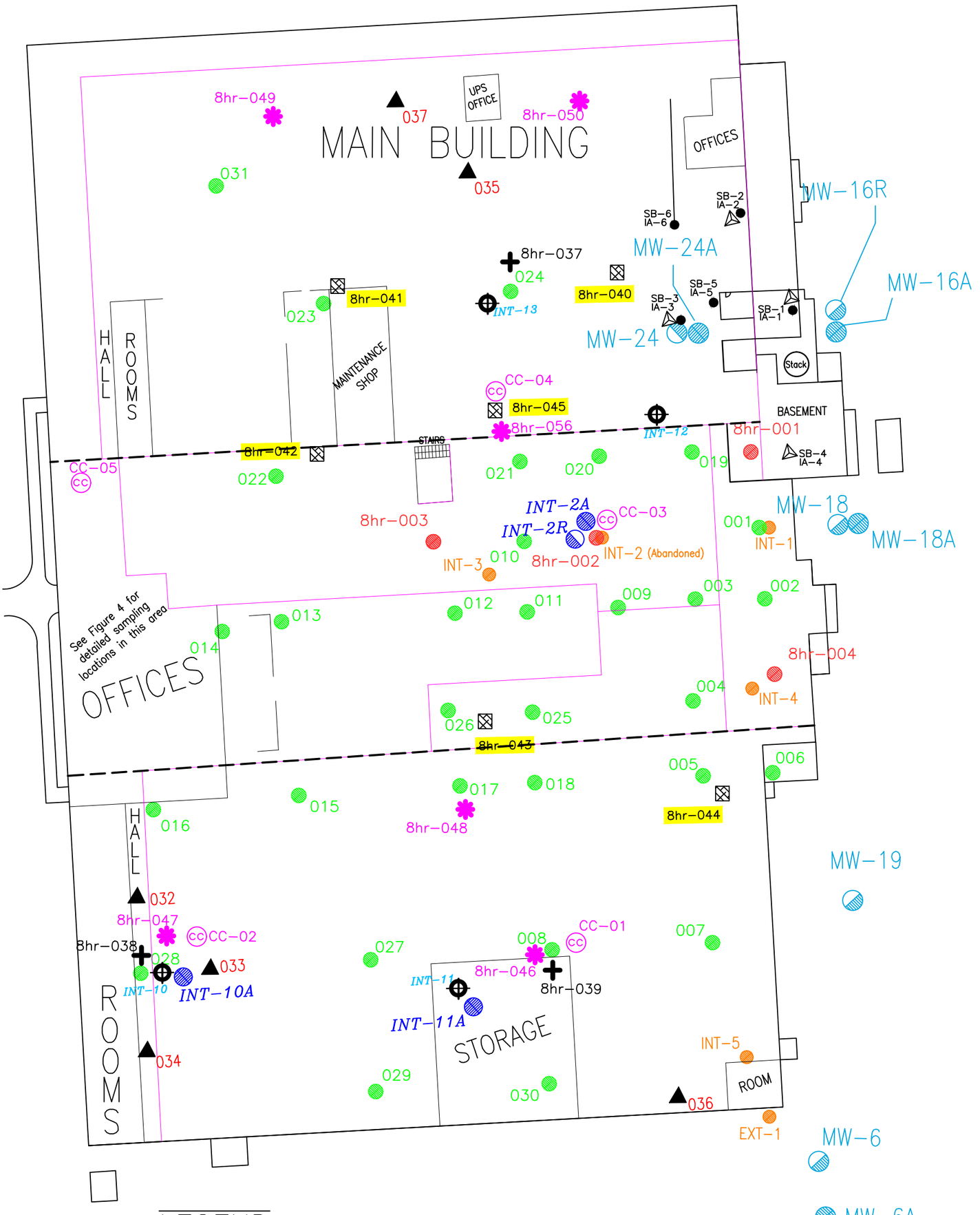
				FILENAME:
REVISION NO.	DRAWING	SITE LOCATION MAP		SCALE: SEE SCALEBAR / DATE: 12/9/09
				BY: MT / CK:
				FIGURE # 1

Figure 2
Proposed Well Locations



LEGEND

NEW SAMPLE RESULTS APRIL 2013

- Indoor Air Sample, µg/m³
- Concrete Sample,(1) µg/m³
- SB-6 IA-6 SSDS Indoor Air and Subslab Air Samples, µg/m³
- INT-12 Groundwater grab samples (4/2013), µg/L

NEW PROPOSED GROUNDWATER WELLS

- INT-2A Proposed Bedrock Monitoring Well
- INT-2R Proposed Overburden Monitoring Well

Note: INT-2 has been abandoned

FORMER DATA

- 8hr-037 = 8 hour subslab correlation samples (9/2012)
- 033 = 30-minute Subslab samples (9/2012)
- INT-12 = Groundwater grab samples (9/2012)
- 8hr-042 = DOH method Indoor air & subslab samples (9/2012)
- INT-1 = GROUNDWATER GRAB SAMPLES (6/2011)
- SB-4 IA-4 = INDOOR AIR AND SUBSLAB AIR SAMPLES (3/2010)
- MW-2 = OVERBURDEN MONITORING WELL
- MW-2A = BEDROCK MONITORING WELL
- 025 = 30 MINUTE SUBSLAB SAMPLES (9/2011)
- 8hr-002 = DOH METHOD INDOOR AIR AND SUBSLAB SAMPLES (9/2011)
- Courtyard Foundation
- Possible Foundation
- Non-support Interior Walls

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REVISION NO.	DRAWING	Proposed Groundwater Monitoring Wells		SCALE: See Scalebar DATE: 6/28/13 BY: MT CK: RM FIGURE # 2