ATTACHMENT A

QUALITY ASSURANCE PROJECT PLAN

Additional Site Investigation Activities
Alexander Schmigel Site
Hoosick Falls, New York
NYSDEC Site ID No. 442002

Quality assurance/quality control (QA/QC) procedures will be utilized throughout the project as described in the following sections. The project QA/QC protocol will be consistent with NYSDEC's Draft Technical Guidance for Site Investigation and Remediation (DER-10).

A.1 LABORATORY ANALYSES

The primary goal of this section is to provide a description of the laboratory analytical program and the analytical methods used to analyze soil and water samples collected during field investigation activities. The majority of the analytical data will be generated using USEPA analytical procedures. Analyses will be completed using USEPA SW-846 methods (USEPA, 1996). Samples will be analyzed by a subcontract laboratory with NYSDOH ELAP Contract Lab Protocol and Toxic Characteristic Leaching Procedure (TCLP) tier certification following the analytical guidance of the NYSDEC Analytical Services Protocol (ASP).

Severn Trent Laboratories of Buffalo, New York (STL-Buffalo) has been selected as the analytical laboratory for the project. Laboratory information and contacts will be provided to NYSDEC.

Analytical methods and parameters are described in the Scope of Work and are summarized below:

- Each soil/solid sample will be analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), including methyl cellosolve (2-methoxyethanol), by SW-846 Method 8260.
- If materials from compromised drums are encountered, samples will also be collected, if in the opinion of MACTEC it can be done safely, for TCLP analysis to determine if the materials are characteristic hazardous waste.
- Each groundwater sample will be analyzed for TCL VOCs, including methyl cellosolve (2-methoxyethanol), in accordance with SW-846 Method 8260B.

The laboratory testing will be performed in accordance with procedures specified in the most recent version of the NYSDEC ASP and the published EPA SW-846 methods. Table A-1 provides the approximate quantitative limits for the specified analyses. Table A-2 summarizes the preservation methods, holding times and quality assurance requirements for the soil and groundwater sampling program. Table A-3 provides the project accuracy and precision goals.

A.2 RECORDKEEPING

Notes regarding field activities, observations, and measurements will be documented in ink in a bound project logbook. Information to be recorded will include the following:

- The names of personnel on site and their organizations
- A time log that records the events that occur during each day on site
- A list of equipment used
- A description of sampling methods and procedures
- Sample types, locations, collection times and required laboratory analyses
- Weather conditions
- Instrument calibration results
- Water levels
- Well purging data
- Other information as necessary

A.3 EQUIPMENT DECONTAMINATION

In order to minimize the potential for cross contamination during sampling, disposable sampling equipment will be used when possible. Decontamination of non-disposable equipment will be performed prior to use at a new location or for sample collection. Decontamination of non-disposable sampling equipment will include a soap/water wash, potable water rinse, distilled water rinse, and wipe-drying with a clean cloth or air drying. During groundwater sampling, new pump tubing will be used at each well location. The submersible pump, if used, will be cleaned with a soap/water wash and distilled water rinse prior to purging/sampling each well.

A.4 SAMPLE COLLECTION

Details of explorations and sample collection activities will be documented by the field personnel. The goal of the exploration and sample collection documentation is to document exploration and sample collection methods, materials, dates and times, and sample locations and identifiers. Field measurements and observations associated with a given exploration or sample collection task are recorded. Sample collection records are maintained throughout the field program in files that become a permanent record of field program activities

A.4.1 Sampling Techniques

The procedures described in the following subsections will govern the collection of samples. Calibration of the sampling equipment will be in accordance with the manufacturer's suggested procedures and will be completed prior to each day's sampling activities and as necessary during the course of the day. Daily instrument calibration data will be recorded.

A.4.1.1 General Soil Sampling Methodology. Soil samples collected will be logged in the field at the time of sampling by the field geologist. Soils shall be classified in accordance with the Unified Soil Classification System (USCS). Soil samples will be described fully on the appropriate sampling logs or in field logbooks.

A4.1.2 Test Pit Sampling. To sample the test pit from the ground surface, two methods may be used. The method will be selected in the field at the time the test pit is sampled.

- Samples can be obtained from the backhoe bucket. The field geologist will direct the backhoe operator to remove material from the selected depth or location within the test pit. The bucket will be brought to the surface and moved away from the pit. The sampler will approach the bucket and monitor its contents with the PID and record the reading in the log. If granular or loose soils and/or uniform materials are encountered, the sample will be obtained directly from the bucket. The sample is collected from the center of the bucket and placed in sample jars or vials using a clean soil sampling syringe or spatula.

- If cohesive soils or multiphase conditions are encountered (e.g., the bucket contains a mixture of soil and sludge) so that obtaining a sample from the bucket is not practical, the sampler may direct the backhoe operator to empty the bucket onto the ground. Prior to dumping the material, the ground surface would be covered with plastic sheeting. The sampler will then obtain the sample from the interior of soil clods or lumps of sludge using a clean soil sampling syringe or spatula.

The following equipment and supplies may be used during completion of test pit excavations:

- PID
- other health and safety monitoring equipment/supplies (e.g., O_2-LEL and Drager Tubes)
- EnCore™ sampling devices (for VOCs)
- stainless steel bowl
- stainless steel spoon or spatula
- decontamination supplies
- sample containers
- plastic sheeting to establish a clean area for equipment staging and sample collection
- disposable or digital camera

VOC soil samples may be collected in accordance with SW-846 Method 5035A for low and high concentrations in EnCore™ sampling devices. Three EnCore™ samplers will be collected for each VOC soil sample location; one for the initial analysis, one for percent solids determination, and one for potential reanalysis. If a field duplicate sample is scheduled at the location, two additional EnCore™ samplers will be collected. VOC samples will be collected first and with minimal disturbance to the soils.

VOC soil samples may be collected in unpreserved jars. If soils are collected in jars, the jar should be filled completely and sealed with a septum lined cover. The soil jar threads should be wiped clean to ensure that the cover can be screwed on completely to minimize VOC loss from head space and contact with air. VOC samples will be collected first and with minimal disturbance to the soils.

TCLP samples, if necessary, will be collected using a stainless steel bowl and will be homogenized (mixed) with a stainless steel spoon so that each sample aliquot is representative of the whole. Care should be taken to ensure that sufficient soil is present in the stainless steel bowl to fill all of the associated sample containers.

VOC and TCLP soil samples will be collected in pre-labeled sample containers and sent for laboratory analysis in accordance with accepted COC and sample handling procedures. Information regarding sample location, depth, date and time of collection, and character will be recorded.

A4.1.3 Groundwater Sampling. The groundwater sampling of monitoring wells will be conducted to delineate the distribution of chemicals and to quantify, to the extent possible, the chemicals in the aquifer(s) underlying the site. Monitoring well sampling will be performed no earlier than 48 hours following well development.

The following equipment and supplies may be used during groundwater sample collection:

- submersible pump
- bailer
- appropriate hoses and connectors
- PID
- turbidimeter
- water level indicator

- volumetric measuring device
- sample containers
- disposable or digital camera
- decontamination supplies
- plastic sheeting to establish a clean area for equipment staging and sample collection

A4.1.4 Sampling Preparation Activities. Non dedicated groundwater sampling equipment will be decontaminated prior to use. Calibration of the monitoring equipment will be in accordance with the manufacturer's suggested procedures and will be completed prior to each day's sampling activities and as required during the course of the day. Instrument calibration data will be recorded daily.

Field measurement data generated during groundwater sampling will be recorded by field personnel.

To the extent practical, sampling of groundwater wells will proceed from the upgradient (background) wells to the more contaminated wells as best as can be determined, based on existing data.

A4.1.5 Pre-Purging Activities. The following activities will be performed immediately prior to purging each well:

1. Complete a synoptic round of water level measurements of all accessible wells, if appropriate.

2. The well will be checked for proper identification and location.

3. The height of protective casing will be measured and recorded (not applicable for flush mount installations).

4. After unlocking the well and removing any well cap, the ambient and well-mouth organic vapor levels will be measured and recorded using the PID. The sampler will use the appropriate action levels and safety.

5. The distance between the top of the well casing and the top of the protective casing will be measured and recorded.

6. Using the electronic water level meter, the static water level will be measured and recorded from the top of the well riser and the depth to the well bottom to the nearest 0.01 foot. Upon removing the water level wire, it will be rinsed with clean water.

7. The well head will be inspected for any signs of forced entry, which could invalidate the sampling data.

8. The well volume will be calculated using the following formula for a 4-inch and 2-inch diameter water table well and 10-inch diameter sand pack:

$$Total\ Purge\ Volume = \left(\begin{matrix} Bottom \\ Depth \end{matrix} - \begin{matrix} Static \\ Water \\ Level \end{matrix} \right) x\ 1.68\ gal/ft\ (4\text{ - }inch)\ or\ 0.33\ (2\text{ - }inch)$$

9. If necessary, place plastic sheeting on the ground surface around the well to protect sampling equipment from becoming contaminated by material located around the well.

A4.1.6 Purging and Sample Collection. A submersible pump or bailer may be used to conduct the purging and sampling. Field parameter measurements will be made using a Horiba or equivalent instrumentation. Purging will continue until the water is visibly free of sediment and indicator parameters (pH, temperature, and conductivity) have stabilized such that three successive measurements are within 10% for each parameter and quantitative turbidity monitoring indicates that turbidity has been reduced to 50 nepholometric units (NTUs) or less, if possible. Once stabilization criteria are met, VOC samples will be collected. When collecting the samples, care will be taken to minimize loss of VOCs due to sample aeration by adjusting the pump to the lowest sustainable flow or utilizing a low-flow discharge attachment with the bailer. Sample collection information will be recorded.

A.5 SAMPLE HANDLING AND CUSTODY PROCEDURES

To assure that each sample is accounted for at all times, COC forms are employed as necessary. Field data sheets and COC forms are completed by the appropriate sampling and laboratory personnel for each sample.

A.5.1 Field Custody

The COC protocol followed by the sampling crews involves the following steps:

- documenting sample collection procedures used and sample preparation and preservation steps;

- recording sample site identification, field sample number, and specific sample collection dates and times;

- record sample collection activities in field log; and
- document sample shipment to lab using COC.

The COC record is used to document sample-handling information (i.e., sample location, sample identification, and number of containers corresponding to each sample number). The following information is recorded on the COC record:

- project reference;
- site identification code, sample identification code, date of collection, time of collection, number and type of sample containers for each analysis, preservation methods, site type, total number of containers for each sample, and sample depth;
- names of the sampler(s) and the person shipping the samples; and
- date and time that the samples were delivered for shipping.

A.5.2 Sample Shipments

Sample containers are generally packed in hard plastic, insulated coolers for shipment. Bottles are packed tightly to minimize motion during transport. Styrofoam, vermiculite, or "bubble pack" are used to protect bottles from breaking. Blue ice packs or Ziploc® bags containing ice are added to the cooler along with all paperwork. The paperwork (i.e., COC forms) is sealed in a separate Ziploc® bag and placed in a prominent position inside. The cooler top is then taped shut and sealed with custody seals.

The standard procedure followed for shipping environmental samples to the off-site analytical laboratory is as follows:

- Shipping of environmental samples collected by field personnel is done daily (when necessary) through Federal Express or equivalent overnight delivery service. Samples may be held in the field for one to two days if sampling schedules do not allow for the shipment, if holding the sample increases the efficiency of the shipping process, or if on-site results are needed for selection of off-site analytical samples. Receipts are retained as a part of the COC documentation.
- Prior to shipping samples, the field sampler notifies the off-site laboratory of the number, type, and approximate collection and shipment dates for the samples. If the number, type, or date of shipment changes due to program changes, the field sampler will notify the off-site laboratory of the changes. This notification from the field also needs to occur when sample shipments will arrive on Saturdays.

- If prompt shipping and laboratory receipt of the samples cannot be guaranteed (e.g., Sunday arrival), the samplers will be responsible for proper storage and custody of the samples until transportation or shipment arrangements can be made.

- The laboratory will be notified when samples collected are going to be shipped to the laboratory.

A.5.3 Off-Site Laboratory Custody

COC procedures are also necessary in the off-site laboratory from the time of sample receipt to the time the sample is discarded. The following procedures will be implemented by the laboratory subcontractor:

- A specific person, the off-site laboratory QAC, is designated custodian; an alternate designee may act as custodian in the laboratory QAC's absence. Incoming samples will be received by the custodian, who will indicate receipt by signing the accompanying custody forms and who will retain the signed forms as permanent records.

The sample custodian maintains a permanent logbook or record for each sample. Records shall include the date and time received, the source of the sample, the sample identification or log number, how the sample was transmitted to the laboratory, and the condition received (i.e. sealed, unsealed, broken container, or other pertinent remarks).

A.6 QUALITY CONTROL SAMPLES

Quality control samples will be collected and analyzed as follows:

- An aqueous trip blank prepared by the laboratory will accompany each sample shipment. The trip blanks will be analyzed for the same VOC parameters as the groundwater samples.

- Aqueous field blank samples will be collected during the groundwater sampling events. The field blanks will be collected by pouring analyte-free water (provided by the laboratory) over the sampling equipment and containerizing the rinsate in the appropriate laboratory bottles. The field blanks will be analyzed for the same parameters as the groundwater samples.

- Groundwater and soil field duplicate, matrix spike and matrix spike duplicate samples will be collected as outlined in Table A-2. Duplicates will be collected at the same time, using the same procedures, and analyzed for the same parameters as the original sample.

A.7 DATA REPORTING AND VALIDATION

Category B deliverables, as defined in the NYSDEC ASP, will be reported for the samples collected during site investigation activities. Analytical data will be validated by a MACTEC project chemist in accordance with current NYSDEC Data Usability Summary Report (DUSR) guidelines and Honeywell Remediation program data validation procedures. The resume of the data validator will be provided to the Divisions Quality Assurance Unit for review and approval. Validation will be completed prior to use as final data in investigation reports. Three levels of validation are established for Honeywell projects. A data validation scope will be selected for each sample set based on the data quality goals and needs of that task.

A.7.1 Project Accuracy and Precision Goals

Accuracy and precision limits have been identified for the analytical quality control measurements that will be performed in association with the collection and analysis of field samples. These limits were determined based on USEPA Region 2 data validation guidelines and the professional judgment of MACTEC QA personnel. They represent QA/QC goals for the project to ensure that data meet a minimum quality standard for evaluation of site contamination and data use in remedial investigation reports. These limits will be used to review and evaluate data quality and data usability during data validation.

A.7.2 Data Validation Levels

Data validation will be completed for all remedial investigation samples and the data validation observations and actions will be summarized in a DUSR. Three general levels of data validation are described for data collected under the Honeywell Remediation Program. Validation Levels II, III, and IV have been established to provide standards for analytical data review and to allow projects to determine validation procedures that are appropriate for the data quality goals for each investigation task. Level II validation includes a review of basic QA/QC procedures and measurements that are associated with environmental laboratory analyses, and it represents a generic minimum review of data quality. Level III and Level IV are completed for investigation data that need more intensive validation to support additional data quality objectives or regulatory guidelines and to provide calculation and transcription. The site investigation samples will have Level III validation with 10 percent Level IV.

Level II includes the following data checks and evaluations:

- A review of the data set narrative to identify and issues that the lab reported in the data deliverable;
- A check of sample integrity (sample collection, preservation, and holding times);
- An evaluation of basic QC measurements used to assess the accuracy and precision of data including QC blanks, laboratory control samples (LCS), matrix spikes/matrix spike duplicates (MS/MSD), surrogate recovery when applicable, and field or lab duplicate results; and,
- A review of sample results, target compounds, and detection limits to verify that project analytical requirements are met.

Level III would include all of Level II plus some additional method-specific QC checks including instrument calibration, internal standard response for gas chromatography/mass spectrometry (GC/MS), and interference checks and serial dilutions data for inorganics.

Level IV includes all Level II and Level III checks with additional calculation and raw data checks to verify that no reporting errors have occurred. Data validation actions will be based on general USEPA Region II Guidelines and the professional judgment of MACTEC QA personnel.

Data qualifiers will be applied to results that do not meet project goals and a summary of data validation actions for each sample set will be produced. The summaries will be reviewed and approved by MACTEC QA personnel prior to finalization of the validated data.

A DUSR will be prepared for data sets reported from each distinct sample collection effort. The validation report will include a summary of analytical methods performed, listings of samples included in the review, and summaries of data validation actions or observations.

FIGURES

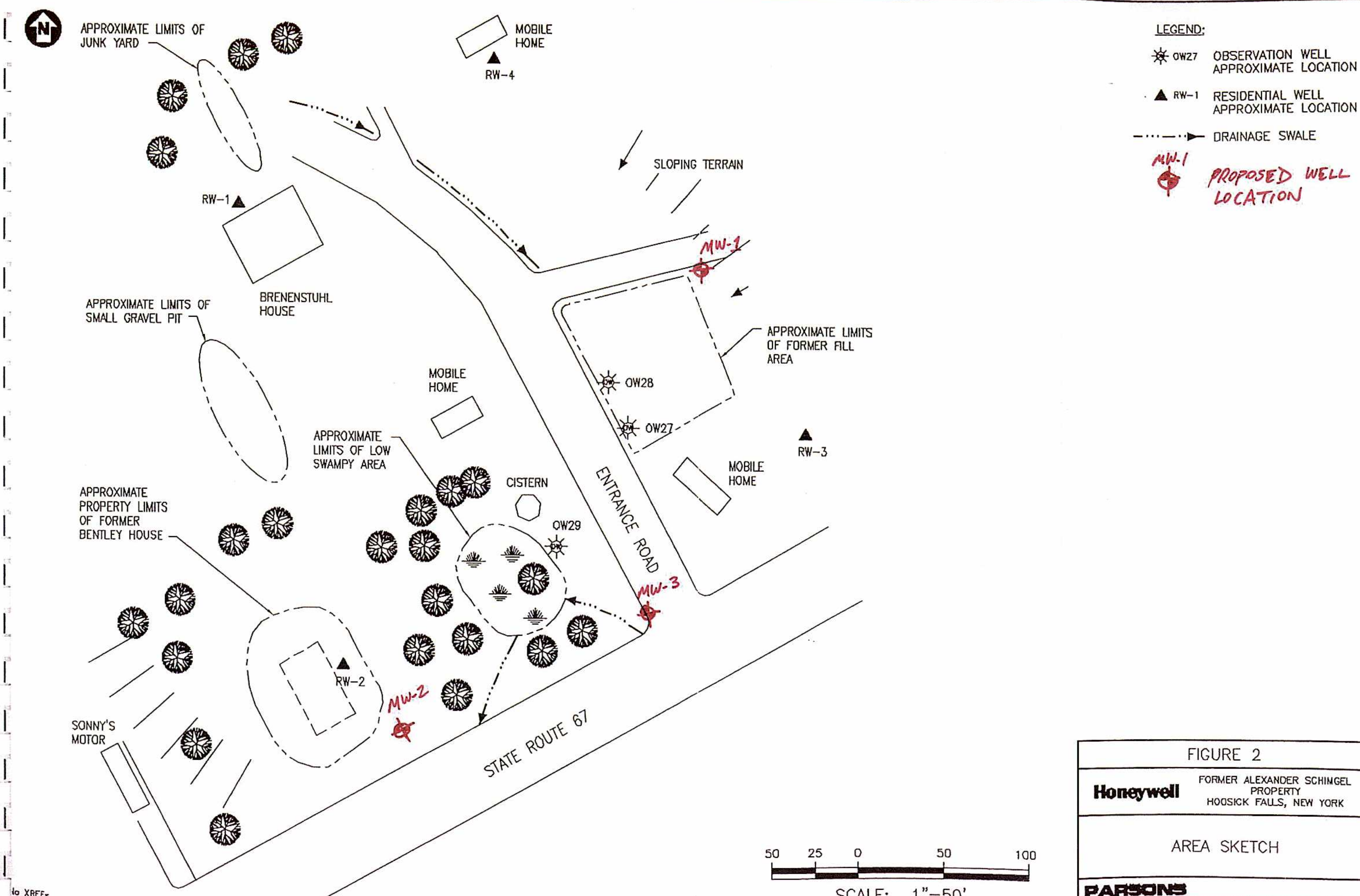

FIGURE 2

Honeywell

FORMER ALEXANDER SCHIMGEL PROPERTY
HOOSICK FALLS, NEW YORK

AREA SKETCH

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

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TABLE A-1
APPROXIMATE QUANTITATION LIMITS

ALEXANDER SCHMIGEL SITE
QUALITY ASSURANCE PROJECT PLAN
HOOSICK FALLS, NEW YORK

AQUEOUS ANALYTES OF INTEREST AND OTHER TARGET ANALYTES
VOLATILE ORGANIC COMPOUNDS (8260)

Analytes	CAS Number	*Approximate Quantitation Limit (µg/L)
1,1,1-Trichloroethane	71-55-6	1
1,1,2,2-Tetrachloroethane	79-34-5	1
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1
1,1,2-Trichloroethane	79-00-5	1
1,1-Dichloroethane	75-34-3	1
1,1-Dichloroethene	75-35-4	1
1,2,3-Trichlorobenzene	87-61-6	1
1,2,4-Trichlorobenzene	120-82-1	1
1,2-Dibromo-3-chloropropane	96-12-8	1
1,2-Dibromoethane	106-93-4	1
1,2-Dichlorobenzene	95-50-1	1
1,2-Dichloroethane	107-06-2	1
1,2-Dichloropropane	78-87-5	1
1,3-Dichlorobenzene	541-73-1	1
1,4-Dichlorobenzene	106-46-7	1
2-Butanone	78-93-3	1
2-Hexanone	591-78-6	1
4-Methyl-2-pentanone	108-10-1	1
Acetone	67-64-1	1
Benzene	71-43-2	1
Bromochloromethane	74-97-5	1
Bromodichloromethane	75-27-4	1
Bromoform	75-25-2	1
Bromomethane	74-83-9	1
Carbon disulfide	75-15-0	1
Carbon tetrachloride	56-23-5	1
Chlorobenzene	108-90-7	1
Chloroethane	75-00-3	1
Chloroform	67-66-3	1
Chloromethane	74-87-3	1
cis-1,2-Dichloroethene	156-59-2	1
cis-1,3-Dichloropropene	10061-01-5	1
Cyclohexane	110-82-7	1
Dibromochloromethnae	124-48-1	1
Dichlorodifluoromethane	75-71-8	1
Ethyl benzene	100-41-4	1
Isopropylbenzene	98-82-8	1
Methyl acetate	79-20-9	1
Methylene chloride	75-09-2	1
Methyl cellosolve (2-Methoxyethanol)	109-86-4	1
Methylcyclohexane	108-87-2	1
Methyl tert-butyl ether	1634-04-4	1
Styrene	100-42-5	1
Tetrachloroethene	127-18-4	1
Toluene	108-88-3	1
trans-1,2-Dichloroethene	156-60-5	1
trans-1,3-Dichloropropene	10061-02-6	1
Trichloroethene	79-01-6	1
Trichlorofluoromethane	75-69-4	1
Vinyl chloride	75-01-4	1
Xylenes, Total	1330-20-7	1

*Target compound list and approximate QLs based on USEPA CLP methods. The exact QLs will be provided by the laboratory at the time of lab contracting.

TABLE A-1
APPROXIMATE QUANTITATION LIMITS

ALEXANDER SCHMIGEL SITE
QUALITY ASSURANCE PROJECT PLAN
HOOSICK FALLS, NEW YORK

SOIL ANALYTES OF INTEREST AND OTHER TARGET ANALYTES
LOW LEVEL VOLATILE ORGANIC COMPOUNDS (8260)

Analytes	CAS Number	*Approximate Quantitation Limit (µg/Kg)
1,1,1-Trichloroethane	71-55-6	10
1,1,2,2-Tetrachloroethane	79-34-5	10
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	10
1,1,2-Trichloroethane	79-00-5	10
1,1-Dichloroethane	75-34-3	10
1,1-Dichloroethene	75-35-4	10
1,2,3-Trichlorobenzene	87-61-6	10
1,2,4-Trichlorobenzene	120-82-1	10
1,2-Dibromo-3-chloropropane	96-12-8	10
1,2-Dibromoethane	106-93-4	10
1,2-Dichlorobenzene	95-50-1	10
1,2-Dichloroethane	107-06-2	10
1,2-Dichloropropane	78-87-5	10
1,3-Dichlorobenzene	541-73-1	10
1,4-Dichlorobenzene	106-46-7	10
2-Butanone	78-93-3	10
2-Hexanone	591-78-6	10
4-Methyl-2-pentanone	108-10-1	10
Acetone	67-64-1	10
Benzene	71-43-2	10
Bromochloromethane	74-97-5	10
Bromodichloromethane	75-27-4	10
Bromoform	75-25-2	10
Bromomethane	74-83-9	10
Carbon disulfide	75-15-0	10
Carbon tetrachloride	56-23-5	10
Chlorobenzene	108-90-7	10
Chloroethane	75-00-3	10
Chloroform	67-66-3	10
Chloromethane	74-87-3	10
cis-1,2-Dichloroethene	156-59-2	10
cis-1,3-Dichloropropene	10061-01-5	10
Cyclohexane	110-82-7	10
Dibromochloromethnae	124-48-1	10
Dichlorodifluoromethane	75-71-8	10
Ethyl benzene	100-41-4	10
Isopropylbenzene	98-82-8	10
Methyl acetate	79-20-9	10
Methylene chloride	75-09-2	10
Methyl cellosolve (2-Methoxyethanol)	109-86-4	10
Methylcyclohexane	108-87-2	10
Methyl tert-butyl ether	1634-04-4	10
Styrene	100-42-5	10
Tetrachloroethene	127-18-4	10
Toluene	108-88-3	10
trans-1,2-Dichloroethene	156-60-5	10
trans-1,3-Dichloropropene	10061-02-6	10
Trichloroethene	79-01-6	10
Trichlorofluoromethane	75-69-4	10
Vinyl chloride	75-01-4	10
Xylenes, Total	1330-20-7	10

*Target compound list and approximate QLs based on USEPA CLP methods. The exact QLs will be provided by the laboratory at the time of lab contracting.

TABLE A-1
APPROXIMATE QUANTITATION LIMITS

ALEXANDER SCHMIGEL SITE
QUALITY ASSURANCE PROJECT PLAN
HOOSICK FALLS, NEW YORK

SOIL ANALYTES OF INTEREST AND OTHER TARGET ANALYTES
MEDIUM LEVEL VOLATILE ORGANIC COMPOUNDS (8260)

Analytes	CAS Number	*Approximate Quantitation Limit (µg/Kg)
1,1,1-Trichloroethane	71-55-6	1300
1,1,2,2-Tetrachloroethane	79-34-5	1300
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1300
1,1,2-Trichloroethane	79-00-5	1300
1,1-Dichloroethane	75-34-3	1300
1,1-Dichloroethene	75-35-4	1300
1,2,3-Trichlorobenzene	87-61-6	1300
1,2,4-Trichlorobenzene	120-82-1	1300
1,2-Dibromo-3-chloropropane	96-12-8	1300
1,2-Dibromoethane	106-93-4	1300
1,2-Dichlorobenzene	95-50-1	1300
1,2-Dichloroethane	107-06-2	1300
1,2-Dichloropropane	78-87-5	1300
1,3-Dichlorobenzene	541-73-1	1300
1,4-Dichlorobenzene	106-46-7	1300
2-Butanone	78-93-3	1300
2-Hexanone	591-78-6	1300
4-Methyl-2-pentanone	108-10-1	1300
Acetone	67-64-1	1300
Benzene	71-43-2	1300
Bromochloromethane	74-97-5	1300
Bromodichloromethane	75-27-4	1300
Bromoform	75-25-2	1300
Bromomethane	74-83-9	1300
Carbon disulfide	75-15-0	1300
Carbon tetrachloride	56-23-5	1300
Chlorobenzene	108-90-7	1300
Chloroethane	75-00-3	1300
Chloroform	67-66-3	1300
Chloromethane	74-87-3	1300
cis-1,2-Dichloroethene	156-59-2	1300
cis-1,3-Dichloropropene	10061-01-5	1300
Cyclohexane	110-82-7	1300
Dibromochloromethnae	124-48-1	1300
Dichlorodifluoromethane	75-71-8	1300
Ethyl benzene	100-41-4	1300
Isopropylbenzene	98-82-8	1300
Methyl acetate	79-20-9	1300
Methylene chloride	75-09-2	1300
Methyl cellosolve (2-Methoxyethanol)	109-86-4	1300
Methylcyclohexane	108-87-2	1300
Methyl tert-butyl ether	1634-04-4	1300
Styrene	100-42-5	1300
Tetrachloroethene	127-18-4	1300
Toluene	108-88-3	1300
trans-1,2-Dichloroethene	156-60-5	1300
trans-1,3-Dichloropropene	10061-02-6	1300
Trichloroethene	79-01-6	1300
Trichlorofluoromethane	75-69-4	1300
Vinyl chloride	75-01-4	1300
Xylenes, Total	1330-20-7	1300

*Target compound list and approximate QLs based on USEPA CLP methods. The exact QLs will be provided by the laboratory at the time of lab contracting.

TABLE A-2
ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY

ALEXANDER SCHMIGEL SITE
QUALITY ASSURANCE PROJECT PLAN
HOOSICK, NEW YORK

Matrix	Parameter	Analytical Method	Preservation	Holding Times	No. of Field Duplicates	Organic		No. of Trip Blanks	No. of Equip. Blanks	No. of Split Samples	No. of Performance Evaluation Samples	Total No. of Samples to Lab
						No. of MS	No. of MSD					
Aqueous	VOC	8260	HCl, $4^{o}C$ +/- 2^{o}	10 VTSR	5%	5%	5%	1 per cooler	TBD	NA	NA	TBD
Solid	VOC	8260	$4^{o}C$ +/- 2^{o}	48 Hours to Analysis	5%	5%	5%	NA	TBD	NA	NA	TBD
Solid	TCLP VOC	8260	$4^{o}C$ +/- 2^{o}	7 Days to Extraction 7 Days to Analysis	5%	5%	5%	NA	TBD	NA	NA	TBD

HCl = hydrochloric acid
MS = matrix spike
MSD = matrix spike duplicate
NA = not applicable
TBD = to be determined
TCLP = toxicity charachteristic leaching procedure
VOC = volatile organic compounds
VTSR = verified time of sample receipt

Table A-3
Project Accuracy and Precision Goals

PARAMETER	QC TEST	ANALYTE	WATER (%R)	SOIL (%R)
Volatiles	**Surrogate**	All Surrogates	80-120	70 - 130
	LCS	All Target Compounds	70 - 130	70 - 130
	MS/MSD	All Target Compounds	70 - 130	70 - 130

Notes:
LCS = Laboratory Control Sample
MS/MSD = Matrix spike/ Matrix Spike Duplicate
%R = Percent Recovery

Table A-3 (cont'd)
Project Accuracy and Precision Goals

PARAMETER	QC TEST	RPD Water	RPD Soil
Volatiles	**Field Duplicates**	30	50
	MS/MSD	30	50

Notes:
MS/MSD = Matrix spike/ Matrix Spike Duplicate
QC = Quality Control
RPD = Relative Percent Difference

KEY TO SOIL DESCRIPTIONS AND TERMS

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS (more than half of material is larger than No. 200 sieve size)	GRAVELS (more than half of coarse fraction is larger than No. 4 sieve size)	CLEAN GRAVELS (little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly-graded gravels, gravel sand mixtures, little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (more than half of coarse fraction is smaller than No. 4 sieve size)	CLEAN SANDS (little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines
			SP	Poorly-graded sands, gravelly sand, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures.
FINE-GRAINED SOILS (more than half of material is smaller than No. 200 sieve size)	SILTS AND CLAYS (liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, clean clays
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils.

TERMS DESCRIBING DENSITY/CONSISTENCY

Coarse-grained soils (more than half of material is larger than No. 200 sieve): Includes (1) clean gravels; (2) silty or clayey gravels; and (3) silty, clayey or gravelly sands. Consistency is rated according to standard penetration resistance.

Descriptive Term	Portion of Total
(Modified Burmister System)	
trace	0% - 10%
little	10% - 20%
some	20% - 35%
adjective (e.g. sandy, clayey)	35% - 50%

Density of Cohesionless Soils	Standard Penetration Resistance N-Value (blows per foot)
Very loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

Fine-grained soils (more than half of material is smaller than No. 200 sieve): Includes (1) inorganic and organic silts and clays; (2) gravelly, sandy or silty clays; and (3) clayey silts. Consistency is rated according to shear strength as indicated.

Consistency of Cohesive soils	SPT N-Value blows per foot	Approximate Undrained Shear Strength (psf)	Field Guidelines
Very Soft	0 - 2	0 - 250	Fist easily Penetrates
Soft	2 - 4	250 - 500	Thumb easily penetrates
Medium Stiff	4 - 8	500 - 1000	Thumb penetrates with moderate effort
Stiff	8 - 15	1000 - 2000	Indented by thumb with great effort
Very Stiff	15 - 30	2000 - 4000	Indented by thumbnail
Hard	>30	over 4000	Indented by thumbnail with difficulty

Rock Quality Designation (RQD):

RQD = sum of the lengths of intact pieces of core* >100mm (0.3ft. / length of core advance

*Minimum NQ rock core (1.88 in. OD of core)

Quality Description	RQD
Very Poor	<25%
Poor	25% - 50%
Fair	50% - 75%
Good	75% - 90%
Excellent	>90%

Desired Rock Observations: (in this order)

Color (Munsell color chart)
Texture (aphanitic, fine-grained, etc.)
Lithology (igneous, sedimentary, metamorphic, etc.)
Hardness (very hard, hard, mod. hard, etc.)
Weathering (fresh, very slight, slight, moderate, mod. severe, severe, etc.)
Geologic discontinuities/jointing:
- -dip (horiz - 0-5, low angle - 5-35, mod. dipping - 35-55, steep - 55-85, vertical - 85-90)
- -spacing (very close - <5 cm, close - 5-30 cm, mod. close 30-100 cm, wide - 1-3 m, very wide >3 m)
- -tightness (tight, open or healed)
- -infilling (grain size, color, etc.)

Formation (Waterville, Ellsworth, Cape Elizabeth, etc.)
RQD and Rock Mass Description (very poor, poor, fair, etc.)
Recovery

Desired Soil Observations: (in this order)

Color (Munsell color chart)
Name (sand, silty sand, clay, etc., including portions - trace, little, etc.
Gradation (well-graded, poorly-graded, uniform, etc.)
Density/Consistency (from above, based on SPT "N" Value)
Moisture (dry, damp, moist, wet, saturated)
Plasticity (non-plastic, slightly plastic, moderately plastic, highly plastic)
Structure (layering, fractures, cracks, etc.)
Geologic Origin (till, marine clay, alluvium, etc.)
Unified Soil Classification Designation

Sample Container Labeling Requirements:

Site:	
Boring Number	Blow Counts:
Sample Number	Sample Recovery
Sample Depth	Personnel Initials

MACTEC

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