July 2006

NYSDEC Environmental Restoration Program

Remedial Investigation / Alternatives Analysis Work Plan

Former Hettling Farm Site (ERP Site #411015)

US Route 9
Town of Clermont
Columbia County, New York

Prepared for:

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REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS WORK PLAN
FORMER HETTLING FARM SITE
TOWN OF CLERMONT
COLUMBIA COUNTY, NEW YORK

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1.0 INTRODUCTION & PURPOSE

1.1 Introduction

The Town of Clermont submitted an application to the New York State Department of Environmental Conservation (DEC) for participation in the NYS Environmental Restoration Program (ERP) in relationship to the property known as the Former Hettling Farm Site located along the western side of U.S. Route 9, approximately 1,100 feet north of this route's intersection with County Route 6, in the Town of Clermont, Columbia County, New York (herein "the Site"). The DEC subsequently notified the Town of Clermont of its eligibility to participate in the ERP. The DEC and the Town of Clermont executed a State Assistance Contract (SAC)which requires the submission, review, approval and implementation of investigative work plans under the ERP. A Site Location Map is presented as Figure 1.

In March 2006, the Town of Clermont retained C.T. Male Associates, P.C. (C.T. Male) as an environmental consultant for this project. To aid in the development of the Remedial Investigation/Alternatives Analysis (RI/AA) Work Plan, C.T. Male arranged for a project scoping meeting with DEC personnel in April 2006. The purpose of the meeting was to allow the agency personnel to gain a better understanding of the site layout and conditions, to review proposed environmental investigations proposed by the Town of Clermont and C.T. Male, and to determine the necessity for additional investigations beyond those that were proposed.

The proposed investigation generally consists of the collection and analysis of surface soil samples, sediment samples, surface water samples, conducting an electromagnetic (EM) survey investigation, and a Fish and Wildlife Impact Analysis (FWIA). Results of the EM survey will dictate the necessity for test pits at the site and will aid in the placement of soil borings that will be converted to monitoring wells to aid in the collection of soil and groundwater samples.

The investigation will also include instituting a non-emergency Interim Remedial Measure (IRM) for the removal and disposal of an above-grade mound of railroad ties and telephone poles. Additional IRM activities may be necessary pursuant to the

results of the EM survey and the findings of subsequent test pits at the geophysical anomalies.

This RI/AAR Work Plan will become an appendix to the ERP Agreement. The work plan is a working document that may be modified by the Town of Clermont and DEC under the terms and conditions of the ERP.

1.2 Purpose

The purpose of the RI/AAR Work Plan is to describe the investigations required to define the nature and extent of contamination. From this data decisions regarding the need for remedial actions are made and appropriate remedial options are evaluated based in part on the intended use of the Site. The Work Plan outlines a systematic investigation specific to the Site characteristics considering the Site's history, geology, hydrogeology, known or suspected contaminants and contemplated future use. The target goals of this ERP investigation will be to identify contaminants of concern, define the horizontal and vertical extent of such contamination, and to produce data of sufficient quantity and quality to support the development of potential remedial alternatives, which will allow the Department to prepare a Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD) for the site.

It is our understanding that the Municipality represents that the site will be used for Restricted Use, which may comprise commercial and recreational options. Commercial type use may include the construction of a new Town highway garage and/or Town Hall. Recreational uses may include athletic fields, nature trails, passive use and other public use amenities.

2.0 SITE HISTORY & SITE DESCRIPTION

2.1 Site Description

The Site is approximately 20.5 acres in size and is located along the western side of U.S. Route 9, approximately 1,100 feet north of this route's intersection with County Route 6, in the Town of Clermont, Columbia County, New York. The site is identified as a subdivision of southern portions of the Hettling Farm and is identified as Columbia County Tax Map Parcel I.D. number 181.00, Block 1 Lot 25.1. The site was subdivided from remaining portions of the Hettling Farm in 2003 when it was conveyed to the Town of Clermont. Access to the site is from the western side of U.S. Route 9. A 2004 Aerial Site Features Map depicting the site's boundaries is presented as Figure 2. The Site Plan is presented as Figure 3.

The site presently consists of vacant land that has historically been used for agricultural purposes. The site rises gradually in elevation from its eastern border with U.S. Route 9 to its property boundary to the west. A water drainage swale/creek bisects central portions of the site and flows in a northerly direction. Site conditions east of the swale/creek consist primarily of vacant land that is overgrown with shrubs and long grasses. A pile of discarded telephone poles, railroad ties and wood is located on this portion of the site in the vicinity of its northern property line. Previous land usage on this portion of the site reportedly included the cultivation of row crops and vegetables as well as fruit trees. Land usage to the west of the swale/creek consists or rows of fruit trees that historically served as an orchard.

A survey of the site, dated May 20, 2003, was prepared by Robert J. Ihlenburg and is titled "Subdivision of Lands of Catherine Hettling". A copy of the survey is presented as Exhibit 1.

2.2 Environmental Site History

2.2.1 Previous Property Use

The site has historically been utilized for agricultural purposes. An active fruit orchard operated on western portions of the site while the cultivation of row crops, vegetables

and fruit trees took place on eastern portions of the site. The site, prior to its subdivision in 2003, was a part of the larger Hettling Farm.

2.2.2 Historical Chemicals Used

Various pesticides and herbicides may have been applied to the fruit trees and row crops during the site's past usage for agricultural purposes. Suspected pesticides used within the site are lead and arsenic based compounds, and organophosphate and organochlorine pesticide compounds. Aerial application of some chemicals may have been performed in the past.

2.2.3 Site Drainage Features

The site gently slopes from west to east towards US Route 9, and is bisected by a water drainage swale/creek at its approximate center. Surface water drainage on western portions of the site would tend to follow the site surface topography and flow towards the swale/creek. Surface water drainage on eastern portions of the site would tend to follow the site surface topography and flow towards U.S. Route 9. Based on the site topography, inferred groundwater flow direction across the site (with the exception of convergent areas in the immediate vicinity of the swale/creek) is inferred to be from west to east towards the Roeliff Jansen Kill, which is located approximately 4,000 feet east of the site (see Figure 1).

2.2.4 Environmental Orders, Decrees and Violations Associated with the Site

Currently there are no known active Orders, Decrees or Violations concerning environmental issues at the Site. A NYSDEC Emergency Response Action was initiated on portions of the Hettling Farm located north and east of the site and is further discussed in the following section.

2.3 Previous Investigations and Evaluation History

To evaluate the history of the site, C.T. Male reviewed publicly available environmental investigation reports of the site, as well as historical aerial photographs and Sanborn Fire Insurance Maps. Interviews were also conducted with persons familiar with the site to gain an understanding of the site's environmental history.

2.3.1 Summary of Previous Investigations by Others

Portions of the Hettling Farm north and east of the site have been assigned NYSDEC Spill No. 9903155 in conjunction with a NYSDEC initiated Emergency Response Action. The response action was the result of an uncontrolled material dumping area and chemical fires to the north of the site. According to interviews with persons familiar with the site (see section 2.3.4) and review of available DEC files pertaining to the site, the fire department responded to fires that were caused by illegal burning and by the employment of blow torches to dismantle stockpiled motor vehicles stored to the north of the site. The dumped items were subsequently removed from the Hettling property by the NYSDEC Division of Solid Waste for off-site disposal. Additionally, four underground storage tanks were closed in 1999 at the Hettling farmstead, which is located on eastern portions of US Route 9 opposite the site (downgradient) and to the north. The tanks that were closed included: two, 6,280-gallon tanks containing gasoline; one 1,200-gallon tank that contained #2 fuel oil; and one 200-gallon tank that contained diesel. Soil samples that were collected as part of the tank closures did not exhibit evidence of impacts.

2.3.2 Historical Aerial Photographs

Aerial photographs for the site and its vicinity were reviewed for the years 1948, 1959, 1994/1996 and 2001 and are included as Exhibits 2, 3, 4 and 5, respectively.

The 1948 and 1959 photos (Exhibits 2 and 3) depict the site as agricultural. Rows of trees are observed on eastern and western portions of the site while central portions of the site are cleared. Land usage surrounding the site is agricultural in nature.

The 1994/1996 photo (Exhibit 4) depicts the site as agricultural. Rows of trees are located on western portions of the site, with the remaining eastern portions depicted as cleared. Discarded materials are depicted in the vicinity of the site's western and northwestern property lines with open land on northwestern portions of the site appearing to provide access for the transport of materials beyond the site's western property line. The discarded materials are assumed to be affiliated with the remaining portions of the Hettling Farm that underwent the NYSDEC Emergency Response Action (section 2.3.1).

The 2001 photo (Exhibit 5) depicts site usage as similar to that identified in the 1994/1996 photo. The discarded materials to the north and west of the site which were identified in the 1994/1996 photo appear to have been removed.

2.3.3 Historical Map Review

Sanborn Fire Insurance maps providing coverage for the Site were searched at the New York State Museum located in Albany, New York. The Sanborn Maps did not extend coverage for the Town of Clermont.

2.3.4 Interviews with Persons Familiar with the Site

Persons familiar with the site were interviewed by telephone to gain a better historical perspective for the site. Persons interviewed included the following:

- Jim Potts who is the Town of Clermont Highway Superintendent;
- Kenny Maus who has resided adjacent northeast of the property for the past 46 to 47 years; and
- Anne Poleschner who is the Town of Clermont Historian.

Jim Potts indicated that he was unaware of any illegal dumping on the site, although he could not confirm if dumping took place on its western portions. Mr. Potts indicated that the Town of Clermont buried tree stumps, brush and decayed natural wood at the northwestern toe of a knoll located on southeastern portions of the site adjacent to the Town of Clermont cemetery. A dirt road originating from the Town of Clermont Highway Garage is shown in this area on Figure 2. Regarding the stockpiled telephone poles and railroad ties on northeastern portions of the site, Mr. Potts indicated that these items were spread out a radius of approximately 100 to 150 feet around the existing stockpile prior to being condensed into their present configuration. Mr. Potts indicated that the Town of Clermont Fire Department was frequently summoned to extinguish grass fires and illegal burnings on portions of the Hettling Farm north of the project site.

Kenny Maus indicated that he was unaware of any surface and/or subsurface disposal of materials at the site, with the exception of the stockpiled railroad ties and telephone poles. Mr. Maus indicated that all dumping took place along a dirt road on the existing

Hettling property which is located to the north and west of the site (see 1994/1996 aerial photo in Exhibit 4).

Anne Poleschner indicated that she was unaware of any dumping on the site. She stated that dumping took place on portions of the Hettling property to the north of the site.

2.3.5 Review of Columbia County Health Department Records

A Freedom of Information Law (FOIL) request was submitted to the Columbia County Health Department for records regarding the project site. The only records available for review pertained to inspections that were conducted on the Hettling Farm migrant labor camp. The inspections mostly focused on the condition of housing provided to the migrant laborers. The Health Department did not have any records pertaining to environmental conditions/issues at the Hettling Farm, inclusive of the project site.

3.0 OBJECTIVES, SCOPE & RATIONALE

3.1 Objectives

The objective of the RI/AAR Work Plan is to provide a description of and the rationale for the investigative approach to be implemented to characterize the nature and extent of the potential Site contaminants. To accomplish the overall project objective, a RI/AAR Work Plan is to be developed, reviewed and approved prior to the initiation of the investigations. The overall project objective is to complete appropriate Site investigations in support of the preparation of a comprehensive remedial investigative report detailing the nature and extent of contamination at the Site. With this objective met, recommendations and plans for Interim Remedial Measures (IRMs), if warranted, will be prepared and presented to the Department for review. Remedial actions based upon the investigation will be developed and presented in the Alternatives Analysis Report. The investigative work outlined herein is based on the contemplated future use of the Site (public buildings and recreational use) and the existing Site data as developed by C.T. Male and others.

3.2 Scope

The scope of the investigation work is intended to supplement the existing Site data with additional physical and chemical data for determining the chemical parameters of concern within the Site. The potential chemical parameters of concern were selected based on the known or suspected chemicals used at the Site.

The scope of work will include the following:

- Conduct a private well survey to identify the location of private drinking water wells within a 1/4-mile radius of the site. This will be accomplished through review of Town records and interviews with appropriate Town, County and New York State Department of Health personnel.

- Conduct an electromagnetic (EM) survey to identify anomalies which may represent buried ferrous materials and wastes. Significant anomalies will be recorded in the field and ultimately identified on a scaled site plan. The anomalies will be further evaluated through the completion of shovel pits

and/or exploratory test pits. The EM survey results may also dictate in part the location of the planned soil borings/monitoring wells.

- Conduct exploratory test pitting based on the results of the EM survey. The test pits will be completed at anomaly locations to determine if materials have been buried within the site. The test pits will be advanced with an excavator to the depth of native soils beneath any fill materials, to the depth of groundwater, or to the top of bedrock, whichever is encountered first. At a minimum, one confirmatory bottom excavation soil sample will be collected for laboratory analysis from each test pit that identifies wastes having the potential to impact the site soils and groundwater. The soil samples will be analyzed for the full Target Compound List (TCL) of organic compounds (VOCs, SVOCs, Pesticides and PCBs) and the Target Analyte List (TAL) of Metals. Because the locations of the test pits will be determined upon completion of the EM survey, they are not depicted on the Proposed Sampling Locations Map in Figure 4.

- Twenty-eight (28) discrete surface soil samples will be collected within the site and are depicted as SS-1 through SS-28 in Figure 4. The samples will be collected across the entire site at both biased and unbiased locations and will be analyzed for the TCL semi-volatile organic compounds, PCBs and pesticides, and TAL metals. Samples SS-22, SS-24 and SS-26 will also be analyzed for TCL volatile organic compounds, as these samples will be collected within an area that formerly contained scattered railroad ties and telephone poles that were likely coated with creosote.

  Depending on the analytical results of the surface soil sampling, off-site background samples may be collected to aid in determining if elevated contaminant levels are localized to the project site or if they are regional in their extent.

- Eight exploratory test borings converted to monitoring wells will be installed within the site, with their location dependent on the results of the EM survey and exploratory test pits. The borings and monitoring wells will be for the purpose of: further investigating any anomalies; evaluating the subsurface geology beneath the site; evaluating subsurface soils above the water table for evidence of contamination; collecting soil and groundwater samples, and to determine the

direction of groundwater flow across the site. It is anticipated that the borings / wells will be completed utilizing Geoprobe drilling techniques.

Soil and groundwater samples will be collected from each of the test borings for laboratory analysis. It is anticipated that one soil sample above the water table and one groundwater sample from each monitoring well will be collected for laboratory analysis. The soil and groundwater samples will be analyzed for the TCL / TAL groups of compounds and analytes.

- Surface water and sediment samples will be collected from the stream that bisects central portions of the site and from a pond located adjacent southwest of the site on land that is owned by the Town of Clermont (see Figure 4). Three surface water (pond, midstream and downstream) water samples and four sediment (pond, upstream, midstream and downstream) samples will be collected for laboratory analyses. The surface water samples will be collected from the off-site pond south of the site and from midstream and downstream portions of the on-site stream. The sediment samples will be collected from the off-site pond (two samples) and from upstream, midstream and downstream portions of the on-site stream. The water samples will be analyzed for the full TCL / TAL groups of compounds and analytes. The sediment samples will be analyzed for the full TCL / TAL groups of compounds and analytes, and total organic carbon (TOC). The sampling locations are depicted on Figure 4.

- The stockpiled railroad ties and telephone poles (see Figure 4) will be removed and disposed of off-site by instituting a non-emergency Interim Remedial Measure (IRM). Upon their removal, any underlying soils exhibiting evidence of contamination employing subjective methods of PID headspace analysis and organoleptic (sight and smell) perception will be stockpiled atop 6-mil poly for subsequent off-site disposal. Two (2) discrete confirmatory samples will be collected of soils beneath the stockpile for laboratory analysis to ensure that all subjectively assessed contaminated soils have been removed. The samples will be analyzed for the full TCL / TAL groups of compounds and analytes.

- Complete a Fish and Wildlife Impact Analysis (FWIA). The level at which the FWIA is completed will be based on the October 1994 NYSDEC Fish and Wildlife Impact Analysis (FWIA) for Inactive Hazardous Waste Sites. The FWIA manual

is written in steps such that decision points are established for determining when the process is complete and further assessment is unnecessary. At a minimum, a partial description of the site will be prepared to determine if fish and wildlife resources are present at the subject site. If fish and wildlife resources are present which may be affected by site-related contaminants, a complete site description as outlined in Step I of the FWIA will be considered. If no resources are associated with the site or if there is no potential for contaminant migration to the resources, then only the necessary information to support that conclusion will be provided. If a potential for the migration of contaminants to the resources is identified, further evaluation pursuant to the FWIA will be considered.

- Complete a qualitative human health exposure assessment of the Site in general accordance with NYSDOH guidance. The assessment will consist of characterizing the exposure setting (including the physical environment and potentially exposed human populations), identifying exposure pathways, and evaluating contaminant fate and transport.

- Collect and submit quality control/quality assurance (QA/QC) samples at a ratio of 1 set of QA/QC samples per 20 media samples. The QA/QC set of samples will consist of a blind duplicate sample, a MS/MSD sample, an equipment blank and a trip blank.

- Complete a Data Usability Summary Report (DUSR) of the analytical data developed during this investigation to confirm the data is of adequate quality for subsequent decision making purposes. The DUSR will be completed by an independent data validator.

- Conduct a survey of all the exploratory locations (i.e. surface samples, stream and sediment samples, test pits, test borings, EM survey anomaly locations etc.) and other pertinent surface features. The locations and features will be amended to a site survey conducted for the Town of Clermont in 2003 (see Exhibit 1).

- Plans for a soil gas survey are not included in the RI. However, a soil gas survey will be conducted at this site during the RI, if preliminary environmental sampling data confirms the presence of volatile chemicals in the soil,

groundwater or both. Plans for a soil gas survey will be developed, reviewed, and implemented as warranted, based upon continuous evaluation of the RI site data. If a soil gas survey is not warranted, this rationale shall be presented in the RI report.

The sampling locations along with the proposed laboratory analyses are presented in the following table.

TABLE 1: Proposed Sampling Locations and Analyses

			PROPOSED ANALYSIS					
Media	**Location**	**Depth Interval**	**TCL VOCs**	**TCL SVOCS**	**TCL PESTs**	**TCL PCBs**	**TAL METALS**	**TOC**
Surface Soil	SS-1 to SS-21, SS-23, SS-25, SS-27 and SS-28	0-2 inches		X	X	X	X	
	SS-22, SS-24 and SS-26	0-2 inches	X	X	X	X	X	
Subsurface Soil (Test Pits)	TP1 to TP8	TBD(1)	X	X	X	X	X	
Subsurface Soil Borings/Monitoring Wells	SB1 to SB8	TBD(1)	X	X	X	X	X	
Surface Water (Stream)	SW1 to SW3	Surface Water	X	X	X	X	X	
Sediment (Stream)	SD1 to SD4	Sediment	X	X	X	X	X	X
Background Surface Soil	TBD(1)	0-2 inches	TBD(1)	TBD(1)	TBD(1)	TBD(1)	TBD(1)	TBD(1)
IRM	TBD(1)	TBD(1)	X	X	X	X	X	

(1) To be determined on the basis of other findings and results

3.3 Rationale

The site has historically been utilized for agricultural purposes and dumping of various materials has reportedly taken place to the north and west of the site. Potential products and chemicals used in conjunction with the site's past activities were summarized in section 2.2.2. Additionally, portions of the Hettling farm (not inclusive of the site) have been the subject of a NYSDEC Emergency Response Action relative to abandoned petroleum storage tanks and other containers of agricultural chemicals

including pesticides and herbicides, uncontrolled material dumping areas and chemical fires. Based on this information, the following rationale is presented in support of C.T. Male's proposed site investigation.

- The private well survey will be conducted to inventory nearby wells so that their locations are known should results of the RI indicate the presence of contaminants within groundwater.

- The EM survey will be completed to identify subsurface anomalies that may be indicative of buried wastes. The EM equipment that will be used will have the capability of detecting buried ferrous materials. The results of the EM survey will dictate the locations of the test pits and will aid in the selection of test boring / monitoring well locations.

- Surface soil sampling is a requirement of the NYSDOH to determine the quality of surface soils at the site. The site has historically been used for agricultural purposes, which indicates that pesticides and / or herbicides may have been used to enhance crop production. The surface soil sampling locations are depicted on Figure 4.

  One sample (1) (SS-1) will be collected in the vicinity of a dirt road that traversed the northwestern portion of the site (see Figures 2 and 4) and led to former areas of material dumping to the west (rear) of the site (see Exhibit 4).

  Nine (9) samples (SS-2 to SS-10) will be collected within the former orchard area located to the west of the swale / creek that bisects central portions of the site. Two of the samples (SS-9 and SS-10) will be collected from a rectangular-shaped cleared area within the orchard (see Figures 2 and 4).

  Eleven (11) samples (SS-11 to SS-21) will be collected within former areas of agricultural row crops and fruit trees. Samples SS-18 and SS-21 will be biased to areas at the western toe of a cemetery knoll where the Town of Clermont has reportedly buried tree stumps and brush.

  Three (3) samples (SS-22, SS-24 and SS-26) will be collected within a 100 to 150 foot radius of the stockpiled railroad ties and telephone poles. The ties and poles

were reportedly scattered within this area prior to being stockpiled into their present location.

Three (3) samples (SS-23, SS-27 and SS-28) will be collected from the remaining eastern portions of the site.

Surface soil samples SS-1 through SS-21, SS-23, SS-25, SS-27 and SS-28 will be analyzed for the TCL semi-volatile organic compounds, PCBs and pesticides, and TAL metals. Samples SS-22, SS-24 and SS-26 will also be analyzed for TCL volatile organic compounds, as these samples will be collected within an area that formerly contained scattered railroad ties and telephone poles which may have be coated with creosote.

- Exploratory test pitting may be conducted to further investigate any anomalies encountered during the EM survey. The test pits will be advanced with an excavator to the depth of native soils beneath any fill materials, to the depth of groundwater, or to the top of bedrock, whichever is encountered first. At a minimum, one (1) discrete verification sample will be collected from each test pit where waste disposal is evident. The sample will be analyzed for the full TCL/TAL groups of compounds and analytes. In the absence of evidence of waste disposal, a confirmatory sample may not be collected for laboratory analysis. The test pit locations will be depicted on a site plan upon completion of the EM survey.

- The exploratory test borings that will be converted to monitoring wells will be installed on the site at locations determined in part by the results of the EM survey. The borings and monitoring wells will be for the purpose of: further investigating any anomalies; evaluating the subsurface geology beneath the site; evaluating subsurface soils above the water table for evidence of contamination; collecting groundwater samples, and to determine the direction of groundwater flow beneath the site. The boring and monitoring well locations will be depicted on the Site Plan upon completion of the EM survey.

  Soil and groundwater samples will be collected from each of the test borings for laboratory analysis. The sampling frequency will be that one soil sample above the water table and one groundwater sample from each monitoring well will be

collected for laboratory analysis. The soil and groundwater samples will be analyzed for the full TCL/TAL groups of compounds and analytes. It is assumed that a total of eight (8) borings/monitoring wells will be advanced across the site.

- The surface water samples of the pond and swale/creek will be collected to determine if the surface water quality is being impacted from surface water runoff generated on the site and from off-site sources to the source. The surface water samples will be analyzed for the full TCL/TAL groups of compounds and analytes. The sampling locations are depicted on Figure 4.

- The sediment samples of the pond and swale/creek will be collected to determine the quality of sediments in portions of the swale/creek located on the subject site and from the off-site pond. The sediment samples will be analyzed for the full TCL/TAL groups of compounds and analytes (excluding TCL VOCs) and TOC. The sampling locations are depicted on Figure 4.

- The stockpiled railroad ties and telephone poles (see Figure 4) will be removed by instituting the non-emergency IRM. The DEC encourages the application of IRMs when wastes are uncovered during the course of the RI. The collection and analysis of a minimum of two discrete confirmatory soil samples beneath the removed stockpile will aid in determining that contaminants are not present at levels above DEC guidelines within this area. The confirmatory samples will be analyzed for the full TCL/TAL groups of compounds and analytes.

4.0 SUPPLEMENTAL PLANS

4.1 Field Sampling Plan

The field activities for this project will include collection and laboratory analysis of surface soil and subsurface soil samples, surface water samples, sediment samples, and collection and laboratory analysis of groundwater samples from monitoring wells. The procedures relative to implementation of these field activities are presented in the Field Sampling Plan (FSP) in Appendix A, which also conforms to the Quality Assurance / Quality Control Plan. The FSP describes in detail the various methods and techniques to be followed during the completion of the soil, surface water, sediment and groundwater sampling activities, instrument operation and calibration, and chain of custody procedures.

4.2 Quality Assurance/ Quality Control Plan

The Quality Assurance Project Plan (QAPP) describes the quality assurance and quality control procedures to be followed at the time media samples are collected to the time they are analyzed by the environmental analytical laboratory and evaluated by a third party according to the NYSDEC DUSR guidelines. The QAPP is presented in Appendix B of this RI / AA Work Plan.

The QAPP will be utilized and followed by field personnel during the Site investigation activities and media sampling events. It will also be used by the project management team and Quality Assurance Officer to assure the data collected and generated is representative and accurate. The laboratory results will be reported with NYSDEC ASP Category B deliverables, which will be subjected to NYSDEC's Data Usability Summary Report guidelines to determine if the data is valid and usable.

4.3 Health and Safety Plan

A Site specific Health and Safety Plan (HASP) has been prepared for this project to address Site worker health and safety issues. The HASP is presented in Appendix C of this RI / AA Work Plan. Although the plan addresses all of the Site activities to be

performed, the subcontractors to be utilized will be required to develop their own HASP relative to work they will be performing.

4.4 Citizen Participation (CP) Plan

A project specific Citizen Participation Plan (CP Plan) has been developed for this project (Appendix D) in general accordance with Draft DER 10. The objective of the plan is to disseminate information to the public regarding the RI/AAR and to involve the public in the decision making process. This is accomplished by keeping the public informed of the investigation through direct mailing, periodic community meetings, pubic notice in local newspapers and other publications, and by having project documents available for review at public accessible repository locations. The CP Plan should be considered an integral part of the Work Plan.

5.0 REPORTING AND SCHEDULE

5.1 Reporting

Upon completion of all of the field activities and receipt of the analytical laboratory data, an RI/AA Report will be prepared and submitted to NYSDEC in a timely manner. The draft report will be prepared in general conformance with the executed ERP. The primary objective of the RI/AA Report is to summarize and discuss the investigation activities completed and any non-conformance to the approved work plan. The report will present the investigation measures employed at the Site, analytical results of samples collected and analyzed, interpretations of the data, overall conclusions regarding the nature and extent of contamination, and recommendations for further investigative work, if any. Upon review and acceptance by the Department, the final approved RI/AA report will be submitted in both hard copy and electronic format acceptable to the Department.

5.2 Schedule

It is currently planned to initiate the first field task during the month of June 2006. It is currently anticipated that the field investigation work will be completed within three to four weeks thereafter. The Draft Remedial Investigation Report will be submitted on or about October 2006.

5.3 Development and Analysis of Remedial Alternatives

The development and analysis of remedial alternatives may begin concurrently with or shortly after commencement of the RI. Alternatives may be considered in an iterative fashion; RI data will be used to develop and screen alternatives, and alternatives under consideration will guide additional work to characterize the property as necessary.

The development of alternatives will be dependent on the development of general response actions relative to site conditions encountered both during, and subsequent to the RI. Remedial alternatives may include, amongst others, no action, institutional controls, soil management plans, material cover to contact, and in-situ and/or ex-situ treatment of impacted soils and groundwater.

At a minimum, the Alternatives Analysis Report (AAR) will evaluate no action relative to the documented conditions disclosed through the RI, and an action that would reduce/remove all documented media impacts below applicable standards, criteria and guidance (SCG's) values.

Once developed, a detailed evaluation will be conducted on the alternatives pursuant to factors identified in 6NYCRR375-1.10(c). These criterions include:

1. Overall protection of public health and the environmental;
2. Compliance with Standards, Criteria, and Guidance (SCGs);
3. Short-term effectiveness;
4. Long-term effectiveness;
5. Reduction of toxicity, mobility, and volume;
6. Implementability;
7. Cost; and
8. Community acceptance.

The first seven (7) of the preceding eight (8) criteria form the basic components of the detailed analysis of each alternative whereby each criteria is compared to the others to determine the most cost effective, protective remedy. The Department will use criteria #8 in their evaluation once the 45-day public comment period has ended.

Prior to the finalization of the AAR, the NYSDEC, NYSDOH and the Town of Clermont and/or C.T. Male will schedule a meeting to review validated analytical data of sampled media collected during the RI. Review of this data will generate discussion and consensus amongst the involved parties as to the preferred remedy(ies) for the site. The finalized Alternatives Analysis Report will be prepared by a currently registered New York State Licensed Professional Engineer.

From the AAR and the RI Report, the Department will prepare a Proposed Remedial Action Plan (PRAP) to be submitted to the public with the RI Report and the AAR. The Department will address issues raised by the public in a Responsiveness Summary. The final remedy for the site will be documented in the Record of Decision (ROD) prepared by NYSDEC after a 45 day public comment period.

6.0 SUBMITTALS

Written communications required by this agreement will be transmitted by United States Postal Service, private courier, or hand delivered to the following individuals. Final documents, as they become available, will also be submitted to the following individuals:

- Randy Hough (two copies)
  Department of Environmental Remediation
  New York State Department of Environmental Conservation
  625 Broadway
  Albany, New York 12233

- Maureen E. Schuck (two copies)
  Bureau of Environmental Exposure Investigation
  New York State Department of Health
  Flanigan Square
  547 River Street
  Troy, New York 12180-2216

- Deborah Christian, Esq. (one copy, correspondence only)
  Division of Environmental Enforcement
  New York State Department of Environmental Conservation
  625 Broadway
  Albany, New York 12233-5500

- William E. Banks, Supervisor (one copy)
  Town of Clermont
  Town Hall
  1795 Route 9
  Clermont, New York 12526

- Kimberly Shaw Rea, Esq. (one copy)
  116 Kraft Avenue, Suite 11
  Bronxville, New York 10708

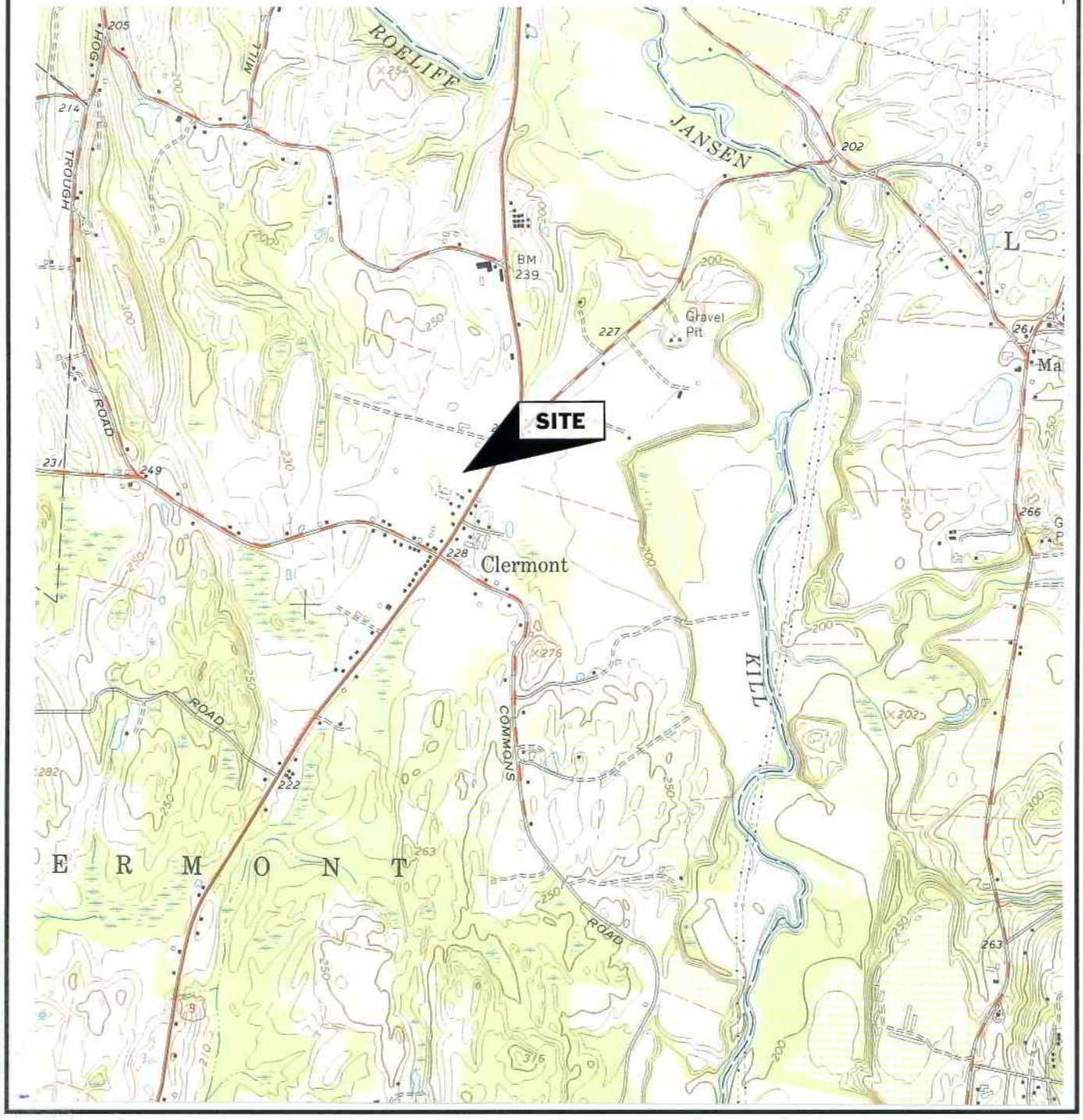
The Department shall review each of the submittals (i.e., work plan, remediation plan and final engineering report) required by the ERP agreement to determine whether it was prepared in accordance with the ERP agreement and generally accepted technical and scientific principles. The Department shall notify the Applicant (Town of

Clermont) in writing (with copies to C.T. Male) of its approval or disapproval of any submittal.

FIGURES

FIGURE 1

SITE LOCATION MAP



MAP REFERENCE
United States Geological Survey
7.5 Minute Series Topographic Map
Quadrangle: Clermont, NY
Date: 1963

ENGINEERING
ENVIRONMENTAL SERVICES
SURVEYING
PHONE (518)786-7400
FAX (518) 786-7299

C.T.MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, PO BOX 727, LATHAM, NY 12110

FIGURE 1 - SITE LOCATION MAP

Former Hettling Farm Site
U.S. Route 9

TOWN OF CLERMONT	COLUMBIA COUNTY, NY
SCALE: 1"=2,000'	
DRAFTER: SHB	
PROJECT No. 06.6084	

FIGURE 2

2004 AERIAL SITE FEATURES MAP

railroad ties, phone poles and debris

buried stumps and brush

drainage swale / creek

Pond

COUNTY ROUTE 6

US ROUTE 9

0 100 200 400 600 800 Feet

MAP NOTES:
Aerial Photography flown April 2004.
Photo Resolution: 2 ft./pixel.
Horizontal Photo Accuracy: +/- 8 ft.
Parcel Outline CAD files from 2002 - 2003.

NORTH

Date: April 21, 2006
User Name: LenaW
File Name: Fig2HettlingFarmUses.mxd

Figure 2: SITE FEATURES MAP

Town of Clermont — **Former Hettling Farm Property Environmental Restoration Project** — Columbia County, New York

C.T. Male Associates, P.C.
50 Century Hill Drive, Latham, NY 12110
Phone: 518-786-7400 Fax: 518-786-7299

Scale: **1 inch equals 200 feet**
Project Number: N/A
Data Source: NYS GIS Clearinghouse; CT Male GIS
Projection: SP NAD83 NYE Ft.

FIGURE 3

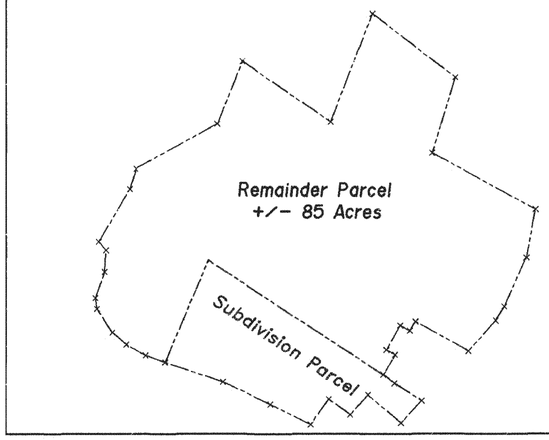
SITE PLAN

NO XREFS

PROJECT NUMBER: 06.6084

CAD DWG. FILE NAME: SITE PLAN.DWG

Property Overview Sketch



Area: 20.575 Acres

brushy agricultural field

other lands of Hettling

N 22°41'25"E 737.78'

new boundary line

heavy brush line not marked

old orchard

new boundary line

S 58°29'05"E 1551.65'

line of pins and red flagging through field

other lands of Hettling

404.7'

614.9'

234.7'

pin set

stream

pipe found in stone and fence corner

stone wall ends

137.64'

N 71°27'40"W

N 71°56'25"W 407.84'

recorded map calls for 401.84'

ditch

pond

lands Town of Clermont Cart. 304 Fr. 2016

N 65°25'25"W 138.73'

pin found

N 64°44'40"W 312.70'

pin found

N 64°54'00"W 191.79'

mowed field

monument held

lands N/F Payne Cart. 393 Fr. 801

N 53°38'45"W 34.73'

24" cherry

N 35°51'15"W 205.11'

head stones

N 54°34'15"W 174.12'

monument not found

S 41°45'15"W 175.50'

plowed field

monument not found

apple tree

apple tree

pear tree

grape arbor

grass area

edge of plowed field

plowed field

N 50°19'15"W 285.15'

lands N/F Rivenburgh L 559 P 1105

S 55°26'40"E 3.2' to pipe found

Lands of Clermont Cemetery So...

S 62°20'45"E 72.95'

N 30°45'15"E 70.77'

pin found and held behind garage

N 28°56'15"E 185.85'

N 60°48'45"W 67.01'

N 26°36'25"E 3.0' to pipe found

N 26°03'40"E 3.6' to pipe found

lands N/

brush

N 30°06'15"E 132.70'

lawn area

S 52°45'45"E 94.47'

pin set

old fence post: not held

line of evergreens 48" cherry tree

S 58°19'15"E 212.71'

lawn area

S 42°19'15"W 202.55'

pressured road line

S 53°29'50"E 65.8' to broken monument found

S 71°56'25"W 377.09'

611.02'

1356

10.33'

lands ...

BAR SCALE

100 0 50 100 200

1 inch = 100 ft.

NOTE:
1. THE LOCATIONS AND FEATURES DEPICTED ON THIS MAP ARE APPROXIMATE AND DO NOT REPRESENT AN ACTUAL FIELD SURVEY.

MAP REFERENCE:
1. SUBDIVISION OF LANDS OF: CATHERINE HETTLING (SITE SURVEY), PREPARED BY ROBERT J. IHLENBURG, LAND SURVEYOR OF HUDSON, NEW YORK, MAP NO. 88-119-03, DATED MAY 20, 2003.

	DATE	REVISIONS RECORD/DESCRIPTION	DRAFTER	CHECK	APPR.
		1			
		2			
		3			
		4			
		5			
		6			
		7			
		8			
		9			

DESIGNED :
DRAFTED : J.KARON
CHECKED : J.MARX
PROJ. NO: 06.6084
SCALE : 1"=100'
DATE : APR. 17, 2006

FIGURE 3
SITE PLAN

FORMER HETTLING FARM SITE
NYSDEC ENVIRONMENTAL RESTORATION PROJECT

TOWN OF CLERMONT — COLUMBIA COUNTY, NEW YORK

C.T. MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, P.O. BOX 727, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299
ARCHITECTURE & BUILDING SYSTEMS ENGINEERING * CIVIL ENGINEERING
ENVIRONMENTAL SERVICES * SURVEY & LAND INFORMATION SERVICES

FIG3
SHEET 1 OF 2
DWG. NO: 06-0304

FIGURE 4

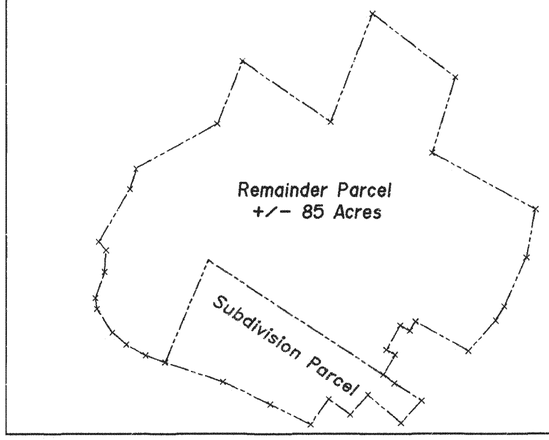
PROPOSED SAMPLING LOCATIONS MAP

NO XREFS

PROJECT NUMBER: 06.6084

CAD DWG. FILE NAME: SITE PLAN.DWG

Property Overview Sketch



LEGEND

- SS-1 — APPROXIMATE LOCATION OF PROPOSED SURFACE SOIL SAMPLING LOCATION
- SW-1 — APPROXIMATE LOCATION OF PROPOSED SURFACE WATER SAMPLING LOCATION
- SD-1 — APPROXIMATE LOCATION OF PROPOSED SEDIMENT SAMPLING LOCATION

Area: 20.575 Acres

APPROXIMATE AREA OF STOCKPILED TELEPHONE POLES AND RAILROAD TIES

APPROXIMATE FORMER FOOTPRINT OF SCATTERED TELEPHONE POLES AND RAILROAD TIES PRIOR TO BEING STOCKPILED

BAR SCALE
100 0 50 100 200
1 inch = 100 ft.

NOTE:
1. THE LOCATIONS AND FEATURES DEPICTED ON THIS MAP ARE APPROXIMATE AND DO NOT REPRESENT AN ACTUAL FIELD SURVEY.

MAP REFERENCE:
1. SUBDIVISION OF LANDS OF: CATHERINE HETTLING (SITE SURVEY), PREPARED BY ROBERT J. IHLENBURG, LAND SURVEYOR OF HUDSON, NEW YORK, MAP NO. 88–119–03, DATED MAY 20, 2003.

	DATE	REVISIONS RECORD/DESCRIPTION	DRAFTER	CHECK	APPR.
		1			
		2			
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		6			
		7			
		8			
		9			

DESIGNED:
DRAFTED : J.KARON
CHECKED : J.MARX
PROJ. NO: 06.6084
SCALE : 1"=100'
DATE : APR. 17, 2006

FIGURE 4
PROPOSED SAMPLING LOCATIONS MAP

FORMER HETTLING FARM SITE
NYSDEC ENVIRONMENTAL RESTORATION PROJECT

TOWN OF CLERMONT — COLUMBIA COUNTY, NEW YORK

C.T. MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, P.O. BOX 727, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299
ARCHITECTURE & BUILDING SYSTEMS ENGINEERING * CIVIL ENGINEERING
ENVIRONMENTAL SERVICES * SURVEY & LAND INFORMATION SERVICES

FIG4
SHEET 2 OF 2
DWG. NO: 06–0304

APPENDIX A

FIELD SAMPLING PLAN

APPENDIX A

FIELD SAMPLING PLAN
FORMER HETTLING FARM
TOWN OF CLERMONT
COLUMBIA COUNTY, NEW YORK

FIELD SAMPLING PLAN
FORMER HETTLING FARM
TOWN OF CLERMONT
COLUMBIA COUNTY, NEW YORK

TABLE OF CONTENTS

1.0 INTRODUCTION

This document is the Field Sampling Plan (FSP) for the site investigation to be conducted at the former Hettling farm ("the site") located in the Town of Clermont, Columbia County, New York. It has been developed in accordance with the RI/AAR Work Plan dated April 2006 as prepared by C.T. Male Associates, P.C. A description of the property, available background information, objectives, and the proposed scope of work, are presented in the referenced RI/AAR Work Plan.

This FSP is a supplement to the RI/AAR Work Plan in that it presents the standard field sampling and data gathering procedures to be followed during implementation of the field activity portion of the scope of work. This plan addresses sampling locations and frequencies, direct-push methods and installation of monitoring wells, test borings, exploratory test pits, vapor intrusion methodologies, decontamination procedures, sampling procedures, field screening and testing procedures, field instrumentation operating procedures, field measurements, sample handling and chain of custody procedures, and water level measurement procedures. The applicable portions of the RI/AAR Work Plan that coincide with the FSP will be provided to, and followed by, the field team. This FSP is intended to be applicable to field sampling activities conducted by C.T. Male and its subcontractors.

The FSP forms an integral part of the Quality Assurance Project Plan (QAPP). The field sampling and data gathering procedures presented in the FSP are incorporated into the QAPP by reference. The FSP and the QAPP document the laboratory quality assurance/quality control procedures to be followed during analysis of samples collected in the field so that valid data of a known quality is generated.

The FSP has been prepared, in part, in general accordance with the following USEPA and NYSDEC guidance documents:

- Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89/004, USEPA, October 1988.
- A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001, USEPA, December 1987.

- Draft DER-10, Technical Guidance for Site Investigation and Remediation, NYSDEC, December 2002.

2.0 SAMPLING LOCATIONS AND FREQUENCY

Sampling will be performed for volatile organic vapor screening, subjective media assessment, laboratory analyses, and for geologic and hydrogeologic characterization of the project site. The environmental media to be sampled includes:

- Surface Soil,
- Stream Surface Water and Sediments,
- Subsurface Soil, and
- Groundwater

Soil and groundwater sampling will be performed as part of the surface soil, test boring subsurface investigation, monitoring well sampling, and the exploratory test pits. Surface water and sediments will be sampled from a stream that bisects central portions of the site and a pond located adjacent to the southwest side of the site. The sampling locations and proposed frequencies are discussed in the appropriate work task section of the RI/AAR Work Plan.

3.0 TEST PIT, BORING AND MONITORING WELL INSTALLATIONS

3.1 Geophysical Survey

An electromagnetic (EM) survey will be conducted on the site to determine the presence (if any) of anomalies that may represent buried materials at the site. The EM survey will be conducted in an attempt to determine the presence of buried ferrous materials and will constitute all accessible portions of the site. Any detections of buried materials will be clearly marked in the field, and their location(s) surveyed for inclusion on a site plan.

3.2 Test Pits

Test pits will be completed to evaluate subsurface anomalies detected during the EM survey of the site and will also be completed to observe the site's subsurface profile. It is estimated that eight (8) test pits will be completed during the site investigation.

The site has historically been used for agricultural purposes and regulatory emergency response actions have historically occurred on portions of the Hettling farm located east of U.S. Route 9 and north of the site. The emergency response revealed the presence of abandoned petroleum storage tanks, containers of agricultural chemicals including herbicides and pesticides and uncontrolled material dumping areas. Additionally, a pile of discarded railroad ties and phone poles, which may have been coated with creosote, were observed on northern portions of the site.

3.3 Test Borings and Monitoring Well Installations

Exploratory test borings will be advanced throughout the site to determine the quality of underlying soils and groundwater. Eight (8) borings are anticipated for the investigation and their locations will be determined upon completion of the EM survey. The location of the borings / monitoring wells will selected such that their locations can be used to assist in determining the direction of groundwater flow within the site, and to assess the soil and groundwater conditions and quality beneath the site. The locations of the borings / monitoring wells will be determined upon completion of the EM survey and exploratory test pits.

3.4 Surface Soil Sampling

Surface soil samples are anticipated to be collected within the site. The on-site samples will be collected across the entire site at both biased and unbiased locations. Biased locations will be near a former road on northwestern portions of the site, within a rectangular-shaped area on western portions of the site, in the vicinity of a knoll on southeastern portions of the site, and in the vicinity of stockpiled railroad ties and telephone boles on northeastern portions of the site. Unbiased samples will be collected from cells created by setting up the site in a grid pattern, as depicted in Figure 4 of the RI/AAR.

The samples will be collected at grade if the sampling point does not lie within a vegetated location (i.e. grass). At locations where there is grass present, the soil will be removed to a point below the root zone and the surficial soil sample will be collected to a depth of two (2) inches below the root zone.

3.5 Observation of Test Pits, Direct-Push Operations, Monitoring Well Installations and Site Wide Surface Soil Sampling Locations

All direct-push borings, test pitting and other associated field work involved in the site investigation to be performed by C.T. Male subcontractors will be observed by a full-time, on-site, C.T. Male Associates, P.C. representative. This representative will be responsible for the collection of soil samples, field screening of soil samples, recording of direct-push and sampling data, recording of groundwater data, deciding on the final direct-push depths and screened intervals (with input from the project manager, hydrogeologist or engineer), recording the monitoring well construction procedures, and monitoring the decontamination procedures.

Field system audits will be conducted and field reports will be prepared that document the daily activities and their conformance to the work plan (described further in Sections 10.1 and 13.0 of the QAPP). A copy of the forms to be utilized by the applicable field team personnel as part of the field quality assurance/quality control (QA/QC) procedures are presented in Appendix A of this FSP.

The project manager will be kept informed of the progress of work and any problems encountered during the field investigations so that the appropriate corrective action can be implemented and the Town of Clermont and NYSDEC can be notified.

3.6 Sampling of Test Pits

A track or wheel mounted excavator will be utilized to complete the exploratory test pits. Excavated soils will be visually classified and screened via organoleptic perception (sight and smell), and with a photo ionization detector (PID).

The soils will be classified in the field using the Unified Soil Classification System in accordance with ASTM D 2488, Standard Practice for Description and Identification of Soils. The soil descriptions may include matrix and clast descriptions, mineralogy, moisture content, color, appearance, odor, behavior of the material and other pertinent observations. This information will be recorded on a test pit log form along with the test pit identification and elevation, date started and completed, sampling intervals, and depth of first groundwater encountered, if present. A blank copy of a Test Pit Log Form is enclosed in Appendix A.

3.7 Drilling and Sampling of Overburden (Direct-Push Methods)

The monitoring well borings will be advanced through the overburden using direct-push Geoprobe technologies which will consist of a 4-foot long by 2-inch wide stainless steel macro-core sampler with acetate liner. The acetate liner is contained within the macro-core sampler and is replaced for each sampling interval. The overburden (soil) samples will be collected within the acetate liner and will not come into contact with the macro-core sampler. Continuous (every two feet) soil samples will be collected and will be subjectively analyzed in the field.

All soils will be visually classified in the field using the Unified Soil Classification System in general accordance with ASTM D-2488, Standard Practice for Description and Identification of Soils. The soil description may include matrix and clast descriptions, mineralogy, moisture content, color, appearance, odor, behavior of the material and any other pertinent observations. This information will be recorded on a test boring log form along with the boring identification and elevation, date started and completed, sampling intervals, standard penetration values, length of recovered sample and depth

of first groundwater encountered. During the drilling a photoionization detector (PID) meter will be used to monitor the volatile organic vapors exiting the borehole and soil cuttings and of all recovered subsurface samples. All of these visual observations and field measurements will be recorded on the Test Boring Log. A blank copy of a Test Boring Log form is enclosed in Appendix A.

In the event a borehole is not converted into a monitoring well, it will be abandoned by filling it with the cuttings from that borehole and the balance needed to fill the borehole will be filled with a cement/bentonite grout mixture (approximately 20 to 1 ratio). Additional soil cuttings from borings converted to monitoring wells will remain on-site, unless directed otherwise.

Based on anticipated subsurface conditions, the soil borings will be advanced to depths of approximately 20 to 30 feet below existing grades. This exploration depth should be sufficient for encountering groundwater, which is expected to be within 15 to 25 feet from grade.

3.8 Soil Sampling and Soil Field Screening Procedures

The specific soil sampling procedures that will be followed for test pits and site wide surface soil samples include the following:

1. A cleaned (per Section 3.10) stainless steel trowel will be used by the onsite sampling personnel. Clean disposable gloves will be worn when handling the trowel.

2. A discrete soil sample will be collected by advancing the bucket of the excavator or hand trowel to a pre-determined depth, based on conditions found at each location. The onsite sampling personnel will collect the test pit soil sample from the bucket or the surface soil sample with the cleaned stainless steel trowel or a new pair of disposable gloves.

3. For samples to be collected for laboratory analysis, the sample container label will be completed with the sample location (test pit nomenclature), sample interval, sampler's initials, date, and time. The client, project name, site location, matrix, sample type (grab/composite) and laboratory analyses to be performed will also be recorded on the sample label.

4. Immediately upon collecting the soil sample, the sample will be put directly into pre-cleaned glass jars using a clean (per Section 3.11) stainless steel trowel, and the jars will be sealed. Sampling personnel will wear a new pair of disposable gloves for each sample interval retrieved. A portion of the remaining soil will be placed in a new plastic zip lock bag, not more than one-half full, and sealed. This bag sample will be for head space analysis screening in the field for volatile organic compounds (VOCs) using a PID meter.

5. The soil sample will be classified and the test pit log completed as described in Section 3.6.

6. The sampling equipment will be decontaminated per Section 3.11.

The specific soil sampling procedures that will be followed for direct push borings include the following:

1. A cleaned (per Section 3.11) macro-core sampler will be given to the driller or driller's assistant who will attach it to the sampling rod. Clean disposable gloves will be worn when handling the macro-core sampler.

2. A soil sample will be collected by hydraulically advancing the sampler to the desired four (4) foot sampling interval. Soils collected within the four (4) foot long acetate liner will be divided into two (2) foot increments for classification and sampling purposes.

3. For samples to be collected for laboratory analysis, the sample container label will be completed with the sample location (boring nomenclature), sample interval, sampler's initials, date, and time. The client, project name, site location, matrix, sample type (grab/composite) and laboratory analyses to be performed will also be recorded on the sample label.

4. The recovered macro-core sampler will be placed on clean polyethylene sheeting. The end cap will be unscrewed and the acetate liner will be extracted and cut open employing a utility knife to expose the sample.

5. Immediately upon opening the acetate liner, a portion of the soil sample will be retrieved and put directly into pre-cleaned glass jars using a clean (per Section 3.11)

stainless steel trowel, scapula, or a new pair of disposable gloves, and the jars will be sealed. Sampling personnel will wear a new pair of disposable gloves for each sample interval retrieved from the acetate liner. A portion of the remaining soil will be placed in a new plastic zip lock bag, not more than one-half full, and sealed. This sample will be for head space analysis screening in the field for volatile organic compounds (VOCs) using a PID meter.

6. The soil samples will be classified and the test boring log completed as described in Sections 3.4 and 3.5.

7. The sampling equipment will be decontaminated per Section 3.11.

All of the macro-core soil samples, where sufficient sample is recovered to generate a headspace sample, will be screened in the field with a PID meter on a daily basis. The sample will be allowed to equilibrate to ambient temperature; the plastic bag will be shaken for 30 seconds and allowed to equilibrate for 1 minute; the bag will be pierced with the tip of the PID meter; and the reading taken. The readings will be recorded on a C.T. Male Associates, P.C. Organic Vapor Headspace Analysis Log form. A blank copy is enclosed in Appendix A. The PID meter calibration procedures are discussed in Section 7.0.

At completion of the field screening of soil samples and soil classification, the recovered soil samples will be retained for no more than 90 days.

3.9 Monitoring Well Installation

Overburden monitoring wells will be installed within the bore hole created by advancement of the macro-core sampler. Once the macro-core sampler is advanced to the desired depth, 2-inch or 1-inch diameter monitoring wells with slotted screens will be installed in accordance with standard practices. Typical overburden well construction details are shown in Figure 1. All wells will be constructed of 2-inch or 1-inch, flush-threaded joint, Schedule 40 PVC riser pipe, machine slotted screen, bottom plug, and cap. The screens will be 0.010-inch slotted and generally ten feet in length.

Each well will be assembled as it is lowered into the borehole. The annulus around the well screen will be packed with clean silica sand to a maximum of two feet above the screen. Additionally, a one-half foot choke of fine-grained sand will be placed on top

of the sand pack to preclude the migration of the seal material into the sand pack. A minimum one-foot bentonite seal will be installed in the annulus. The seal will consist of bentonite pellets/chips or slurry. The remainder of the annulus will be filled with cement/bentonite grout (ratio of 20 to 1). A steel monitoring well guard pipe or curb box will be set over each well head and cemented in place. A positive grade will be constructed of cement around the well to divert surface water away from the well. A permanent mark will be made at the top of the PVC riser to serve as a datum for all subsequent static water level measurements. Upon completion, a locking gripper well cap will be installed and locked. Monitoring well depths, and screen lengths and depths will be calculated by the environmental scientist/geologist by maintaining accurate measurements of screen and casing placed in the borehole. A Monitoring Well Construction Log form (Figure 1) will be completed that documents the well materials and depths.

3.10 Monitoring Well Development

Well development of the monitoring wells will be necessary to remove sediments (silt, clay, and fine sand) from the well screen, well bottom, sand pack, and formation. This will increase the hydraulic conductivity immediately around the well, thus increasing the well yield for sampling. No well will be developed sooner than 24 hours after installation. This will assure that the grout or bentonite seal will be set before increasing the flow to the well. The wells will be developed by surging, bailing, and pumping. Reasonable means will be taken to develop the wells to a turbidity of 50 NTU's or less, however, if the site soils are composed of a high percentage of silt and/or clay, a turbidity value of 50 NTU or less will not likely be achieved.

The monitoring wells will be developed utilizing surge and purge methods. The back and forth flow created within the screened interval dislodges fine sediments in the formation, sand pack, and screen, suspending fines so they can be removed.

The wells will be surged a minimum of 5 well volumes using a dedicated 3-foot long, ¾-inch diameter polyethylene bailer attached to a 1/8-inch, dedicated, nylon or polypropylene rope. The surging will be accomplished by rapidly raising and lowering the bailer within the screened interval. The bailer will then be used to obtain a water sample to check the color, turbidity, odor, and sand and silt content of the well water during and after the development efforts.

The bailing rope and polyethylene bailer will be dedicated to each well to prevent cross-contamination during development. The dedicated bailer can be utilized in the future when the wells are purged for groundwater sampling.

All of the development water from the monitoring wells will be discharged to the ground surface around each well.

3.11 Direct-Push and Sampling Equipment

Direct-push equipment including rods, macro-core samplers, tools, the Geoprobe unit and any piece of equipment that can come in contact with the formation will be cleaned with a high temperature/high pressure wash prior to the start of work and between each boring to prevent cross-contamination between borings. The equipment will also be cleaned using the same procedure at completion of the work (before leaving the site) to prevent any contamination from leaving the site.

The sampling equipment including macro-core samplers and stainless steel trowels, etc., will be cleaned prior to use, in between each boring and at completion of the work by similar process described above. In between each sample interval at the same boring location the sampling equipment will be cleaned using the following procedure:

1. Remove any excess soil remaining on the macro-core sampler.

2. Prepare a solution of tap water and non-phosphate detergent in a wash bucket, and scrub the equipment with a brush to remove any adhering particles.

3. Rinse the equipment with copious amounts of tap water.

4. Place clean equipment on clean polyethylene sheeting.

5. Reassemble the clean macro-core sampler.

6. New disposable gloves will be worn when cleaning and handling the equipment to avoid contamination.

7. The water in the wash and rinse buckets will be changed frequently to avoid cross contamination.

The decontamination rinse water will be collected and placed in 55-gallon drums and stored at the project site until laboratory analyses results of the soil and groundwater samples indicates the proper method of treatment or disposal. Disposable protective clothing such as tyvek suits, gloves, etc. will be placed in a garbage bag and disposed of as a solid waste. The personnel decontamination procedures are detailed in Section 10.0 of the Site Specific Health and Safety Plan.

3.12 Decontamination of Excavating Equipment

The excavating equipment (bucket only) will be decontaminated with a high pressure wash and rinse. The equipment will be washed over a temporary decontamination pad which will collect the wash and rinse water. A pumping device may be used to transfer the liquids into 55-gallon drums.

4.0 GROUNDWATER SAMPLING PROCEDURES

4.1 General

During groundwater sampling, it is important to follow strict acceptable protocol during the collection and transportation of groundwater samples. This minimizes the potential for sample variation from well to well due to sampling and transportation techniques. Quality control measures will be instituted as discussed in Section 8.0 of this document and the QAPP as a check on the procedures being utilized so that the quality of the data can be assessed. The groundwater samples will be analyzed in the laboratory for Target Compound List (TCL) volatile and semi-volatile organic compounds, PCBs and Pesticides and the Target Analyte List (TAL) metals (unfiltered) by standard methods following the QA/QC procedures outlined in the QAPP.

Prior to sampling, the water level in the well will be measured, and the well will be purged and allowed to recover to near static conditions. Groundwater samples will be taken for field and laboratory analyses. The field parameters to be determined are pH, temperature, turbidity and specific conductance. All pertinent groundwater sampling information will be recorded on a C.T. Male Groundwater Services Field Log. A separate log will be completed for each monitoring well sampled. Logs will be dated and signed by the person making the entries and will be submitted to the project manager for inclusion in the project files. The following information will be included on the log forms:

1. Project name and location.
2. Date and times.
3. Monitoring well identification number.
4. Bailer type and identification number, if any.
5. Well development data.
6. Physical characteristics of samples.
7. Field analyses results.
8. Name of sampler(s).
9. Recovery times of wells.

10. Any additional observations / information.

An Environmental Services Field Log will also be completed for the groundwater sampling event. A blank copy of the referenced forms are enclosed in Appendix A.

4.2 Preparation for Sampling

Prior to groundwater sampling, the equipment and containers needed for sampling will be collected and prepared. If non-dedicated stainless steel sampling equipment is used it will be cleaned, as described below prior to use, in between each use, and at completion of use:

- Scrub with tap water and non-phosphate detergent,
- rinse with tap water,
- rinse with 10% HNO_3, ultrapure, if metal analyses are to be performed,
- rinse with tap water,
- rinse with methanol,
- rinse with deionized water,
- air dry, and
- wrap in aluminum foil.

In lieu of stainless steel sampling equipment, new disposable polyethylene bailers will be utilized to facilitate the groundwater sampling. New disposable gloves will be worn during equipment cleaning and decontamination, and handling of the media being sampled. Only new pre-cleaned laboratory provided sample containers and caps will be used for sample collection / analyses. All sample containers required to be fixed with a preservative, will be prepared by the laboratory before each sampling event. The container type, cap type and preservative requirements for the analytical parameters (water) to be analyzed are summarized in Table 1 on the following page.

TABLE 1
Analytical Requirements for Containers and Preservatives for Water Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
VOCs per EPA 8260 (Water)	3-40 ml vials (preserved)	Septum	HCl to pH<2 Cool, 4°C	NA
Semi-VOCs, PCBs and Pesticides (Water)	3-1L amber Glass	Teflon	0.008% $Na_2S_2O_3$ Cool, 4°C	Store in dark.
Metals per EPA 6010/7000 (Water)	500 ml Plastic	Poly	HNO_3 to pH <2	NA

Sample labels will be prepared prior to sampling and affixed to the sample containers. The client, project name, site location, matrix, sample type (grab/composite), preservative and laboratory analyses to be performed will be recorded on the sample labels by the laboratory. The sample location (i.e., monitoring well ID), date, sampler's initials and time will be filled out on the sample label at the time of sampling.

Upon arrival at the sampling location, the well will be observed for any damage, the cover of the guard pipe or curb box will be cleared of any debris and unlocked or unbolted. Clean polyethylene sheeting will be placed adjacent to the well to protect purging and sampling equipment from contamination. The cap and top of the well casing will be wiped with a clean cloth and then the cap removed. A PID reading will be collected when the well cap is removed. The water level in the well will then be measured.

4.3 Measuring the Water Level

Prior to sampling and purging, static water heights will be measured using a water level indicator to determine the standing water column height. A full set of water levels will be collected from all wells prior to initiating the water sampling. The water column height and depth of the well are used to calculate the well water volume. Non-vented well caps will be removed for a period of ten minutes to allow the water column to reach static conditions prior to taking the water level measurements. Refer to Section 11.0 for a detailed description of water level measurement procedures.

4.4 Well Development Procedures

Prior to sampling of the groundwater, it is necessary to purge the wells. Purging of the wells allows for a representative sample to be taken from the screened interval of the well by removing stagnant water from the well.

Three to five well volumes of the standing water will be removed from the well. The volume of standing water in the well is calculated by subtracting the water level height from the well depth measurement, and multiplying this value by a conversion factor. The conversion factor is based on the well casing diameter and converts linear feet of water into gallons. In cases where the water recharges at a slow rate, the well will be purged dry when possible.

New dedicated polyethylene bailers or pre-cleaned bottom filling stainless steel bailers with Teflon™ ball check valve will be used to purge the wells. Bailers will be dedicated to an individual well during sampling events. If an alternative purging method is used it will be documented on the Groundwater Services Field Log form. A clean, new piece of polypropylene rope will be used at each individual well and will be properly discarded after each sampling event. Physical observations of the purge water will be noted and recorded in the groundwater sampling log. The actual quantity of purge water removed from the well will be measured by using a bucket graduated in gallons, and the volume will be recorded. Once purging is complete, the bailer or alternate purging device will be removed from the well and placed on the clean polyethylene sheeting or on the aluminum foil it was wrapped in, adjacent to the well, until completion of the groundwater sampling.

All of the purge water from the monitoring wells will be discharged to the ground around the well unless the water exhibits an unusual odor, or sheens or films are noted during development. If deemed necessary, the development water will be collected and placed in 55-gallon drums and stored at the project site until laboratory analyses results of the soil and groundwater samples indicates the proper method of treatment or disposal.

4.5 Sample Collection

Prior to sample collection, the wells will be allowed to recover to at least 80% of their initial static water level. Slow recharging wells will be allowed to recover for a period of four hours before sampling. Recovery times and water depths will be recorded on the Groundwater Services Field Log form.

The sample will be collected using a new disposable bailer or a pre-cleaned stainless steel bailer that was dedicated to the well for the sampling event. In the event it becomes necessary to use a bailer at more than one location, the bailer will be field cleaned according to the decontamination protocol presented in Section 4.2, and the field decontamination techniques will be verified through the use of equipment/field blanks. An equipment/field blank will be taken from a distilled water rinse from the decontaminated sampling device prior to sampling.

A new pair of disposable surgical gloves will be used to handle the sampling equipment and containers at each sampling location. Only non-powdered sampling gloves will be used during sampling for metal analytes.

The stainless steel bailer or disposable bailer will be lowered slowly into the well to minimize the aeration of the samples. Volatile samples will be collected first, followed by field parameters and then in decreasing order of the volatility of the parameters being analyzed for.

In order to insure the integrity of samples, sample containers must be filled properly. The following sections contain general procedures for sampling and specific procedures for sampling volatile organic compounds. Care shall be taken in sampling to assure that analytical results represent the actual sample composition.

A. General Sampling

1. Don't remove caps until the actual sampling time and only long enough to fill the container.
2. Identify every container by filling out the label with all the required data.
3. Fill all containers completely.

4. Some bottles may contain a fixative which should not be rinsed out of the bottle. Read the sample label treatment and fixative section to determine if a preservative/fixative has been added. Be careful not to contact fixatives with skin or clothing. If this should occur, rinse liberally with water.

5. After the sample is taken, wipe the container with a paper towel and place the container in a cooler with ice packs, to maintain the cooler at 4°C.

6. Complete the Groundwater Services Field Log and Chain of Custody Record forms.

7. Deliver or ship samples to the laboratory within 48 hours.

B. Sampling for Volatile Organic Compounds

1. Samples are to be collected in glass containers having a total volume in excess of 40 ml with open-top screw caps with Teflon-faced silicone septa. Sample containers will have hydrochloric acid (HCL) added to them as a preservative. This preservative must not be rinsed out.

2. A transport blank should be prepared from organic-free water and carried through the sampling and handling procedure. It will serve as a check for transport and container contamination.

3. Fill sample container slowly to minimize aeration of the sample, until a curved meniscus is observed over the bottle rim.

4. Float the septa, Teflon™ side down on the liquid meniscus. The Teflon™ side is the thin layer observed when viewing the septum from the side horizontally.

5. Carefully set on septum, expelling excess sample and being careful to exclude air. Then screw open-top cap down.

6. Check for a good seal by inverting bottle and tapping and checking for visible air bubbles.

7. If air bubbles are visible or there is a bad seal, remove cap and add additional sample and repeat steps 4 to 6.

8. Groundwater samples for volatile analysis will be taken in triplicate.

At completion of the sampling the well cap will be replaced; and the cover to the protective guard pipe will be bolted in place. The rope, gloves, and sheeting will be properly disposed of, and the stainless steel sampling equipment, if used, decontaminated and placed in a clean plastic bag. The polyethylene bailer will be hung in the well using either a simple polyethylene string or stainless steel wire harness.

4.6 Field Analyses

The field analyses of groundwater include pH, temperature, specific conductivity and turbidity. The field analyses will be measured in the field since these constituents change during storage. A minimum 40 ml sample will be collected and placed in clean unpreserved polyethylene or glass containers for analysis. The containers will be covered if the measurements are not recorded immediately.

The pH, temperature and conductivity of a sample are measured with a portable unit capable of measuring all three parameters concurrently. The portable unit automatically adjusts to compensate for the temperature of the sample. The turbidity of a sample is measured with a separate portable unit. The pH, temperature, conductivity and turbidity will be recorded on the Groundwater Services Field Log. These units will be calibrated to known standards prior to the start of field activities. Measurement and operating procedures for these field analyses are presented in Section 9.0 of this FSP.

5.0 SOIL SAMPLING PROCEDURES

5.1 Headspace Analysis

The soil samples collected from the test boring investigation and test pit excavations will be screened for the presence of petroleum related hydrocarbons by headspace analysis utilizing a photoionization detector (PID), to subjectively assess the recovered soil samples for evidence of petroleum contamination. The sample is transferred from the excavation or macro-core sampler into a zip lock bag, sealed, shaken and then allowed to sit for several minutes. Once the sample has had a chance to sit or "volatilize," the vapor space inside the bag will be analyzed by inserting the tip of the PID through the bag, as described in Section 3.8.

5.2 Analytical Soil Sampling

Select recovered soil samples will be subjected to laboratory analysis to assist in defining the horizontal and vertical extent of the contamination at the project site. The soil samples obtained from the test borings and test pits will be analyzed for the Target Compound List (TCL) volatile and semi-volatile organic compounds, PCBs and Pesticides, and the Target Analyte List (TAL) metals by standard methods. The surface soil samples will be analyzed for all of the above parameters with the exception of volatile organic compounds. The soil samples will be extracted from the sampling equipment in a timely fashion such that the soil sample has limited exposure to the outside air reducing the chance for volatilization. The interval chosen to be analyzed will be based, in part, on headspace analysis results and visual observations for staining and odor. Only new pre-cleaned laboratory provided sample containers and caps will be used for sample collection / analyses. All sample containers required to be fixed with a preservative, will be prepared by the laboratory before each sampling event. The container type, cap type and preservative requirements for the analytical parameters (soil) to be analyzed are summarized in Table 2.

TABLE 2
Analytical Requirements for Containers and Preservatives for Soil Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
VOCs (Soil)	4 oz Glass	Teflon	Cool	NA
TCL Semi-VOCs, PCBs and Pesticides (Soil)	8 oz Glass	Teflon	Cool	NA
Metals per EPA 6010 / 7000 (Soil)	8 oz Glass	Poly	None	NA

6.0 SURFACE WATER SAMPLING

Three surface water samples will be collected from the stream that bisects central portions of the site.

Surface water samples will be collected using clean glass flasks or clean bottom filling stainless steel and/or new factory-sealed disposable bailers with Teflon™ ball check valve. The cleaning/decontamination procedures presented in Section 4.2 will be followed. The samples will be collected by carefully lowering the bailer or flask so that the water surface is minimally disturbed to the desired depth, and then carefully pulling the bailer or flask up to the surface. The samples will be transferred from the bailer or flask directly into the laboratory sample containers. Procedures for filling the containers will be the same as for groundwater sampling discussed in Section 4.5. A new polypropylene or nylon cord will be used at each sample location to raise and lower the bailer. The water samples will be analyzed for TCL volatile and semi-volatile organic compounds, PCBs and Pesticides, and the TAL metals.

After the samples for laboratory analyses are taken, an additional sample will be collected and analyzed in the field for temperature, pH and specific conductance following the procedures identified in Section 4.6 of this FSP. The measured results along with observations of the sample(s) color, odor and appearance will be recorded on the Stream Water Sampling Log.

7.0 SEDIMENT SAMPLING

Four sediment samples will be collected from the stream that bisects central portions of the site and from a pond located adjacent south to the site.

Sediment samples will be collected using a stainless steel container with small openings to allow for the passage of water to the exterior of the container so that a representative sample of sediment can be collected. The samples will be collected from approximately 0 to 6 inches beneath the bottom of the water column and will be characterized by type, thickness, particle size, color and any other distinct physical qualities. The cleaning/decontamination procedure presented in Section 3.11 will be followed for the cleansing of the container. The samples will be collected by carefully lowering the stainless steel container through the water column into the bottom sediments, and then carefully pulling the container up to the surface. The samples will be transferred from the container directly into the laboratory sample containers. Procedures for filling the containers will be the same as for soil sampling discussed in Section 3.6. The sediment samples will be analyzed for TCL semi-volatile organic compounds, PCBs and Pesticides, TAL metals, and for Total Organic Carbon (TOC).

8.0 QUALITY CONTROL DURING SAMPLING IN THE FIELD

Quality control samples will be taken during the field sampling to monitor sampling technique, sampling equipment cleanliness, sample variability, sample handling and laboratory performance (analytical reproducibility). The quality control samples will include replicate samples, equipment/field blanks and transport blanks.

Replicate samples are samples taken from the same location with the same sampling device. Replicate samples are used to check on laboratory reproducibility, sampling technique and sample variability. The replicate samples will be coded so that the laboratory is not biased in performing the analyses. The code that is used will be identified in the field notes and on the sampling logs, but not on laboratory correspondence.

One replicate soil/sediment and one replicate groundwater/surface water sample will be taken for every twenty (20) investigative samples submitted to the laboratory for analysis. The replicate soil/sediment samples will be collected after the desired sampling interval is thoroughly mixed in a stainless steel bowl to achieve a homogeneous sample and then equally spilt into the various analytical containers. The replicate groundwater/surface water samples, except for VOC analysis, will be taken by splitting the sample by alternating the discharge tubing between both sets of containers (sample and replicate containers) until the containers are filled. The replicate groundwater/surface water sample for VOCs analysis will be taken by filling one container completely and then filling the replicate container completely. Groundwater/surface water samples for VOCs analysis are typically taken in triplicate, so this procedure will be repeated three times using a new full bailer of water each time.

Equipment/field blanks are samples taken to monitor sampling equipment cleanliness and decontamination procedures during field sampling. One equipment/field blank will be taken during soil/sediment and groundwater/surface water sampling for every twenty (20) investigative samples submitted to the laboratory for analysis of all of the parameters of concern. The equipment/field blanks will be taken as follows per the environmental media being sampled:

Soil Sampling - After the macro-core sampler has been decontaminated, reassembled, or the sampling trowel for the site wide surface soil sampling, sediment sampling or test pits, and are ready for sampling, pour deionized water through and over the macro-core sampler or trowel and collect it in the sample container(s).

Ground / Surface Water - After the bailer has been decontaminated or a new disposable bailer is removed from its packaging and is ready for sampling, pour deionized water into the bailer and then into the sample container(s).

The equipment field blanks will be identified as such and by the location to be sampled (i.e., equipment blank before SB-8, 2 to 4 feet; or before MW-5).

Transport blanks are prepared when VOCs analysis is to be performed, and they are prepared in the laboratory when the sample containers are prepared. Transport blanks will be prepared in triplicate by filling 40 ml glass containers (with Teflon™ lined septum) with deionized water. These containers will travel unopened with the sample containers and be analyzed for the same volatile constituents as the samples being submitted. The transport blanks are taken to monitor whether the samples have been contaminated during transport, as a result of handling in the field, during shipment or during storage in the laboratory. One transport blank will accompany each set of samples (soil or water) that are shipped / delivered to the laboratory for VOCs analysis.

The analyses to be performed on the replicate, equipment / field blanks and transport blanks are presented in Table 2 of the QAPP. Additional QC / QA procedures are discussed in the QAPP.

9.0 FIELD INSTRUMENTATION OPERATING PROCEDURES

9.1 General

The field instruments that will be utilized during implementation of the site investigation are: a photoionization detector (PID) meter for air monitoring of the total VOCs during drilling, and for headspace analysis of soil samples for total VOCs; and a pH/conductivity/thermometer meter and turbidity meter for field analysis of groundwater samples for these parameters. The field instruments used will be calibrated and operated in accordance with the manufacturer's instructions and the procedures identified in the following sections. Additionally, ambient dust monitoring will be conducted during test pit/trenching and drilling activities to provide "real time" measurement of dust generated as part of these activities.

9.2 Photoionization Detector Meter

A MiniRae PID meter and data logger with a 10.6 eV lamp will be utilized to measure total VOCs. The instrument is calibrated at the factory upon purchase and annually thereafter using certified service shops who utilize standards of benzene and isobutylene. Prior to use in the field, the instrument will be calibrated in accordance with the manufacturer's instructions using a disposable cylinder containing isobutylene obtained from Pine Environmental Services, Inc. of Hightstown, New Jersey. The calibration value varies by the manufacturer, however, 105 parts per million is commonly utilized by C.T. Male. During use the PID meter will be calibrated at least once every 8 hours. The calibration procedure is contained in the Photovac Microtip User's Manual.

Care will be taken when handling and using the PID meter to prevent any debris from entering the sample line which will effect the instrument's operation. If this occurs the field personnel will clean the unit or replace it with a functional PID meter.

9.3 Temperature, PH and Specific Conductivity Meter

9.3.1 General

The Oakton Portable pH/Con 10 meter, or equal unit, will be used to measure temperature, pH and conductivity. This instrument is equipped with an automatic temperature control for accurate adjustment to the temperatures of the samples and calibration standards. The temperature range is 0°C to 100°C with an accuracy of ±0.5° C.

9.3.2 pH

Prior to collecting the pH readings, the pH meter will be calibrated with standard buffer solutions of pH 4.0, 7.0 and 10.0 with the unit automatically correcting the temperature. The instrument will be calibrated prior to use each day to ensure accurate measurements. Calibration procedures are presented in the manufacturer's operating instructions.

The pH measurement will be taken by setting the meter function to pH mode, immersing the electrode in the sample (after rinsing the probe with deionized water), gently stirring the water with the electrode probe until equilibrium is reached, and recording the pH when the instrument displays "ready." The pH electrode will be rinsed with deionized water after taking a measurement. The manufacture recommends that the electrode be stored in an electrode storage solution when not in use.

9.3.3 Specific Conductivity

Prior to collecting specific conductance readings, the instrument will be calibrated prior to use each day to ensure accurate measurements. Calibration will be performed using standards of 147.0, 717.8 and 1,413 umhos/centimeter, being sure the instrument is showing automatic temperature correction. Calibration procedures are presented in the manufacturer's operating instructions.

The conductivity cell will be rinsed with distilled water before and after use. The measurement will be taken after rinsing the conductivity probe twice with the sample,

immersing the probe in the sample and recording the measured value when the instrument reads "ready."

9.4 Turbidity Meter

A LaMotte Turbidimeter (Model 2008) or equal unit will be used to measure turbidity. The Model 2008 is a true nephelometer, measuring the amount of light scattered at right angles from a beam of light passing through the test sample. The instrument range is 0 to 19.99 NTU (20 scale) and 0-199.9 (full scale). The accuracy of this instrument is ±2% of the reading or 0.05 NTU, whichever is greater. The turbidity is pre-calibrated from the manufacture, but is regularly calibrated to known standards of typically 4 and 40 NTU.

The turbidity measurement is collected by pouring a sample into a dedicated VOA vial or cuvette. The cuvette is wiped clean and them inserted into the instrument's chamber and covered. The reading is noted once stabilized.

9.5 Dust Monitors

C.T. Male will utilize two TSI Dust Tracks real-time particulate monitors capable of continuously measuring concentrations of airborne dust, smoke, mists, haze, and fumes with real time readout (or equivalent). This instrument will detect particles from 0.1 to 10 micrometers in size. The instruments will be placed at temporary monitoring stations based on the prevailing wind direction each day, one upwind and one downwind of the work area. The short-term exposure limit (STEL) is a 15 minute time-weighted average (TWA) exposure that is also measured by the particulate monitors. Dust monitoring equipment is calibrated by the supplier and zeroed daily in the field prior to each day's use.

10.0 SAMPLE HANDLING AND CHAIN OF CUSTODY PROCEDURES

Just prior to sampling and filling the sample containers, the label on the container will be completed with the required information. After filling the sample containers they will be wiped with a paper towel, and placed in a protective bubble or foam wrap to protect it during transport. The container(s) will be placed in a cooler with double bagged ice packs, to maintain a temperature of 4°C.

A Chain of Custody Record will be completed by the sampler in the field after securing analytical samples. The sampler will be responsible for retaining possession of the samples until they are delivered to the laboratory or until they are delivered to a courier or common carrier for shipment to the laboratory. When the samples are released from the custody of the sampling personnel, the Chain of Custody Record will be signed by both relinquishing and receiving parties with the date and time indicated. A copy of the form will be retained by the sampler for inclusion in the project files and the original form will accompany the shipment. The Chain of Custody Record will then be signed by the relinquishing party and receiving laboratory personnel when the samples are ultimately received at the laboratory.

If samples are shipped, a bill of lading or an air bill will be used and retained in the project files as documentation of sample transportation. Prior to shipment, the cooler will be securely wrapped with clear tape to protect it from tampering. A separate additional Chain of Custody Record will be completed for each cooler of samples. This form will be placed in a plastic bag and taped to the underside of the cooler lid. This form will be used by the laboratory personnel as a check to verify that the containers listed on the form are present in the cooler when they are received at the laboratory. A copy of the signed Chain of Custody Record will accompany the laboratory analysis reports. A blank Chain of Custody Record form is enclosed in Appendix A.

11.0 WATER LEVEL MEASUREMENT PROCEDURES

Water levels will be measured in the monitoring wells using a water level indicator probe. The water levels will be measured from the surveyed reference point to the nearest 0.01 foot. Water levels will be measured progressively from upgradient monitoring wells to downgradient monitoring wells, attempting to measure water levels from the cleanest well to the dirtiest well.

To avoid possible cross contamination of the wells, the water level indicator will be decontaminated prior to and following the water measurement of individual wells. The water level indicator will be decontaminated by rinsing it with distilled water or tap water, then rinsing it with methanol and wiping it with a clean cloth or paper towel and then rinsing it with copious amounts of distilled water.

The water depth levels and reference elevations determined from the monitoring well survey will be recorded on a Water Level Record form and the water table elevations calculated. A blank copy of this form is presented in Appendix A.

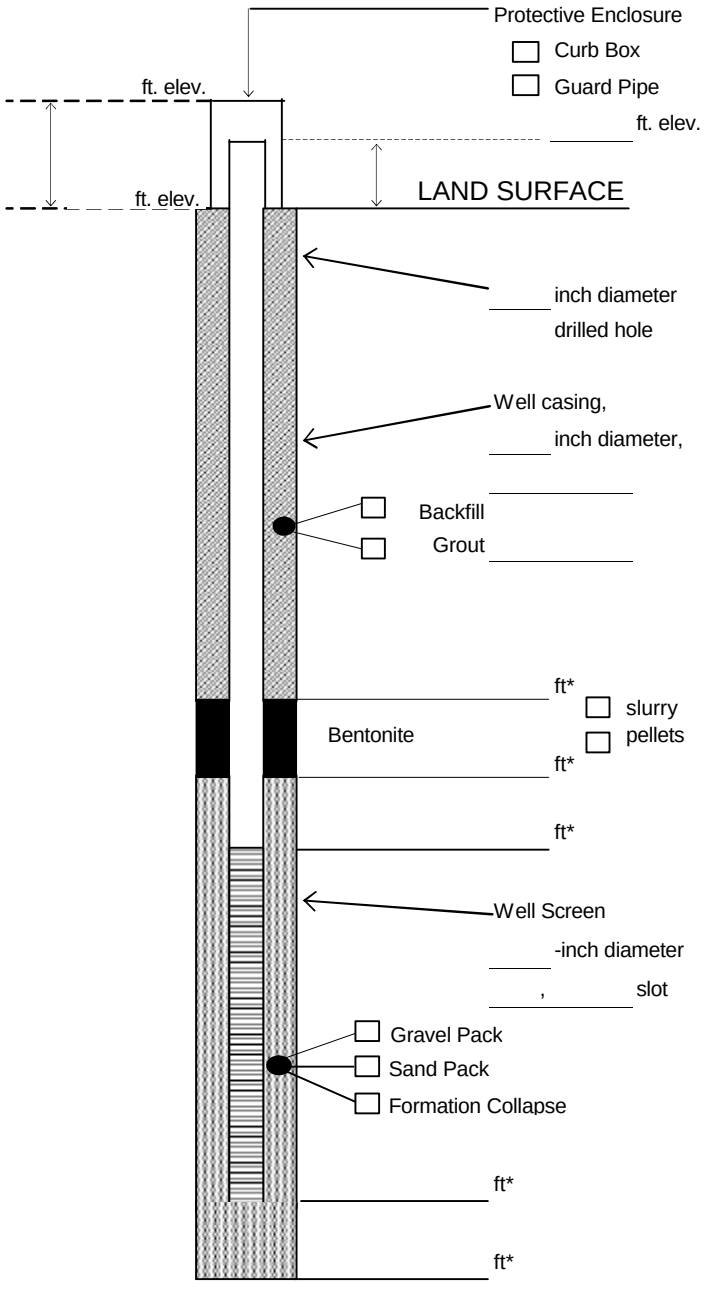
FIGURE 1

TYPICAL OVERBURDEN MONITORING WELL DIAGRAM

Well No. _____

MONITORING WELL CONSTRUCTION LOG

C.T. MALE ASSOCIATES, P.C.



* Depth below land surface.

Project Number _____

Project Name _____

Well No. _____ Boring No. _____

Town/City _____

County _____ State _____

Installation Date(s) _____

Drilling Contractor _____

Drilling Method _____

Water Depth From Top of Riser _____ ft _____
Date

C.T. Male Observer _____

Notes:

APPENDIX A

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) FORMS

and

FIELD REPORT FORMS

C.T. MALE ASSOCIATES, P.C.

WATER LEVEL RECORD

Project Name _____ Project Number _____
Location _____ Measurement Taken By _____
Method or Reading_____ Datum_____

		Date _____		Date_____		Date_____	
Well No.	Ref. Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.

Measuring Point(s) _____

_____

Groundwater Services Field Log

DATE: _____ PROJECT NAME: _____

PROJECT NO.: _____ PROJECT LOCATION: _____

SAMPLING PERSONNEL: _____

MONITORING WELL ID#: _____ NOTES TAKEN BY: _____

DEPTH TO WATER: _____ FROM: _____ BAILER ID: _____

DEPTH TO BOTTOM: _____ FROM: _____ BAILER: LAB CLEANED / FIELD CLEANED

WATER COLUMN HEIGHT: _____ BAILER: STAINLESS STEEL _____

OTHER _____

WELL CASING DIAMETER

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GALLONS 3" = 0.38 GALLONS

1.25" = 0.064 GALLONS 4" = 0.66 GALLONS

2" = 0.16 GALLONS 6" = 1.47 GALLONS

WELL VOLUME: _____ GALLONS

VOLUMES PURGED: _____ GALLONS PURGE METHOD: _____

TIME STARTED: _____ ; TIME FINISHED: _____

OBSERVATIONS: COLOR _____ ; ODOR _____

SHEEN _____ ; TURBIDITY _____

OTHER _____ _____

WATER RECOVERY HEIGHT: _____ ; RECOVERY TIME IN MINUTES: _____

FIELD PARAMETERS: pH _____ , TEMPERATURE _____

CONDUCTIVITY _____ UMHO/CM, OTHER _____

SAMPLE COLLECTION TIME: _____

NOTES: _____

C.T. MALE ASSOCIATES, P.C.

SUBSURFACE EXPLORATION LOG

a

BORING NO.:
ELEV.: **DATUM:**
START DATE: **FINISH DATE:**
SHEET **OF**

PROJECT: _____ CTM PROJECT NO.: _____

LOCATION: _____ CTM INSPECTOR: _____

DEPTH (FT.)	SAMPLE TYPE	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	RECOVERY	SAMPLE CLASSIFICATION	NOTES
5										
10										
15										
20										
25										
30										

N = NO. OF BLOWS TO DRIVE 2" SAMPLER 12" WITH A 140 LB. WT. FALLING 30" PER BLOW

DRILLING CONTRACTOR: _____ DRILL RIG TYPE: _____

METHOD OF INVESTIGATION: _____

GROUNDWATER LEVEL READINGS

DATE	LEVEL	CASING	STABILIZATION

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR C.T. MALE DESIGN PURPOSES. IT IS MADE AVAILABLE TO AUTHORIZED USERS ONLY THAT THEY MAY HAVE ACCESS TO THE SAME INFORMATION AVAILABLE TO C.T.MALE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGMENT OF SUCH AUTHORIZED USERS.

SAMPLE CLASSIFICATION BY:

Environmental Services Field Log

Date: Time On-Site: Time Off-Site:

Project Name: Project No.:

Purpose: Field Report No:

Weather Conditions:

Present at Site:

Observations:

Items to Verify:

List of Attachments:

Field Log Prepared by:

Copies to:

ORGANIC VAPOR HEADSPACE ANALYSIS LOG

PROJECT:	PROJECT #:	PAGE 1 OF
CLIENT:		DATE
LOCATION:		COLLECTED:
INSTRUMENT USED: LAMP EV		DATE
DATE INSTRUMENT CALIBRATED:	BY:	ANALYZED:
TEMPERATURE OF SOIL:		ANALYST:

EXPLORATION NUMBER	SAMPLE NUMBER	DEPTH (FT.)	SAMPLE TYPE	SAMPLE READING (PPM)**	BACKGROUND READING (PPM)**	REMARKS

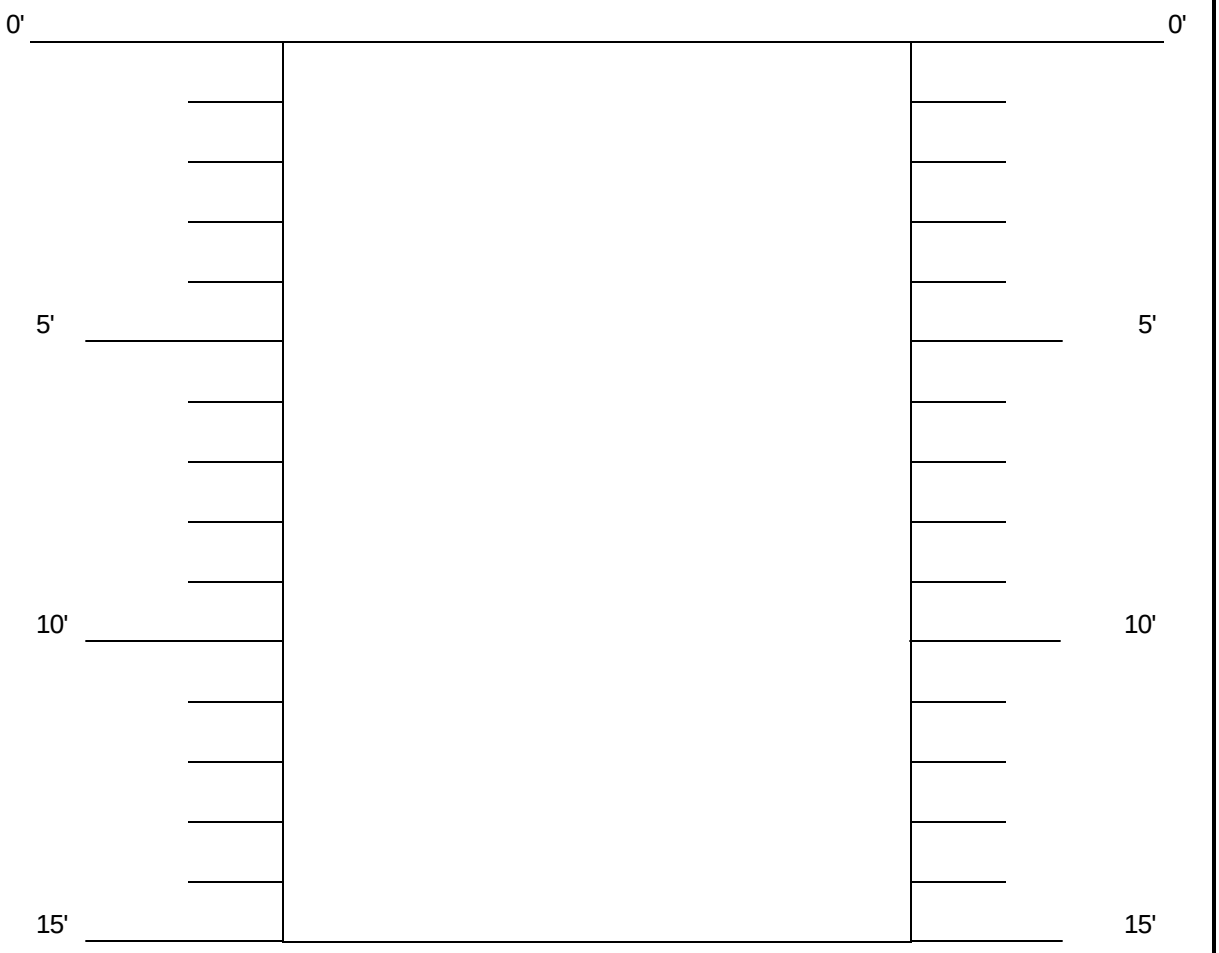
*Instrument was calibrated in accordance with manufacturer's recommended procedure using a calibration gas supplied by the manufacturer.
**PPM represents concentration of detectable volatile and gaseous compounds in parts per million of air.
***Due to poor sample recovery the sample is not sufficient enough to specify which portion of the recovered sample interval was collected .

TEST PIT LOG

C.T. MALE ASSOCIATES, P.C.
50 Century Hill Drive, P.O. Box 727
Latham, NY 12110-0727
(518) 786-7400 • FAX (518) 786-7299
Building Systems • Engineering • Environmental Services • Land Information Servic

PROJECT NAME: _____ EXCAVATOR: _____
PROJECT NUMBER: _____ EQUIPMENT: _____
LOGGED BY: _____ DATE: _____

TEST PIT NO. _____



TOTAL DEPTH: _____
WATER AT: _____
SIZE OF TEST PIT: _____

NOTES: _____

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN
FORMER HETTLING FARM
TOWN OF CLERMONT
COLUMBIA COUNTY, NEW YORK

NYS ENVIRONMENTAL RESTORATION PROGRAM
QUALITY ASSURANCE PROJECT PLAN
FORMER HETTLING FARM
TOWN OF CLERMONT
COLUMBIA COUNTY, NEW YORK

KEY PERSONNEL AND SIGNATURES

Approved: _____ Date: 7/11/06

Project Principal
David Roecker, P.E.
Vice President, Environmental Services Division
C.T. Male Associates, P.C.

Approved: _____ Date: 7/6/06

Project Manager & Geologist
Kirk Moline
Hydrogeologist
C.T. Male Associates, P.C.

Approved: _____ Date: 7/11/06

Project Scientist & Health and Safety Coordinator
Stephen Bieber
Environmental Scientist
C.T. Male Associates, P.C.

Approved: _____ Date: 7/6/06

Quality Assurance Officer
Elizabeth Rovers, P.E.
Managing Engineer
C.T. Male Associates, P.C.

NYS ENVIRONMENTAL RESTORATION PROGRAM
QUALITY ASSURANCE PROJECT PLAN
FORMER HETTLING FARM
TOWN OF CLERMONT
COLUMBIA COUNTY, NEW YORK

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APPENDICES

1.0 PROJECT DESCRIPTION

1.1 Introduction

This Quality Assurance Project Plan (QAPP) has been prepared for the implementation of the site investigation activities at the former Hettling farm ("the site") located along the west side of U.S. Route 9, approximately 1,100 feet north of the route's intersection with County Route 6, in Town of Clermont, Columbia County, New York. It has been developed in conjunction with the Remedial Investigation/Alternatives Analysis Report (RI/AAR) Work Plan as prepared by C.T. Male Associates, P.C. (C.T. Male). A description of the site, available background information, objectives and the proposed site remediation scope of work are presented in detail in the referenced RI/AAR Work Plan.

This QAPP presents the organizational structure and data quality objectives (DQOs) for the site investigation, and the quality assurance (management system) and quality control methods of checks and audits to be implemented to ensure that the quantity and quality of the data required for its intended use is obtained and documented (i.e., that DQOs are met). The measurement parameters used to determine the quality of the data are precision, accuracy, completeness, representativeness and comparability and are discussed further in this QAPP.

A Field Sampling Plan (FSP) has been prepared by C.T. Male as a separate exhibit and forms an integral part of this QAPP. The field sampling and data gathering procedures are presented in the FSP and incorporated into the QAPP by reference. The QAPP and FSP document the laboratory quality assurance/quality control (QA/QC) procedures and field sampling and data gathering procedures that will be followed during implementation of the site investigation scope of work so that valid data of a known quality is generated.

The project specific field QA/QC procedures and the project specific laboratory QA/QC procedures are presented in the text of this QAPP. The general internal laboratory QA/QC procedures are presented in the subcontractor laboratory's Quality Manual which is retained at C.T. Male's office. The subcontract laboratory for this project will be Upstate Laboratories, Inc., who was selected via written responsive quotes. The laboratory certifications are included in Appendix A.

The QAPP has been prepared in a manner consistent with the following guidance documents:

- Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89/004, USEPA, October 1988.
- Data Quality Objectives for Remedial Response Activities: Development Process, EPA/540/G-87/003, USEPA, March 1987.
- Draft DER-10 Technical Guidance For Site Investigation and Remediation, NYSDEC, December 2002.

1.2 Objectives and Scope of Work

It is the objective of the RI and this QAPP to obtain and present representative data of a known quality and sufficient quantity. The primary goal is to perform soil, sediment, surface water and groundwater sampling through a variety of investigation tasks to evaluate the quality of the site's soils, stream water and sediments, and groundwater. The data will help document overall protection requirements for human health and the environment based on the site's contemplated use.

To achieve these objectives, the scope of work will include the following items as presented in the RI/AA Work Plan, in this QAPP and in the FSP: a site reconnasissance to identify areas and conditions of concern not previously identified; an electromagnetic (EM) survey investigation to locate potential buried structures and/or wastes; a fish and wildlife impact analysis; a site wide subsurface/hydrogeologic evaluation which will include boring/monitoring wells and test pits; an investigation of the quality of sediments and surface water within the on-site stream and off-site pond; and surface soil, sediment, soil gas, surface water and groundwater sampling and analysis.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

C.T. Male Associates, P.C. is responsible for the overall administration and the overall quality control/quality assurance of the site investigation and remedial activities. These will include project management, coordination and scheduling of activities in-house and with qualified subcontractors. The work tasks that will be performed by a subcontractor under C.T. Male's supervision include: an EM survey, advancement of exploratory test pits, direct-push (Geoprobe) drilling of borings/monitoring wells and analytical laboratory testing.

A project organizational chart listing key individuals of the project and their associated title is presented as Figure 1 at the end of this document. Personnel from C.T. Male Associates, P.C., the subcontracted laboratory and data validator can be reached at the following addresses:

- C.T. Male Associates, P.C.
  Contact: Stephen Bieber and Kirk Moline
  50 Century Hill Drive, P.O. Box 727, Latham, New York 12110
  Phone: (518) 786-7400
  Fax No.: (518) 786-7299
  Email: s.bieber@ctmale.com and k.moline@ctmale.com

- Upstate Laboratories, Inc.
  Contact: Anthony Scala
  Address: 6034 Corporate Drive, East Syracuse, NY 13057
  Bus. Office: (315) 437-0255
  Bus. Fax No.: (315) 437-1209
  Email: AScala@UpstateLabs.com

- C.T. Male Associates, P.C.
  Contact: Megan Drosky
  50 Century Hill Drive, P.O. Box 727, Latham, New York 12110
  Phone: (518) 786-7400
  Fax No.: (518) 786-7299
  Email: m.drosky@ctmale.com

A description of the responsibilities by title of the key individuals is presented as follows:

Project Principal is responsible for the review of the RI/AAR activities and reports for their technical adequacy and conformance to the scope of work.

Quality Assurance Officer is responsible for the independent review of the RI/AAR documents and reports to check that the appropriate project documentation, of the quality control activities performed, exist and are maintained; for conducting field and sampling audits. Analytical data will also be reviewed by this individual for accuracy and completeness.

Project Manager is responsible for the overall coordination and implementation of the project, the management of staff and resources, the implementation of schedules, the conformance by the technical staff and subcontractors to the scope of work, assessing the adequacy of the work being performed, implementing corrective action as necessary, interaction with the client and regulatory agencies, maintaining complete project documentation, and report preparation.

Health and Safety Coordinator is responsible for implementation of the project specific Health and Safety Plan, and resolution of safety issues which arise during the completion of the work. The Health and Safety Coordinator or designee will be present during the completion of the field work.

Laboratory Quality Assurance Officer is responsible for review of the laboratory data quality control procedures and documentation to determine if the QA objectives are being met; and to report non-conforming events to the laboratory technical staff and Project Manager and implement corrective action as necessary.

Laboratory Director is responsible for all activities within the laboratory, and for the performance of the laboratory work tasks in accordance with the project work plans, interactions with the Project Manager, and the adherence to project schedule.

Project Geologist/Engineer/Scientist is responsible for coordinating and conducting the field hydrogeologic activities and subcontractors, the adherence of activities to the QAPP and the FSP, evaluation of the collected data, soil

classifications, report preparation and interaction with Project Manager and Project Team.

Project Team is responsible for adequately performing the work tasks in accordance with the project work plans so that the objectives of investigations and the project are achieved, notifying the Project Manager of any non-conformance to the work plan so that corrective actions can be taken as necessary, and notifying the Project Manager of unforeseen conditions so that modifications to the work plan, if necessary, can be approved and implemented.

Data Validator is responsible for review of all analytical data generated for this project. The data validator will review analytical data in accordance with New York State Department of Environmental Conservation Guidance for the Development of Data Usability Summary Reports and preparation of a report documenting if the analytical data is valid and usable. The report will also present data rejection and qualification, where necessary, based on laboratory performance.

3.0 QUALITY ASSURANCE OBJECTIVES FOR DATA MEASUREMENT

3.1 General

The Quality Assurance (QA) objective for this project is to produce data which is technically valid and of a known quality that meets the needs of its intended use. In this section the data quality objectives are defined by describing the intended use of the data; defining the type of data needed (i.e., physical or analytical); specifying the analytical levels, as established by EPA, appropriate to the data uses; specifying the quality control checks on field and laboratory procedures and frequency of checks; and presenting the quality control acceptance criteria.

Laboratory quality assurance objectives for data measurement are established for each measurement parameter in terms of precision, accuracy, completeness, representativeness and comparability. These terms form an integral part of the laboratory's quality assurance programs in that DQOs are set for each parameter.

3.2 Data Uses and Types

The data to be generated during the proposed work will be completion of site investigation, and health and safety during implementation of the field activities. Both physical data including air monitoring and analytical data from soil, sediment, surface water and groundwater will be needed to provide the necessary information to complete the steps in the site investigation. The specific physical and analytical data proposed and its purposes are presented in the RI/AA Work Plan.

3.3 Data Quality Needs

To support data collection activities in obtaining quality data, EPA has established a series of analytical levels that are appropriate to site investigation/remediation data uses. The analytical levels are defined as follows:

Level I - Field screening or analysis using portable instruments. Qualitative data.

Level II - Field analyses using more sophisticated portable analytical instruments. Qualitative and quantitative data can be obtained.

Level III - Laboratory analyses using standard EPA approved procedures.

Level IV - Laboratory analyses by NYSDEC ASP (Analytical Services Protocol) - Category B Deliverable with QA / QC protocols and documentation.

Level V - Analyses by non-standard methods.

The data collection activities, the environmental media, the intended use of the data and the corresponding analytical levels that will be used to produce the project data are summarized in Table 1.

Table 1
Summary of Work Tasks and Corresponding Analytical Levels

Data Collection Activities	Sample Media & Description	Data Use[(a)]	Analytical Level
PID Monitoring	Soil Vapors	1	I
Air Monitoring	Air / Ambient Air	2	I
Test Pits, Test Borings, Monitoring Wells, and Surface Soil, Sediment, Soil Gas, Groundwater and Surface Water Sampling	Surface, Sediment and Subsurface Soil, Surface Water, Groundwater and Soil Gas / Laboratory Analyses, Field Instrumentation.	1, 3, & 4	IV

Note:
(a) Data Uses Key:
1 - Site Characterization.
2 - Health and Safety and Community Air Monitoring During Implementation of Field Activities.
3 - Risk Assessment.
4 - Evaluation of Remediation Alternatives.

Another consideration besides defining the Data Quality Needs is what level of cleanup will be required for the site. The applicable or relevant and appropriate requirements (ARARs) are related to defining satisfactory cleanup efforts. In order to be able to evaluate the data generated with respect to potential ARARs, the samples will need to be analyzed by analytical methods that can achieve detection limits below or at existing ARAR values. The analytical methods selected for this project are designed to achieve ARAR values.

3.4 Quality Control Checks and Acceptance Criteria

To monitor and document the integrity of such factors as sample variability, sampling equipment cleanliness, sampling technique, analytical reproducibility and sample handling which can affect data quality, several field quality control checks will be implemented. These will include taking equipment/field blanks after the sampling equipment has been decontaminated to check for cross contamination and equipment cleanliness; taking replicate samples to monitor analytical precision/ reproducibility and sampling technique; and preparing transport blanks to be transported with the sample containers for volatile analyses to monitor sample handling. For this project the field Quality Control (QC) checks will consist of one equipment/field blank, and one replicate sample, during sampling activities for every twenty (20) analytical samples per media type (i.e. soil, groundwater). A transport blank will be prepared for each sample set to be submitted for volatile analyses.

Laboratory quality control checks will be those specified in EPA Methods or in the NYSDEC ASP (Revised 2000) for the analytical method performed and could consist of some of the following:

- Blanks (method, preparation),
- initial and continuing calibrations,
- surrogate spikes,
- matrix spikes/matrix spike duplicates,
- ambient samples,
- duplicate samples, and
- control samples/matrix spike blanks.

The laboratory will be responsible for performing what is necessary for complying with appropriate standards and certifications of the selected EPA method and ASP requirements. The laboratory quality control acceptance criteria is method specific and will be the laboratory's responsibility to meet ASP (Revised 2000) criteria.

4.0 SAMPLING PROCEDURES

Procedures for sampling are presented in the Field Sampling Plan (FSP) and includes the following:

- Selection of sampling sites and media to be sampled,
- specific sampling procedures for each environmental media to be sampled, and for QC samples to be taken,
- field soil screening procedures,
- a description of the containers, procedures and equipment used for sample collection, preservation, transport and storage,
- procedures for preparing the sample containers and sampling equipment prior to sampling and decontamination of sampling equipment during sampling,
- chain of custody procedures and forms, and
- description of the procedures, forms and notebooks to be used to document sampling activities, sample conditions and field conditions.

5.0 SAMPLE CUSTODY

Proper chain of custody will be established and maintained through a series of steps, beginning in the field and ending with final disposition of the analyzed sample. At the time of the field sampling, an external chain of custody form will be utilized to track sample collection until delivery to the analytical laboratory. An internal or "intra-laboratory" chain of custody will be used by laboratory personnel to track the sample(s) from the point it is received/logged and passed through the laboratory process. Chain of custody procedures are discussed in detail in Section 10.0 of the FSP.

6.0 CALIBRATION PROCEDURES

Calibration procedures for field equipment including the photo-ionization detector (PID) meter, pH/conductivity/temperature meter and dust monitors are presented in Section 9.0 of the FSP. Calibration procedures for laboratory equipment/instrumentation consist of the production and use of current certifiable standards and the measurement/adjustment of the instrument response. The laboratory is responsible for maintaining records documenting use of current standards and acceptable instrument responses. The laboratory is required to flag analytical data that has had potential contamination or poor instrument calibration that may have occurred during the analytical process.

7.0 SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

The analytical parameters, sample preparation and analysis methods, acceptable holding times and required method detection limits are presented in Table 2. The analytical methods specified reflect the requirements of the NYSDEC ASP, Revised June 2000.

Table 2
Analytical Methods and Requirements

Analytical Parameters	EPA Method	Holding Times(2)	Contract Required Quantitative Limits (as noted)(1)
Volatile Organic Compounds	8260	Soil/Sediment: 7 Days to Analysis (cool to 4° C). Water: 7 Days Unpreserved to Analysis, 10 Days (HCl to pH<2) Preserved to Analysis.	10-100 ug/kg (Soil) 1 to 10 ug/l (Water)
Semi-volatile Organic Compounds	8270	5 Days to Extraction, 40 Days to Analyze	330 to 800 ug/kg (Soil) 10-25 ug/l (Water)
TCL Pesticides	8081	5 Days to Extraction, 40 Days to Analyze	1.7 to 170 ug/kg (Soil) 0.05-1 ug/l (Water)
TCL PCBs	8082	5 Days to Extraction, 40 Days to Analyze	33 to 67 ug/kg (Soil) 0.5-1 ug/l (Water)
Metals	6010/7000 Series	180 Days except for Mercury (30 Days)	0.3 to 500 mg/kg (Soil) 3 to 5,000 ug/l (Water)
Total Organic Carbon (TOC)	9060	26 Days	100 mg/kg

Note:
1) The listed method detection limits are practical quantitation limits (PQLs). The method detection limit (MDL) is the best possible detection. Laboratories report PQLs which are typically 4 times the MDL for liquids and varies for solids depending on the quantity of contamination present. Efforts will be made to obtain the lowest possible detection limit. When the guidance value or standard value is below the detection limit, achieving the detection limit will be considered acceptable for meeting that guidance or standard value.
2) Holding times are relative to the verifiable time of receipt at the laboratory.

Where matrix interference is noted, analytical clean-ups will be required to be performed by the laboratory following the procedures specified in SW-846 or the NYSDEC ASP, as applicable. In general, samples shall not be diluted more than 1 to 5.

8.0 DATA REDUCTION, VALIDATION AND REPORTING

The field measurement data and the laboratory analyses results of detected parameters will be compiled and tabulated to facilitate comparison and evaluation, and will be included in the Final RI/AAR. The tabulated data will include at a minimum:

- soil and sediment analysis results,
- soil gas analysis results,
- surface water and groundwater analysis results, and
- quality control results (field blanks, duplicates, ambient and transport blanks).

Field logs will also be compiled and included, in part, in the text and appendices of the Final RI/AAR, and will consist of:

- monitoring well construction logs,
- test pit logs,
- test boring logs,
- organic vapor headspace analysis logs,
- groundwater services field logs,
- surface water sampling logs,
- environmental services field logs, and
- water level records.

Any observations or problems encountered during field activities which could affect the quality of the data or its validity will be noted on the appropriate field log.

The laboratory will generate ASP Category B Data Deliverable Package(s) that may be submitted as a separate volume to the RI/AAR. It will include analytical results and quality control data deliverables as required by NYSDEC ASP (Revised 2000).

Internal data validation will be performed by the laboratory QA officer to ensure that the data package is complete and meets the criteria to the work plan and this QAPP. Any problems encountered in performing the analyses by the laboratory such as out of limits surrogate recoveries, and comments on the quality and

limitations of specific data and the validity of the data will be described in the case narrative of the laboratory report.

External data validation will be performed by an independent data validator who will utilize the USEPA National and Regional Validation Guidelines/Procedures and the NYSDEC Guidance in the Development of Data Usability Summary Reports to determine the applicable qualifications of the data. The validator will then prepare a NYSDEC Data Usability Summary Report (DUSR) in accordance with NYSDEC guidelines. The proposed data validator's qualifications and work experience is presented in Appendix B. The NYSDEC DUSR guidance is presented in Appendix C for reference.

9.0 INTERNAL QUALITY CONTROL

Field QC will consist of taking equipment / field blanks and having transport blanks with the appropriate volatile organic compound sample sets. Field instrumentation will also be calibrated prior to use and the calibration maintained as discussed in the FSP (Section 9.0).

Internal laboratory QC will generally consist of:

- Method (instrument) blanks,
- initial and continuing calibrations,
- surrogate spikes,
- matrix spikes / matrix spike duplicates,
- duplicate samples, and
- laboratory control samples / matrix spike blanks.

The QC samples will be run in accordance with the protocols and frequencies specified in the NYSDEC ASP, SW-846 and EPA Methods as applicable for the analyses being performed.

10.0 PERFORMANCE AND SYSTEMS AUDITS

10.1 Field Audits

Field performance audits will consist of taking replicate samples and equipment/field blanks and analyzing them for the same parameters as other samples.

Field system audits will be conducted during field operation to ensure that the field activities are being conducted correctly and in accordance with the RI/AAR Work Plan. The project field supervisor will check that the field instrumentation is calibrated prior to use, that field measurements are taken correctly, that equipment and sample containers are properly decontaminated, and that the field activities are properly documented. Any deficiencies will be reported to the project manager and discussed with the field staff immediately and corrective action taken. The person conducting the field audits will document the field system audits by use of a field report and submit the report to the project manager for review on a bi-weekly basis at a minimum. The project quality assurance officer, geologist/engineer or project manager will conduct system audits as appropriate or warranted.

The project manager will review the field system audit reports and the field documentation for completeness and correctness, and check that the work is proceeding on schedule and in accordance with the work plans.

10.2 Laboratory Audits

Laboratory system audits are not required, however, if the laboratory is required to maintain New York State Department of Health (NYSDOH) ELAP certification. A copy of the laboratory NYSDOH ELAP certification documentation will be provided. Part of this certification process typically includes periodic performance evaluations and on-site systems audits.

11.0 PREVENTATIVE MAINTENANCE

C.T. Male Associates, P.C. keeps an inventory of all field equipment and it is kept locked in a designated area. The field equipment is signed out when in use and its condition checked upon its return. The equipment is kept in good working order and frequently checked and calibrated by qualified employees. Additionally, select equipment (i.e., PID) is routinely serviced for cleaning and calibration by an independent repair facility.

The project geologist/engineer/scientist and field sampler are responsible for assuring that the field equipment is tested, cleaned, charged and calibrated in accordance with the manufacturer's instructions prior to taking the equipment out into the field.

12.0 DATA ASSESSMENT PROCEDURES

The field and laboratory generated data will be assessed for precision, accuracy, representativeness, completeness, and comparability (PARCC parameters). Both quantitative and qualitative procedures will be used for these assessments.

The criteria for assessment of field measurements will be that the measurements were taken in accordance with the procedures specified in the FSP using calibrated instruments. Assessment of the sampling data with respect to field performance will be based on the criteria that the samples were properly collected and handled. Field replicate and equipment/field blank sample results will be used in assessing the sampling technique and representativeness of the samples collected.

The laboratory will calculate and report the precision, accuracy, and completeness of the analytical data. Precision will be expressed as the relative percent difference (RPD) between values of duplicate samples. Accuracy will be expressed as percent difference (PD) for surrogate standards and matrix spike compounds. Completeness is a measure of the amount of valid data derived from a set of samples based on the total amount expected to be derived under normal conditions. The precision and accuracy results will be compared to the QC acceptance criteria specified for each test method in the NYSDEC ASP (Revised June 2000).

The representativeness of the analysis is dictated primarily by the field sampling technique and sample location, as opposed to laboratory operations. The laboratory will take steps to ensure that the analysis is representative of the sample being submitted. The criteria for ensuring representativeness of the analysis are careful aliquot selection and proper compositing techniques. Laboratory performance will be based on the criteria that the samples were properly handled prior to submission to the laboratory, that the laboratory aliquots taken for analysis are representative (i.e. oversized particles discarded, sample thoroughly mixed except when dealing with volatile organics), that the samples were analyzed within holding times, and that no cross-contamination has occurred based on the method blank results. Data comparability will be assessed based on analyses being performed within required holding times, on consistent units of measure, and that

analyses were performed in strict adherence with NYSDEC and EPA analytical methods / protocols.

13.0 CORRECTIVE ACTIONS

The site investigation will be performed in accordance with the approved work plan, the contents of the approved FSP and the approved QAPP. Any persons identifying unacceptable conditions or deficiencies in the work being performed such as deviation from or omission of health and safety procedures, sampling procedures or other field procedures, will immediately notify the project field supervisor, where applicable, and the project manager. The unacceptable conditions or deficiencies will be documented and submitted to the project manager. The project manager, with assistance from the technical quality review staff, if necessary, will be responsible for developing and initiating appropriate corrective action, documenting the corrective action and verifying that the corrective action has been effective.

Depending on the significance and potential impact of the problem or deficiency requiring corrective action, the NYSDEC and the Town of Clermont will be notified, as warranted, as soon as practical after becoming aware of the situation.

14.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Field system audit/field reports from the project team, where applicable, will be submitted to the project manager on a bi-weekly basis at a minimum. The field report will include the project name, location, time, date, weather, temperature range, work in progress, conformance with schedule, persons present at the site (arrival and departure times), observations, work start-up and stoppage, items to verify, information or action required, any attachments identified, and the reporting persons signature. The field report notifies the management as to the progress, conformance with the work plan, and any problems that may affect quality control. Field personnel will also keep log books and field notebooks that will discuss day to day procedures followed, any problems encountered, etc. A copy of the field notes will be given to the project manager at least bi-weekly to keep the project manager informed of the project status and as a quality control check. The project manager will review the reports and field notes to assess the quality of the investigate data gathering efforts to make sure the objectives of the work are being met, to make sure the work is progressing on schedule, that the work is being conducted in accordance with the work plan, and that any problems encountered are addressed. These reports will be utilized in assessing the data quality with respect to field activities and the findings will be discussed in the RI/AAR where applicable.

Documentation of each phase of the project and all work tasks performed are kept in the file on the project. The documentation is available at all times for review by the Quality Assurance Officer, who will randomly check files for their completeness.

If any occurrences or conditions are encountered during the course of work that may require a change in the scope of work or departure from the approved work plan, the NYSDEC will be notified and the situation reported as soon as possible.

FIGURE 1

Project Organizational Chart

C.T. Male Project Organization

TOWN OF CLERMONT

Client

David W. Roecker, P.E.
Project Principal

Kirk Moline, CEI, CES
Project Manager/ Geologist

Elizabeth W. Rovers, P.E.
QA/QC

Jeffrey Marx, P.E.
Environmental Engineer

Steve Bieber
Project Scientist

Karen Gaidasz
Environmental Scientist/Permitting Specialist

Megan Drosky
Data Validator

Nathan Freeman
Field Technician

James F. Cook, PLS
Project Surveyor

Subconsultants & Contractors
- Laboratory Services
- Geophysical Survey
- Drilling Services
- Test Pit Services

APPENDIX A
Laboratory Certifications

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Wadsworth Center The Governor Nelson A. Rockefeller Empire State Plaza P.O. BOX 509 Albany, New York 12201-0509

Antonia C. Novello, M.D., M.P.H., Dr.P.H.
Commissioner

Dennis P. Whalen
Executive Deputy Commissioner

LAB ID: 10170

April 03, 2006

MR. ANTHONY J. SCALA
UPSTATE LABORATORIES INC
BOX 169
SYRACUSE, NY 13206

Certificate Expiration Date: April 01, 2007

Dear Mr. Scala,

Enclosed are the ELAP and/or NELAP Certificate(s) of Approval issued to your environmental laboratory for the current permit year. The Certificate(s) supersede any previously issued and is(are) in effect through the expiration date listed above. Please carefully examine the Certificate(s) to insure that the categories, subcategories, analytes and methods for which your laboratory is approved are listed correctly, as well as verifying your laboratory's name, address, lead technical director and identification number.

Pursuant to regulation (Part 55-2 NYCRR), original certificates must be posted conspicuously in the laboratory and shall, upon request, be made available to any client of the laboratory. Certificates remain the property of the New York State Department of Health and must be surrendered promptly on demand.

Please note, pursuant to Section 55-2.5(a) NYCRR, any misrepresentation of the Fields of Accreditation (Matrix - Method - Analyte) for which your laboratory is approved may result in denial, suspension, or revocation of your certification. Any use of the ELAP or NELAP name, reference to the laboratory's approval status and/or using the NELAC/NELAP logo in any catalogs, advertising, business solicitations, proposals, quotations, laboratory analytical reports or other materials must include the laboratory's ELAP identification number, and must distinguish between proposed testing for which the laboratory is approved and the proposed testing for which the laboratory is not approved.

Please notify the ELAP office of any changes you feel need to be made to your Certificate(s). We may be reached via email to elap@health.state.ny.us or by calling (518) 485-5570.

Sincerely,

Joyce Reilly

Program Administrator
Environmental Laboratory
Approval Program

APR - 7 2006
Copy to Tony

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
Antonia C. Novello, M.D., M.P.H., Dr.P.H.

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. ANTHONY J. SCALA
UPSTATE LABORATORIES INC
6034 CORPORATE DRIVE
EAST SYRACUSE, NY 13057

NY Lab Id No: 10170
EPA Lab Code: NY00054

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Disinfection By-products	
Bromochloroacetic acid	EPA 552.2
Dibromoacetic acid	EPA 552.2
Dichloroacetic acid	EPA 552.2
Monobromoacetic acid	EPA 552.2
Monochloroacetic acid	EPA 552.2
Trichloroacetic acid	EPA 552.2
Drinking Water Bacteriology	
Coliform, Total	SM 18-20 9222B
Standard Plate Count	SM 18 9215B
Drinking Water Metals I	
Arsenic, Total	EPA 200.7
Barium, Total	EPA 200.7
Cadmium, Total	EPA 200.7
Chromium, Total	EPA 200.7
Copper, Total	EPA 200.7
Iron, Total	EPA 200.7
Lead, Total	EPA 200.9
Manganese, Total	EPA 200.7
Silver, Total	EPA 200.7
Zinc, Total	EPA 200.7
Drinking Water Metals II	
Aluminum, Total	EPA 200.7
Drinking Water Metals II	
Antimony, Total	EPA 200.9
Beryllium, Total	EPA 200.7
Molybdenum, Total	EPA 200.7
Nickel, Total	EPA 200.7
Thallium, Total	EPA 200.9
Vanadium, Total	EPA 200.7
Drinking Water Metals III	
Boron, Total	EPA 200.7
Calcium, Total	EPA 200.7
Magnesium, Total	EPA 200.7
Potassium, Total	EPA 200.7
Sodium, Total	EPA 200.7
Drinking Water Miscellaneous	
Methyl tert-butyl ether	EPA 502.2/ SEE ITEM 198.5
	EPA 524.2
Drinking Water Non-Metals	
Alkalinity	EPA 310.2
	SM 18-20 2320B
Calcium Hardness	EPA 200.7
Chloride	EPA 325.3
	SM 18-20 4500-Cl C
Color	EPA 110.2

Serial No.: 28734

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
Antonia C. Novello, M.D., M.P.H., Dr.P.H.

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. ANTHONY J. SCALA
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EAST SYRACUSE, NY 13057

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EPA Lab Code: NY00054

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Drinking Water Non-Metals	
Color	SM 18-20 2120B
Corrosivity	SM 18-19 2330
Fluoride, Total	EPA 340.2
	SM 18-20 4500-F C
Hydrogen Ion (pH)	EPA 150.1
	SM 18-20 4500-H B
Nitrate (as N)	LACHAT 10-107-04-1
Nitrite (as N)	EPA 353.2
	EPA 354.1
	LACHAT 10-107-04-1
	SM 18-20 4500-NO2 B
Orthophosphate (as P)	EPA 365.1
	EPA 365.2
Solids, Total Dissolved	EPA 160.1
	SM 18-20 2540C
Specific Conductance	EPA 120.1
Sulfate (as SO4)	EPA 375.4
Drinking Water Trihalomethanes	
Bromodichloromethane	EPA 502.2
	EPA 524.2
Bromoform	EPA 502.2
	EPA 524.2
Chloroform	EPA 502.2

Drinking Water Trihalomethanes	
Chloroform	EPA 524.2
Dibromochloromethane	EPA 502.2
	EPA 524.2
Total Trihalomethanes	EPA 502.2
	EPA 524.2
Volatile Aromatics	
1,2,3-Trichlorobenzene	EPA 502.2
	EPA 524.2
1,2,4-Trichlorobenzene	EPA 502.2
	EPA 524.2
1,2,4-Trimethylbenzene	EPA 502.2
	EPA 524.2
1,2-Dichlorobenzene	EPA 502.2
	EPA 524.2
1,3,5-Trimethylbenzene	EPA 502.2
	EPA 524.2
1,3-Dichlorobenzene	EPA 502.2
	EPA 524.2
1,4-Dichlorobenzene	EPA 502.2
	EPA 524.2
2-Chlorotoluene	EPA 502.2
	EPA 524.2
4-Chlorotoluene	EPA 502.2

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WADSWORTH CENTER
Antonia C. Novello, M.D., M.P.H., Dr.P.H.

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. ANTHONY J. SCALA
UPSTATE LABORATORIES INC
6034 CORPORATE DRIVE
EAST SYRACUSE, NY 13057

NY Lab Id No: 10170
EPA Lab Code: NY00054

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Volatile Aromatics	
4-Chlorotoluene	EPA 524.2
Benzene	EPA 502.2
	EPA 524.2
Bromobenzene	EPA 502.2
	EPA 524.2
Chlorobenzene	EPA 502.2
	EPA 524.2
Ethyl benzene	EPA 502.2
	EPA 524.2
Hexachlorobutadiene	EPA 502.2
	EPA 524.2
Isopropylbenzene	EPA 502.2
	EPA 524.2
n-Butylbenzene	EPA 502.2
	EPA 524.2
n-Propylbenzene	EPA 502.2
	EPA 524.2
p-Isopropyltoluene (P-Cymene)	EPA 502.2
	EPA 524.2
sec-Butylbenzene	EPA 502.2
	EPA 524.2
Styrene	EPA 502.2
	EPA 524.2
Volatile Aromatics	
tert-Butylbenzene	EPA 502.2
	EPA 524.2
Toluene	EPA 502.2
	EPA 524.2
Total Xylenes	EPA 502.2
	EPA 524.2
Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 502.2
	EPA 524.2
1,1,1-Trichloroethane	EPA 502.2
	EPA 524.2
1,1,2,2-Tetrachloroethane	EPA 502.2
	EPA 524.2
1,1,2-Trichloroethane	EPA 502.2
	EPA 524.2
1,1-Dichloroethane	EPA 502.2
	EPA 524.2
1,1-Dichloroethene	EPA 502.2
	EPA 524.2
1,1-Dichloropropene	EPA 502.2
	EPA 524.2
1,2,3-Trichloropropane	EPA 502.2
	EPA 524.2

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Volatile Halocarbons	
1,2-Dichloroethane	EPA 502.2
	EPA 524.2
1,2-Dichloropropane	EPA 524.2
1,3-Dichloropropane	EPA 502.2
	EPA 524.2
2,2-Dichloropropane	EPA 524.2
Bromochloromethane	EPA 502.2
	EPA 524.2
Bromomethane	EPA 502.2
	EPA 524.2
Carbon tetrachloride	EPA 502.2
	EPA 524.2
Chloroethane	EPA 502.2
	EPA 524.2
Chloromethane	EPA 524.2
cis-1,2-Dichloroethene	EPA 502.2
	EPA 524.2
cis-1,3-Dichloropropene	EPA 502.2
	EPA 524.2
Dibromomethane	EPA 502.2
	EPA 524.2
Dichlorodifluoromethane	EPA 502.2
	EPA 524.2

Volatile Halocarbons	
Methylene chloride	EPA 524.2
Tetrachloroethene	EPA 502.2
	EPA 524.2
trans-1,2-Dichloroethene	EPA 524.2
trans-1,3-Dichloropropene	EPA 502.2
	EPA 524.2
Trichloroethene	EPA 524.2
Trichlorofluoromethane	EPA 502.2
	EPA 524.2
Vinyl chloride	EPA 502.2
	EPA 524.2

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ENVIRONMENTAL ANALYSES POTABLE WATER
All approved subcategories and/or analytes are listed below:

Drinking Water Non-Metals

Chloride	EPA 300.0
	LACHAT 10-510-00-1

Serial No.: 28735

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All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 624
	EPA 8260B
Acrylonitrile	EPA 624
	EPA 8260B
Methyl acrylonitrile	EPA 8260B
Methyl methacrylate	EPA 8260B
Amines	
1-Naphthylamine	EPA 8270C
2-Nitroaniline	EPA 8270C
3-Nitroaniline	EPA 8270C
4-Chloroaniline	EPA 8270C
4-Nitroaniline	EPA 8270C
	OLM 4.2 BNA
5-Nitro-o-toluidine	EPA 8270C
Carbazole	EPA 8270C
Diphenylamine	EPA 8270C
Methapyriline	EPA 8270C
Pronamide	EPA 8270C
Propionitrile	EPA 8260B
Pyridine	EPA 625
	EPA 8260B
	EPA 8270C

Benzidines	
3,3' -Dichlorobenzidine	EPA 625
	EPA 8270C
3,3'-Dimethylbenzidene	EPA 8270C
Benzidine	EPA 625
	EPA 8270C
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 608
	EPA 8081A
4,4'-DDE	EPA 608
	EPA 8081A
4,4'-DDT	EPA 608
	EPA 8081A
Aldrin	EPA 608
	EPA 8081A
alpha-BHC	EPA 608
	EPA 8081A
alpha-Chlordane	EPA 8081A
beta-BHC	EPA 608
	EPA 8081A
Chlordane Total	EPA 608
	EPA 8081A
Chlorobenzilate	EPA 8270C
delta-BHC	EPA 608

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Chlorinated Hydrocarbon Pesticides	
delta-BHC	EPA 8081A
Diallate	EPA 8270C
Dieldrin	EPA 608
	EPA 8081A
Endosulfan I	EPA 608
	EPA 8081A
Endosulfan II	EPA 608
	EPA 8081A
Endosulfan sulfate	EPA 608
	EPA 8081A
Endrin	EPA 608
	EPA 8081A
Endrin aldehyde	EPA 608
	EPA 8081A
Endrin Ketone	EPA 8081A
gamma-Chlordane	EPA 8081A
Heptachlor	EPA 608
	EPA 8081A
Heptachlor epoxide	EPA 608
	EPA 8081A
Isodrin	EPA 8270C
Kepone	EPA 8270C
Lindane	EPA 608

Chlorinated Hydrocarbon Pesticides	
Lindane	EPA 8081A
Methoxychlor	EPA 608
	EPA 8081A
	SM 18-20 6630B
Mirex	SM 18-20 6630B
PCNB	EPA 8270C
Toxaphene	EPA 608
	EPA 8081A
Chlorinated Hydrocarbons	
1,2,4,5-Tetrachlorobenzene	EPA 8270C
1,2,4-Trichlorobenzene	EPA 625
	EPA 8270C
2-Chloronaphthalene	EPA 625
	EPA 8270C
Hexachlorobenzene	EPA 625
	EPA 8270C
Hexachlorobutadiene	EPA 625
	EPA 8270C
Hexachlorocyclopentadiene	EPA 625
	EPA 8270C
Hexachloroethane	EPA 625
	EPA 8270C
Hexachloropropene	EPA 8270C

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Chlorinated Hydrocarbons	
Pentachlorobenzene	EPA 8270C
Chlorophenoxy Acid Pesticides	
2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
Demand	
Biochemical Oxygen Demand	EPA 405.1
	SM 18-20 5210B
Carbonaceous BOD	SM 18-20 5210B
Chemical Oxygen Demand	EPA 410.4
	HACH 8000
Fuel Oxygenates	
Methyl tert-butyl ether	EPA 8021B
Haloethers	
4-Bromophenylphenyl ether	EPA 625
	EPA 8270C
4-Chlorophenylphenyl ether	EPA 625
	EPA 8270C
Bis (2-chloroisopropyl) ether	EPA 625
	EPA 8270C
Bis(2-chloroethoxy)methane	EPA 625
Haloethers	
Bis(2-chloroethoxy)methane	EPA 8270C
Bis(2-chloroethyl)ether	EPA 625
	EPA 8270C
Microextractables	
1,2-Dibromo-3-chloropropane	EPA 8260B
1,2-Dibromoethane	EPA 8260B
Mineral	
Acidity	SM 18-20 2310B(4a)
Alkalinity	EPA 310.2
Calcium Hardness	EPA 200.7
Chloride	EPA 325.2
	EPA 325.3
	SM 18-20 4500-Cl C
	SM 18-20 4500-Cl E
Fluoride, Total	EPA 340.2
	SM 18-20 4500-F C
Hardness, Total	EPA 200.7
Sulfate (as SO4)	EPA 375.4
Nitroaromatics and Isophorone	
1,3,5-Trinitrobenzene	EPA 8270C
1,3-Dinitrobenzene	EPA 8270C
1,4-Naphthoquinone	EPA 8270C

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Nitroaromatics and Isophorone	
2,4-Dinitrotoluene	EPA 625
	EPA 8270C
2,6-Dinitrotoluene	EPA 625
	EPA 8270C
Isophorone	EPA 625
	EPA 8270C
Nitrobenzene	EPA 625
	EPA 8270C
Nitrosoamines	
N-Nitrosodiethylamine	EPA 8270C
N-Nitrosodimethylamine	EPA 625
	EPA 8270C
N-Nitrosodi-n-butylamine	EPA 8270C
N-Nitrosodi-n-propylamine	EPA 625
	EPA 8270C
N-Nitrosodiphenylamine	EPA 625
	EPA 8270C
N-nitrosopiperidine	EPA 8270C
N-Nitrosopyrrolidine	EPA 8270C
Nutrient	
Ammonia (as N)	EPA 350.2
	SM 18 4500-NH3 E
Nutrient	
Kjeldahl Nitrogen, Total	EPA 351.3
	SM 18 4500-NH3 E
Nitrate (as N)	EPA 353.2
	SM 18-20 4500-NO3 H
Nitrite (as N)	EPA 353.2
	EPA 354.1
	SM 18-20 4500-NO2 B
Orthophosphate (as P)	EPA 365.2
	SM 18-20 4500-P E
Phosphorus, Total	EPA 365.1
	EPA 365.2
	SM 18-20 4500-P E
Organophosphate Pesticides	
Disulfoton	EPA 8270C
Famphur	EPA 8270C
Parathion methyl	EPA 8270C
Phorate	EPA 8270C
Phthalate Esters	
Benzyl butyl phthalate	EPA 625
	EPA 8270C
Bis(2-ethylhexyl) phthalate	EPA 625
	EPA 8270C

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Phthalate Esters	
Diethyl phthalate	EPA 625
	EPA 8270C
Dimethyl phthalate	EPA 625
	EPA 8270C
Di-n-butyl phthalate	EPA 625
	EPA 8270C
Di-n-octyl phthalate	EPA 625
	EPA 8270C
Polychlorinated Biphenyls	
PCB-1016	EPA 608
	EPA 8082
PCB-1221	EPA 608
	EPA 8082
PCB-1232	EPA 608
	EPA 8082
PCB-1242	EPA 608
	EPA 8082
PCB-1248	EPA 608
	EPA 8082
PCB-1254	EPA 608
	EPA 8082
PCB-1260	EPA 608
	EPA 8082

Polynuclear Aromatics	
3-Methylcholanthrene	EPA 8270C
7,12-Dimethylbenzyl (a) anthracene	EPA 8270C
Acenaphthene	EPA 625
	EPA 8270C
Acenaphthylene	EPA 625
	EPA 8270C
Anthracene	EPA 625
	EPA 8270C
Benzo(a)anthracene	EPA 625
	EPA 8270C
Benzo(a)pyrene	EPA 625
	EPA 8270C
Benzo(b)fluoranthene	EPA 625
	EPA 8270C
Benzo(ghi)perylene	EPA 625
	EPA 8270C
Benzo(k)fluoranthene	EPA 625
	EPA 8270C
Chrysene	EPA 625
	EPA 8270C
Dibenzo(a,h)anthracene	EPA 625
	EPA 8270C
Fluoranthene	EPA 625

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Polynuclear Aromatics	
Fluoranthene	EPA 8270C
Fluorene	EPA 625
	EPA 8270C
Indeno(1,2,3-cd)pyrene	EPA 625
	EPA 8270C
Naphthalene	EPA 625
	EPA 8270C
Phenanthrene	EPA 625
	EPA 8270C
Pyrene	EPA 625
	EPA 8270C
Priority Pollutant Phenols	
2,3,4,6 Tetrachlorophenol	EPA 8270C
2,4,5-Trichlorophenol	EPA 625
	EPA 8270C
2,4,6-Trichlorophenol	EPA 625
	EPA 8270C
2,4-Dichlorophenol	EPA 625
	EPA 8270C
2,4-Dimethylphenol	EPA 625
	EPA 8270C
2,4-Dinitrophenol	EPA 625
	EPA 8270C
Priority Pollutant Phenols	
2,6-Dichlorophenol	EPA 8270C
2-Chlorophenol	EPA 625
	EPA 8270C
2-Methyl-4,6-dinitrophenol	EPA 625
	EPA 8270C
2-Methylphenol	EPA 8270C
2-Nitrophenol	EPA 625
	EPA 8270C
3-Methylphenol	EPA 8270C
4-Chloro-3-methylphenol	EPA 625
	EPA 8270C
4-Methylphenol	EPA 8270C
4-Nitrophenol	EPA 625
	EPA 8270C
Cresols, Total	EPA 625
	EPA 8270C
Pentachlorophenol	EPA 625
	EPA 8270C
Phenol	EPA 625
	EPA 8270C
Purgeable Aromatics	
1,2-Dichlorobenzene	EPA 624
	EPA 8260B

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Purgeable Aromatics		**Purgeable Halocarbons**	
1,2-Dichlorobenzene	EPA 8270C	1,1,1-Trichloroethane	EPA 624
1,3-Dichlorobenzene	EPA 624		EPA 8260B
	EPA 8260B	1,1,2,2-Tetrachloroethane	EPA 624
	EPA 8270C		EPA 8260B
1,4-Dichlorobenzene	EPA 624	1,1,2-Trichloroethane	EPA 624
	EPA 8260B		EPA 8260B
	EPA 8270C	1,1-Dichloroethane	EPA 624
Benzene	EPA 624		EPA 8260B
	EPA 8021B	1,1-Dichloroethene	EPA 624
	EPA 8260B		EPA 8260B
Chlorobenzene	EPA 624	1,2,3-Trichloropropane	EPA 8260B
	EPA 8260B	1,2-Dichloroethane	EPA 624
Ethyl benzene	EPA 624		EPA 8260B
	EPA 8021B	1,2-Dichloropropane	EPA 624
	EPA 8260B		EPA 8260B
Styrene	EPA 8260B	1,3-Dichloropropane	EPA 8260B
Toluene	EPA 624	2,2-Dichloropropene	EPA 8260B
	EPA 8021B	2-Chloroethylvinyl ether	EPA 624
	EPA 8260B		EPA 8021B
Total Xylenes	EPA 624		EPA 8260B
	EPA 8260B	3-Chloropropene (Allyl chloride)	EPA 8260B
Purgeable Halocarbons		Bromochloromethane	EPA 8260B
1,1,1,2-Tetrachloroethane	EPA 8260B	Bromodichloromethane	EPA 624

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Purgeable Halocarbons	
Bromodichloromethane	EPA 8260B
Bromoform	EPA 624
	EPA 8260B
Bromomethane	EPA 624
	EPA 8260B
Carbon tetrachloride	EPA 624
	EPA 8260B
Chloroethane	EPA 624
	EPA 8260B
Chloroform	EPA 624
	EPA 8260B
Chloromethane	EPA 624
	EPA 8260B
cis-1,2-Dichloroethene	EPA 8260B
cis-1,3-Dichloropropene	EPA 624
	EPA 8260B
Dibromochloromethane	EPA 624
	EPA 8260B
Dibromomethane	EPA 8260B
Dichlorodifluoromethane	EPA 624
	EPA 8260B
Methylene chloride	EPA 624
	EPA 8260B

Purgeable Halocarbons	
Tetrachloroethene	EPA 624
	EPA 8260B
trans-1,2-Dichloroethene	EPA 624
	EPA 8260B
trans-1,3-Dichloropropene	EPA 624
	EPA 8260B
trans-1,4-Dichloro-2-butene	EPA 8260B
Trichloroethene	EPA 624
	EPA 8260B
Trichlorofluoromethane	EPA 624
	EPA 8260B
Vinyl chloride	EPA 624
	EPA 8260B
Purgeable Organics	
2-Butanone (Methylethyl ketone)	EPA 8260B
2-Hexanone	EPA 8260B
4-Methyl-2-Pentanone	EPA 8260B
Acetone	EPA 8260B
	OLM 4.2 Volatiles
Acetonitrile	EPA 8260B
Carbon Disulfide	EPA 8260B
Isobutyl alcohol	EPA 8260B
Methyl Iodide	EPA 8260B

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NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
Antonia C. Novello, M.D., M.P.H., Dr.P.H.

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. ANTHONY J. SCALA
UPSTATE LABORATORIES INC
6034 CORPORATE DRIVE
EAST SYRACUSE, NY 13057

NY Lab Id No: 10170
EPA Lab Code: NY00054

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Purgeable Organics	
Vinyl acetate	EPA 8260B
Residue	
Solids, Total	EPA 160.3
	SM 18-20 2540B
Solids, Total Dissolved	EPA 160.1
	SM 18-20 2540C
Solids, Total Suspended	EPA 160.2
	SM 18-20 2540D
Semi-Volatile Organics	
2-Methylnaphthalene	EPA 8270C
4-Amino biphenyl	EPA 8270C
Acetophenone	EPA 8270C
Benzoic Acid	EPA 8270C
Benzyl alcohol	EPA 8270C
Dibenzofuran	EPA 8270C
Ethyl methanesulfonate	EPA 8270C
Isosafrole	EPA 8270C
Methyl methanesulfonate	EPA 8270C
O,O,O-Triethyl phosphorothioate	EPA 8270C
p-Dimethylaminoazobenzene	EPA 8270C
Phenacetin	EPA 8270C
Safrole	EPA 8270C
Wastewater Bacteriology	
Coliform, fecal	SM 18-20 9222D
Coliform, Total	SM 18-20 9222B
Standard Plate Count	SM 18 9215B
Wastewater Metals I	
Barium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Cadmium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Calcium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Chromium, Total	EPA 200.7
	EPA 3005A
	EPA 3010A
	EPA 6010B
Copper, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Iron, Total	EPA 200.7
	EPA 3005A
	EPA 3010A

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Wastewater Metals I	
Iron, Total	EPA 6010B
Lead, Total	EPA 200.7
	EPA 3005A
	EPA 3010A
	EPA 3020A
	EPA 6010B
Magnesium, Total	EPA 200.7
	EPA 3010A
Manganese, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Nickel, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Potassium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Silver, Total	EPA 200.7
	EPA 3005A
	EPA 6010B
Sodium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B

Wastewater Metals I	
Strontium, Total	EPA 200.7
	EPA 6010B
Wastewater Metals II	
Aluminum, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Antimony, Total	EPA 200.7
	EPA 3005A
	EPA 6010B
Arsenic, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Beryllium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Chromium VI	SM 18-19 3500-Cr D
Mercury, Total	EPA 245.2
Selenium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Vanadium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B

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All approved analytes are listed below:

Wastewater Metals II	
Zinc, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Wastewater Metals III	
Cobalt, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Molybdenum, Total	EPA 200.7
	EPA 3005A
	EPA 6010B
Thallium, Total	EPA 200.7
	EPA 3010A
	EPA 6010B
Tin, Total	EPA 200.7
	EPA 6010B
Wastewater Miscellaneous	
Boron, Total	EPA 200.7
	EPA 6010B
Bromide	EPA 300.0
Color	EPA 110.2
	SM 18-20 2120B
Corrosivity	SM 18-19 2330

Wastewater Miscellaneous	
Cyanide, Total	EPA 335.2
	EPA 335.3
	EPA 9010B
	EPA 9014
	SM 18-20 4500-CN E
	SM 18-20 4500-CN G
Hydrogen Ion (pH)	EPA 150.1
	EPA 9040B
	SM 18-20 4500-H B
Oil & Grease Total Recoverable	EPA 1664A
	EPA 413.1
Organic Carbon, Total	EPA 415.1
	SM 18-20 5310B
Phenols	EPA 420.1
	EPA 420.2
Silica, Dissolved	EPA 200.7
	EPA 6010B
Specific Conductance	EPA 120.1
	SM 18-20 2510B
Sulfide (as S)	EPA 376.2
	EPA 9030B
	EPA 9034
	SM 18-20 4500-S D

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Wastewater Miscellaneous

Surfactant (MBAS)	EPA 425.1
	SM 18-20 5540C
Temperature	EPA 170.1
	SM 18-20 2550B

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All approved analytes are listed below:

Fuels	
B.T.U.	ASTM D2015-77
Percent Sulfur	ASTM D1552
	ASTM D4239
Metals II	
Beryllium, Total	NIOSH 7300
Mercury, Total	EPA 245.2
Metals III	
Chromium, Total	NIOSH 7300
Miscellaneous Air	
Formaldehyde	MASA 2 116
Particulates	40 CFR PART 50 1985 APP. B
Suspended Particulates	40 CFR PART 50 1985 APP. B
Polychlorinated Biphenyls	
PCB-1016	NYS DOH 311-1
PCB-1221	NYS DOH 311-1
PCB-1232	NYS DOH 311-1
PCB-1242	NYS DOH 311-1
PCB-1248	NYS DOH 311-1
PCB-1254	NYS DOH 311-1
PCB-1260	NYS DOH 311-1

Surface Coating	
Density	ASTM D1475-60
Percent Solids	ASTM D2697-86
Percent Water	40 CFR 60 METH 24
Volatile Content	40 CFR 60 METH 24

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is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES ANALYTICAL SERVICES PROTOCOL
All approved subcategories and/or analytes are listed below:

CLP PCB/Pesticides

CLP Volatile Organics

CLP Inorganics

Serial No.: 28739

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All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 8260B
Acrylonitrile	EPA 8260B
Amines	
2-Nitroaniline	EPA 8270C
3-Nitroaniline	EPA 8270C
4-Chloroaniline	EPA 8270C
4-Nitroaniline	EPA 8270C
Carbazole	EPA 8270C
Benzidines	
3,3' -Dichlorobenzidine	EPA 8270C
Characteristic Testing	
E.P. Toxicity	EPA 1310
Ignitability	EPA 1010
Reactivity	SW-846 Ch7, Sec. 7.3
TCLP	EPA 1311
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081A
4,4'-DDE	EPA 8081A
4,4'-DDT	EPA 8081A
Aldrin	EPA 8081A
alpha-BHC	EPA 8081A

Chlorinated Hydrocarbon Pesticides	
alpha-Chlordane	EPA 8081A
beta-BHC	EPA 8081A
Chlordane Total	EPA 8081A
delta-BHC	EPA 8081A
Dieldrin	EPA 8081A
Endosulfan I	EPA 8081A
Endosulfan II	EPA 8081A
Endosulfan sulfate	EPA 8081A
Endrin	EPA 8081A
Endrin aldehyde	EPA 8081A
Endrin Ketone	OLM 4.3
gamma-Chlordane	EPA 8081A
Heptachlor	EPA 8081A
Heptachlor epoxide	EPA 8081A
Lindane	EPA 8081A
Methoxychlor	EPA 8081A
Toxaphene	EPA 8081A
Chlorinated Hydrocarbons	
1,2,4-Trichlorobenzene	EPA 8270C
2-Chloronaphthalene	EPA 8270C
Hexachlorobenzene	EPA 8270C
Hexachlorobutadiene	EPA 8270C
Hexachlorocyclopentadiene	EPA 8270C

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6034 CORPORATE DRIVE
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All approved analytes are listed below:

Chlorinated Hydrocarbons	
Hexachloroethane	EPA 8270C
Chlorophenoxy Acid Pesticides	
2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
Dicamba	EPA 8151A
Haloethers	
4-Bromophenylphenyl ether	EPA 8270C
4-Chlorophenylphenyl ether	EPA 8270C
Bis (2-chloroisopropyl) ether	EPA 8270C
Bis(2-chloroethoxy)methane	EPA 8270C
Bis(2-chloroethyl)ether	EPA 8270C
Metals I	
Barium, Total	EPA 6010B
Cadmium, Total	EPA 6010B
Calcium, Total	EPA 6010B
Chromium, Total	EPA 6010B
Copper, Total	EPA 6010B
Iron, Total	EPA 6010B
Lead, Total	EPA 6010B
Magnesium, Total	EPA 6010B
Manganese, Total	EPA 6010B
Metals I	
Nickel, Total	EPA 6010B
Potassium, Total	EPA 6010B
Silver, Total	EPA 6010B
Sodium, Total	EPA 6010B
Metals II	
Aluminum, Total	EPA 6010B
Antimony, Total	EPA 6010B
Arsenic, Total	EPA 6010B
Beryllium, Total	EPA 6010B
Chromium VI	EPA 7196A
Mercury, Total	EPA 7471A
Selenium, Total	EPA 6010B
Vanadium, Total	EPA 6010B
Zinc, Total	EPA 6010B
Metals III	
Cobalt, Total	EPA 6010B
Molybdenum, Total	EPA 6010B
Thallium, Total	EPA 6010B
Tin, Total	EPA 6010B
Miscellaneous	
Cyanide, Total	EPA 9010B
Hydrogen Ion (pH)	EPA 9040B

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Miscellaneous	
Hydrogen Ion (pH)	EPA 9045C
Lead in Paint	EPA 6010B
Oil & Grease Total Recoverable	EPA 9071
Phenols	EPA 9066
Sulfide (as S)	EPA 9030B
Nitroaromatics and Isophorone	
2,4-Dinitrotoluene	EPA 8270C
2,6-Dinitrotoluene	EPA 8270C
Isophorone	EPA 8270C
Nitrobenzene	EPA 8270C
Nitrosoamines	
N-Nitrosodiphenylamine	EPA 8270C
Phthalate Esters	
Benzyl butyl phthalate	EPA 8270C
Bis(2-ethylhexyl) phthalate	EPA 8270C
Diethyl phthalate	EPA 8270C
Dimethyl phthalate	EPA 8270C
Di-n-butyl phthalate	EPA 8270C
Di-n-octyl phthalate	EPA 8270C
Polychlorinated Biphenyls	
PCB-1016	EPA 8082
Polychlorinated Biphenyls	
PCB-1221	EPA 8082
PCB-1232	EPA 8082
PCB-1242	EPA 8082
PCB-1248	EPA 8082
PCB-1254	EPA 8082
PCB-1260	EPA 8082
Polynuclear Aromatic Hydrocarbons	
Acenaphthene	EPA 8270C
Acenaphthylene	EPA 8270C
Anthracene	EPA 8270C
Benzo(a)anthracene	EPA 8270C
Benzo(a)pyrene	EPA 8270C
Benzo(b)fluoranthene	EPA 8270C
Benzo(ghi)perylene	EPA 8270C
Benzo(k)fluoranthene	EPA 8270C
Chrysene	EPA 8270C
Dibenzo(a,h)anthracene	EPA 8270C
Fluoranthene	EPA 8270C
Fluorene	EPA 8270C
Indeno(1,2,3-cd)pyrene	EPA 8270C
Naphthalene	EPA 8270C
Phenanthrene	EPA 8270C
Pyrene	EPA 8270C

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Priority Pollutant Phenols	
2,4,5-Trichlorophenol	EPA 8270C
2,4,6-Trichlorophenol	EPA 8270C
2,4-Dichlorophenol	EPA 8270C
2,4-Dimethylphenol	EPA 8270C
2,4-Dinitrophenol	EPA 8270C
2-Chlorophenol	EPA 8270C
2-Methyl-4,6-dinitrophenol	EPA 8270C
2-Methylphenol	EPA 8270C
2-Nitrophenol	EPA 8270C
4-Chloro-3-methylphenol	EPA 8270C
4-Methylphenol	EPA 8270C
4-Nitrophenol	EPA 8270C
Pentachlorophenol	EPA 8270C
Phenol	EPA 8270C
Purgeable Aromatics	
1,2,4-Trimethylbenzene	EPA 8021B
1,2-Dichlorobenzene	EPA 8260B
	EPA 8270C
1,3,5-Trimethylbenzene	EPA 8021B
1,3-Dichlorobenzene	EPA 8260B
	EPA 8270C
1,4-Dichlorobenzene	EPA 8260B
	EPA 8270C

Purgeable Aromatics	
Benzene	EPA 8021B
	EPA 8260B
Chlorobenzene	EPA 8260B
Ethyl benzene	EPA 8021B
	EPA 8260B
Isopropylbenzene	EPA 8021B
n-Butylbenzene	EPA 8021B
n-Propylbenzene	EPA 8021B
p-Isopropyltoluene (P-Cymene)	EPA 8021B
sec-Butylbenzene	EPA 8021B
Styrene	EPA 8260B
tert-Butylbenzene	EPA 8021B
Toluene	EPA 8021B
	EPA 8260B
Total Xylenes	EPA 8021B
	EPA 8260B
Purgeable Halocarbons	
1,1,1-Trichloroethane	EPA 8260B
1,1,2,2-Tetrachloroethane	EPA 8260B
1,1,2-Trichloroethane	EPA 8260B
1,1-Dichloroethane	EPA 8260B
1,1-Dichloroethene	EPA 8260B
1,2-Dichloroethane	EPA 8260B

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All approved analytes are listed below:

Purgeable Halocarbons	
1,2-Dichloropropane	EPA 8260B
2-Chloroethylvinyl ether	EPA 8260B
Bromodichloromethane	EPA 8260B
Bromoform	EPA 8260B
Bromomethane	EPA 8260B
Carbon tetrachloride	EPA 8260B
Chloroethane	EPA 8260B
Chloroform	EPA 8260B
Chloromethane	EPA 8260B
cis-1,2-Dichloroethene	EPA 8260B
cis-1,3-Dichloropropene	EPA 8260B
Dibromochloromethane	EPA 8260B
Dichlorodifluoromethane	EPA 8260B
Methylene chloride	EPA 8260B
Tetrachloroethene	EPA 8260B
trans-1,2-Dichloroethene	EPA 8260B
trans-1,3-Dichloropropene	EPA 8260B
Trichloroethene	EPA 8260B
Trichlorofluoromethane	EPA 8260B
Vinyl chloride	EPA 8260B
urgeable Organics	
2-Butanone (Methylethyl ketone)	EPA 8260B
2-Hexanone	EPA 8260B
4-Methyl-2-Pentanone	EPA 8260B
Acetone	EPA 8260B
Carbon Disulfide	EPA 8260B
Vinyl acetate	EPA 8260B
Semi-Volatile Organics	
2-Methylnaphthalene	EPA 8270C
Benzoic Acid	EPA 8270C
Benzyl alcohol	EPA 8270C
Dibenzofuran	EPA 8270C

Serial No.: 30188

roperty of the New York State Department of Health. Valid only at the address shown, Must be onspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on uccessful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to erify laboratory's accreditation status.

APPENDIX B

Data Validator Qualifications and Experience

Megan A. Drosky

Environmental Scientist/Data Validator

Ms. Drosky joined C.T. Male in 2005. Her duties include the data validation and preparation of Data Usability Summary Reports (DUSR) for New York State Department of Environmental Conservation (NYSDEC) Brownfields Sites and NYS Superfund Sites, and validation of data for Inactive Hazardous Waste Sites, Landfill Closure and Post Closure Monitoring, and other groundwater monitoring sites.

Data Validation Experience

Arthur Kill Correctional Facility Firing Range, Staten Island, New York. Performed data validation on Remedial Investigation lead soils samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Durkee Street – Parking Lot Site, Operable Units #1 and #2 Sites, Plattsburgh, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil vapor and soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Former CP Rail Yard, Plattsburgh, New York. Performed data validation on Brownfield Cleanup Program Remedial Investigation soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

South Troy Industrial Park, Troy, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

BP, North Carolina. Performed validation of analytical data of various methods (e.g., volatile and semivolatile organics, metals, natural attenuation parameters, petroleum hydrocarbons, etc.) and matrices (soil, groundwater, waste, air) based on United States Environmental Protection Agency (USEPA)Contract Laboratory Program (CLP) in conformance with North Carolina Department of Environment and Natural Resources (NCDENR) Underground Storage Tank (UST) and Groundwater Protection Guidelines for more than 50 commercial and terminal sites in North Carolina.

NCDOT, North Carolina. Performed validation of analytical data of various methods (e.g., volatile and semivolatile organics, metals, natural attenuation parameters, petroleum hydrocarbons, etc.) and matrices (soil, groundwater, waste, air) based on USEPA CLP in conformance with NCDENR UST and Groundwater Protection Guidelines for five sites in North Carolina.

International Paper, Wilmington, North Carolina. Performed validation of analytical data of various methods (e.g., volatile and semivolatile organics, natural attenuation parameters, etc.) for groundwater based on USEPA CLP.

Plantation Pipeline, Virginia and North Carolina. Performed validation of analytical data of various methods (e.g., volatile and semivolatile organics, natural attenuation parameters, etc.) for groundwater based on USEPA CLP in conformance with NCDENR Groundwater Protection Guidelines and Virginia Department of Environmental Quality Petroleum Program Guidelines at four sites in North Carolina and one site in Virginia.

Kinder Morgan Terminal, Selma, North Carolina. Performed validation of analytical data of various methods (e.g., volatile and semivolatile organics, natural attenuation parameters, etc.) for groundwater based on USEPA CLP in conformance with NCDENR Groundwater Protection Guidelines.

Circuitron Superfund Site, East Farmingdale, New York. Performed data validation on the monthly process and quarterly monitoring well samples collected from the groundwater treatment system following USEPA CLP guidelines, and prepared a validation report for each data package.

FAA Technical Center, O&M Project, Atlantic City, New Jersey. Performed data validation on the monthly process and quarterly monitoring well samples collected from the groundwater treatment system following USEPA CLP guidelines, and prepared a validation report for each data package.

Pope Air Force Base, Fayetteville, North Carolina. Performed data validation on various site-specific projects based on Air Force Center for Environmental Excellence (AFCEE) and USEPA National Functional Guidelines for analytical data of various methods (e.g., volatile and semivolatile organics, metals, pesticides, and PCBs) and matrices (groundwater, soil, sediment, and surface water).

Professional Background

- Environmental Scientist/Data Validator, C. T. Male Associates, Latham, New York, September 2005 - Present
- Environmental Scientist, URS Corporation, Morrisville, North Carolina, November 2003 – September 2005.
- Laboratory Technician, Wearcheck USA, Cary, North Carolina, October 2002 – November 2003.
- B.S. in Environmental Science, Long Island University at Southampton College, Southampton, New York, 2002.

Certifications

- OSHA 40-Hour Health and Safety Training Course, 2004
- 8-Hour Health and Safety Refresher Training, 2005
- 3 years prior work experience

APPENDIX C

Guidance for the Development of Data Usability Summary Reports

New York State Department of Environmental Conservation
Division of Environmental Remediation

Guidance for the Development of Data Usability Summary Reports

Background:

The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data without the costly and time consuming process of third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use.

Though the substitution of a DUSR for a full third party data validation may seem to be a relaxation of the Division's quality assurance requirements, this is definitely not the case. The development of the DUSR must be carried out by an experienced environmental scientist, such as the project Quality Assurance Officer, who is fully capable of conducting a full data validation. Furthermore, the DUSR is developed from a full New York State Department of Environmental Conservation Analytical Services Protocol (NYSDEC ASP) Category B or a United States Environmental Protection Agency Contract Laboratory Protocol (USEPA CLP) deliverables package.

The DUSR and the data deliverables package will be reviewed by the Division's Quality Assurance Unit. In most cases, we expect that this review will result in agreement or with only minor differences that can be easily reconciled. If data validation is found to be necessary (e.g. pending litigation) this can be carried out at a later date on the same data package used for the development of the DUSR.

Personnel Requirements:

The Environmental Scientist preparing the DUSR must hold a Bachelors Degree in a relevant natural or physical science or field of engineering and must submit a resume to the Division's Quality Assurance Unit documenting experience in environmental sampling, analysis and data review.

Preparation of a DUSR:

The DUSR is developed by reviewing and evaluating the analytical data package. During the course of this review the following questions must be asked and answered:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

Once the data package has been reviewed and the above questions asked and answered the DUSR proceeds to describe the samples and the analytical parameters. Data deficiencies, analytical protocol deviations and quality control problems are identified and their effect on the data is discussed. The DUSR shall also include recommendations on resampling/reanalysis. All data qualifications must be documented following the NYSDEC ASP '95 Rev. guidelines.

Contact the Division of Environmental Remediation Quality Assurance Group at (518) 457-9280, with any questions on the preparation of a DUSR.

Revised 09/97

APPENDIX C

SITE SPECIFIC HEALTH AND SAFETY PLAN

APPENDIX C

SITE SPECIFIC HEALTH AND SAFETY PLAN
FORMER HETTLING FARM
TOWN OF CLERMONT
COLUMBIA COUNTY, NEW YORK

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1.0 GENERAL

1.1 Overview

This Health and Safety Plan (HASP) has been prepared for use during implementation of a site investigation of an approximate 20 acre parcel of the former Hettling farm ("the site") located in the Town of Clermont, Columbia County, New York. This HASP has been developed as an integral part of the RI/AAR Work Plan as prepared by C.T. Male Associates, P.C. The site investigation is being performed as part of the NYSDEC 1996 Clean Water/Clean Air Bond Act, Environmental Restoration Projects (Brownfield Program).

A designated Health and Safety Officer (HSO) will be responsible for implementing this HASP during the completion of the field work. All persons or parties who enter the work area (support, decontamination, exclusion zone) must review, sign and comply with this HASP. A list of individuals authorized to enter the exclusion zone at the site is presented in Section 13.0 of this HASP. A copy of this HASP will be maintained at the work area throughout the duration of the project. A complete description of the site investigation work is presented in the RI/AAR Work Plan. A brief description of the proposed scope of work is outlined below:

<u>Site Investigation:</u>

- Site Reconnaissance;
- Electromagnetic Survey;
- Site boundary survey of existing conditions;
- Test Pits;
- Fish and wildlife impact analysis;
- Site wide subsurface/hydrogeologic evaluation;
- Surface soil sampling and analysis; and
- Stream surface water and sediment sampling

1.2 Contact Names & Numbers

For this project, the following NYSDEC, Town of Clermont, C.T. Male, and Emergency Response names and telephone numbers are presented below as site contacts.

NYSDEC CONTACTS:

PROJECT MANAGER:	Randy Hough 625 Broadway Albany, NY 12233	(518) 402-9818

TOWN OF CLERMONT CONTACTS:

CURRENT OWNERS:	William E. Banks Town of Clermont Supervisor Town Hall 1795 Route 9, Clermont, NY 12526	(518) 537-6668

NYSDOH CONTACT:

TECHNICAL LEAD:	Maureen E. Schuck Capital District Regional Office New York State Department of Health 1 Fulton Street Troy, New York 12180-3218	(518) 402-7860

CONSULTANT CONTACTS:

CONSULTING ENGINEER:	C.T. Male Associates, P.C. 50 Century Hill Drive Latham, NY 12110	(518) 786-7400
	David Roecker, Project Principal	(518) 786-7491
		Cell Phone: (518) 265-2117
	Kirk Moline, Project Manager	(518) 786-7502
		Cell Phone: (518) 265-1708
	Stephen Bieber, Health & Safety Officer	(518) 786-7495

EMERGENCY PHONE NUMBERS:

PERSONAL INJURY OR EMERGENCY:	Columbia Memorial Hospital 71 Prospect Avenue Hudson, NY 12534	(518) 828-7601
FIRE DEPARTMENT:	Emergency Clermont Fire Department US Route 9 Clermont, NY 12526	911
POLICE:	Emergency Non-emergency Columbia County Sheriff 85 Industrial Tract Hudson, NY 12534	911 (518) 828-3344
HUDSON VALLEY REGIONAL POISON CONTROL CENTER:	Phelps Memorial Hospital Center 701 North Broadway Sleepy Hollow, NY 10591	(800) 336-6997
NATIONAL RESPONSE CENTER:	c/o United States Coast Guard (G-OPF) 2100 2nd Street, Southwest - Room 2611 Washington, DC 20593-0001	(800) 424-8802
NYSDEC SPILL HOTLINE:		(800) 457-7362

2.0 HEATLH AND SAFETY PERSONNEL

The Health and Safety Officer (HSO) will be responsible for implementation of the HASP and the delegation of health and safety duties. The HSO will coordinate the resolution of safety issues that arise during site work. When field operations require Level D protection, it will not be necessary for the HSO to be present on-site at all times. When the HSO is not present on-site, a designee will be authorized to perform the duties of the HSO. The designee will be responsible for implementation of the HASP.

The HSO or designee has stop work authorization which the HSO or designee will execute upon the HSO or designee's determination of an eminent safety hazard, emergency situation or other potentially dangerous situations (e.g. weather conditions), when this action is deemed appropriate. Authorization to resume work will be issued by the HSO.

3.0 SITE LOCATION AND DESCRIPTION

The Site is located along the west side of U.S. Route 9, approximately 1,100 feet north of this route's intersection with County Route 6, in the Town of Clermont, Columbia County, New York. The Site consists of an approximate 20 acre parcel of land that at one time constituted a portion of the Hettling Farm, as shown in Work Plan Figures. The Site is currently owned by the Town of Clermont.

The site rises gradually in elevation from its eastern border with Route 9 to its property boundary to the west. Prior to the Town acquiring the site in 2003, it was a portion of the Hettling Farm. The eastern portions of the site, east of a small stream flowing from south to north through the central portion of the property, was reportedly used for cultivation of row crops and vegetables as well as fruit trees, whereas the western portion of the site was a fruit tree orchard. As such, various pesticides and herbicides may have been applied to the crops.

4.0 POTENTIAL SITE CONTAMINANTS

Various pesticides and herbicides may have been applied to the former crops on the site. Suspected pesticides used within the site are lead and arsenic based compounds, and organochlorine and organophosphate pesticide compounds.

5.0 HAZARD ASSESSMENT

5.1 General

The hazard assessment, use of specific protective equipment, and monitoring associated with each field work task of the investigation and remedial work to be conducted at the subject site are presented in following subsections.

For this project, C.T. Male will be subcontracting portions of the site investigation and/or remedial activities. Each subcontractor will be responsible for developing and implementing a site specific health and safety plan for their activities, for protection of their employees, and use of personal protective equipment. The subcontractor will also be responsible for developing and following their own Respiratory Protection Program, as applicable.

5.2 Site Survey

The site survey will be performed by a two man crew and their work will not be intrusive. Therefore, exposure to potential site contaminants is considered remote. The potential hazards to the survey crew will include slip and fall hazards from poor terrain, cuts from improper use of vegetation cutting tools, and the possibility of skin and eye damage from walking through brush. To protect against these potential hazards, any personnel completing this work should wear, at a minimum, safety glasses, leather gloves, steel-toe boots, and full length pants.

5.3 Electromagnetic (EM) Survey

The EM survey is a subcontracted service that will involve a one or two person crew that pulls a transmitting/receiving antenna across the surface of the site. The signals are received by a video display through a connected transmitter cable. The radar signals are electromagnetic and present little hazard. Exposure to potential site contaminants is considered remote. The potential hazards include trip and fall hazards from site terrain and EM equipment. Those individuals conducting the EM survey should were steel-toe boots, and must pay attention to the surroundings prior to running the EM traverse.

5.4 Subsurface Work

Exploratory test pits, as well as soil test borings (including the installation of monitoring wells) are planned to be advanced across the site for more than one field task. The potential hazards to personnel during this work are dermal contact and a low potential for vapor inhalation of potential site contaminants. Level D protection should be sufficient to protect against dermal contact during excavation of and/or handling of the subsurface soils and groundwater. If organic vapors are present at the action levels described in Section 5.7, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection.

5.5 Fish and Wildlife Impact Analysis (FWIA)

The FWIA involves walking the property and assessing the current vegetative and drainage features. The potential hazards are slip and fall hazards from poor terrain and the possibility of skin and eye damage from walking through brush. To protect against these potential hazards, personnel completing this work should wear Level D protection and, at a minimum, safety glasses, leather gloves, steel-toe boots, and full length pants.

5.6 Evaluation of Stream Sediments and Surface Waters

Sediment and surface water samples will be collected from the stream that bisects central portions of the site. Potential hazards for these sampling tasks include dermal contact with potential site contaminants and the potential for drowning. Level D protection should provide sufficient protection from dermal contact. If a boat is used to collect these samples, life preservers and the buddy system must be used to reduce the risk of drowning.

5.7 Air Monitoring

During the completion of test pits and test borings, the ambient air in the work area will be monitored with a photoionization detection meter (total volatile compound – MiniRAE 2000) prior to the start of work and periodically as conditions warrant. If a concentration of 10 ppm (sustained for 5 minutes) of total volatile compounds is detected within the work area on the instrument, relative to an isobutylene standard

(used to calibrate the instrument), work will cease immediately and the workers shall shut down equipment and leave the area immediately. The level of personal protective equipment (PPE) protection will be evaluated prior to continuing work. If a PPE upgrade to Level C is required, it will include: a half face air purifying respirator equipped with combination organic vapor and particulate cartridges for 10-15 ppm exposure levels; and a full-face air purifying respirator for greater than 15 ppm to less than 50 ppm exposure levels, prior to continuing work. If a concentration greater than 50 ppm is encountered, work will cease immediately and the situation will be evaluated prior to continuation of work. Table 1 summarizes the action levels relative to the required respiratory protection.

Table 1
C.T. Male Action Levels & Required Respiratory Protection

Action Level	Level of PPE	Type of Respiratory Protection
0-10 parts per million	Level D	No respiratory protection
10-15 parts per million	Level C	Negative pressure half-face respirator
15-50 parts per million	Level C	Positive pressure full-face respirator
Greater than 50	Cease Work	Evaluate work procedures

-Facial hair is not permitted while wearing most respirators.

-Workers required to wear a respirator must have a minimum of OSHA 40 Hour training with current medical monitoring and fit test documentation.

5.7 Community Air Monitoring Plan

A site specific Community Air Monitoring Plan (CAMP) will be followed for the project on the basis of the New York State Department of Health Generic Community Air Monitoring Plan dated June 2000.

5.8 Hazard Identification and Control

The following table presents generalized hazards potentially involved with the tasks to be completed on this project. Table 2 identifies general procedures to follow to prevent or reduce accident, injury or illness. Any worker on-site who identifies a potential hazard must report the condition to the HSO or designee, and initiate control of the hazardous condition.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
Vehicular Traffic	1. Wear safety vest when vehicular hazards exist. 2. Use cones, flags, barricades, and caution tape to define work area. 3. Use vehicle to block work area. 4. Contact police for high traffic situations.
Slip, Trip, and Fall Protection	1. Assess work area to determine if there is a potential for falling. 2. Make sure work area is neat and tools are staged in one general area. 3. Wear steel-toe boots with adequate tread and always watch where the individual is walking. Carry flashlight when walking in poorly lighted areas.
Inclement Weather	1. Stop outdoor work during electrical storms and other extreme weather conditions such as extreme heat or cold temperatures. 2. Take cover indoors or in vehicle. 3. Listen to local forecasts for warnings about specific weather hazards such as tornadoes, hurricanes, and flash floods.
Utility Lines Contact	1. Contact UFPO to have utility lines marked prior to any underground excavation, trenching or drilling. UFPO must be contacted at least 72 hours prior to work. 2. Refer to site drawings for utility locations. 3. Manually dig 3 to 5 feet below grade and 5 feet on each side of utility marked to avoid breaking utility lines.
Noise	1. Wear hearing protection when equipment such as a drill rig, Geoprobe, jackhammer, or other heavy equipment is operating on-site. 2. Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; this much noise indicates the need for protection. 3. Hearing protection is required when measured sound exceeds 85 decibels (dB) where employees stand or conduct work.

Table 2
Potential Hazards and Control

Potential Hazard	Control
Electrical Shock	1. Maintain appropriate distance between heavy equipment and overhead utilities; 20 foot minimum clearance from power lines; and 10 foot minimum clearance from shielded power lines. 2. Contact local underground utility locating service prior to penetrating the ground surface.
Physical Injury	1. Wear hard hats and safety glasses at all times when on-site. 2. Maintain visual contact with equipment operators and wear orange safety vest when heavy equipment is operating on-site. 3. Avoid loose clothing when working around rotary equipment. 4. Keep hands and feet away from drilling augers and excavation equipment tracks / tires. 5. Test emergency shut-off switches on drill rigs and excavation equipment regularly.
Back Injury	1. Use a mechanical lifting device or a lifting aid where appropriate. 2. Make sure the route is free of obstructions. 3. Bend at the knees and use leg muscles when lifting. 4. Use the buddy system if lifting heavy or awkward objects. 5. Do not twist or jerk your body when lifting.
Heat Stress	1. Increase water intake while working. 2. Avoid excessive alcohol intake the night before working in heat stress situations. 3. Increase number of rest breaks as necessary, and rest in a shaded area. 4. Watch for signs and symptoms of heat exhaustion and fatigue. 5. Rest in cool, dry areas. 6. In the event of heat stress or heat stroke, bring the victim to a cool environment and call 911.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
Fire Control	1. Smoke only in designated areas. 2. Keep flammable liquids in closed containers. 3. Isolate flammable and combustible materials from ignition sources. 4. Keep fire extinguisher nearby and use only if deemed safe.
Media Sampling (water, soil, sediment, etc.)	1. Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated media. 2. Stand upwind to minimize possible inhalation exposure, especially when opening monitoring wells or closed containers / vessels. 3. Conduct air monitoring, whenever necessary to determine level of respiratory protection. 4. If necessary, employ engineering controls to assist in controlling chemical vapors.
Cleaning Equipment	1. Wear appropriate PPE to avoid skin and eye contact with isopropyl alcohol, alconox, or other cleaning materials. 2. Stand upwind to minimize possible inhalation exposure. 3. Properly dispose of spent chemical cleaning solutions and rinse accordingly.
Poor Structural Building Condition	1. Assess building condition prior to entering and note where exit points are at all times. 2. Be cautious when walking inside the building. Always look for holes in the floors or hanging debris which could cause injury. 3. Carry a high power flashlight and use as necessary in low light areas. 4. If working in the building, make sure work area is neat and tools are staged in one general area. 5. Wear steel-toe boots with adequate tread. 6. Try to employ the buddy system so someone knows what part of the building individuals are in.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
Deer Ticks	1. Wear pants and long sleeve shirts 2. Perform personal body checks for the presence of ticks 3. Notify the Health and Safety Officer immediately if you have been bitten by a tick and contact your physician.
Note: A first aid kit and fire extinguisher will be located in the C.T. Male company vehicle.	

Response actions to personal exposure from on-site contaminants include skin contact, eye contact, inhalation, ingestion, and puncture or laceration. The recommended response actions are presented in Section 11.2.

6.0 TRAINING

Site specific training of workers and personnel will be conducted and provided by the HSO or designee prior to any on-site activity. The training will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include area and facility layout, hazards, emergency services (police, hospital, fire, etc.), and review of this HASP. Questions by workers, field personnel, etc. will be addressed at this time.

Workers and personnel conducting and/or supervising the project must have attended and successfully completed a 40 Hour Health and Safety Training Course for Hazardous Waste Operations, an annual 8 hour Refresher Course, and take part in an employer medical surveillance program in accordance with OSHA 1910.120 requirements, specifically, that the workers have had a medical physical within one (1) year prior to the date the work begins and that they are physically able to wear a respirator.

Documentation of training and medical surveillance will be submitted to the HSO or designee prior to the start of any on-site work. A copy of the training certificates shall be inserted into the pocket of this HASP in Appendix A.

7.0 SITE ACCESS

The site investigation and remediation work will be generally performed within the site boundaries. Due to the site location, it is unlikely that the public or curious bystanders will be present at the time of the work. Nevertheless, the work area will be considered as a 100 foot radius around the work activity being performed. Only OSHA trained individuals which are qualified to do the work and have read and signed this site specific HASP will be allowed within the 100 foot radius work zone. The work area will be secured with traffic cones and/or flagging to prevent unauthorized entry. The HSO or designee will be responsible for limiting access to unauthorized individuals.

During completion of the site investigation and remediation activities, a 100 foot circle around the immediate work area will be considered the Exclusion Zone (contaminated area where investigation/remedial work is to be conducted). The Contamination Reduction Zone (decontamination area), and Support Zone (clean area, everywhere else) will be established outside the Exclusion Zone, as necessary. The exclusion, contamination reduction, and support zone during investigation/remediation work have been identified and designated as follows:

Exclusion Zone - The location of the exclusion zone will be determined in the field prior to the start of work and will vary depending on the work activities conducted. For the most part, the exclusion zone is anticipated to be a 20 foot radius around the work area. The outside exclusion zones may be delineated with cones and yellow caution tape or equal method, where applicable. Only authorized persons with proper training and protective gear will be allowed to enter the exclusion zone. If the exclusion zones, as previously explained, changes orientation during the completion of the work, the HASP will be amended in the field to reflect the change.

Contamination Reduction Zone – If applicable, this zone will generally be a 10'± x 10'± area, marked off with stakes and blue and white colored flagging or equal method, containing the decontamination pad. The location will be determined in the field prior to the start of work and will vary depending on the area(s) the work is being conducted. This zone is where decontamination of personnel and

equipment will take place, as necessary, on the basis of the work being performed. It will be located upwind of the Exclusion Zone, if possible.

Support Zone - Area outside of contamination reduction zone and not including the exclusion zone. Unauthorized or untrained individuals must remain in this zone.

8.0 PERSONAL PROTECTION

8.1 Level of Protection

Based on evaluation of the potential hazards, the minimum level of protection to be worn by workers during implementation of the site investigation and remediation activities is defined as Level D protection, and will be controlled by the HSO or designee.

The minimum level D protective equipment will consist of field clothes, rubber gloves, hard hats, safety glasses, and safety boots (steel-toe preferred). As appropriate, this level of protection may be modified to include polylaminated Tyvek suits, coveralls, leg chaps, or face shield for additional protection. Both full-face and half-face air purifying respirators should be readily available. Appropriate combination organic vapor and particulate cartridge filters will be available at the site, to use, if necessary with the air purifying respirators.

If required, level C protective equipment will consist of the items listed for Level D protection with the added protection of full-face, air purifying (organic vapor and particulate) respirator, chemical resistant clothing, inner and outer chemically resistant gloves (i.e. solvent resistant nitrile, PVC/nitrile), and chemical resistant safety boots/shoes.

Level B is not anticipated, but if required, level B protective equipment will consist of the items listed for Level D protection except a self-contained breathing apparatus (SCBA) will be worn dependent on the level of contaminants present in the work zone, and polylaminated Tyvek suits will be required. When site conditions warrant the need for level B protective equipment, work will cease and the project will be re-evaluated to determine the necessity for employing engineering controls to reduce or eliminate the potential contaminants of concern.

8.2 Safety Equipment

Basic emergency and first aid equipment will be available at an area within the Support Zone clearly marked and available or within C.T. Male's company vehicle. This shall include a first aid kit, fire extinguisher, supply of potable water, soap and towels. The HSO or designee shall be equipped with a cellular phone in case of emergencies. If the cellular phone is not available, or is inoperable, a pay phone in the immediate vicinity will be used.

9.0 COMMUNICATIONS

There are no existing phone services associated with the subject site. The HSO or designee shall be equipped with a cellular phone in case of emergencies. If the cellular phone is not available, or is inoperable, a pay phone in the immediate vicinity will be used. The HSO or designee shall notify the C.T. Male project manager as soon as safely possible in the event of an accident, injury or emergency action.

Hand signals for certain work tasks will be employed, as necessary, and the buddy system will be employed during excavation, direct-push and sampling activities.

10.0 DECONTAMINATION PROCEDURES

10.1 Personnel Decontamination Procedures

Decontamination procedures will be carried out by all personnel leaving the Exclusion Zone (except under emergency evacuation). The amount of decontamination performed will be dependent on the level of personal protection currently being worn within the exclusion zone.

1. Do not remove respiratory protection until all of steps have been completed.
2. Clean outer protective gloves and outer boots, if worn, with water (preferably with a pressurized washer) over designated wash tubs in the exclusion zone to remove the gross amount of contamination.
3. Deposit equipment used (tools, sampling devices, and containers) at designated drop stations - on plastic drop sheets or in plastic lined containers.
4. Rinse outer boots if worn and gloves with clean water in designated rinse tubs. Remove outer boots if worn and gloves and deposit in designated area to be determined in the field for use the next day or when necessary. If disposable outer boots are worn, remove and discard in designated container.
5. Remove hard hat & safety glasses, rinse with clean water as necessary and deposit in designated area for use the next day or when necessary.
6. Remove Tyvek suit, if worn, and discard in designated container. Remove respirator at this time, if used; wash and rinse with clean water. Organic vapor cartridges, when used, will be replaced daily. Used cartridges will be discarded in the designated waste container. Remove inner gloves and discard in designated container.

10.2 Equipment and Sample Containers Decontamination

All decontamination will be completed by personnel in protective gear appropriate for the level of protection determined by the site HSO or designee. Manual

sampling equipment including trowels, hand augers, shovels and macro-core samplers which come into contact with the site's soils, will be cleaned with a tap water/detergent wash and a tap water rinse. The sampling equipment will be washed after each surface soil sample is collected and the wash and rinse water will be allowed to infiltrate the site's soils at each sampling point.

Larger excavation equipment (i.e., rubber-tire backhoe or track excavator) which comes into contact with the site's soils will be decontaminated with a high pressure/hot water wash. The decontamination procedure will focus on portions of the equipment that has come into contact with the site's soils such as the bucket. The cleaning will be performed at the completion of each test pit so that the cleaning fluids will infiltrate the site's soils at the test pit location were the digging was performed.

Drill rig equipment (i.e., augers) - if used to replace direct-push methods - which comes into contact with the site's soils will be decontaminated with a high pressure/hot water wash. The decontamination procedure will focus on portions of the equipment that has come into contact with the site's soils such as the augers and drill bits. The cleaning will be performed at the completion of each boring location so that the cleaning fluids will infiltrate the site's soils at the boring location were the drilling was performed.

Exterior surfaces of sample containers will be wiped clean with disposable wipes in the decontamination zone and transferred to a clean cooler for transportation or shipment to the analytical laboratory. Sample identities will be noted and checked off against the chain-of-custody record. The disposable wipes will be placed in the designated disposal container and disposed of as solid waste.

11.0 EMERGENCY RESPONSE PROCEDURES

THE PROJECT EMERGENCY COORDINATOR IS:

Site Health and Safety Officer (HSO) Stephen Bieber

The following standard emergency procedures will be used by on-site personnel. The Project Manager and HSO shall be notified of any on-site emergencies and be responsible for assuring that the appropriate procedures are followed.

11.1 Personal Injury

Emergency first aid shall be administered on-site as deemed necessary and only by a trained individual, if available at the site. If a trained individual is not available on-site, decontaminate, if feasible, and transport individual to nearest medical facility (Colombia Memorial Hospital). The HSO will supply medical data sheets to appropriate medical personnel and be responsible for completing the incident report. If the HSO is injured or controlling the emergency situation, the medical data sheets are available in Appendix B of this Health and Safety Plan.

11.2 Personal Exposure

The recommended response to worker exposure from contaminants on-site includes the following:

SKIN CONTACT: Use generous amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention, as necessary.

EYE CONTACT: Wash eyes thoroughly with potable water supply provided on site. Eyes should be rinsed for at least 15 minutes subsequent to chemical contamination. Provide medical attention, as necessary.

INHALATION: Move worker to fresh air and outside of the work zone and/or, if necessary, decontaminate and transport to hospital (Columbia Memorial Hospital). If respirator use is

implemented at the time of inhalation, worker must not remove respirator until completely away from the work zone.

INGESTION: Decontaminate, if feasible, and transport to hospital (Columbia Memorial Hospital).

PUNCTURE WOUND OR LACERATION: Provide first aid at the site and if wound needs medical attention, decontaminate, if feasible, and transport to hospital (Colombia Memorial Hospital).

If the affected worker is exposed to contaminants on-site and the injury or accident prevents decontamination of the individual, the emergency responders must be notified of this condition and the exposure must be kept to a minimum.

11.3 Potential or Actual Fire or Explosion

Immediately evacuate area in the event of potential or actual fire or explosion. Notify the local fire and police departments, and other appropriate emergency response groups, as listed in Section 1.2. Perform off-site decontamination and contain wastes for proper disposal. If a fire or explosion occurs, all on-site personnel must meet in the designated area of the site (established by the HSO or designee) for an accurate head count.

11.4 Equipment Failure

Should there be any equipment failure, breakdown, etc. the Project Manager and HSO shall be contacted immediately. The Project Manager or the HSO will make every effort to replace or repair the equipment in a timely manner.

11.5 Spill Response

The site HSO or designee shall initiate a corrective action program with the subcontractors in the event of an accidental release of a hazardous material or suspected hazardous material. The HSO or designee will act as the Emergency Coordinator with the subcontractors for the purposes of: spill prevention; identifying releases; implementing clean up measures; and notification of appropriate personnel.

The corrective action program will be implemented by the HSO and subcontractor to effectively control and minimize any impact accidental releases may have to the environment.

Effective control measures will include:

- Preliminary assessment of the release
- Control of the release source
- Containment of the released material
- Effective clean-up of the released material

Potential sources of accidental releases include: hydraulic oil spills or petroleum leaks from heavy equipment; cooling oils (potentially PCB containing) for electrical equipment handling and cleaning; and spills from drums, vats, vessels, and tanks. The HSO/Emergency Coordinator in conjunction with the subcontractor shall respond to an accidental release in the following manner:

- Identify the character, source, amount and area affected by the release.
- Have subcontractor take all reasonable steps to control the release.
- Notify the NYSDEC Spill Hotline at 1-800-457-7362. Notify NYSDEC Project Manager Randy Hough and the Town of Clermont.
- Contain the release with sorbent material which should include speedi-dry, spill socks and sorbent pads.
- Prevent the release from entering sensitive receptors (i.e., catch basins and surface water) using the specified sorbent material or sandbags.
- Coordinate cleanup of the release material.
- Oversee proper handling and storage of contaminated material for disposal.

At no time should personal health or safety be compromised or jeopardized in an attempt to control a release. All health and safety measures as outlined in this HASP should be adhered to.

12.0 ADDITIONAL WORK PRACTICES

Workers will be expected to adhere to the established safety practices. Work on the project will be conducted according to established protocol and guidelines for the safety and health of all involved. The following will be adhered to:

- Employ the buddy system when possible, and for those work tasks which require it. Establish and maintain communications.
- Minimize contact with potentially contaminated soil, sediment and water.
- Employ disposable items when possible to minimize risks during decontamination and possible cross-contamination during sample handling.
- Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed (to prevent oral ingestion of potential on-site contaminants).
- Avoid heat and other work stress related to wearing personal protective equipment. Take breaks as necessary and drink plenty of fluids to prevent dehydration.
- Withdrawal from a suspected or actual hazardous situation to reassess procedures is the preferred course of action.
- The removal of facial hair (except mustaches) prior to working on-site will be required to allow for a proper respiratory face piece fit.
- The Project Manager, the HSO, and sampling personnel shall maintain records recording daily activities, meetings, facts, incidents, data, etc. relating to the project. These records will remain at the project site during the full duration of the project so that replacement personnel may add information while maintaining continuity. These daily records will become part of the permanent project file.

13.0 AUTHORIZATIONS

Personnel authorized to enter the exclusion zone at the Environmental Restoration Project being conducted at the Former Hettling Farm site in the Town of Clermont, Columbia County, New York while operations are being conducted must be certified by the HSO. Authorization will involve completion of appropriate training courses and review and sign off of this HASP.

Personnel authorized to perform work on-site are as follows:

1. Kirk Moline C.T. Male
2. Stephen H. Bieber C.T. Male
3. Jeffrey Marx C.T. Male
4. Dan Achtyl C.T. Male
5. Megan Drosky C.T. Male
6. Nathan Freeman C.T. Male
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

17._____

14.0 MEDICAL DATA SHEET

This medical data sheet will be completed by all on-site personnel and will be kept on-site during the duration of the project. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

PROJECT: Environmental Restoration Project to be conducted at the Former Hettling Farm in the Town of Clermont, Columbia County, New York.

Name _____ Home Telephone

_____

Address

_____

Emergency Contact

_____

Drug or Other Allergies

_____

Particular Sensitivities

_____

Do You Wear Contact Lenses

_____

Provide a Checklist of Previous Illness or Exposure to Hazardous Chemicals

_____

___

What Medications Are You Presently Using

_____

_____

___

Do You Have Any Physical or Medical Restrictions

_____

_____

___

Are You Qualified to Wear Respirator (Provide Fit Test Results)_____

Name, Address, and Telephone Number of Personal Physician:

_____

___

_____

___

_____

___

15.0 FIELD TEAM REVIEW

Each field team member shall sign this section after site specific training is completed and before being permitted to work on-site.

I have read and understood this Site Specific Health and Safety Plan, and I will comply with the provisions contained therein.

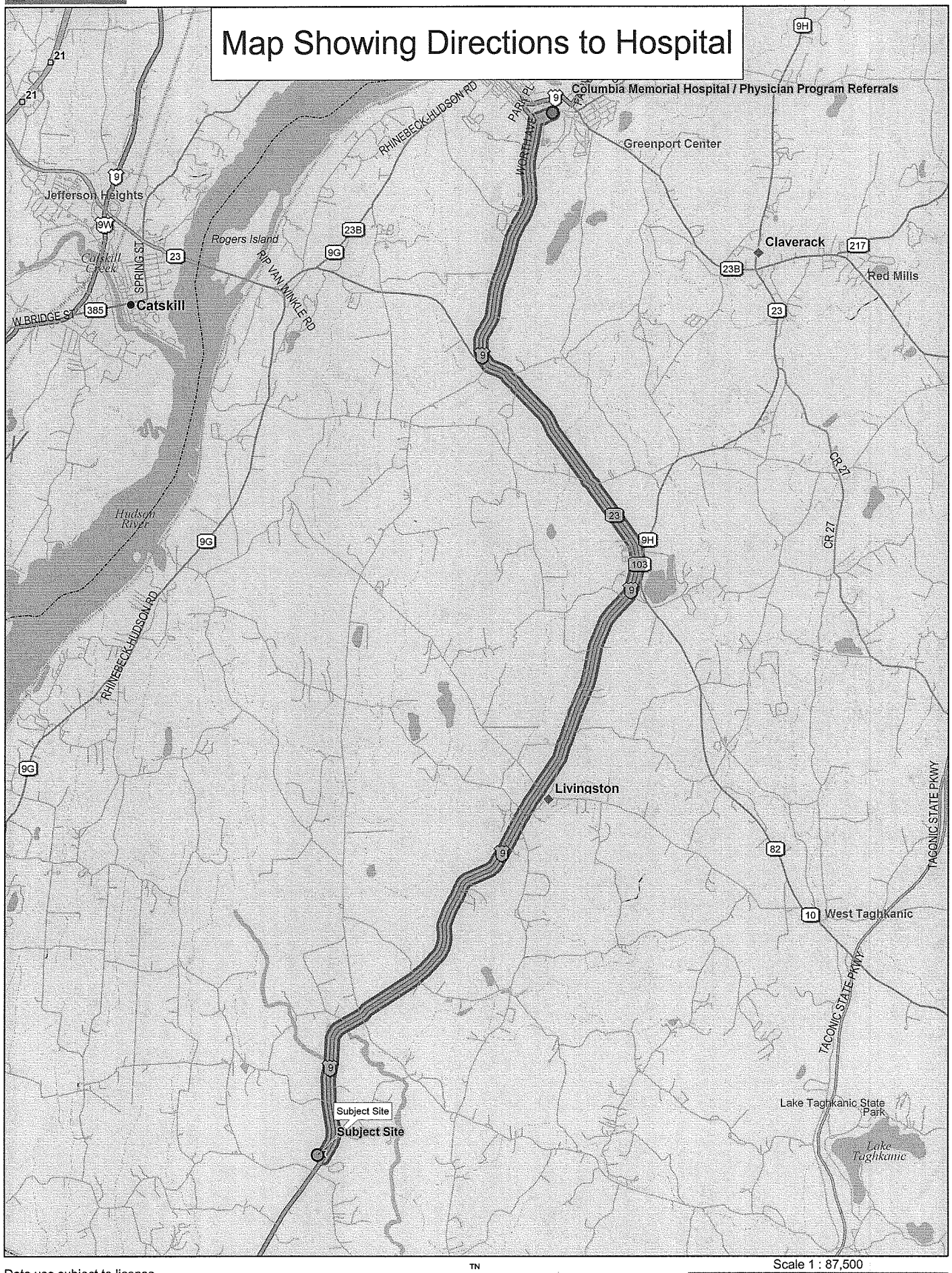
PROJECT: Environmental Restoration Project
Former Hettling Farm, Town of Clermont
Columbia County, New York

Name: Printed	Signature	Date

FIGURE 1

MAP SHOWING ROUTE TO COLUMBIA MEMORIAL HOSPITAL

Map Showing Directions to Hospital



TN
MN (13.8°W)

Scale 1 : 87,500

1" = 1.38 mi

Data Zoom 11-2

APPENDIX A

TRAINING CERTIFICATES

CERTIFICATE OF AWARD

THIS CERTIFICATE RECOGNIZES

John Favreau

AS HAVING SUCCESSFULLY COMPLETED
THE 40-HOUR TRAINING COURSE
FOR HAZARDOUS WASTE ACTIVITIES
IN COMPLIANCE WITH OSHA 29 CFR 1910.120

GROUNDWATER
TECHNOLOGY, INC.

August 17, 1990

Maureen E. Grant
Trainer

Marilyn E. Grant
Marilyn E. Grant
Director of Corporate Health & Safety

This is to certify that

John Favreau

has completed

29 CFR 1910.120-8 Hour Refresher Training

Instructor: R. Kip Score

Date: May 2, 2005

Saratoga Safety Inc.

Gansevoort, New York

This is to certify that

John Favreau

has completed

29 CFR 1910.120-8 Hour Refresher Training

Instructor: R. Kip Score

Date: May 2, 2005

Saratoga Safety Inc.

Gansevoort, New York

CERTIFICATE OF ACHIEVEMENT

This certifies that

Jeffrey A. Marx

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070

Paul Witt CA
Principal Instructor

February 2, 2006
Date of Course

February 2, 2007
Expiration Date

Gregory J. Morsch
Regional Manager

8HMR-11634
Certificate Number

Not Applicable
Examination Date

CERTIFICATE OF ACHIEVEMENT

This certifies that

Kirk Moline

has successfully completed the

8 Hour Health & Safety Refresher Training for
Hazardous Waste Site Activities
per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070

Principal Instructor

November 3, 2005
Date of Course

November 3, 2006
Expiration Date

Gregory J. Morsch
Regional Manager

8HMR-11550
Certificate Number

Not Applicable
Examination Date

HAZARDOUS MATERIAL TRAINERS

certifies that

Megan A Drosky

has successfully met the 29 CFR 1910.120 certification requirements for the course entitled

40 HOUR HEALTH & SAFETY TRAINING -GENERAL SITE WORKER-(e)(3)(i)

and in evidence thereof is awarded this

CERTIFICATE OF COMPLETION

On The 29th Day of January, 2004

40H040129URS002
Certification Number

Howard J. LaPatra, Director

1464 Garner Station Blvd. PMB 252, Raleigh, NC 27603 919-662-9524 F: 662-7247

LITHO IN U.S.A.

CERTIFICATE OF ACHIEVEMENT

This certifies that

Megan Drosky

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070

Jeffrey S. Malo
Principal Instructor

October 4, 2005
Date of Course

October 4, 2006
Expiration Date

Gregory J. Morsch
Regional Manager

8HMR-11519
Certificate Number

Not Applicable
Examination Date

CERTIFICATE OF ACHIEVEMENT

This certifies that

Daniel T. Achtyl

has successfully completed the

40 Hour Health & Safety Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070

Principal Instructor

August 15-19, 2005
Date of Course

August 19, 2006
Expiration Date

Gregory J. Morsch
Regional Manager

HM-865
Certificate Number

Not Applicable
Examination Date

CERTIFICATE OF ACHIEVEMENT

This certifies that

Stephen Bieber

has successfully completed the

8 Hour Health & Safety Refresher Training for
Hazardous Waste Site Activities
per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070

Jeffrey Melo (AR)
Principal Instructor

March 2, 2006
Date of Course

March 2, 2007
Expiration Date

Gregory J. Morack
Regional Manager

8HMR-11709
Certificate Number

Not Applicable
Examination Date

CERTIFICATE OF ACHIEVEMENT

THIS IS TO CERTIFY THAT

NATHAN T. FREEMAN

Has achieved recognition for completing

OSHA 40-HOUR (29 CFR 1910.120) HEALTH & SAFETY CLASS
HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

PRESENTED BY
INDUSTRIAL HYGIENICS CORPORATION
131 Dorset Lane
Williston, VT 05495
(802) 879-2711

Certificate #5491 is granted this 15th day of June, 2001

Barry Clayton, Vice President

Hugh McBride, Director of Training

ALPINE ENVIRONMENTAL SERVICES, INC.

1146 Central Avenue, Albany, NY 12205 (518)453-0146

Nathan Freeman

has completed the requisite training as required by 29 CFR 1910.120 (e)
for the

8-Hour Hazardous Waste Operations Refresher

February 24, 2005

Certification No:CPHWRR-022405-001 Expiration Date: 2/24/2006

Course Topics Include: Toxicology, Regulations, Personal Protective Equipment, Site Control, Decontamination, Health and Safety Programs, Decontamination, Labeling and Placarding, Disposal

Terry Bardwell
Training Manager

APPENDIX B

MEDICAL DATA SHEETS

14.0 MEDICAL DATA SHEET

This medical data sheet will be completed by all on-site personnel and will be kept on-site during the duration of the project. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

PROJECT: Environmental Restoration Project to be conducted at the Former Hettling Farm in the Town of Clermont, Columbia County, New York.

Name _____ Home Telephone _____

Address _____

Emergency Contact _____

Drug or Other Allergies _____

Particular Sensitivities _____

Do You Wear Contact Lenses _____

Provide a Checklist of Previous Illness or Exposure to Hazardous Chemicals

_____

What Medications Are You Presently Using _____

_____

Do You Have Any Physical or Medical Restrictions _____

_____

Are You Qualified to Wear Respirator (Provide Fit Test Results)_____

Name, Address, and Telephone Number of Personal Physician:

_____

_____

_____

APPENDIX C

COMMUNITY AIR MONITORING PLAN

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a **continuous** basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring partculate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

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APPENDIX D

CITIZEN PARTICIPATION PLAN

CITIZEN PARTICIPATION PLAN
for

The Former Hettling Farm

Site (#411015)
U.S. Route 9
Town of Clermont
Columbia County, New York

July 2006

Prepared By:

C.T. Male Associates, P.C.

PREFACE

ENVIRONMENTAL RESTORATION PROJECT

This Citizen Participation Plan has been developed for the Former Hettling Farm ("the site") under New York State's Environmental Restoration Projects Program.

Brownfields are abandoned, idled, or under-used properties where expansion or redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. They often pose not only environmental, but legal and financial burdens on communities. Left vacant, contaminated sites can diminish the property value of surrounding sites and potentially threaten the economic viability of adjoining properties.

RESOURCES AVAILABLE FOR COMMUNITY REDEVELOPMENT

In an effort to spur the cleanup and redevelopment of brownfields, Governor Pataki proposed, and New Yorkers approved, a $200 million Environmental Restoration Fund as part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996 (1996 Bond Act). Under the Program, the State provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Only New York State municipalities are eligible. The term "municipality" includes counties, cities, towns and villages as well as local public authorities, public benefit corporations, school and supervisory districts and improvement districts. The term also includes municipality acting in partnership with a community based organization.

Once remediated, the property may then be reused for commercial, industrial, residential or public use. In addition, the municipality and all successors in title, lessees, and lenders are released from remedial liability for hazardous substances that were on the property prior to the grant. The State indemnifies these same persons in the amount of any settlements/judgments obtained regarding an action relating to hazardous substances that were on the property prior to the grant.

SECTION 1: INTRODUCTION

The Town of Clermont and the New York State Department of Environmental Conservation (NYSDEC), in cooperation with the New York State Department of Health (NYSDOH), are committed to informing and involving the public during the process to develop the Remedial. Investigation and Alternatives Analysis Report (RI/AAR) for the former Hettling farm. The site is vacant land and is located along the west side of U.S. Route 9, approximately 1,100 feet north of this route's intersection with County Route 6, in the Town of Clermont, Columbia County, New York, as shown on the attached site location map. This Citizen Participation Plan (CPP) has been prepared by C.T. Male Associates, P.C. on behalf of the Town of Clermont specifically for this site. Definitions of some common terms used in the RI/AAR process may be found in Appendix 1.

The RI is a detailed study to determine how much contamination there is, how far it extends, and potential threats to public health and the environment. Using information developed during the RI, the AAR evaluates possible ways to clean up the site. NYSDEC describes its preferred remedy in a Proposed Remedial Action Plan. After public comment, the selection of a remedy is finalized in a Record of Decision.

The CPP seeks to assure an open process for the interested and possibly affected public. This includes public officials at all levels, citizen interest groups, commercial interests, individuals in the area of the site, and the media. These parties can be a part of the decision-making process for this site, and need to be informed about on-site activities. It also identifies locations where these parties can obtain additional information about the remedial program for this site. Specific opportunities for public and community input into the decision-making process are indicated.

The CPP is a working document. It can be enhanced to accommodate major changes in either public attitude, or in the nature and scope of technical activities at the site. The activities listed below are not intended to be an all-inclusive list, but an outline of possible activities which may be conducted in coordination with the site investigation and remedial process.

This CPP includes the following information:

- A description of the site history, indicating possible types of contamination, any past studies, and any previous remedial measures that may have occurred at the site;
- A description of the proposed Remedial Investigation/Alternatives Analysis Report (RI/RAR) activities;
- Listing of contacts representing the affected and interested public agencies associated with this project;

- Identification of a local repository for information and reports generated during the course of completing the investigation activities; and

- A description of planned citizen participation activities.

SECTION 2: SITE LOCATION

The subject property is defined as the approximate 20.5 acre parcel located along the western side of U.S. Route 9, approximately 1,100 feet north of this route's intersection with County Route 6, in the Town of Clermont. The subject property is bounded on the north, south and west by farmsteads and agricultural fields and on the east by U.S. Route 9 and a farmstead and agricultural fields. The site is accessed along the west side of U.S. Route 9.

SECTION 3: SITE HISTORY

The site has historically been utilized for agricultural purposes. An active fruit orchard operated on western portions of the site while the cultivation of row crops, vegetables and fruit trees took place on eastern portions of the site. The site, prior to its subdivision in 2003, was a part of the larger Hettling Farm.

Various pesticides and herbicides may have been applied to the crops during the site's past usage for agricultural purposes. Suspected pesticides used within the site are lead and arsenic based compounds, and organophosphate and organochlorine pesticide compounds.

Portions of the Hettling Farm north of the site have been investigated by the DEC as a result of an uncontrolled material dumping area and chemical fires to the north of the site. According to interviews with persons familiar with the site and review of available DEC files pertaining to the site, the fire department responded to fires that were caused by illegal burning and by the employment of blow torches to dismantle stockpiled motor vehicles stored to the north of the site. The dumped items were subsequently removed from the Hettling property under the guidance of the DEC for off-site disposal. Additionally, underground storage tanks containing gasoline and various drums were removed from the Hettling farmstead, which is located on eastern portions of US Route 9 opposite the site (downgradient) and to the north.

SECTION 4: PLANNED SITE INVESTIGATION

4.1 Scope of the Investigation

An Investigation Work Plan has been prepared which includes the following major tasks:

- Site Reconnaissance;

- Electromagnetic Survey;
- Site boundary survey of existing conditions;
- Test Pits;
- Fish and wildlife impact analysis;
- Site wide subsurface/hydrogeologic evaluation;
- Removal and disposal of stockpiled railroad ties and telephone poles;
- Surface soil sampling and analysis; and
- Stream surface water and sediment sampling

The RI work plan provides additional details about the investigation. Copies can be reviewed at the repositories listed in Section 5.2 of this Citizen Participation Plan.

4.2 Project Schedule

The above activities are expected to begin at the site by early summer, 2006. The initial field activities will take approximately three to four weeks to complete. The remaining sampling activities will take place based on the results of the initial data gathered. Laboratory results should be available about four to six weeks later. A draft RI report should be submitted to the Town of Clermont, the NYSDEC and the NYSDOH about one month following data submittal.

SECTION 5: CITIZEN PARTICIPATION ACTIVITIES

It is the expressed intent of the Town of Clermont and the NYSDEC to provide information to the public in a timely, complete, and accurate manner. Towards this end, the Town of Clermont has compiled a list of individuals to whom the public can address specific requests for information. These contacts are both local and state public officials and are knowledgeable of the proposed investigative activities. This list of contacts is provided in Table 1, Section 5.1, below.

A local repository has been established at the Town of Clermont Town Hall, in addition to the ones established at the NYSDEC offices at Schenectady and Albany. Repositories of information are identified in Section 5.2 below. A copy of the documents relevant to the RI/AAR, including the RI/AAR Work Plan, will be placed in the repositories to allow interested citizens and groups to review these documents.

A Fact Sheet detailing the availability of the RI/AAR Work Plan will be sent out to the residents and other interested parties on the mailing list. The mailing list is presented in Section 5.3, as well as in Appendix 2. This mailing will include information about the document repositories, the name and address of the Town of Clermont Project Manager, NYSDEC Citizen Participation Specialist,

NYSDEC Project Manager and NYS Department of Health contact. Parties who express interest in being placed on or removed from the mailing list will be added or removed as requested.

The Fact Sheet will also serve as an invitation for the public to ask questions regarding the Work Plan and provide input concerning the site via written or oral comments.

Additional activities, such as a public meeting and/or Fact Sheet after the site investigation is completed will be added as appropriate.

Once the RI/AA Report has been accepted, the NYSDEC will issue a Proposed Remedial Action Plan (PRAP) for the site. This plan will use the information contained in the RI/AAR and evaluate several alternatives to address the contamination at the site. This plan will then propose a course of remedial action for the site.

A public meeting will then be held to present the RI/AAR and the PRAP to the public. This presentation will be followed by a formal question and answer period. The PRAP will also have a 45-day comment period, during which written comments and questions can be submitted.

After the comment period, a Record of Decision (ROD) will be issued by the NYSDEC identifying the remedy selected for the site, and the basis for this selection. As part of the ROD, a responsiveness summary will be prepared. This responsiveness summary will include all relevant and significant questions and comments received on the PRAP and the NYSDEC/NYSDOH responses to this input.

The ROD and the PRAP, and all NYSDEC-approved reports, plans, and fact sheets on this project will be placed in the document repositories for public review. These documents may be distributed more widely, such as to interested local groups, if warranted.

5.1 Public Agency Contacts

The Town of Clermont has identified individuals knowledgeable of the proposed remedial investigation activities. These individuals are identified in Table 1, below.

Table 1: Public Agency Contacts

Columbia County and Town of Clermont Contacts		
William E. Banks Municipal Project Manager	1241 County Route 6 Germantown, NY 12526	(518) 537-6668
Holly C. Tanner County Clerk	560 Warren Street Hudson, NY 12534	(518) 828-3339
Mary Helen Shannon Town Clerk	Town Hall, 1795 Route 9 Clermont, New York 12526	(518) 537-6868 Ext. 300
NYS Department of Environmental Conservation		
Randy Hough (Project Manager) (Technical Assistance)	NYSDEC Central Office 625 Broadway Albany, New York 12233	(518) 402-9818
Allan Geisendorfer (Technical Assistance)	NYSDEC Region 4 1150 Westcott Road Schenectady, New York 12306-2014	(518) 357-2234
Rick Georgeson (Citizen Participation Specialist)	NYSDEC Region 4 1150 Westcott Road Schenectady, New York 12306-2014	(518) 357-2234
New York State Department of Health		
Maureen E. Schuck (Technical Assistance)	Bureau of Environmental Exposure Investigation NYSDOH 547 River Street Troy, New York 12180-2216	(518) 402-7860
Columbia County Department of Health		
Dale Rowe Environmental Health Director	325 Columbia Street Hudson, New York 12534	(518) 828-3358

5.2 Document Repositories

The public is encouraged to review the documents related to the site which are available for public review at the following locations:

NYSDEC Region 4 Office

1150 North Westcott Road
Schenectady, NY 12306
Attn: Allan Geisendorfer
Phone: (518) 357-2234
Hours: M-F, 8:30-4:45

NYSDEC Central Office

625 Broadway
Albany, NY 12233
Attn: Randy Hough
Phone: (518) 402-9814
Hours: M-F, 9:00-3:00
By Appointment Only

Town Clerk's Office

1795 Route 9
Germantown NY 12526
Attn: William Banks
Phone: (518) 537-6668
Hours: Thurs. (6 to 8 pm)
Sat. (10 am to 12 pm)

5.3 Mailing List

The attached mailing list includes owners of properties located within the immediate vicinity of the site (generally within a block or so). The mailing list of property owners is presented in Appendix 2. The Town of Clermont will produce and distribute Fact Sheets providing residents with timely information on project status, including notifications of upcoming activities on-site (e.g., fieldwork) or off-site (e.g., public availability sessions). Included in all Fact Sheets will be the list of individuals to be contacted by the public for additional information (see Table 1, above). In addition to property owners, Fact Sheets will be mailed to the elected officials/ representatives, environmental groups, and media listed in Tables 2 and 3 below.

Table 2: Elected Officials/Representatives and Environmental Groups

Elected Officials / Public Agency Representatives	
Hillary R Clinton, US Senator Leo O'Brien Federal Office Building, Room 821 Albany, NY 12207	Charles E. Schumer, US Senator Leo O'Brien Federal Office Building, Room 420 Albany, NY 12207
John E. Sweeney, Member of Congress 75-78 North Broadway Red Hook, NY 12571	Daniel L. Hooker, NYS Assemblyman 45 Five Miles Woods Road, Suite 2 Catskill, NY 12414
Stephen M. Saland, NYS Senator Leo O'Brien Federal Office Building, Room 609 Albany, NY 12207	William E. Banks, Town Supervisor 1241 County Route 6 Germantown, NY 12526
Harry Harned, Councilman 27 LeGrand Avenue Germantown, NY 12526	
Environmental Groups	
None Identified	

5.4 Media Announcements

The Town of Clermont and the NYSDEC will make every reasonable effort to ensure that upcoming public meetings are announced in several media, for the purpose of encouraging public participation and comment. Announcements will be initially submitted to visual and sound media for broadcast as "Public Service Announcements" at least 14 calendar days prior to the day of the public meeting.

The media locations identified in Table 3 represent the minimum media where announcements will be placed.

Table 3: Media

Television	WNYT News Channel 13 PO Box 4035 Albany, NY 12204 Tel: (800) 999-9698
Radio	WGY 810 AM Clear Channel Radio of Albany Riverhill Center 1203 Troy-Schenectady Road Latham, NY 12110 Tel: (518) 452-4800
Newspaper	Hudson Register Star 364 Warren Street Hudson, NY 12534 Tel: (518) 828-1616

APPENDIX 1

Environmental Restoration Program Glossary and Acronyms

GLOSSARY

This glossary defines terms associated with New York's citizen participation program, and important elements of the Brownfield program. Words in **bold** in the definitions are defined elsewhere in the glossary.

Administrative Record	Part of a site's **Record of Decision** which lists and defines documents used in the development of NYSDEC's decision about selection of a remedial action.
Availability Session	A scheduled gathering of program staff and members of the public in a casual setting, without a formal presentation or agenda but usually focusing on a specific aspect of a site's remedial process.
Citizen Participation	A program of planning and activities to encourage communication among people affected by or interested in Brownfield sites and the government agencies responsible for investigating and remediating them.
Citizen Participation Plan	A document which must be developed at a site's **Site Investigation** stage. A CP Plan describes the citizen participation activities that will be conducted during a site's remedial process.

Citizen Participation Specialist	A staff member from a NYSDEC central office or regional office who has specialized training and experience to assist a **project manager** and other staff to plan, conduct and evaluate a site-specific citizen participation program
Comment Period	A time period for the public to review and comment about various documents and DER actions. For example, a 45-day comment period is provided when DER issues a **Proposed Remedial Action Plan (PRAP)**.
Contact List	Names, addresses and/or telephone numbers of individuals, groups, organizations, government officials and media affected by or interested in a particular Brownfield site. The size of a contact list and the categories included are influenced by population density, degree of interest in a site, the stage of the remedial process and other factors. It is an important tool needed to conduct outreach activities.
Division of Environmental Remediation	A major program unit within the New York State Department of Environmental Conservation created to manage the hazardous waste site remedial program, the Brownfield program, and the Voluntary Cleanup program. Staff include: engineers, geologists, chemists, attorneys, citizen participation specialists, environmental program specialists and support staff.
Document Repository	A file of documents pertaining to a site's remedial and citizen participation programs which is made available for public review. The file generally is maintained in a public building near the Brownfield site to provide access at times and a location convenient to the public.
Fact Sheet	A written discussion about part or all of a site's remedial process, prepared and provided by DER to the public. A fact sheet may focus on: a particular element of the site's remedial program; opportunities for public involvement; availability of a report or other information, or announcement of a **public meeting** or **comment period**. A fact sheet may be mailed to all or part of a site's **contact list**, distributed at meetings, placed in a **document repository** and/or sent on an "as requested" basis.

Interim Remedial Measure (IRM)

A discrete action which can be conducted at a site relatively quickly to reduce the risk to people's health and the environment from a well-defined contamination problem. An IRM can involve removing contaminated soil and drums, providing alternative water supplies or securing a site to prevent access.

New York State Department of Health

Agency within the executive branch of New York State government which: performs health-related inspections at suspected contaminated sites; conducts health assessments to determine potential risk from environmental exposure; reviews Exposure Assessments prepared during the **Remedial Investigation/Alternatives Analysis Report**; conducts health-related community outreach around sites; and reviews remedial actions to assure that public health concerns are adequately addressed.

Operable Unit

A discrete part of an entire site that produces a release, threat of release, or pathway of exposure. An Operable Unit can receive specific investigation, and a particular remedy may be proposed. A **Record of Decision** is prepared for each Operable Unit.

Operation and Maintenance

A period in which remedial action may be conducted following construction at a site (for example, operation of a "pump and treat" system), or which is performed after a remedial action to assure its continued effectiveness and protection of people's health and the environment. Activities can include site inspections, well monitoring and other sampling.

Project Manager

An NYSDEC staff member within the **Division of Environmental Remediation** (usually an engineer, geologist or hydro geologist) responsible for the day-to-day administration of remedial activities at, and ultimate disposition of, an Environmental Restoration site. The Project Manager works with legal, health, **citizen participation** and other staff to accomplish site-related goals and objectives.

Proposed Remedial Action Plan (PRAP)	An analysis by DER of each alternative considered for the remediation of an Environmental Restoration site and a rationale for selection of the alternative it recommends. The PRAP is created based on information developed during the **Remedial Investigation/Alternatives Analysis Report**. The PRAP is reviewed by the public and other state agencies.
Public Meeting	A scheduled gathering of **Division of Environmental Remediation** staff with the affected/interested public to give and receive information, ask questions and discuss concerns about a site's remedial program. Staff from other NYSDEC divisions, legal and health staff, and staff from consultants and a responsible party often also attend. A public meeting, unlike an **availability session**, generally features a formal presentation and a detailed agenda.
Record of Decision (ROD)	A document which provides definitive record of the cleanup alternative that will be used to remediate an Environmental Restoration site. The ROD is based on information and analyses developed during the **Remedial Investigation/Alternatives Analysis Report** and public comment.
Remedial Construction	The physical development, assembly and implementation of the remedial alternative selected to remediate a site. Construction follows the **Remedial Design** stage of a site's remedial program.
Remedial Design	The process following finalization of a **Record of Decision** in which plans and specifications are developed for the **Remedial Construction** of the alternative selected to remediate a site.
Remedial Investigation/ Alternatives Analysis Report (RI/AAR)	The RI fully defines and characterizes the type and extent of contamination at the site. The AAR, which may be conducted during or after the RI, uses information developed during the RI to develop alternative remedial actions to eliminate or reduce the threat of contamination to public health and the environment.

Responsiveness Summary

A written summary of major oral and written comments received by DER during a **comment period** about key elements of a site's remedial program, such as a **Proposed Remedial Action Plan**, and DER's response to those comments.

APPENDIX 2

MAILING LIST

NEARBY CITIZENS MAILING LIST

Name	Address	Telephone
Clermont Cemetery Society c/o Ronald Miller	1629 Route 9 Tivoli, NY 12583	(518) 537-6634
Ronald Miller	1629 Route 9 Tivoli, NY 12583	(518) 537-6634
Bruce Maus, et al c/o Kenneth Maus	1825 Route 9 Germantown, NY 12526	(518) 537-6480
Clermont Partners, LLC	1827 Route 9 Germantown, NY 12526	(518) 537-4724
George W. Saulpaugh & Son	1790 Route 9 Germantown, NY 12526	(518) 537-6500

EXHIBITS

EXHIBIT 1

SITE SURVEY

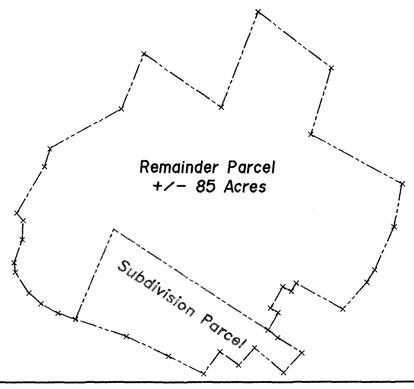
Subdivision of Lands of Catherine Hettling

DESCRIPTION TABLE

COURSE	BEARING	DISTANCE
1	N 50°19'15"W	285.15'
2	S 41°45'15"W	175.50'
3	N 54°34'15"W	174.12'
4	N 53°38'45"W	34.73'
5	S 35°51'15"W	205.11'
6	N 64°54'00"W	191.79'
7	N 64°44'40"W	312.70'
8	N 65°25'25"W	138.73'
9	N 71°56'25"W	407.84'
10	N 71°27'40"W	137.64'
11	N 22°41'25"E	737.78'
12	S 58°29'05"E	1551.65'
13	S 52°45'45"E	94.47'
14	S 58°19'15"E	212.71'
15	S 42°19'15"W	202.55'

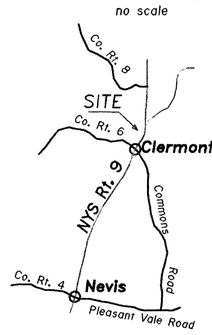
Property Overview Sketch

scale: +/- 1in. = 800Ft.



LOCATOR SKETHC

no scale



NOTES:

1) This map was prepared from an accurate field survey. The property lines shown are established from deeds of record and existing monumentation as indicated. Also see micro map 702 for additional boundary line information.

2) This property is subject to easements and rights of way of record. Where a property line runs along the center of a highway the presumption is that the center of the pavement is the center of the road right of way. Where the property line does not reach the road center line any interest in and to the road center is intended to be conveyed (if any).

4) All on site water supply and sewage disposal systems shall be designed and installed to meet the minimum standards of the Columbia County Department of Health.

5) Topographic lines, if indicated, are approximate and scaled from the USGS Quad map.

Maps must be filed with the Columbia County Clerk within 62 days of the approval date: 6/4/03

Dated 6/4/03 Town of Clermont Planning Board

By

Final Subdivision Approval

Dated 6/4/03 By

Town of Clermont Planning Board

KEY

—F—F— wire fence line
—W—W— stone wall line
—U—U— utility lines
- - - - - - - occupation line
N land hook
—P—P— pond area
—S—S— line of stream
——— property line

Rev. No.

SUBDIVISION OF LANDS OF: CATHERINE HETTLING

TO BE CONVEYED TO: THE TOWN OF CLERMONT

TOWN OF CLERMONT
COUNTY OF COLUMBIA
STATE OF NEW YORK

portion of tax parcel 181.00 -01-25.1
reference deed book 367 page 473
also see micro map 702 (February 16, 1959)
Zone "H" 1 acre minimum lot size
Area: 20.575 Acres

SURVEY INFORMATION BY:
ROBERT J. IHLENBURG, LAND SURVEYOR
451 EAST ALLEN STREET
HUDSON, NEW YORK 12534
(518) 828-7406 / 943-1922

N.Y.S. P.L.S.
 49374

DATE	SCALE:	MAP No.	SHEET
MAY 20, 2003 RPAYNE01	1IN. = 100FT.	88-119-03 RCLRMNT3	1 OF 1

EXHIBIT 2

1948 AERIAL PHOTOGRAPH

MAP REFERENCE
Columbia County Soils and Water
Conservation District Office
Ghent, New York
Date: 1948

N
W
E

ENGINEERING
ENVIRONMENTAL SERVICES
SURVEYING
PHONE (518)786-7400
FAX (518) 786-7299

C.T.MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, PO BOX 727, LATHAM, NY 12110

EXHIBIT 2 – 1948 Aerial Photograph

Former Hettling Farm Site
U.S. Route 9

TOWN OF CLERMONT	COLUMBIA COUNTY, NY
SCALE: 1"=1,320'	
DRAFTER: SHB	
PROJECT No. 06.6084	

EXHIBIT 3

1959 AERIAL PHOTOGRAPH

MAP REFERENCE
Columbia County Soils and Water
Conservation District Office
Ghent, New York
Date: 1959

ENGINEERING
ENVIRONMENTAL SERVICES
SURVEYING
PHONE (518)786-7400
FAX (518) 786-7299

C.T.MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, PO BOX 727, LATHAM, NY 12110

EXHIBIT 3 – 1959 Aerial Photograph

Former Hettling Farm Site
U.S. Route 9

TOWN OF CLERMONT	COLUMBIA COUNTY, NY
SCALE: 1"=1,320'	
DRAFTER: SHB	
PROJECT No. 06.6084	

EXHIBIT 4

1994/1996 AERIAL PHOTOGRAPH

Map Notes:
CAD Parcel Outlines from 2002 / 2003.
Aerial Photography was flown 1994-1996.
Photo Resolution: 1 m./pixel.

Hettling Parcel 2002
Catherine Hettling Parcel
Town-owned parcels
Clermont Tax Parcels

NORTH

Date: April 21, 2006
User Name: LenaW
File Name: Ex4ERPProp_Fot96.mxd

Exhibit 4: 1994 / 1996 Historic Aerial Photo

Town of Clermont — Columbia County, New York

C.T. Male Associates, P.C.
50 Century Hill Drive, Latham, NY 12110
Phone: 518-786-7400 Fax: 518-786-7299

Scale: **1 inch equals 300 feet**
Project Number: NA
Data Source: NYS GIS Clearinghouse; CT Male GIS
Projection: SP NAD83 NYE Ft.

EXHIBIT 5

2001 AERIAL PHOTOGRAPH

Map Notes:
CAD Parcel Outlines from 2002 / 2003.
Aerial Photography was flown April, 2001.
Photo Resolution: 2 Ft./pixel.

Hettling Parcel 2002
Catherine Hettling Parcel
Town-owned parcels
Clermont Tax Parcels

NORTH

Date: April 21, 2006
User Name: LenaW
File Name: Ex5ERPProp_Fot01.mxd

Exhibit 5: 2001 Historic Aerial Photo

Town of Clermont — Columbia County, New York

C.T. Male Associates, P.C.
50 Century Hill Drive, Latham, NY 12110
Phone: 518-786-7400 Fax: 518-786-7299

Scale: **1 inch equals 300 feet**
Project Number: NA
Data Source: NYS GIS Clearinghouse; CT Male GIS
Projection: SP NAD83 NYE Ft.