Work Plan

→ Steve Hammond

Please Provide me with comments as soon as possible NIMO wants to do the work before Thanksgiving

Site Investigation

Mark

M. Wallace & Son, Inc. Scrapyard

Cobleskill, New York

Prepared for:
Niagara Mohawk Power Corporation
Syracuse, New York
and
M. Wallace & Son, Inc.
Cobleskill, New York

October 1987

O'BRIEN & GERE

WORK PLAN

SITE INVESTIGATION

M. WALLACE & SON, INC. SCRAPYARD

COBLESKILL, NEW YORK

Prepared for:

NIAGARA MOHAWK POWER CORPORATION
SYRACUSE, NEW YORK

and

M. WALLACE & SON, INC.

COBLESKILL, NEW YORK

by

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1.0 Introduction

Niagara Mohawk Power Corporation (NMPC) and M. Wallace and Son, Inc. (MW&S) have been named as defendants in a lawsuit filed by the State of New York Attorney General over alleged PCB contamination at the M. Wallace and Son, Inc. Scrapyard in Cobleskill, New York (figure 1). This property has been designated as an inactive hazardous waste site by the New York Department of Environmental Conservation (NYSDEC) and is identified as site number 448003.

Limited sampling and analysis of soil, surface water, sediment, and nearby household wells has been conducted. On June 10, 1983, the Bureau of Enforcement and Criminal Investigation (BECI) of the NYSDEC sampled soil, sediment, and water from the quarry pond and from a stream. The sampling and analysis allegedly revealed PCB concentrations ranging from 170-200 ppm in soil, 34 ppm in a sediment sample, 0.5 ppb in water from the quarry pond, and 0.5 ppb in water from a stream. On December 19, 1984, the Schoharie County Department of Health sampled 8 household wells near the scrapyard for purgeable hydrocarbons, purgeable aromatics, PCBs, and heavy metals. There were no detectable levels of organic contaminants.

This work plan presents a plan for a site investigation of the M. Wallace and Son, Inc. Scrapyard. The objectives of this site investigation are (1) to determine the locations, extent (including the vertical and lateral limits) and concentrations of oil and grease and PCBs in on-site soils, ground water, surface water and sediments, and (2) to identify and characterize the potential for off-site migration of oil and grease and PCBs. This work plan is organized as follows:

Chapter 2.0 Scope of Work - presents the objectives, the methodology, and the output for each of the eight tasks set forth therein. The anticipated work schedule for this investigation is also presented

Figures - Site location map, proposed sampling locations, and work schedule.

Appendix A Health and Safety Plan - presents protocols for protecting the health of workers during the site investigation.

Appendix B Soil Sampling Protocol - presents the procedures for collecting representative soil samples.

Appendix C Ground Water Sampling Protocols - presents the protocols for collecting representative ground water samples

Appendix D Surface Water and Sediment Sampling Protocol - presents the protocols for collecting representative surface water and sediment samples

All work performed for this project, including field and laboratory work, will conform to all applicable standards, guidelines, and prescribed practices of the U.S. Environmental Protection Agency (USEPA), the New York State Department of Environmental Conservation (NYSDEC), and other applicable regulatory agencies.

2.0 Detailed Scope of Work

The objectives of this site investigation are to: (1) determine the locations, extent (including the vertical and lateral limits) and concentrations of oil and grease and PCBs in on-site soils, ground water, surface water, and sediments, and (2) identify and characterize the potential for off-site migration of oil and grease and PCBs. In addition, each section is divided into 3 subsections: the OBJECTIVE, METHOD, and OUTPUT. This organization allows the reader to clearly see what is to be done, how it is going to be done, and exactly what information will be received from the task.

2.1 Air Monitoring

OBJECTIVE: Air monitoring will be conducted before and during the site investigation to help protect those working in or living near the site.

METHOD: An HNU Model PI-101 or equivalent photoionization detector (HNU) will be used to monitor the air for volatile organic compounds at one upwind and one downwind location prior to any site work. This background data will be recorded in a field book. In addition, HNU air monitoring will be periodically performed during the site investigation, ie. during boring and monitoring well installation, and collection of surface water, ground water and sediment samples.

Particulate and vapor phase PCB samples will be collected during site work at two locations shown on Figure 2. Samples will be collected using an air sampling pump operated at an air flow rate of 0.05 to 0.2 liters/minute until from 1 to 50 liters of air have passed through the filter. The particulate sample will be collected on a 25 ml, 0.8 micron filter. The air stream will then be passed through a Florisil trap for vapor

phase analysis. These samples will be analyzed for PCBs in accordance with the method set forth in the section entitled "Polychlorinated Biphenyls in Ambient Air" of the NYSDOH document "Analytical Handbook" (NYSDOH, 1980).

The initial HNU air monitoring data will be compared to Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) by an industrial hygienist and will be used in the preparation of the site specific Health and Safety Plan. HNU air monitoring data collected during site activities will be compared to guidelines presented in the site Health and Safety Plan. If HNU readings exceed a specified concentration limit and duration for organic vapors, work will cease immediately until the health and safety concerns have been addressed.

OUTPUT: HNU and PCB air monitoring data will be made available to the NYSDEC in a report that will be prepared at the completion of site work. The significance of this data will be discussed in the Final Report.

2.2 Health and Safety Plan

OBJECTIVE: To help protect the health of those working at the site and to protect the health of people living nearby from site-related hazards during the site investigation.

METHOD: A generic health and safety plan is presented in Appendix A. A site specific Health and Safety Plan will be prepared by an industrial hygienist. This plan will consistent with OSHA guidelines.

OUTPUT: The Health and Safety Plan will be submitted to the NYSDEC prior to the initiation of the sampling program.

2.3 Surface and Near-Surface Soil Sampling

OBJECTIVE: To identify the horizontal extent and concentration of oil and grease and PCB contamination at the site.

METHOD: A total of 67 surface samples will be collected using the protocols in Appendix B and analyzed for oil and grease and PCBs (see Section 2.7). The proposed sampling traverses are shown in Figure 3. This sampling strategy focuses on areas exhibiting discoloration and/or staining of the soil. Samples will be collected approximately every 15 feet on both the north-south and east-west traverse lines (figure 3). The locations of the traverse will be surveyed with respect to an on-site datum. At each sample location, a representative sample will be collected between 0 and 6 inches. Six samples will be collected that are in isolated stained areas and thus are not on the traverse lines. Also included in the 67 sampling locations are 7 samples from non-stained areas of the site to demonstrate that these areas are not contaminated with PCBs. Additional sampling will be performed if the extent of contamination is not defined by the above program.

Fill material (i.e. gravel) may have been placed over oil-soaked areas to allow scrapyard workers to operate in a dryer environment. Therefore, up to 10 samples of the total 67 samples will be collected at a depth of up to 2 feet or at the top of the native soil, whichever is shallower. These deeper samples will be taken if visually clean gravel is encountered, during the collection of the 0-6 in samples. At these locations, the 0-6 in sample will not be collected; only the deeper sample will be collected and analyzed. The sample depth will be recorded.

Two samples of the 67 total will be analyzed per Contract Laboratory Protocols (CLP) for NYSDEC Hazardous Substance List (HSL) metals,

cyanide, and organics (see Section 2.7). Any unidentified peaks with areas greater than 10% of the ____ standards will be identified through a Natural Bureau of Standards Library Search. The locations of these two samples will be determined in the field by representatives of the NYSDEC and O'Brien & Gere.

Six duplicate samples, six matrix spikes, and a trip blank will be analyzed for quality assurance/quality control (QA/QC) purposes.

The laboratory report for the two HSL samples will provide the basis to select a reduced list of HSL parameters for analysis of samples from the test borings, ground water, seeps, sediments and surface water. This reduced list will be agreed to by representatives of O'Brien & Gere and the NYSDEC prior to subsequent sample analysis.

develop surrogate list

OUTPUT: A laboratory report will be generated that will contain analytical results for oil and grease and PCBs that are in the soil samples. The laboratory report will also include the analytical results for the two HSL samples.

This laboratory data will be used to estimate the volume of site soils contaminated with PCBs (greater than 50 ppm, 10-50 ppm, and less than 10 ppm) and to assess the potential for contaminants to migrate to off-site receptors. The laboratory data and the above assessment will appear in the Final Report.

2.4 Test Borings

OBJECTIVE: To characterize and assess contamination in the subsurface soil.

METHOD: Four test borings will be drilled by the subcontractor, Parratt-Wolff, Inc. A hydrogeologist will be present during drilling. An

upgradient monitoring well will be installed at the location of one boring (see Figure 2 and Section 2.5). The other three borings will be installed in the immediate vicinity of the stained soil to evaluate the vertical extent of the waste material (see Figure 2). The exact location will be agreed to in the field by representatives of NYSDEC and O'Brien & Gere.

Hollow stem auger drilling techniques will be used for the test borings. Soil samples will be collected using the Standard Split Barrel Sampling Method (ASTM-D 1586-67). Split-spoon samples will be collected continuously to the top of bedrock. A boring depth to the top of bedrock of 10 feet has been assumed. Geologic classification of the split-spoon samples will be performed and boring logs maintained by the supervising field hydrogeologist. Split-spoons will be decontaminated between samples using a soap and water wash followed by a potable water rinse and a solvent rinse. All drilling equipment will be decontaminated between borings by steam cleaning. Boring and decontamination spoils will be disposed of on site. Should sufficient water, 3 ft. or greater, be encountered in the eastern most soil boring, then the boring shall be converted to a overburden monitoring well. Other borings will be backfilled with a bentonite grout.

Two split spoon samples from each boring will be analyzed for oil and grease and the reduced NYSDEC Hazardous Substance List compounds identified and agreed upon as a result of analysis of the surface soil samples (see Section 2.7). One sample will be the first visually clean sample encountered in the boring. The second sample will be the soil sample at the bedrock interface. One duplicate sample, one matrix spike, and one trip blank will be analyzed for QA/QC purposes.

Three split-spoon samples will be selected that are representative of subsurface lithologies. These samples will be analyzed for grain size, Atterburg limits, and moisture content.

OUTPUT: A laboratory report will be generated and will contain analytical results for oil and grease, and those NYSDEC HSL parameters included in the analyses. This data output will be used to (1) determine the general soil/geologic profile of the site, (2) determine the vertical limits of oil and grease and PCB contaminantion layers in the soil, and (3) determine the presence of those parameters on the reduced HSL. This data will then be used to estimate the volume of site soils contaminated with PCBs (greater than 50 ppm, 10-50 ppm, and less than 10 ppm) and to assess the potential for contaminants to migrate to off-site receptors. The data and assessment will appear in the Final Report.

2.5 Ground Water Monitoring and Sampling

OBJECTIVE: To determine ground water flow direction and whether any waste material has impacted the ground water.

METHODS: Four monitoring wells, 1 upgradient and 3 downgradient, will be installed (Figure 2). Well installation and subsequent ground water quality sampling will be directed by a hydrogeologist.

Because of the proximity of the quarry to the heavily stained areas and the lack of accessibility by a drilling rig, monitoring well installation immediately downgradient of the waste area would be difficult or impossible. In addition, determination of whether any contaminants are migrating off-site via ground water would facilitate management decisions. A more cost effective evaluation of this could be made at the downgradient boundary of the site. Therefore, the 3 downgradient wells will be

installed along the downgradient side of the M. Wallace and Son, Inc. property (on the south side of Rte. 10) as shown in figure 2. These three wells and the upgradient well will be installed 10 feet into the first encountered bedrock ground water. The wells will be open rock wells, 3 inch nominal diameter. A 4 inch steel locking casing will be cemented a minimum of 2 feet into the bedrock. All drilling equipment will be decontaminated between wells by steam cleaning. Each monitoring well will be developed to assure the collection of representative samples. An air surging method or bailing will be used for the development. This procedure will continue until each well yields sediment-free water. Development water will be disposed of on the site. Water levels will be measured before and after the development process.

All monitoring wells will be surveyed for elevation, to 0.01 feet, and location with respect to an on-site datum. The quarry pond water elevation will be included in this survey. Ground water elevations in each well will be measured twice to determine ground water flow direction. The elevation of the quarry pond will be measured when ground water elevations are measured.

In-situ permeability tests will be conducted on all monitoring wells using positive displacement. For the positive displacement method, a teflon rod will be placed into the well. The water level within the well will be measured prior to insertion of the rod and measured at predesignated intervals after insertion. The recorded data will be analyzed using Hvorslev's Method.

A ground water sample will be collected from each monitoring well in accordance with the protocol in Appendix C. A dedicated stainless steel bailer will be used for each well. In addition, two (2) seep samples will

be collected from the northern quarry wall to evaluate ground water quality. Sample locations will be agreed to in the field by representatives of O'Brien & Gere and the NYSDEC. The samples will be analyzed for NYSDEC Hazardous Substances List (HSL) parameters identified in the surface soil samples (Section 2.3 and Section 2.7). A total of one duplicate sample, one matrix spike, and one trip blank will be analyzed for QA/QC purposes.

OUTPUT: A ground water flow map will be developed from data collected during this task. In addition, a laboratory report will be generated that will contain analytical data for NYSDEC HSL parameters contained in the ground water samples. The data output from this task will be used to determine whether the ground water has been impacted by site contaminants and the potential for future migration. This discussion will appear in the Final Report.

2.6 Surface Water and Sediment Sampling

OBJECTIVE: To characterize the surface water and sediments in the on-site quarry and drainage ditches.

METHOD: Two surface water samples from the on-site quarry pond and 2 water samples from the quarry outflow ditch will be collected using the procedures given in Appendix D. Proposed sample locations are shown in Figure 3. Each water sample will be analyzed for those NYSDEC Hazardous Substances List (HSL) parameters identified in Task 2.3 (Section 2.7).

Sediment samples will be collected from 4 different locations in the on-site quarry pond. Proposed sediment sample locations are shown in figure 3. Sediment sample depth will be 3 inches. The locations of the

individual samples will be documented for future reference. Two sets of two samples each will be composited by the laboratory for analysis. The incomposited portions of each sample will be retained by the laboratory. Selection of sample sets will be based on sample location. Two sediment samples will also be collected from the quarry outflow ditch (figure 3). The four sediment samples will be analyzed for those NYSDEC HSL parameters identified in task 2.3 (Section 2.7). The detection limit for PCBs will be 0.1 ppm. For the composite samples the detection limit for each sample will be 0.2 ppm. It is assumed that this sampling will occur at the same time as the ground water sampling; therefore, QA/QC will be addressed in conjunction with Task 2.5.

The sampling protocol for collecting surface water samples is given in Appendix D. USEPA Sampling protocols will be followed for sediment sampling (USEPA, 1982b).

OUTPUT: A laboratory report will be generated that will contain analytical results for NYSDEC HSL parameters in the surface water and sediment samples. The data output from the eight sample sets (4 surface waters, 2 composite sediment, and 2 sediments) will be used to assess the potential for contaminant migration to off-site receptors. This assessment will appear in the Discussion Section of the Final Report.

2.7 Sample Analysis

The following analytical methods will be used for analyzing the samples:

Sample Matrix	Analysis	USEPA Analytical Method (USEPA, 1982a)
Soil	Oil and Grease	9070
Soil	PCBs (detection limit of 5 ppm)	8080

Sample Matrix	Analysis	USEPA Analytical Method (USEPA, 1982a)
Soil	NYSDEC HSL	8080, 7,000 Series 9010, 8240, 8270
Soil & Sediment	Reduced NYSDEC HSL (PCBs, phenol)	8080, 8040
Water	Reduced NYSDEC HSL (PCBs, phenol)	608, 604
Air	PCBs	Note #1

Note: #1: Methodology in NYSDOH "Analytical Handbook" (1980) will be used.

2.8 Quality Assurance Project Plan

OBJECTIVE: To implement QA/QC protocols for maintaining sample integrity in the field and in the laboratory.

METHOD: The quality assurance project plan encompasses the protocols to be followed in the field and in the laboratory. In the field, the protocols in Appendices B-D will be followed for sampling techniques, decontamination, chain-of-custody procedures, and sample preservation. In the laboratory, chain-of-custody will involve recording of field information (i.e., time, location, and analyses requested), assigning a laboratory tracking number, and following the protocols listed in Section 2.7 (Analytical Methods for Samples). In addition, routine QA/QC laboratory protocol will be followed, including:

- Analysis of matrix spikes and matrix spike duplicates
- Analysis of reference standards
- Instrument calibration and maintenance logs
- Statistical analysis of QA/QC results

- Adherence to QA/QC acceptance criteria.

QA/QC acceptance criteria will be as follows:

BLANKS: If the concentration in a blank is greater than 10% of the maximum observed values in any sample or is twice the method detection limit (whichever is higher), then the sample results will be corrected for the blank values.

DUPLICATES: If duplicate concentrations are outside the normal quality control limits established by the laboratory, then the samples will be re-analyzed. The normal quality control limits are set at three times the standard deviation for the last three months as set forth by the USEPA (1982a).

SPIKES: If spike recovery is less than 75% or greater than 125%, then the theoretical results will be corrected for recovery.

OUTPUT: The QAPP will provide a valid data base that will be defendable under public scrutiny during any legal adjudication that may occur.

2.9 Final Report

OBJECTIVE: To generate a site investigation report that presents: the objectives of the study, a site description, the methodology used in the field and laboratory, the findings/results, a discussion of the results, a summary and conclusion, literature cited, tables, and figures.

METHOD: O'Brien & Gere personnel will prepare a draft report that addresses the questions posed by the objectives of this site investigation. This draft report will be submitted to the NYSDEC for review. One meeting to discuss the report will be held in Albany or Syracuse.

OUTPUT: A final report will be completed that is acceptable to all parties.

2.10 Work Schedule

A proposed work schedule is presented in Figure 4. The tasks are listed in the same order as section 2.0 of this proposal.

Figures

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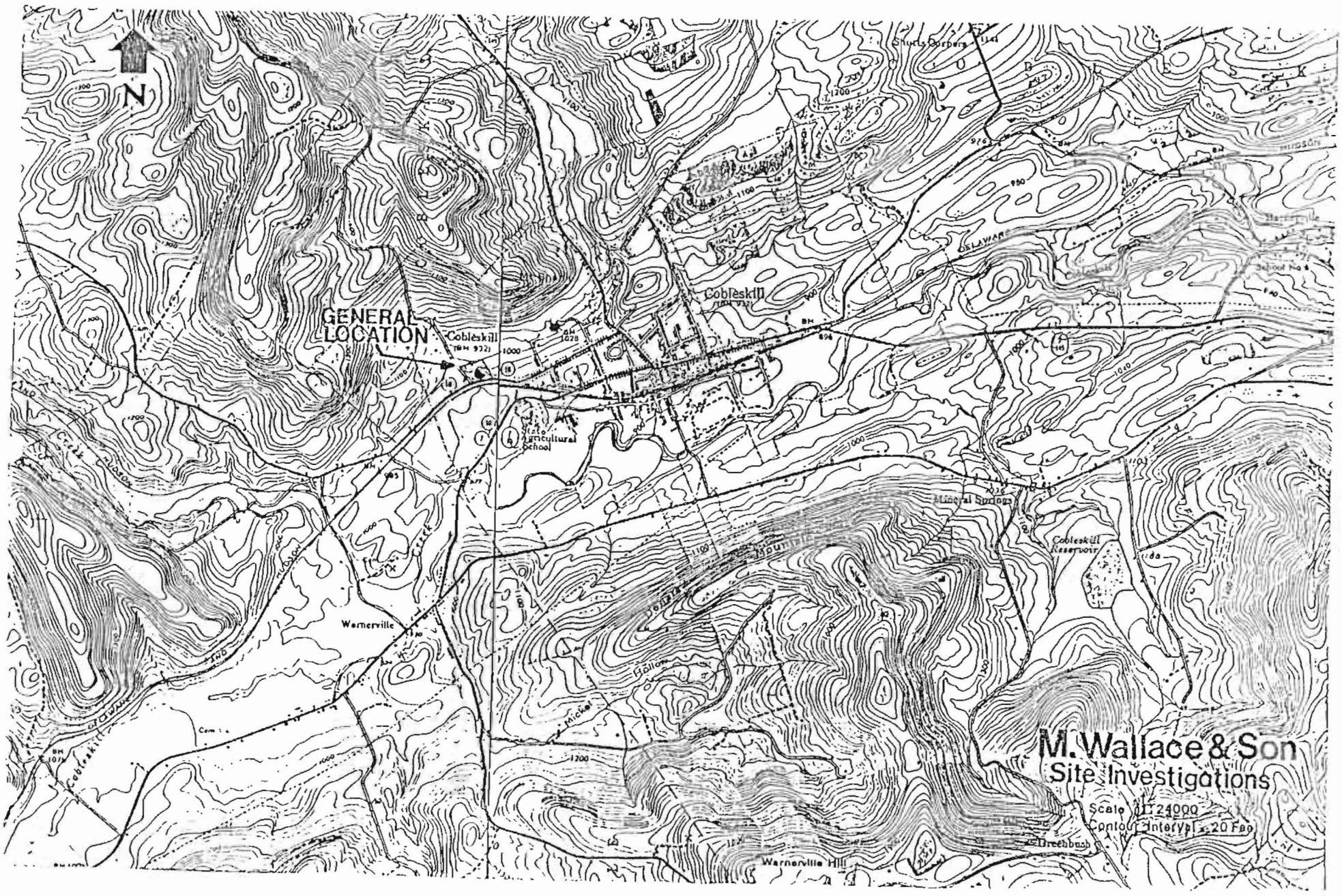
Figure 1.


N
GENERAL LOCATION
Cobleskill
Cobleskill
Cobleskill Reservoir
Mineral Springs
Warnerville
Warnerville Hill
Creekbush
M.Wallace & Son
Site Investigations
Scale 1" = 2000'
Contour Interval = 20 Feet

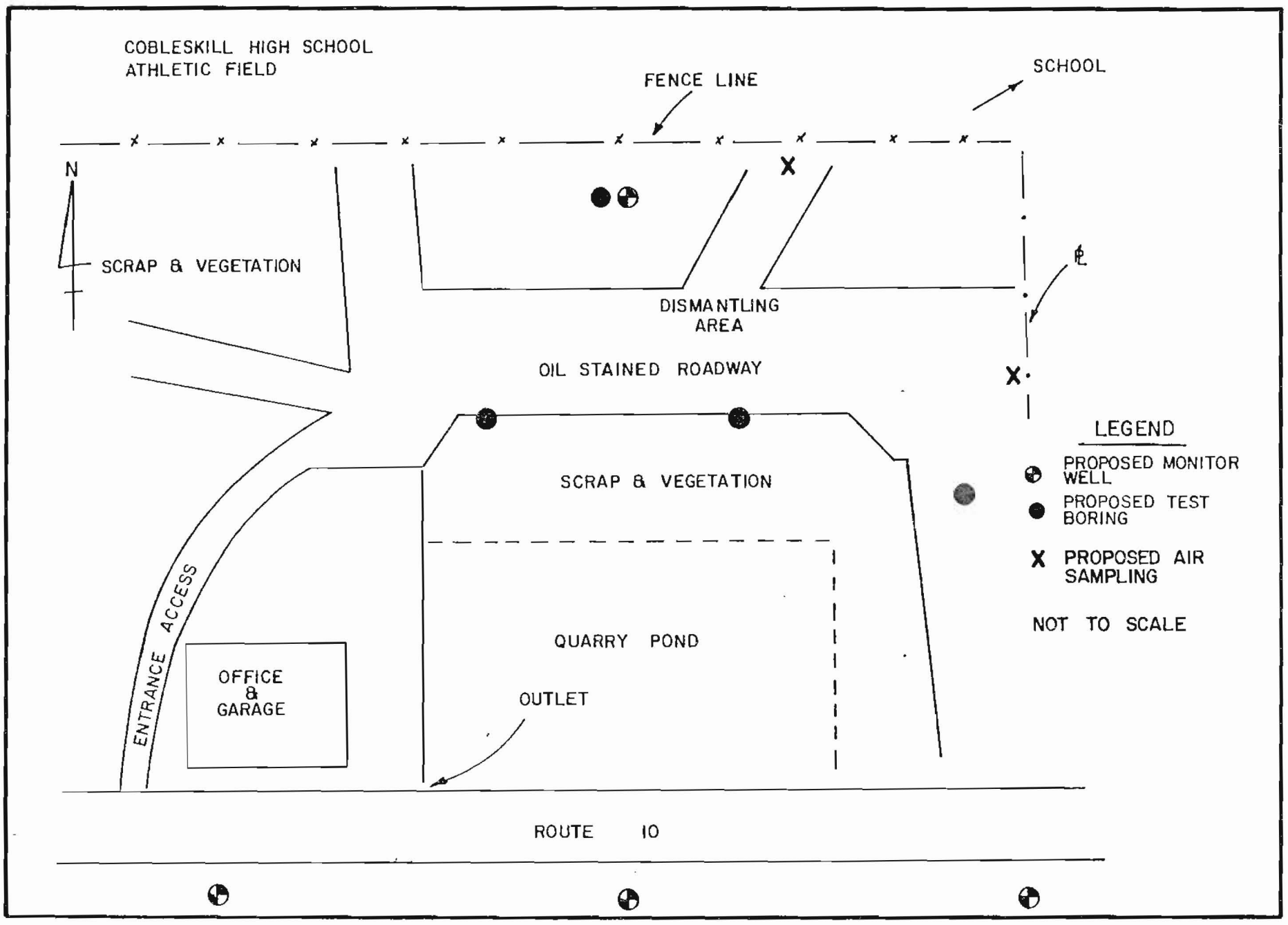


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FIGURE 2

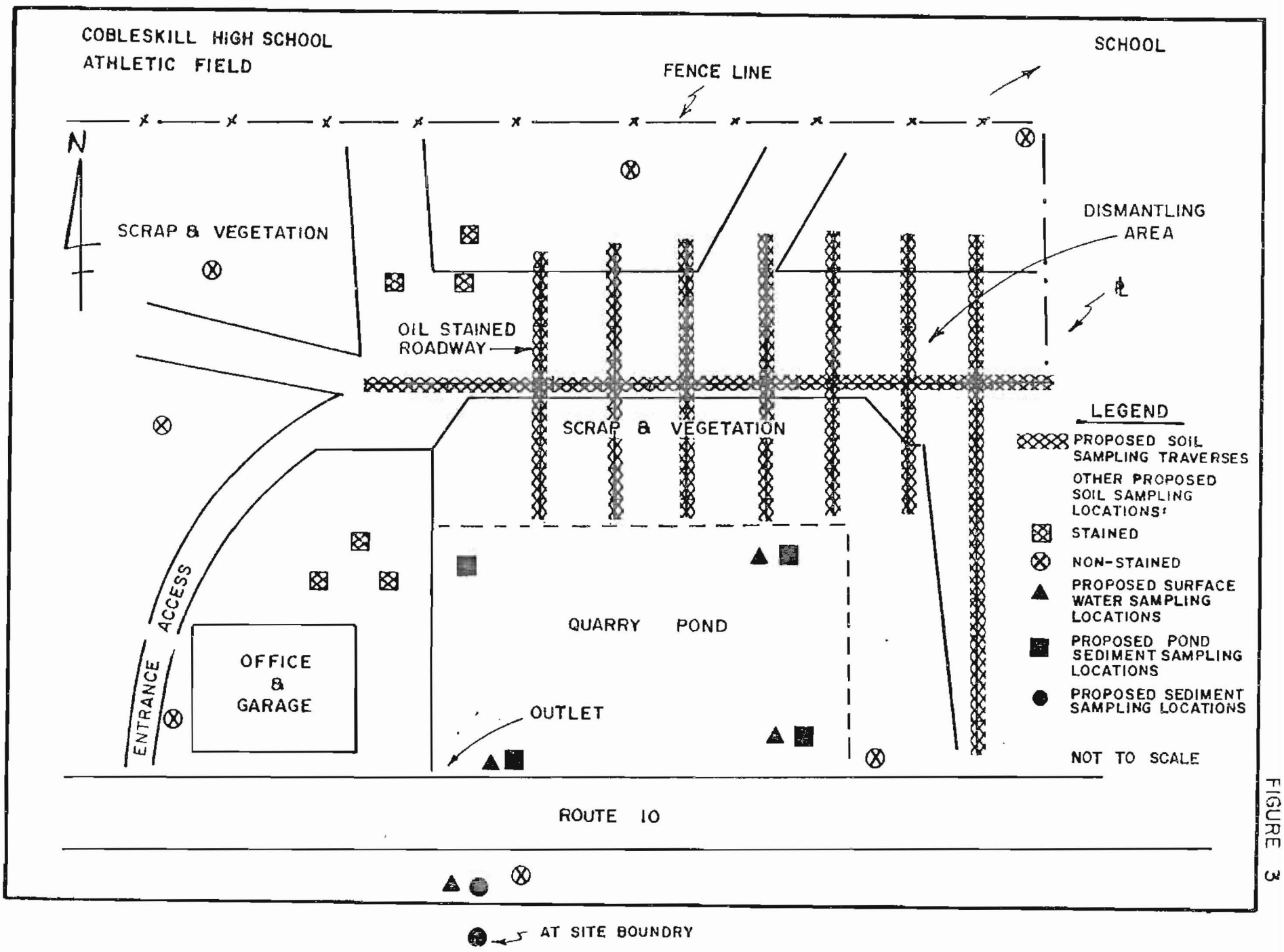

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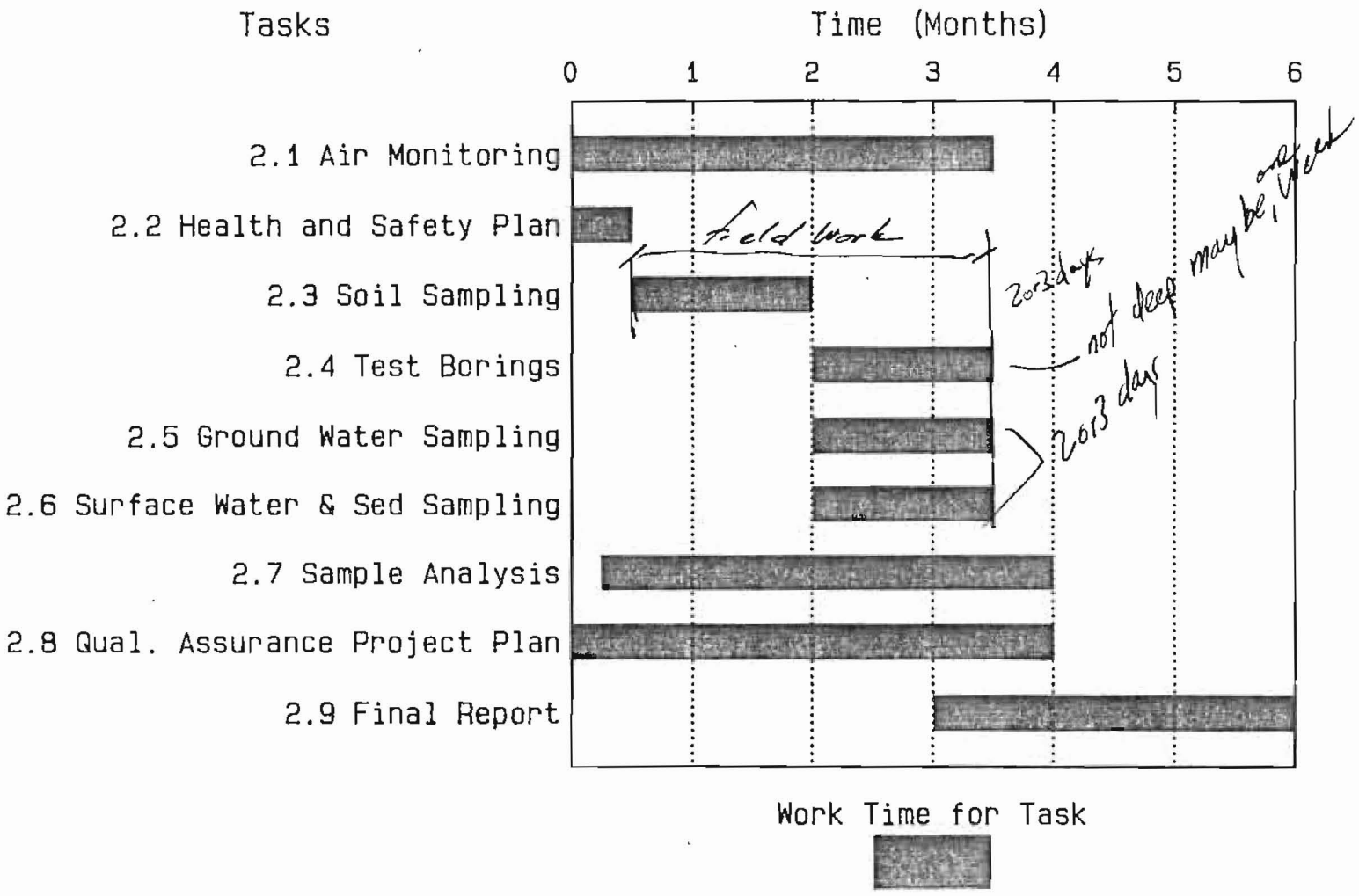
FIGURE 3

Figure 4. Proposed Schedule for the Site Investigation of the M. Wallace and Son, Inc. Scrapyard, Cobleskill, New York



O'Brien and Gere Engineers, Inc.
August 1987

Appendices

O'BRIEN & GERE

APPENDIX A

HEALTH AND SAFETY PLAN

GENERIC SAFETY PLAN

The following is the form to be used for the development of a project-specific safety plan for (name of client/project) . This is to be used for contracted/subcontracted work, in which the "sponsor" (client) requires a project safety plan for on-site activities. By following the directives and examples corresponding to each question, the form can be filled out in such a way that it will serve as a complete, comprehensive and effective safety plan for all activities involved with the specific project.

The basic areas of information on the form are:

I. Project Information
II. General Site Information
III. Work Site Hazards
IV. Safety Protocols and Procedures
V. Emergency Measures

Where applicable, portions of a previously established safety manual, describing general site safety protocols and practices, should be referenced, rather than repeated, within the Project Safety Plan.

I. PROJECT INFORMATION

A. Project Title _____

B. Organization

1. Primary "Sponsor" Representative (Project Supervisor):

Full Name _____ Location _____

Department _____ Phone # _____

2. "Sponsor" Safety Expert/Industrial Hygienist:

Full Name _____ Location _____

Department _____ Phone # _____

3. Project Manager/Coordinator (the contractor/subcontractor):

Full Name _____ Phone # _____

Address _____

_____

4. Project Safety Officer:

Full Name _____ Phone # _____

Address _____

_____

5. Other Authorized Project Personnel:

Name	Position	Company

The Project Manager is responsible for obtaining permission for for all subcontracted work activities involved with the project. Notification of specific requirements shall be the responsibility of the Project Supervisor.

The Project Safety Officer is responsible for advising his/her staff of the guidelines of this safety plan, as well as any safety protocols held by the "sponsor".

C. Description of Project

This should include the purpose and intent of the project, the type and extent of work required, notes of previous similar work and any noteworthy aspects or operations involved in the project. Attachments may be added to this form as necessary.

D. Identify Needs:

Equipment	Utilities	Materials

E. Time Schedule:

Phase	Start Date	Finish Date

E. Area Security:
Security is generally the responsibility of both the site owners (the sponsor) and the contractor/subcontractor. On-site security measures should be discussed during the initial safety training session. Specific protocols for various aspects of site security should be clearly explained by the Project Supervisor, adhered to by all project personnel, and enforced by sponsor personnel.

F. Communication:
The chain of comunication will be assumed to proceed from project personnel to Project Safety Officer and Project Manager, to Sponsor Project Supervisor. Any particular provisions for deviations from this usual route should be noted below:

_____

_____

_____

Any external communication is the sole responsibility of sponsor's public relations personnel.

II. GENERAL SITE INFORMATION

A. Work Site/Area Location _____

B. Access Point (sponsor rules) _____

C. Topography _____

D. Ground Cover _____

E. Features
(special conditions, buildings, obstacles, utilities, etc.):

_____

_____

F. Brief History
(incl. regulatory actions, previous use, previous similar work)

_____

_____

_____

III. WORK SITE HAZARDS

A. Hazardous Materials Present:

Compound	Concentration/Amount	Degree of Hazard

Note: all Material Safety Data Sheets corresponding to identified compounds listed above must be attached to this Plan.

B. Physical Hazards Present (including heavy equipment, electrical or biological hazards, oxygen deficiency, fire & explosion, radiation, excess temperature or noise):

C. Summary of Site Hazards

1. Check all of the following that are appropriate for chemical hazards:

____ Corrosive	____ Radioactive	____ Toxic
____ Ignitable	____ Volatile	____ Reactive

2. Evaluation of Expected Hazard

This section is to include a summary statement - what, if any, are the hazards, how significant are they, via what routes (oral, inhalation, direct contact) are they presented, what is(are) the major health threat(s), the specific areas of danger, and any other pertinent information.

IV. SAFETY PROTOCOLS AND PROCEDURES

A. Any specific, sponsor mandated safety protocols should be referenced below:

_____ _____

_____ _____

_____ _____

_____ _____

B. Level of Protection Required to Address Hazards Present:

____ A ____ B ____ C ____ D

(Refer to Attachment A for further description and selection criteria)

C. Modification or Specialized Equipment:

_____

_____

_____

D. Monitoring Equipment

1. List conditions requiring monitoring (airborne dust, vapors, heat stress, radiation, etc.)

_____

_____

_____

If a particular compound of concern is to be monitored, note the compound(s) next to the condition above.

2. Details on Monitoring Equipment

(a) List below the name of each piece of monitoring equipment to be employed:

1. _____

2. _____

3. _____

4. _____

(b) For each item listed above, put the corresponding number in all appropriate blanks below.

____ Fixed ____ Continuous ____ Instant Reading

____ Portable ____ Periodic ____ Analytical Results

(c) The details noted above provide the information to determine the personnel needed to maintain a proper monitoring program. Special consideration must be given to:

- the need to train personnel in the use of the equipment
- materials needed to properly utilize the equipment
- set-up of a monitoring station
- scheduling of the monitoring program
- scheduling of laboratory work for any necessary analyses

Note all provisions for the considerations just listed:

_____

_____

_____

_____

_____

(Again, attachments may be made to this form as necessary.)

E. Training, Use and Care of Personal Protective Equipment

All training of personnel on the proper use and care of the personal protective equipment to be employed is the responsibility of the Project Safety Officer, possibly with assistance from the Sponsor Safety Expert. No one is to attempt to wear and/or use the equipment without proper training.

Provision of all the proper safety equipment is the responsibility of the Project Manager and the Project Safety Officer. The Sponsor Safety Expert should be consulted if there is any question as to the appropriate equipment to provide.

F. Decontamination

The extent of decontamination is dependent on the level of personal protection involved, as well as the nature of the materials involved. Decontamination of workers and personal protective equipment employing Level B protection generally progresses through the following steps:

1. Tools, sampling devices, containers, monitoring instruments, radios, clipboards, and all other items of equipment used in the work zone are deposited on

a drop cloth of plastic.

2. Outer boots and outer gloves are scrubbed with detergent water and rinsed with abundant water.

3. The tape which sealed the boots and gloves to the outer protective suit is removed. These boots and gloves are removed, and they along with the sealing tape are placed in separate containers lined with plastic.

4. If a worker is leaving the work zone just to change a cartridge or the entire respirator, this is the point at which the worker does so. Following the exchange, new outer gloves and boot covers are donned; the joints are taped; and, the worker returns to duty.

5. The protective suit is removed and deposited in plastic-lined disposal container.

6. Respirators are removed and cleaned with detergent water by personnel assisting with the decontamination process.

7. Inner gloves are removed and deposited in plastic-lined disposal containers.

8. The worker showers and changes clothes to complete the decontamination process.

9. Tools and equipment, including heavy machinery used on the site, are decontaminated by decontamination line personnel wearing the proper personal protective equipment and clothing. Gross accumulations of contaminated soil are swept or scraped off. All surfaces which have contacted the contaminated wastes are steam-cleaned or washed with detergents and rinsed.

Decontamination procedures for lower levels of protection would necessarily be less involved.

Note any project-specific details and provisions on decontamination procedures for the following:

1. Personnel _____
_____
_____
_____

2. Personal Protective Equipment _____
_____
_____
_____

3. Sampling Equipment _____

_____
_____
_____

4. Support Equipment_____
_____
_____
_____

5. Materials Needed for All Decontamination Procedures_____
_____
_____
_____

All wastes or waste streams generated by decontamination activities must be collected and disposed of as hazardous wastes. Sponsor personnel should be consulted for specific, onsite requirements for disposal of contaminated materials.

V. EMERGENCY MEASURES

A. Emergency Phone Numbers

Site Medical Department (if one exists) _____
Ambulance_____
Police_____
Fire Department_____
Hospital_____
Poison Control Center_____
EPA_____
State Environmental Agency_____
Coast Guard_____
Utilities_____

B. Location/Directions to:

Nearest Phone_____
Other Emergency Communications_____
_____
Site Medical_____
_____
Hospital_____
_____

Note! - All Material Safety Data Sheets MUST be attached to this safety plan, and a copy of this must remain onsite at all times.

C. Response to Incidents as listed below should follow the basic steps explained with each:

1. Major Release of Hazardous Material - the general order of response should be:
   - Containment - using absorbent booms, blankets, or granular materials.
   - Clean-up - of hazardous material and all contaminated articles (including soils) using additional absorbent materials.
   - Disposal - of all polluted materials as hazardous waste.
   - Investigation - into the cause, and future prevention.

   An investigation is to be conducted for all injuries/ illnesses/serious incidents.

2. Major Exposure
   - Notify Project Safety Officer, Project Manager, Project Supervisor, Site Medical Department, and the site rescue team, if such exists.
   - Remove victim from area only if necessary, using a stretcher
   - Administer preliminary first aid, if trained in such
   - Victim will be transported to treatment at the direction

of the Project Safety Officer and the Sponsor Safety Expert
Investigation

3. Medical Crisis
   Follow procedures in 2. above

4. Fire and/or Explosion
   Evacuate area
   Contact Fire Department
   Follow procedures in 2. above

5. Accident Involving Equipment
   Follow procedures in 2. above

6. Flood
   Disconnect all equipment and utilities, if possible
   Evacuate personnel (and equipment, if time permits)

D. Onsite Facilities Available
The site medical department is to be utilized at the direction of Sponsor personnel. Site rescue teams may be available to respond to emergency needs. Also, the location of safety showers, eyewash facilities, stretchers and rescue blankets should be noted, and all project personnel made aware of the locations.

E. Procedures for Contacting Offsite Facilities
All incidents requiring the response of offsite facilities must be reported to the Project Safety Officer, and Project Supervisor. It will be the responsibility of the Project Supervisor to contact the appropriate outside resonse agency.

F. Follow-Up
1. Documentation
   Documentation is important in understanding an incident and planning to prevent any similar incidents in the future. A report must be filed with the Project Supervisor for all incidents of worker illness or injury.

2. Restore to Order
   Work shall not be continued until all equipment has been restored to readiness, in order to be fully prepared for any future incidents.

ATTACHMENT A

Selection of personal protective equipment involves definition of the level of protection required. The following guidelines should be used in making this determination:

Level A Provides the highest level of respiratory, skin and eye protection. This level should be employed when a chemical is either suspect or identified which requires the skin and eye protection, while measured and/or expected levels of airborne contaminants merit the respiratory protection. This should also be used in confined, poorly ventilated areas, until conditions merit a downgrade to a less stringent level.

Level B Provides the highest level of respiratory protection, but lesser levels of skin and eye protection. This is the minimum level recommended during initial visits to the site and then until the nature of the hazards has been determined to demand less protection. Specific respiratory requirements include conditions with IDLH (Immediate Danger to Life and Health) concentrations of substances that do not present a severe skin hazard, contaminants which exclude the use of air-purifying respirators, atmospheres containing less than 19.5% oxygen, or situations of unidentified or unquantified airborne contaminants.

Level C Criteria for using air-purifying respirators is met but skin and eye exposure is unlikely. Hazardous airborne substances are identified and quantified.

Level D No respiratory protection. Minimal skin protection - only that typical of any construction site. For situations which contain no known hazards.

The following checklist, taken from the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities", designates the personal protective equipment, both recommended and optional, for each of the levels discussed above.

	LEVEL A	B	C	D
Positive-pressure (pressure demand), self-contained, breathing apparatus (SCBA)* or pressure-demand supplied-air respirator with escape SCBA*	•	•		
Full-face, air-purifying respirator*			•	
Fully-encapsulating, chemical-resistant suit	•			
Chemical-resistant clothing		•	•	
Chemical-resistant inner gloves	•	•	•	
Chemical-resistant outer gloves	O	•	•	O
Chemical resistant overboots	•	•	•	
Boots or shoes with steel toe and shank	•	•	•	•
Thermal Luminescent Detector badge (radiation)	O	O	O	
Personal radiation detector	O	O	O	
Hard hat	O	•	•	•
Coveralls	O	O	O	•
2-way radio communications (intrinsically safe)	•	•	•	
Escape mask			O	
Safety eyewear				•

*=OSHA/NIOSH approved.
•=Recommended
O=Optional

APPENDIX B

SOIL SAMPLING PROTOCOL

SOIL SAMPLING PROTOCOL

The simplest, most direct method of collecting soil samples for subsequent analysis is with the use of a spade and scoop. A normal lawn or garden spade can be used to remove the top cover of soil to the required depth and then a smaller stainless steel scoop can be used to collect the sample.

Uses

This method can be used in most soil types but is limited somewhat to sampling the near surface. Samples from depths greater than 50 cm become extremely labor intensive in most soil types. Very accurate, representative samples can be collected with this procedure depending on the care and precision demonstrated by the technician. The use of a flat, pointed mason trowel to cut a block of the desired soil will be of aid when undisturbed profiles are required. A stainless steel scoop will suffice in most other applications. Avoid using devices plated with chrome or other materials. Plating is particularly common with garden implements such as potting trowels.

Procedures for Use

1. Carefully remove the top layer of soil to the desired sample depth with a spade.

2. Using a stainless steel scoop or trowel, collect the desired quantity of soil.

3. Transfer sample into an appropriate sample bottle with a stainless steel lab spoon or equivalent.

4. Check that a Teflon liner is present in the cap if required. Secure the cap tightly. The chemical preservation of solids is generally not recommended. Refrigeration is usually the best approach supplemented by a minimal holding time.

5. Label the sample bottle with the appropriate sample tag. Be sure to label the tag carefully and clearly, addressing all the categories or parameters. Complete all chain-of-custody documents and record in the field log book.

6. Place the properly labeled sample bottle in an appropriate carrying container maintained at 4°C throughout the sampling and transportation period.

7. Clean the sampling scoop by rinsing with control water, acetone mixture, and finally distilled water. Store the cleaned tool(s) in aluminum foil.

APPENDIX C

GROUND WATER SAMPLING PROTOCOLS

GROUND WATER SAMPLING PROTOCOL

Sampling Procedures

Use of the following procedures for the sampling of ground water monitoring wells is dependent upon the size and depth of the well to be sampled and the volume of ground water in the well. To obtain representative ground water samples from wells containing only a few gallons of ground water, the bailing procedure is preferred. To obtain representative ground water samples from wells containing more than a few gallons, the pumping procedure generally facilitates more rapid sampling. Each of these procedures is explained in detail below.

A. Sampling Procedures (BAILER)

1. Identify the well and record the location in the Ground Water Sampling Field Log.
2. Put on a new pair of disposable gloves.
3. Cut a slit in the center of the plastic sheet, and slip it over the well creating a clean surface onto which the sampling equipment can be positioned. This clean working area should be a minimum of 10 feet by 10 feet.
4. Clean all meters, tools, equipment, etc., before placing on the plastic sheet.
5. Disposable shoe covers should be placed over the sampler's shoes to prevent potential contamination from dirty shoes contacting the

plastic sheet. Do not kick, transfer, drop, or in any way let soils or other materials fall onto this plastic sheet unless it comes from inside the well.

6. Clean the well cap with a clean towel, and remove the well cap and plug placing both on the plastic sheet.
7. Using an electric well probe, measure the depth of the water table and the bottom of the well. Record this information in the Ground Water Sampling Field Log.
8. Clean the well depth probe with an acetone soaked towel and rinse it with distilled water after use.
9. Compute the volume of water in the well, and record this volume in the Ground Water Sampling Field Log.
10. Attach enough polypropylene rope to a bailer to reach the bottom of the well, and lower the bailer slowly into the well making certain to submerge it only far enough to fill it one-half full. The purpose of this is to recover any oil film, if one is present on the water table.
11. Pull the bailer out of the well keeping the polypropylene rope on the plastic sheet. Empty the ground water from the bailer into a new glass quart container and observe its appearance. NOTE: This sample will not undergo laboratory analysis, and is collected to observe the physical appearance of the ground water only.
12. Record the physical appearance of the ground water in the Ground Water Sampling Field Log.
13. Lower the bailer to the bottom of the well, and agitate the bailer up and down to resuspend any material settled in the well.
14. Initiate bailing the well from the well bottom making certain to keep the polypropylene rope on the plastic sheet. All ground water

should be dumped from the bailer into a graduated pail to measure the quantity of water removed from the well.

15. Continue bailing the well until at least three volumes of water (previously calculated) are removed prior to sampling. If the well is bailed dry, allow sufficient time for the well to recover before proceeding with Step 16. Record this information in the Ground Water Sampling Field Log.

16. Remove the sampling bottles from their transport containers and prepare the bottles for receiving samples. Inspect all labels to insure proper sample identification. Sample bottles should be kept cool with their caps on until they are ready to receive samples. Arrange the sampling containers to allow for convenient filling. Always fill the containers labeled purgeable priority pollutant first. Filter and add preservatives to appropriate samples.

17. To minimize agitation of the water in the well, initiate sampling by lowering the bailer slowly into the well making certain to submerge it only far enough to fill it completely. Fill the appropriate sample containers. Return each sample bottle to its proper transport container.

18. If the sample bottle cannot be filled quickly, keep them cool with the caps on until they are filled. The vials (3) labeled purgeable priority pollutant analysis should be filled from one bailer then securely capped. NOTE: Samples must not be allowed to freeze.

19. Record the physical appearance of the ground water observed during sampling in the Ground Water Sampling Field Log.

20. After the last sample has been collected, record the date and time, and empty one bailer of water from the surface of the water in the well into the 200 ml beaker and measure and record the pH, conductivity and temperature of the ground water following the procedures outlined in the equipment operation manuals. Record this information on the Ground Water Sampling Field Log. The 200 ml beaker must then be rinsed with acetone and distilled water prior to reuse.
21. Begin the Chain of Custody Record. A separate form is required for each well with the required analysis listed individually.
22. Replace the well plug, and lock the well protection assembly before leaving the well location.
23. Place the polypropylene rope, gloves, rags, and plastic sheeting into a plastic bag for disposal.
24. Clean the bailer by rinsing with control water, acetone mixture, and finally distilled water. Store the clean bailer in a fresh plastic bag.

B. Sampling Procedures (PUMP)

1. Identify the well and record the location in the Ground Water Sampling Field Log.
2. Put on a new pair of disposable gloves.
3. Cut a slit in the center of the plastic sheet, and slip it over the well creating a clean surface onto which the sampling equipment can be positioned. This clean working area should be a minimum of 10 feet by 10 feet.

4. Clean all meters, tools, equipment, etc., before placing on the plastic sheet.
5. Disposable shoe covers should be placed over the sampler's shoes to prevent potential contamination from dirty shoes contacting the plastic sheet. Do not kick, transfer, drop, or in any way let soils or other materials fall onto this plastic sheet unless it comes from inside the well.
6. Clean the well cap with a clean towel, and remove the well cap and plug placing both on the plastic sheet.
7. Using an electric well probe, measure the depth of the water table and the bottom of the well. Record this information in the Ground Water Sampling Field Log.
8. Clean the well depth probe with an acetone soaked towel and rinse it with distilled water after use.
9. Compute the volume of water in the well, and record this volume in the Field Log.
10. Attach enough polypropylene rope to a bailer to reach just below the surface of the water table, and lower the bailer slowly into the well making certain to submerge it only far enough to fill it one-half full. The purpose of this is to recover any oil film, if one is present on the water table.
11. Pull the bailer out of the well keeping the polypropylene rope on the plastic sheet. Empty the ground water from the bailer into a new glass quart container and observe its appearance. NOTE: This sample will not undergo laboratory analysis, and is collected to observe the physical appearance of the ground water only.

12. Record the physical appearance of the ground water in the Ground Water Sampling Field Log.

13. Prepare the submersible pump for operation. A pump with a packer inflated above the screened interval is preferred.

14. Lower the pump to the bottom of the well and pump the ground water into a graduated pail. Pumping should continue until at least three volumes of water (previously calculated) have been removed or the well is pumped dry. If the well is pumped dry, allow sufficient time for the well to recover before proceeding with Step 16. Record this information in the Ground Water Sampling Field Log.

15. Remove the sampling bottles from their transport containers, and prepare the bottles for receiving samples. Inspect all labels to insure proper sample identification. Sample bottles should be kept cool with their caps on until they are ready to receive samples. Arrange the sampling containers to allow for convenient filling. Always fill the vials labeled purgeable priority pollutant first. Filter and add preservatives to appropriate samples.

16. With submersible pump raised to a level just below the surface of the water in the well, fill the appropriate sample containers. Return each sampling bottle to its proper transport container. NOTE: While filling the sample vial labeled purgeable priority pollutant analysis, insure that the submersible pump intakes are located at a sufficient depth below the surface of the water to insure air is not introduced while filling the vials.

17. If the sample bottle cannot be filled quickly, keep them cool with the caps on until they are filled. NOTE: Samples must not be allowed to freeze.

18. Record the physical appearance of the ground water observed during sampling in the Ground Water Sampling Field Log.

19. After the last sample has been collected, record the date and time, and pump from the surface of the water in the well into the 200 ml beaker and measure and record the pH, conductivity and temperature of the ground water following the procedures outlined in the equipment operation manuals. Record this information in the Ground Water Sampling Field Log. The 200 ml beaker must then be rinsed with acetone and distilled water prior to reuse.

20. Begin the Chain of Custody Record. A separate form is required for each well with the required analysis listed individually.

21. Remove the submersible pump from the well and clean the pump and necessary tubing both internally and externally. Cleaning is comprised of rinses with source water, acetone mixture, and distilled water using disposable towels and separate wash basins. The pump should then be returned to its covered storage box.

22. Replace the well plug, and lock the well protection assembly before leaving the well location.

23. Place the gloves, towels, disposable shoe covers and plastic sheet into a plastic bag for disposal.

APPENDIX D

SURFACE WATER AND SEDIMENT SAMPLING PROTOCOL

SURFACE WATER SAMPLING PROTOCOL

When sampling from an open body of water (stream or pond) care must be exercised to collect a representative sample. The sample should cause as little disturbance to the water body as possible. Avoid taking a sample of water which shows evidence of sediment, debris or other material which may have been stirred up by the presence of the sampler.

Surface Water Sampling

Surface water samples should be taken from 2 to 5 (or more) points spaced equally across the width of the stream or pond. The specific number of points may be determined in the field and should be adequate to accurately reflect the size of the water body being sampled. At each point, subsamples should be collected, representative of the total depth of the stream. The subsamples may then be composited into a single sample for analysis dependent upon the intent of the sampling program. For small, shallow streams, a single sample, collected just below the surface at the stream's midpoint may be adequate for sampling and analyses purposes.

Whether samples are obtained from a boat, a bridge, or by wading into the water body, samples should be taken while facing upstream, away from the influence of the sampler on stream flow.

Collection is accomplished by submerging a clean container at the sampling point to the depth required. For deep streams or ponds, a Kemmer, VanDorn or other sampler specifically designed for this purpose may be used. For

shallow (i.e. less than three feet deep) locations, an inverted sample container may be carefully submerged by hand and then slowly allowed to fill.

Samples should then be placed in the proper containers, preserved as necessary for the analyses to be run and stored in an insulated ice cooler at 4°C. All pertinent information should be recorded including sample date and location, sample identification and chain-of-custody forms.

Sediment Sampling Protocol

A sediment sampling device such as a Ponar, Ekman, Tall Ekman, or Peterson (USEPA, 1986b) will be used from a boat to collect sediment samples.