

STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the
Development and Implementation
of a Phase II Investigation
Program for an Inactive
Hazardous Waste Disposal Site,
Under Article 27, Title 13,
of the Environmental Conser-
vation Law of the State of
New York (the "ECL") by

ORDER ON CONSENT

INDEX # W3-0112-87-04
SITE # 360014

NAPPI COLONIAL CONCRETE COMPANY, INC.,

Respondent.

WHEREAS,

1. The New York State Department of Environmental Conservation (the "Department") is responsible for enforcement of Article 27, Title 13, of the Environmental Conservation Law of the State of New York ("ECL"), entitled "Inactive Hazardous Waste Disposal Sites."

2. Nappi Colonial Concrete Company, Inc. ("Respondent") a corporation organized and existing under the laws of the State of New York, is doing business in the State of New York in that Respondent owns and operates a concrete batching plant on Harris Road, Town of Bedford, County of Westchester, State of New York. This location is also known as the "Colonial Sand and Gravel" property (the "Site"). A map of the Site is attached to this Order as Appendix "A".

3. Respondent is a person responsible in that: Beginning at a time prior to 1987 and continuing to present, Respondent was the owner and operator of the Site where certain hazardous wastes may have been generated and disposed of.

4. The Site may be an inactive hazardous waste disposal site, as that term is defined in ECL Section 27-1301(2), and has been listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 360014.

5. The Department has identified and classified the Site pursuant to ECL Section 27-1305, under classification 2a, which is a temporary classification assigned to suspected "sites that have inadequate and/or insufficient data for conclusion in any of the other classifications."

6. The Department and Respondent acknowledge that the goals of this Order shall be that Respondent shall develop and implement a Phase II investigation program to:

(1) determine if wastes are present at the Site and, if so, the nature of such wastes and the areal and vertical extent and distribution of such wastes;

(2) determine the actual or potential for release or migration of such wastes or contaminants derived therefrom; and

(3) obtain information necessary for the Commissioner of Environmental Conservation to determine if the Site poses a significant threat to public health or the environment.

7. Respondent, without admitting any liability, having waived its right to a hearing herein as provided by law, and having consented to the issuance and entry of this Order, agrees to be bound by the terms hereof.

NOW, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. All investigations, work plans, reports, and plans, supplements and revisions thereto required by this Order, shall address on-Site contamination, if any, and impacts caused by the disposal of hazardous wastes at the Site, if any, and shall be prepared, designed and executed in accordance with Requisite Technology. As used in this Order, "Requisite Technology" means engineering, scientific and construction principles and practices subject to the Department's approval, which (a) are technologically feasible, and (b) will most effectively identify any present or potential significant threat to the public health or the environment posed by the disposal of hazardous wastes, if any, at the Site.

The failure of Respondent to submit or undertake a required Work Plan, Phase II Investigation, Report, or any supplement or revision thereof which is in accordance with Requisite Technology, shall constitute a violation of this Order.

II. As used herein, "hazardous wastes" shall mean hazardous wastes, as defined at ECL Section 27-1301(1) and 6 NYCRR 371, and any constituents or degradation products of such wastes.

III. Respondent shall undertake a Phase II investigation of the Site and, if necessary, of areas off-Site affected by the possible disposal of hazardous wastes on-Site ("Phase II investigation").

IV. All submittals made by Respondent pursuant to this Order shall be subject to Departmental review. Within the time limits set forth by Table No. 1 herein, the Department shall approve or disapprove each submittal in writing.

If the Department approves a submittal, Respondent shall perform the specified work or continue with Respondent's obligations under the Order in accordance with the terms of the approval or Order and under the Department's supervision.

The submittal, once approved by the Department, shall be appended to and made a part of this Order.

If the Department disapproves a submittal, the Department shall notify Respondent in writing of the reasons for such disapproval. Within the time limits set forth by Table No. 1 herein, the Respondent shall revise and resubmit the submittal, addressing each of the Department's objections. Within fifteen (15) days of receipt of the revised submittal, the Department shall approve or disapprove the revised submittal in writing. If the Department approves the revised submittal, Respondent shall perform the specified work or continue with Respondent's obligations under the Order in accordance with the terms of the approval or Order and under the Department's supervision.

If the Department disapproves the revised submittal, Respondent shall be in violation of this Order, not having submitted an approvable document in accordance with the terms of this Order.

Table No. 1

Submittals

<u>Submittal</u>	<u>Consent Order Paragraph</u>	<u>Days after Receipt for Department Review</u>	<u>Days to Prepare and submit Revision</u>
Work Plan	V	30 days	30 days
Report	VIII, IX	60 days	60 days

V. Within 30 days after the effective date of this Order, Respondent shall submit to the Department a Work Plan outlining the nature and extent of the work to be undertaken in conducting the Phase II investigation. At a minimum, the Work Plan shall meet the requirements of the Phase II Generic Workplan attached hereto, and made a part hereof, as Appendix "B", and shall include the name of the consulting firm(s), contractor(s) and laboratory to be performing the work.

VI. The approved Work Plan or the approved revised Work Plan shall be attached hereto and shall be incorporated into this Order as Appendix "C". Such Work Plan shall hereafter be referred to as the "Work Plan".

VII. Within 120 days of the Work Plan being approved, Respondent shall submit to the Department a Phase II Investigation Report (the "Report"), founded upon its performance of the Phase II Investigation in accordance with the Work Plan. The Report shall include all data generated, and all other information obtained during the Phase II Investigation, and completed site hazard ranking score sheets. The Report shall contain a certification by Respondent's consultant that the Phase II Investigation was completed in full compliance with the Work Plan.

VIII. Within the timetable set forth in Table No. 1 in Paragraph IV herein, and under the terms set forth in Paragraph IV, the Department shall determine if the Phase II Investigation was conducted, and the Report prepared in accordance with, the terms of this Order and the Work Plan.

IX. The approved Report or the approved Revised Report shall be attached hereto and shall be incorporated into this Order as Appendix "D". This Report shall hereafter be referred to as the "Approved Report".

X. The Department reserves the right to require a modification and/or an amplification and expansion of the Phase II Investigation and Report by Respondent to address specific off-Site areas if the department determines that off-Site investigation is necessary, as a result of reviewing data generated by the Phase II Investigation or as a result of reviewing other data or facts.

XI. The Department shall review the Report and shall use the Report (and completed forms) as the basis of the development of the Site Hazard Ranking Score assigned to the Site for State Superfund Site ranking purposes.

XII. The Department shall have the right to obtain "split samples" of all substances and materials sampled by Respondent pursuant to this Order.

XIII. Respondent shall provide notice to the Department of any field work to be conducted (including but not limited to excavating, drilling or sampling) pursuant to the terms of this Order at least 5 days in advance of such activities.

XIV. Respondent shall take all reasonable steps to obtain whatever permits, easements, rights-of-way, rights-of-entry, approvals or authorizations that are necessary in order to perform the Phase II Investigation and all of Respondent's other obligations pursuant to this Order.

XV. Respondent shall permit any duly designated officer, employee, consultant, contractor or agent of the Department to enter upon the Site or areas in the vicinity of the Site which may be under the control of Respondent, and any areas necessary to gain access thereto, for purposes of inspection and of making or causing to be made such sampling and tests as the Department deems necessary, and for assurance of Respondent's compliance with the terms of this Order.

XVI. Respondent shall retain a third-party professional consultant, contractor and/or technically acceptable laboratory to perform the technical, engineering and analytical obligations required by this Order. Said consultant, contractor and/or laboratory shall have demonstrable experience, capabilities and qualifications in the type of work which they will be performing. The Respondent shall be required to have a health and safety plan prepared and certified by appropriately trained specialists experienced in health and safety operations at hazardous waste disposal sites.

XVII. Respondent shall not suffer any penalty under any of the terms of this Order, or be subject to any proceeding or actions for any remedy or relief if it cannot comply with any requirements hereof because of an act of God, war, riot, or other condition as to which negligence or willful misconduct on the part of Respondent was not a proximate cause, provided however, that Respondent shall immediately notify the Department in writing when it obtains knowledge of any such condition and request an extension or modification of the terms of this order.

XVIII. Within 30 days of the Department's approval of the Report, and after receiving a bill from the Department, Respondent shall pay to the Department a sum of money which shall be determined by the Department and which shall represent

reimbursement for the expenses including, but not limited to, direct labor, overhead, analytical costs and contractor costs incurred by the State of New York for reviewing the Work Plan and Report, for overseeing the Phase II Investigation and for the collection and analysis of samples. Such payment shall be to the Hazardous Waste Remedial Fund.

XIX. The failure of Respondent to comply with any material term of this Order shall constitute a default and a failure to perform an obligation under this Order and under the ECL.

XX. Nothing contained in this Order shall be construed as barring, diminishing, adjudicating or in any way affecting:

a. any legal or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against anyone other than Respondent, its directors, officers, employees, servants, agents, successors and assigns;

b. the Department's right to enforce at law or in equity the terms and conditions of this Order against Respondent, its directors, officers, employees, servants, agents, successors and assigns in the event that Respondent shall fail to satisfy any of the terms hereof;

c. the Department's right to bring any action at law or in equity against Respondent, its directors, officers, employees, servants, agents, successors and assigns with respect to areas or resources that may have been affected or contaminated as a result of the release or migration of hazardous wastes from the Site; and

d. the Department's right to bring any action or proceeding to which it may be entitled in connection with, relating to, or arising out of the presence of hazardous wastes at the Site or the release or migration of hazardous wastes from the Site.

XXI. The terms of this Order shall not be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers, either at common law or as granted pursuant to statute or regulation.

XXII. Respondent shall indemnify and hold the Department, the State of New York, and their representatives and employees harmless for all claims, suits, actions, damages and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of the terms of this order by Respondent, its directors, officers, employees, servants, agents, successors or assigns.

XXIII. The effective date of this Order shall be the date it is signed by the Commissioner.

XXIV. If Respondent desires that any terms of this Order be changed, Respondent shall make timely written application to the Commissioner, setting forth reasonable grounds for the relief sought.

XXV. In the event that Respondent proposes to convey the whole or any part of its ownership interest in the Site, Respondent shall, not fewer than 30 days prior to the consummation of such proposed conveyance, notify the Department in writing of the identity of the transferee and of the nature and date of the proposed conveyance. In advance of such proposed conveyance, Respondent shall notify the transferee in writing, with a copy to the Department, of the applicability of this Order.

XXVI. A. All communication required by this Order to be made between the Department and Respondent shall be made in writing and transmitted by United States Postal Service, first class or hand delivered to the address listed below.

B. Communication to be made from Respondent
to the Department shall be made as follows:

1. Two copies to: The Division of Hazardous Waste Remediation
Room 220, 50 Wolf Road - Room 212
Albany, New York 12233-4010
Attn: Michael J. O'Toole P.E., Dir.
2. Two copies to: The Division of Environmental Enforcement

202 Mamaroneck Avenue Room 304
White Plains, New York 10601-5381
Attn: Robert J. Owens, Esq., Sr. Attorney
3. Two copies to: NYS Department of Environmental Conservation

Region 3 - 21 South Putt Corners Road
New Paltz, N.Y. 12561
Attn: Regional Director
4. Two copies to: NYS Department of Health

Bureau of Env. Exposure Investigation
2 University Place - Rm 205
Albany, New York 12203
Attn: Ronald Tramontano, P.E.

C. Communication to be made from the Department
to Respondents shall be made as follows:

1. One copy to: Mr. Louis Nappi
Nappi Colonial Concrete Company
599 W. Hartsdale Avenue
White Plains, New York 10607
2. One copy to: Mr. Tom Julius
Northbrook Realty Group
22 Westchester Avenue
Suite 300
White Plains, New York 10604
3. One copy to: Berle, Kass & Case
45 Rockefeller Plaza
New York, New York 10111
Attn: Charles S. Warren, Esq.

4. One copy to: Jay Kushner, Esq.
Altieri, Kushner, Miuccio &
Frind, P.C.
60 East 42nd Street
New York, New York 10165

D. The Department and Respondent respectively reserve the right to designate other or different individuals and/or addresses on notice to the other.

XXVII. The terms of this Order shall be deemed to bind Respondent, its officers, directors, agents, servants, employees, successors and assigns.

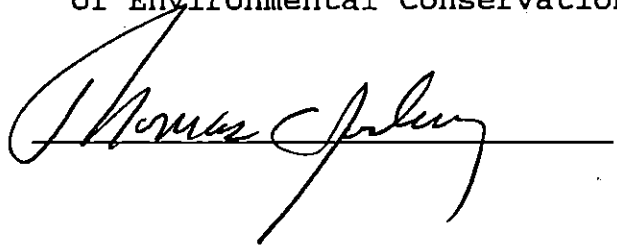
XXVIII. Nothing herein shall be construed to bind any entity not specifically bound by the terms of this Order.

XXIX. The terms hereof shall constitute the complete and entire Order between Respondent and the Department concerning the Site. No terms, conditions, understandings or agreements purporting to modify or vary the terms hereof shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestions or comments by the Department regarding reports, work plans, specifications, schedules or any other writing submitted by Respondent shall be

construed as relieving Respondent of its obligations to obtain such formal approvals as may be required by this order.

DATED: *Albany*, New York
Nov. 12, 1988

THOMAS C. JORLING
Commissioner
New York State Department
of Environmental Conservation

A handwritten signature in cursive script, reading "Thomas C. Jorling", is written over a horizontal line.

983:002

CONSENT BY RESPONDENT

NAPPI COLONIAL CONCRETE COMPANY, INC.

Respondent hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by the terms contained in this Order.

By:

Louis G. Nappi

Title:

President, Nappi Colonial Concrete Co. Inc.

Date:

August 10, 1988

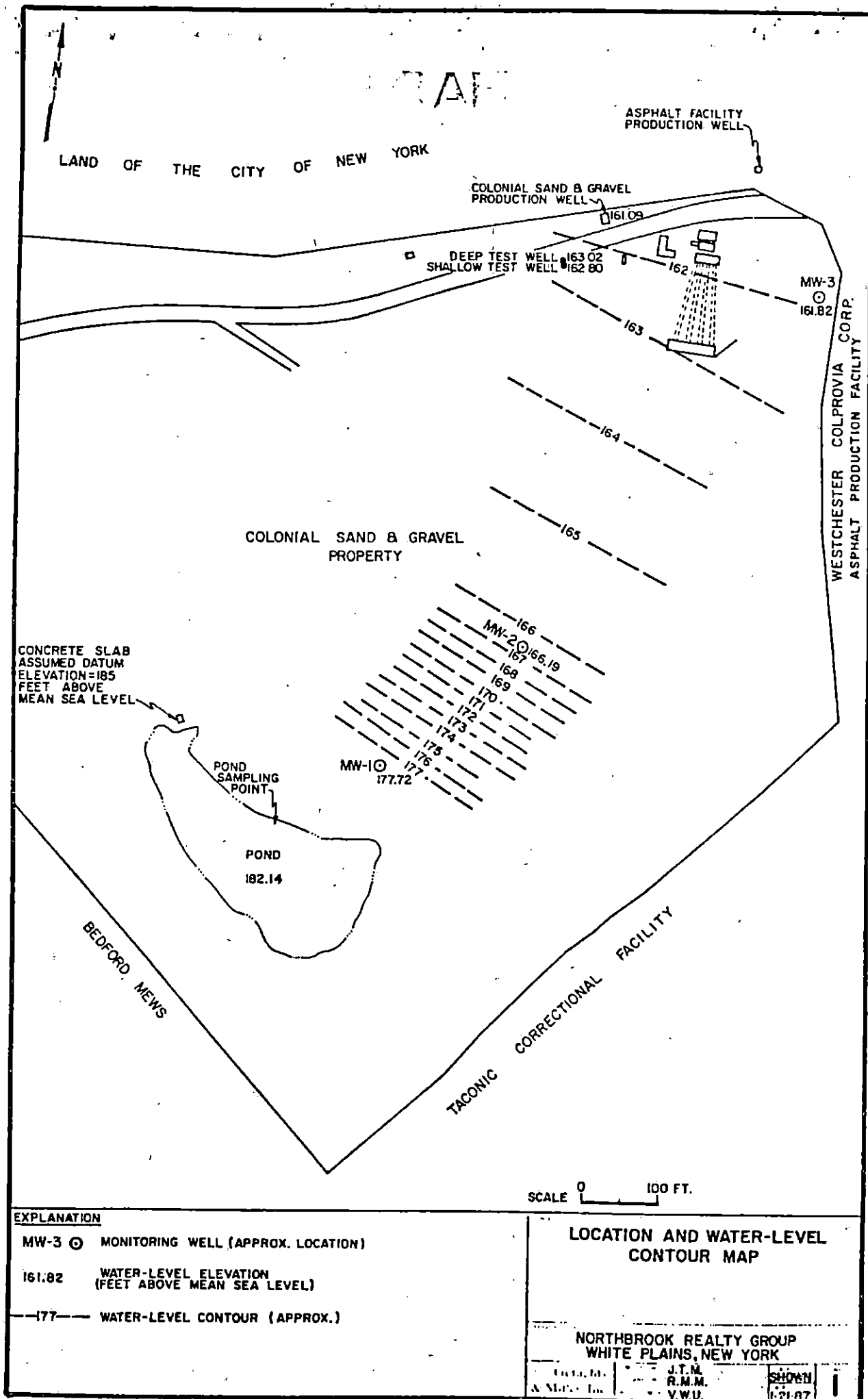
STATE OF NEW YORK)
) s.s.:
COUNTY OF Westchester)

On this 10 day of August, 1988, before me personally came Louis G. Nappi, to me known, who being duly sworn, did depose and say that he/she resides in Palham, New York; that he/she is the President of the Nappi Colonial Concrete Co. Inc. corporation described in and which executed the foregoing instrument; that he/she knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation, and that he/she signed his/her name thereto by like order.

Marie E. Mc Isaac
Notary Public

983:002

MARIE E. Mc ISAAC
Notary Public, State of New York
No. 4744680
Qualified in Rockland County
Certificate Filed Westchester County
Commission Expires 7-31-89



MC

New York State Department of Environmental Conservation

MEMORANDUM

TO:
FROM:
SUBJECT:
DATE:

Regional Solid and Hazardous Waste Engineers, Bureau Directors and Section Chiefs
Michael J. O'Toole, Jr., Acting Director, Division of Hazardous Waste Remediation
DIVISION TECHNICAL/ADMINISTRATIVE GUIDANCE MEMORANDUM: PHASE II INVESTIGATION
GENERIC WORK PLAN

MAY 09 1988

Michael J. O'Toole, Jr.

The objective of a Phase II investigation carried out by consulting firms under contract with the Division of Hazardous Waste Remediation, Bureau of Hazardous Site Control, is to determine if contaminants are leaving an inactive hazardous waste site with a resulting impact on human population and/or the environment.

This document describes the requirements of a Phase II investigation of inactive hazardous waste sites, and should be used in the review of Phase II investigation reports to ensure that all applicable items have been met.

The Bureau of Hazardous Site Control (BHSC) requires that certain aspects be addressed in any investigative work (Phase II) undertaken to determine the hazardous nature of a site. This document describes the applicable work and reporting that must be accomplished by the consultant in performing a Phase II investigation; the requirements by the Division of the consultant in performing a satisfactory Phase II investigation are not limited to the items described herewith, but may include other needs to satisfy unanswered questions on a site-specific basis.

This generic work plan will be divided into nine main areas:

1. Geophysical Survey
2. Well Drilling/Development
3. Recommended Well Sampling and Analyses
4. Environmental Sampling
5. QA/QC Protocols
6. Health and Safety
7. Work Plan Format
8. Phase II Report Format
9. Special Conditions

1. Geophysical Survey

The broad considerations are:

- a. Location of buried materials
- b. Determination of the presence of contaminant plumes
- c. Characterization of subsurface conditions

There are complexities involved in detecting contaminants at a given site, and the Bureau's staff should determine if a geophysical survey is needed. Where a survey is needed, the consultant must determine the best geophysical method for meeting the goals of the investigations, and submit a work plan for the Bureau's review.

Generally, the goals of a geophysical survey are:

- to determine existence of contaminant plumes
- to optimize location and number of monitoring wells
- to reduce risks associated with drilling into unknown terrain and waste
- to reduce overall project time and cost, and to improve accuracy of and confidence in the project
- to determine thickness of and depth to layers of soil and rock
- to determine depth to water table
- to determine existence of buried waste and its vertical and horizontal boundaries
- determination of lateral and vertical anomalies
- determining direction of groundwater flow

All geophysical data must be reduced by the consultant, analyzed and made available to the Bureau for review prior to installation of monitoring wells. The findings of the geophysical survey must be used to determine the best location of wells, i.e., in the contaminated plumes, and to select other environmental sampling locations.

The steps that should be followed are:

- i) Bureau's staff identify conditions at each site using existing information to determine if geophysics is required or feasible.
- ii) Consultant selects the proper geophysical technique to achieve the above-mentioned items.
- iii) Consultant prepares a site-specific geophysical survey work plan.
- iv) Consultant files a report of the reduced and analyzed geophysical data with the Bureau.
- v) Consultant, after discussions and agreement with the Bureau, utilizes the reduced geophysical data to guide further field work, and in conjunction with drilling data, attempts to achieve the goals above.

2. Well Drilling/Development

These shall include, but are not limited to:

- a. Number of wells (nested or single) and located on a map of the site.
- b. Estimated depth of wells to the nearest foot based on available data.
- c. Well specifications, i.e. materials needed to properly construct wells, seal annular space and secure wells with a steel protective casing and padlock. Note: Boreholes, casings and augers must be

- large enough to enable the efficient use of a tremie for placing down-hole materials in construction of the monitoring wells.
- d. Split spoon sampling must be done from grade elevation at 5 feet intervals or at significant changes in materials. A grain size analysis or Atterberg limits for non-cohesive materials or cohesive materials respectively must be done at every change in subsurface lithology, as well as one such analysis in the screened interval. If conditions are such that a mixture of cohesive and non-cohesive materials is encountered, perform only grain size analysis. Hydrometer analysis must also be done if 20 percent of the sample is less than a No. 200 sieve size.
 - e. Permeability testing of each well. Evacuation of the well for this determination may be accepted only after examination and approval by DEC of the rationale for not utilizing a variable head borehole permeability slug test.
 - f. Groundwater elevation readings in each well before and after development. These readings must be accomplished for normally recovering wells before the drill rig leaves the site, since if data is unable to show direction of groundwater flow, additional wells should be placed.

It is required that a well must be developed as soon as its recovery is completed and as soon as practically possible before or during the drilling operations of the next well. This process of staggered well development will result in only the last well remaining undeveloped at the end of the drilling operations. If a low yielding well, requiring greater than eight hours for recovery, is encountered, then the consultant and sub-contractor must depart the site, after the last well development and return at a later date for its groundwater elevation measurement. The consultant, at this stage, will have gathered enough information to aid in determining the next course of action.

- g. Development of each well to the point that the turbidity of the recovered well water is 50 Nephelometric Turbidity units (NTu). A portable nephelometric turbidity meter must be brought to the field for making this measurement.
- h. Description of the split spoon samples by a geologist in the field using the NYSDOT Soil Description Procedure. See Attachment 1.
- i. Shallow soil samples, if required, may be obtained with a hand auger.
- j. The standard operating procedures anticipated to be used in drilling and installation of borings and wells. Guidelines have been promulgated by DHWR.

It must be noted that in moving from one well to another on-site location for constructing a new well, all drilling equipment, including drilling tools for the entire drill rig, used in construction of a well must be cleaned of all foreign matter, washed with a detergent, rinsed properly with water, given an acetone wash, then followed with a final hexane wash, or cleaned of foreign matter and sanitized with a steam cleaner. Any alteration to the method of cleaning is to be determined for each site by New York State Department of Environmental Conservation.

Similarly, in conducting split spoon sampling, the split spoon must be cleaned as above after each sample and before introduction in a new bore hole.

It is also required that a HNu detector, Photovac photoionization detector, or OVA analyzer (either instrument calibrated daily) be used to monitor the gases emitted from the borehole and from each split spoon sample as soon as the sampler is opened.

When an OVA analyzer is used, special precautions must be taken in using a filter by which methane concentrations are recorded. Both filtered and unfiltered samples must be taken to show the difference for methane.

Disposal of wash water, drilling fluids and wastewater may be handled in accordance with the Division of Water Technical and Operational Guidance Series (1.6.1). If conditions require a departure from TOGS (1.6.1), then all wastes must be collected in drums until analytical data of a sample(s) is obtained. Disposal of such wastes will be contingent on the results of the analysis.

Prior to leaving a site, all equipment that was used in constructing the well, i.e., augers, split spoons, tools, accessories and other items such as vehicles and drill rigs must be cleaned as described above.

3. Recommended Well Sampling and Analyses

The BHSC expects that a minimum of one groundwater sample will be taken from each well. The consultant is, therefore, required to note in the work plan:

a. number of groundwater samples recommended.

b. recommended analysis for each sample, keeping in mind that:

- i. if a determination on the type(s) of chemical(s) can be made from a foregoing Phase I study or other sources, then analysis shall be concentrated on those items.
- ii. if there is a suspected multiplicity of chemicals, but no determination on their classification can be made, serious consideration will be given in analyzing for:
 - extraction procedure toxicity
 - corrosivity
 - ignitability
 - reactivity
 - metals
 - identification and quantification of compounds should be done in accordance with New York State Department of Environmental Conservation's Analytical, Quality Control and Reporting Requirements as adopted from the USEPA Caucus Protocol for the Contract Laboratory Program, with the

requirement that at a minimum, the contaminants specified on the Target Compound List (formerly the Hazardous Substance List) be identified and that all GC/MS peaks greater than 10 percent of the nearest calibrating standard be included in the identification and quantification. When concentrations are to be found below the Contract Required Detection Limit (of the CLP), the actual concentration(s) of the analyte(s) of the Target Compound List contaminant(s) must be reported. This is to be done instead of using the data qualifiers (U, E, [], J, etc.) used in the CLP.

In developing and extracting samples from wells, the Division will require that dedicated tubes, hoses (rubber or tygon unacceptable), bailers, including line and other sampling equipment must be provided for each well. Groundwater elevation equipment may be used between wells, provided that after use in each well, the detector is cleaned with a detergent wash, water rinse, acetone rinse and hexane rinse in that order.

4. Environmental Sampling

The Division will expect as a result of a Phase II preparatory site visit, that the work plan will include appropriate air, surface water, soil, sediment, biota, and waste sampling:

a. air, protocol for monitoring will at a minimum account for:

- i. Weather conditions during monitoring to include but not limited to; temperature, precipitation, and wind direction. Also, the date, time, location of samples for plotting on a site map, and person's name among other details must be recorded.
- ii. Mitre model requirements, i.e., up and downwind monitoring points measured in the average breathing zone and not downgradient of newly disturbed areas.
- iii. Depressions and existing venting pipes for on-site safety plan.
- iv. Sketch showing grid sampling format and background location.
- v. As previously stated in 2.j., if an OVA is utilized, special concern must be noted for use of a methane filter.
- vi. Method of calibration and statement that it will be performed immediately prior to use in the field.
- vii. Ambient air monitoring for human health and other concerns, as determined by the New York State Department of Health and NYSDEC should be considered on a site-specific basis, where conditions will warrant that consideration.

b. surface water, sampling program should as a minimum include the following considerations:

- i. Sampling locations indicated on a site map.
- ii. Include an upgradient sampling point for Mitre model scoring.
- iii. Depending on the time of year and/or recent precipitation events, the volume of water in surface water bodies will fluctuate. The conditions occurring at the time of sampling can significantly impact the presence and/or concentration of contaminants in the system. If the surface water borders or is in close proximity to the site, it could either be receiving runoff water from the site or outbreaks of groundwater contaminated by the site. Sampling should be effected at these times to obtain best results. The consultant must in the work plan describe presence or absence of seasonal dependence on sampling.
- iv. If a stream or other flowing system is the designated target for sampling, the consultant must ascertain to best extent possible, from the site visit, if spring runoff could cause significant diluting effects. Even if this is not an anticipated problem, it must be discussed in the work plan to assure it has been considered.
- v. Measurement of the elevation of significant surface water bodies must be recorded whenever the piezometric levels of wells are measured. "Significant surface water body" means any standing or flowing water body which may affect the flow of groundwater in the aquifer or water-bearing zone (or zones) and is tapped by the wells being measured.

Measurements of tidal or other periodic or occasional fluctuations in the surface/groundwater system, which could affect the direction or the rate of flow of leachate plumes must be recorded to the extent necessary. This is to establish as fact, said effect, as necessary for the selection of detection well locations and for the interpretation of data collected from wells.
- vi. Vertical and horizontal sampling point will vary depending on nature of surface water body; river, stream, lake, pond, lagoon, etc. Full description and justification must be provided for each sampling location.
- vii. Equipment requirements (calibration, cleaning).
- viii. Recommended analysis for each sample (containers, preservatives) justification, conforming with section 3.b. (i. & ii.) of this document.

c. soil, the following considerations must be addressed in the work plan as a minimum;

- i. Sampling locations indicated on a site map.
- ii. Background sample accounted for, selection of location based upon a prior site visit.
- iii. Depth, sampling method, and discussion/justification for composite samples if recommended.
- iv. Equipment requirements.
- v. Recommended analysis for each sample, justification, conforming with section 3.b. (i. & ii.) of this document.

d. sediment, the following points as a minimum must be addressed in the work plan:

- i. Sampling locations indicated on a site map.
- ii. Include upgradient and downgradient sampling points at a minimum.
- iii. Often, difficulties are encountered in the field with this type of sampling because of inappropriate equipment. Where possible in the work plan a second method to acquire samples should be provided.
- iv. List of equipment for use during field effort (boots, boats, stainless steel scoops, Veihmeyer sampler, ponar dredge, etc.) accompanied with description of use if appropriate.
- v. Recommended analysis for each sample, justification, conforming with section 3.b. (i. & ii.) of this document.

e. biota, it may not always be possible to characterize a site through groundwater, surface water, soil, sediment and air sampling. Make note during the reconnaissance visit of visually stressed and/or available/appropriate biota (flora and fauna) specimens for potential sampling. If biota sampling is proposed in the work plan, it should be accompanied with a detailed description of method and purpose adequate to illustrate the consultant's ability to perform such work (field processing preserving, capture methods, adequate sampling numbers for proper QA/QC, special permits, seasonal dependence, etc...). If samples are stationary, sampling points are to be indicated on a site map. All biota sampling and analytical plans must be in accordance with the DEC protocols. All analytical needs are to be described as provided for in section 3.b. (i. & ii.) of this document, or as required by the DEC Fish and Wildlife Sampling and Analytical Protocols.

f. Other Site Sampling, due to a lack of adequate knowledge of the characteristics of the hazardous waste present at a particular site, it may be necessary to perform tank or drum sampling, leachate sampling, hazardous waste pile sampling, and/or lagoon sampling. The following considerations must be addressed in the work plan at a minimum.

- i. Sampling locations indicated on a site map.
- ii. Techniques and justification which will be utilized to collect these samples.
- iii. Equipment requirements.
- iv. Recommended analysis for each sample, with justification conforming with section 3.b. (i. & ii.) of this document.

5. Quality Assurance/Quality Control Protocols

QA/QC protocols for sample integrity from the field to the laboratory, as well as those employed in the laboratory must be submitted by the consultant. Generally, the sampling QA/QC protocols should describe sampling techniques and methods used in ensuring sampling integrity, as cleaning of equipment, dedicated samplers, chain-of-custody procedures, sample preservation, experience and capabilities of personnel and other factors associated with obtaining and delivering hazardous waste samples to the laboratory.

A quality assurance document shall be prepared describing the quality assurance and quality control practices which will be applied to field and laboratory activities of the hazardous waste program. This document must be in accordance with the NYSDEC, Division of Hazardous Waste Remediation Quality Assurance Program Plan which contains Guidance for Preparation of Combined Work/Quality Assurance Project Plans for Water Monitoring (OWRS QA-1), U.S. EPA, Washington, D.C., May 1983, and the NYSDEC State Contract Laboratory Protocol, November 1987.

6. Health and Safety

Phase II investigations are to be conducted in accordance with a site-specific plan, which must ensure that the health and safety of all on-site persons are safeguarded. The consultant's safety plan must be in accordance with the applicable OSHA standards and the U.S. EPA Office of Emergency and Remedial Response Interim Standard Operating Safety Guide. The Health and Safety Plan will be reviewed by the BHSC insofar as the safety of its staff is involved during site visits and oversight activities. The consultant is responsible for the safety of his staff, sub-consultant staff, subcontractor staff and any other person who may visit the site, and the applicability of the Health and Safety Plan.

7. Work Plan Format

The proposed work plan must follow the format as specified below.

The requirements after each underlined heading are meant only as guidelines on the type of information to be addressed. The Engineer should not be limited to only these requirements and is expected to include additional points in the proposed work plan as needed to evaluate a given site.

- i. Title: Phase II Investigation
Work Plan
(Name of Site)
(Town) (T), County (Co.)
(Site No.)
- ii. Introduction: Narrative describing the basis of the proposed study, e.g. results of a Phase I study or concern of NYSDEC based on the history of operations of a facility or site. Further literature search or any other needs should also be addressed.
- iii. Objective: Narrative describing in general terms the tasks to be undertaken and expected use of data.
- iv. Site Reconnaissance: Narrative describing the survey of the site for aid in gaining access, placement of wells, collection of surface samples, determination of ambient air concentrations for contaminants and for obtaining information upon which a proper Phase II investigation may be conducted.
- v. Geophysics: Narrative describing how required methods of surveying will be employed and spacing and number of stations. The methods and the purpose of their use, e.g., detection of contaminated plumes, bedrock, stratigraphy, lateral and/or vertical extent of fill or garbage specified must be outlined. A discussion of the proposed applicability of the collected data especially when used to determine the most strategic location of monitoring wells must be included (see Section 1).
- vi. Test Borings and Observation Wells: Narrative describing the equipment to be used in placement of test borings/observations wells must be provided. A description of the consultant's standard operating procedures for the drilling of well borings, and means of safeguarding them (completed and sub-completed) must be included. It must also discuss the type(s) of sampling that will be conducted during this phase, quality assurance and control to be adopted, expected depth of wells and their construction materials (see Sections 2 & 3).

- vii. Sampling and Analysis: Locations and types of sampling should be described in a narrative; likewise, the proposed instrumentation and analyses for the samples should be described. A table denoting recommended type and number of samples and analyses must be submitted (see Table 2 and Section 4).
- viii. Maps/Plans: A plot plan and proposed location of well(s) and all sampling points, and a site location map, e.g., USGS topographic map, must be included.
- ix. Task Presentation: Construct and include a table which states the proposed tasks in the left column and a brief description of each task in the corresponding right column.
- x. Project Team: There are various disciplines involved in a Phase II investigation. It is required that a project team be selected by the Engineer to conduct the tasks of the contract. The names of staff members, experience and the positions they will fill must be listed and will be subject to final approval by the Department.

Furthermore, qualification and experience must be provided to justify the selection of a person in performing a particular task. More than one staff member can be designated for any one task so that relief in the field may be provided. It is required by the Department that no one except those designated will be allowed to work on or oversee the project without the Department's prior approval.

8. Phase II Report Format

Cover:

The report cover shall be in accordance with the sample attached hereto as Attachment 3 and shall be printed on 65 lb. Atlantic Pastel uncoated cover, Misty Blue color. The back cover shall be of the same material as that of the front cover.

Title Page:

Indicate: name of project (i.e., "Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase II Investigations"); the site name, location (i.e., municipality and county) and NYSDEC site number; prepared for (i.e., Division of Hazardous Waste Remediation, New York State Department of Environmental Conservation, 50 Wolf Road, Albany, New York, 12233-0001); prepared by (i.e., contractor's name and address); and date submitted.

Table of Contents:

List all sections and subsections of the Phase II Report.

Section I:

Executive Summary -

Briefly describe the site, Phase II effort, site assessment and HRS score. Include a portion of the USGS 7.5 minute Quadrangle Sheet (8½" x 11") with site located, name of the quadrangle and the coordinates of the site, identified on it. Also include a detailed sketch map of the site including north arrow and all appropriate information (leachate outbreaks, buildings, drums, slopes, lagoons, streams, property lines, etc.).

Section II:

Purpose -

Describe the goal of the Phase II effort at the specific site.

Section III:

Scope of Work -

Describe the scope of the Phase II effort including, but not necessarily limited to: geophysical studies, boring and monitoring well placement and installation, sampling and sampling station selection (soil, surface water, groundwater, air, sediment and liquid or solid waste sample).

Give reasons for the locations chosen for monitoring wells and sampling stations. Also include details of monitoring well installation and environmental sampling techniques used.

Section IV:

Site Assessment -

- i) A detailed site history noting all past operations at the site. A description of waste disposal, operation of the site, change in ownership and significant events such as boil water notices issued by a health agency, reports of leachate outbreak, fish kills and remedial actions taken should be included.
- ii) Description of site topography indicating such items as general slope of the site and proximity to surface waters, private and public wells, commercial buildings, dwellings and sensitive environments.
- iii) Description of hydrology of the site, include data from geophysical studies (plots), boring logs, monitoring well data and soil test data. (Depth to groundwater, aquifers of concern, depth of bedrock, soil and bedrock permeabilities, and any unique

geological characteristics such as, but not limited to, multiple aquifer systems and karst topography should be noted.)

- iv) Describe the observations of the site inspection, e.g., was leachate flow noted, were drums observed and were they full or empty. Assess site contamination. Summarize the results of both past and Phase II sampling programs. Indicate the waste types and quantities on site if known, and the extent of contamination of soil, surface water, groundwater and air. Note when samples were taken and the location of samples on a map or sketch of the site. Compare sampling results to appropriate State and federal environmental quality or effluent standards. For soil samples, compare to well documented ranges of concentrations in non-contaminated or background soil levels. (The applicable State standards are 6NYCRR Part 700 series. Appropriate guidelines are New York State Air Guide-1, Guidelines for the Control of Toxic Ambient Air Contaminants and the NYSDEC Solid Waste Management Facility Guidelines, Land Application of Sewage Sludge Table 1.) Include a report of how the QA/QC plan was applied to the site, noting any deviations from the QA/QC plan and explaining the reasons for any deviations. Discuss any necessary future studies of the site or actions that may be required.

Section V:

Final Application of the Hazard Ranking System - The final application of the HRS must incorporate all information collected in the Phase I and Phase II investigations of the site. This section of the report is to include:

- 1) Narrative Summary - Limit each narrative summary to one page (DOUBLE SPACED). Use active voice as much as possible and identify actors--that is, say "EPA erected a fence," not "a fence was erected," or "the State filed suit," not "a suit was filed." Be sure to tie the information to the response category/status codes you are assigning the site.
- a. Site name (including origin of name)
 - b. Site location - town or city, county and state
 - c. Size
 - d. Nature of operations (landfill, recycling, manufacturing, etc.)
 - e. History of ownership/operations - private, public, bankrupt, permitted (by whom? to do what?) currently operating (how long), closed (how long). Name responsible parties if they have taken cleanup action, either voluntary or negotiated
 - f. Wastes present (types, amounts, in what form, buried, on surface, etc.)
 - g. Media affected and with what (including source of analytical data)
 - h. Important demographic information (population affected and how, proximity of groundwater wells and surface water intake)

- i. Important geographic information (nearby surface water, aquifers, wetlands, etc.)
- j. Cleanup actions (completed or scheduled)
- k. Enforcement actions

A typical summary is outlined below. While no single example can cover the variety of conditions at hazardous waste sites, this one illustrates the types of information and form we want.

Name
Location

The ABC/DEF (name) site covers (size) acres in (location, including county). ABC (describe operations) on the site (date), when it purchased the property from DEF (relationship of DEF to the site operation), until (date), when it (describe operations/ownership history).

The companies disposed of about (quantities of waste) of (types of waste) on the site by (describe disposal methods). According to tests conducted by (source of data), (media) are contaminated with (chemicals). The site is (important geographic information). About (population affected) are (affected how).

In (date), (who) filed (describe any legal action). In (date), (who) (describe any cleanup actions).

- ii) Portion of USGS quadrangle with site located on it and the name of quadrangle identified as also required in Section I.
- iii) Updated HRS Worksheets

All applicable data collected in the Phase I and Phase II investigations will be used to complete these worksheets.

- iv) Updated HRS Documentation Records

All applicable data collected in the Phase I and Phase II investigations will be used to complete the HRS Documentation Records. All sources of information supplied in the documentation records must be clearly referenced on the same page where this information is presented. In addition, copies of all documents indicated as a source of information must be supplied. This includes correspondence, sampling and analytical data (even if previously presented in the Phase I report), professional papers and reports. A numbered reference list must be included with copies of the references also numbered accordingly. Copies of references must appear in the order they are used in the documentation records. Information based on conversations with knowledgeable individuals must be confirmed in a memorandum or a letter, and a copy included with the HRS Documentation Records.

Also, a copy of the site sketch or map indicating the location of samples (as required in Section IV) must also be included in this section. Copies of references included in the HRS documentation section do not need to be included in the appendices.

Updated EPA Form 2070-13 "Potential Hazardous Waste Site, Site Inspection Form," or any revision of such forms shall be used.

Note: Information presented on the HRS Documentation Records is to be typed and not handwritten or printed.

Appendix:

All raw data collected from the field, laboratory, literature search or any other source (i.e., geophysical, analytical, QA/QC, etc.) shall be presented in the appendix. This shall be in addition to any reduction of data presented elsewhere in the report.

9. Special Conditions

The consultant is required to observe certain conditions during the conduct of a Phase II investigation. These are:

- a. Site visit must be made prior to completion of the work plans for reconnaissance and especially for determining access problems.

Those of concern should include: is physical access possible, is auxiliary equipment required, can wells be located on or off the site, is off-site access permitted, are easements necessary, etc.

If during the actual field activities of a Phase II investigation, the consultant should require a tractor to locate the drill rig, or determine that access through an adjacent property is needed and such requirements are not mentioned in the work plan, the Department will conclude that a reconnaissance was not done. The Department will not be responsible for costs incurred, which are not the result of carrying out an approved work plan.

- b. Name and address of all sub-contractors must be submitted with an itemized list of jobs and charges.
- c. The following requirements as promulgated by the Division of Hazardous Waste Remediation deal with the construction of overburden and rockwells. These are entitled:
 1. Guidelines for Exploratory Boring, Monitor Well Installation and Documentation of these activities.
 11. Guidelines for rockwells
- d. The attached Oversight Checklist (DHWR personnel) are items that DEC staff ensure will be met during their oversight of the

Phase II investigation. The checklist is made a part hereof, and the consultant must at a minimum meet these requirements during his Phase II investigation field activities.

- e. Standby time - It may be necessary to interrupt the work for short periods of time to allow the DEC staff to make measurements, to collect data or readings, to collect samples, or for other reasons determined necessary to the purpose of the work. In such cases, the Contractor shall be paid for the time employees and equipment are not being utilized. Standby time will not be compensated when delays are incurred due to the contractor's employees, equipment failure, material problems, delivery problems, inability to perform for reasons attributable to the Contractor, or by inclement weather, strike or other circumstances beyond the control of DEC, unless it can be demonstrated that a "force majeure" was involved.

Reference

Geophysical Techniques for Sensing; Bureau of Wastes and Waste Migration; U.S. Environmental Protection Agency, Las Vegas, Nevada. 236pp.

Revised: 3/88
MK:wp

Table 1. APPLICATION OF GEOPHYSICAL METHODS TO HAZARDOUS WASTE SITES

Application	Radar	Electromagnetics	Resistivity	Seismic	Metal Detector	Magnetometer
Mapping of Geohydrologic Features	1	1	1	1	---	---
Mapping of Conductive Leachates and Contaminant Plumes (ex. landfills, acids, bases)	2	1	---	---	---	---
Location and Boundary Definition and Buried Trenches with Metal	1	1	2	2	2	2
Location and Boundary Definition of Buried Trenches without Metal	1	1	2	2	---	---
Location and Definition (ex. drums, ordinance)	2	2	---	---	1	1

1. Primary Method - Indicates the most effective method
2. Secondary Method - Indicates an alternative approach

New York State Department of Environmental Conservation
Phase II Investigations
Recommended Chemical Analyses

Site Name and ID#

Consultant:

Analyses

<u>Type of Sample</u>	<u>Volatiles</u>	<u>Base Neutrals</u>	<u>PCB/Pesticide</u>	<u>Metals</u>	<u>TCL*</u>	<u>Remarks</u>
Groundwater						
Surface Water						
Sediment						
Soil						
Air						
Waste						
Leachate						
Drums						
Other						

*TCL means Target Compound List as defined in the NYSDEC Contract Laboratory Protocols.