JSW

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LETTER OF TRANSMITTAL

TO: Jaspal Walia

FROM: Tammi Aiken, P.E.

DATE: October 1, 2003

CC: Mary-Lynn Cummings, Patricia McClary, Robert Seem, Gregg Travis, Richard Dunst, Steve Beyers

RE: **Vineyard Research Laboratory, Final Report – Sludge, Sump, and Soil Removal and Disposal.**

Jaspal,

Thank you for your continued patience while we finalized the enclosed report for your review. If you would like additional information, please do not hesitate to contact me.

V00417

Thank you,

Tammi

ECO Environmental Compliance Office

V00417

Interim Remedial Measure (IRM)
Final Report

Sludge, Sump, and Soil Removal and Disposal

Vineyard Research Laboratory
New York State Agricultural Experiment Station
Cornell University
Fredonia, New York

Prepared by:
Environmental Compliance Office
Cornell University
129 Humphreys Service Building
Ithaca, NY 14850

October, 2003

Interim Remedial Measure (IRM) Final Report

Sludge, Sump, and Soil Removal and Disposal
Vineyard Research Laboratory
Fredonia, New York

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Engineer's Certification and Executive Summary

This Final Report documents the work done as part of an Interim Remedial Measure (IRM) approved by the New York State Department of Environmental Conservation for the Vineyard Research Facility in Fredonia, New York. The work was completed under the terms of a Voluntary Clean-Up Agreement (VCA) between Cornell University, the facility operator, and the NYSDEC.

The completed work included the following:

- Removal of the contents of a former drywell sump. The contents included liquids, sludge, sediment, and miscellaneous wood and metal debris.
- Removal of the sump, which was constructed of concrete masonry unit (CMU) block and cast-in-place concrete.
- Removal of contaminated stone and soil surrounding the sump (over 2'-0" on all sides).
- Characterization and disposal of all wastes.
- Soil sampling at the base and sidewalls of the excavation to determine the residual levels of contaminants at those locations.

All of the work was completed under the approved Health and Safety Plan (HASP) and in accordance with the approved Work Plan.

The IRM resulted in the removal of highly contaminated waste materials which formed a potential "source" for contamination of nearby soil or groundwater. Soil sampling confirmed that the removal of the sump contents and surrounding materials substantially reduced this risk, as the remaining contaminant levels in the soil were generally several orders of magnitude lower then the contaminant levels in the removed materials.

Cornell University thereby certifies that the IRM was completed in accordance with the approved Work Plan and recommends no further actions for this site.

Signed: _____ ***Dated:*** 10/1/03

Steve Beyers, P.E.
Cornell University Environmental Compliance Office

Section I: Overview

1.0 Introduction and Purpose

This Interim Remedial Measure (IRM) Final Report describes remedial work completed at the Vineyard Research Laboratory in Fredonia, New York. The remedial work included the removal of contaminated materials resulting from past use of the facility. The scope of work was as recommended by the Site Investigation Final Report prepared in September, 2002 by Blasland, Bouck, and Lee (BB&L), consultants to Cornell University (Owner) for the Site Investigation work. The specific construction scope was performed in accordance with the approved Remedial Work Plan submitted by Cornell to the New York State Department of Environmental Conservation (NYSDEC) in April, 2003.

The objective of the Project was to excavate and dispose of specific materials from the site that have been contaminated by past agricultural and research activities at the research facility. These materials included the following:

1. A sump, consisting of a reinforced concrete base, concrete masonry units forming the sump walls, and a pre-cast concrete cover section. The pesticide pit was approximately 12-feet long, 8-feet wide (outside dimensions) and 5-feet deep (from top of grade);
2. The sump contents, including a mix of sediments, sludge, and liquid;
3. Impacted soils immediately surrounding the sump area; and
4. A small area of surface soils located adjacent to former drain outlet from a former interior pesticide storage area.

The completed removal of these materials is expected to eliminate principal areas of pesticide and associated metal contamination at the site and the potential of future migration of contaminants from these areas into surrounding soils or groundwater.

1.1 Site Background

The Vineyard Research Laboratory, also known as the Taschenberg Laboratory, is located at 412 East Main Street in the Village of Fredonia, Town of Pomfret, Chautauqua County, New York. The Vineyard Research Laboratory was established in 1958 by the New York State Agricultural Experiment Station, Geneva, New York, in order to develop improved pesticide application methods; improve control of major grape insect, disease, and weed pests; and develop a mechanical harvester for grapes. The facility is currently operating to support research programs such as the mechanization of pruning and shoot positioning, long-term effects of insects and diseases on vineyard productivity, trickle irrigation, and weed control methods. Prior to 1958, the land was owned and operated by Renalski nursery.

The laboratory is adjacent to an active research farm. A dry well sump to the north (back side) of the facility was used as a dry well for several lab drains in the building and as a collection and disposal system for wash waters during pesticide fill and rinse operations until about 1990. The use of the sump was discontinued after new Federal underground injection control regulations were promulgated. Sampling in and around the sump, as documented in the Final Site Investigation Report, indicated elevated levels of pesticides and metals adjacent to the sump and significant contamination of the sump sludge.

1.2 Summary of IRM Work Plan

The IRM Work Plan described the specific work required to effect the removal of contaminated materials as recommended in the Site Investigation Final Report. Specifically, the Work Plan detailed the following actions:

1. Removal, characterization, and off-site disposal of sludge from the sump, the sump, and the following surrounding soils:
   - 2' of soil on all four sides of the sump
   - 2' of soil beneath the sump

2. Removal, characterization, and disposal of surface soils in a 3' by 3' area immediately adjacent to a former building drain line, to a uniform depth of 1'. The drain line extended from a former pesticide storage room. The room is no longer used for pesticide storage.

3. Field observation of the work and confirmatory soil sampling at the conclusion of the excavation.

1.3 Regulatory Framework

This Project was part of a Voluntary Clean-Up Program Agreement between Cornell University, Owner, and the New York State Department of Environmental Conservation, representing the State's public environmental interest. The review and approval authority for this work is the NYSDEC. This Final Report is a component of the process described in that Agreement.

Section II: Summary of Site Activities

2.0 Contracts and Timetable

The Owner advertised for bid from a select group of remediation contractors. The advertisement and bid processes included the distribution of Contract and Bid Documents to four contractors, an on-site pre-construction conference, and the submission of formal closed bids to the Owner by the Contractors. Of the four contractors who were invited to bid, the Owner received bids from two of those, and selected AAA Environmental, Inc. of Syracuse New York (AAA) to perform this work. AAA had previously visited the site and was therefore cognizant of site conditions.

This Project was carried out jointly by the Owner, the Contractor (AAA), a certified testing lab (Severn Trent Laboratories, Inc.), and the New York State Department of Environmental Conservation (NYSDEC). This Section of the Final Report specifies the roles and responsibilities of each party.

2.1 Personnel Involved

The Project Team for this project included the Owner, Contractor, and the NYSDEC.

Roles for the Owner included the following:

- Approving the Project.
- Preparing the Work Plan and the associated Health and Safety Plan (HASP).
- Contracting for the work.
- Promoting compliance with the Work Plan and HASP through appropriate contractual terms.
- Financing the work.
- Providing to the Contractor relevant information on site hazards so that the Contractor could appropriately protect site personnel during the work.
- Providing the Contractor with temporary site access and control of the Work Area.
- Providing the Contractor with relevant site history information and data in order to allow an accurate characterization of the waste materials.
- Observing the work in the field.
- Collecting and analyzing samples of the soil on the sides of the sump and the soils under the sump.
- Providing this Final Report.

The roles for the Contractor included:

- Completing the remediation work specified in the Contract Documents, which reference the Work Plan and HASP.
- Providing worker protection for Contractor's workers.
- Characterizing, transporting, and properly disposing of all remediation waste materials, in accordance with the Contract Documents.

The role of the NYSDEC included:

- Review and approval of the Work Plan, HASP, and Contract Documents.
- Oversight of the remedial work to promote protection of the environment and to assure substantive conformance with the approved Work Plan.
- Providing guidance and technical support to the Owner as appropriate.

The role of the certified testing laboratory included:

- Analysis of soil and material samples as directed by the Owner.
- Documentation of analysis and reporting of results.

2.2 Site Activities

The Contractor completed the remedial actions in accordance with the Contract Documents, which referenced and included the approved Work Plan and HASP. These actions included providing the manpower, equipment, resources, and all associated administrative and contractual elements as specified in the Contract between the Owner and Contractor. The Contractor was also responsible for all field testing as specified in the Contract.

In addition to the excavation of soils to the limits specified in the work plan (generally, all soil surrounding the sump within 2' of the sump sides or bottom) the Contractor, at the direction of the Owner, excavated, characterized, and disposed of some additional soils, removed based on a probability of contamination as judged by site observation (moisture level, consistency, and color). The total amount of soil removed was therefore significantly higher than proposed in the approved Work Plan.

The Contractor performed all sampling and analysis for waste characterization as required by the selected waste disposal facility, and was responsible for the health and safety of the Contractor's personnel and implementation of the Health and Safety Plan.

The following pages provide a brief written and photo chronology of site activities, as summarized from field notes of the work.

Work Summary Chronology:

Tuesday May 27, 2003
Mid-day: Contractor arrived on site, set up equipment, delineated work space (including decontamination zone), and held a site-specific health and safety meeting for Contractor employees (including a review of the health and safety instrumentation used to check "background" levels of dust and contaminants). The Contractor and Owner planned work. The NYSDEC site inspector arrived and stayed on-site for the duration of the excavation portion of the project.

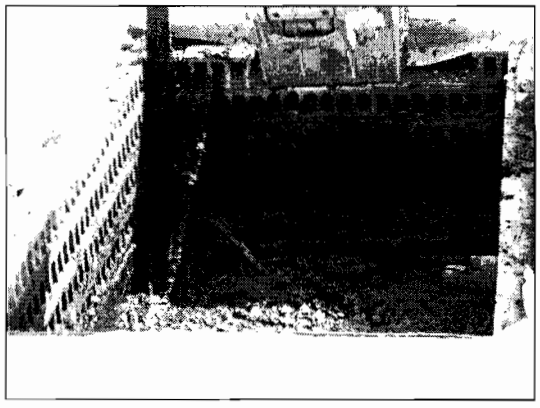
Wednesday, May 28, 2003
The Contractor removed the tarp over the sump and sump cover.
The Owner took a sample of cover concrete and sent this sample to a certified laboratory for pesticide analysis to document that the cover was uncontaminated (proposed for backfill).
The Contractor pumped free liquids at surface of sump into two drums.

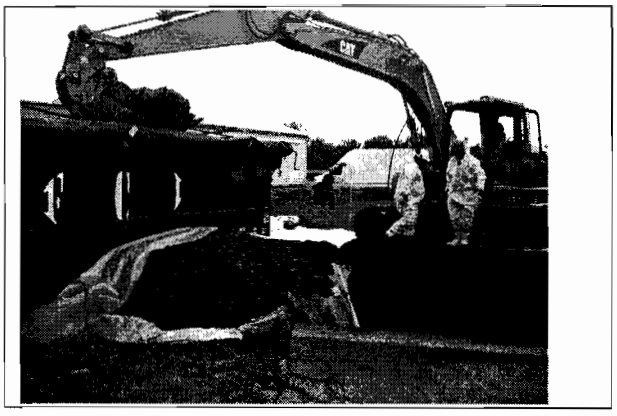
Thursday, May 29, 2003
The Contractor removed remaining sump contents (sludge, sediment, and debris) using the backhoe. The sump contents were loaded into a lined roll-off container.
The Contractor identified three penetrations through the bottom of the sump (not anticipated) and requested direction on next steps. The Owner directed the Contractor to continue work in accordance with the Work Plan, with the aim of investigating this further once removal of the sump bottom was complete.
Once the pit was empty, the Contractor removed the cinder block walls, concrete sidewalls, and bottom, and placed them into another roll-off. Discolored soils were observed at the sides of the excavation in a limited stratum between approximately two feet and four feet below the surface.

Sludge removal from the sump pit.

Friday, May 30, 2003
The Owner received laboratory analysis indicating that the sump cover had some contamination. Although the contamination was less than the levels constituting a "hazardous waste", the levels were sufficient to consider the cover material to be "industrial waste". After conferring with Environmental Health & Safety, ECO directed the Contractor to dispose of this material at a hazardous waste landfill, but not classify this waste as "hazardous".

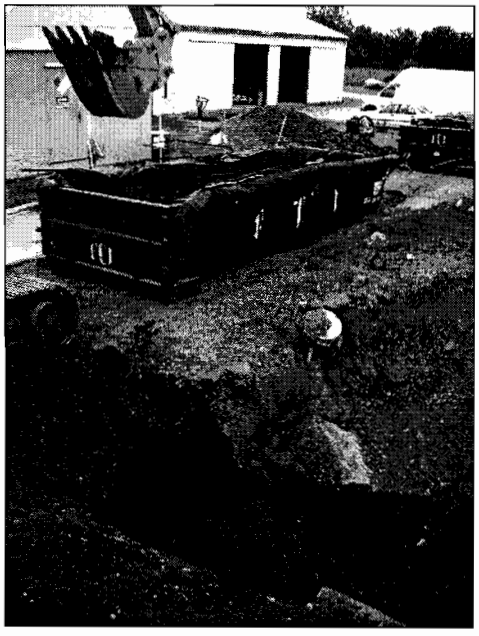
CMU inside walls of the sump pit.





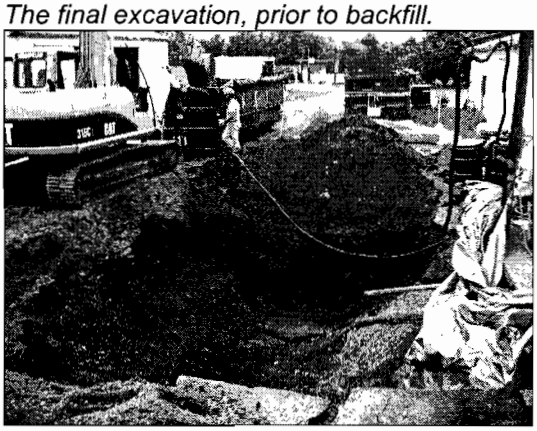
The picture above illustrates the stone fill around the sump pit.

Monday, June 2, 2003
The Owner requested the Contractor to dig test pits approximately 3'-4' from the north and west sides of the excavation, extending approximately 5 to 6 feet. NYSDEC Project Manager Jaspal Walia was on site to observe the excavation and test pits. No further discoloration was observed and the holes were re-filled with the original soil as requested by the NYSDEC. The Owner and NYSDEC jointly decided to remove additional soil by scraping the sides of the excavation until clean soil is observed, i.e., no discolored soil visibly evident on sides of excavation.

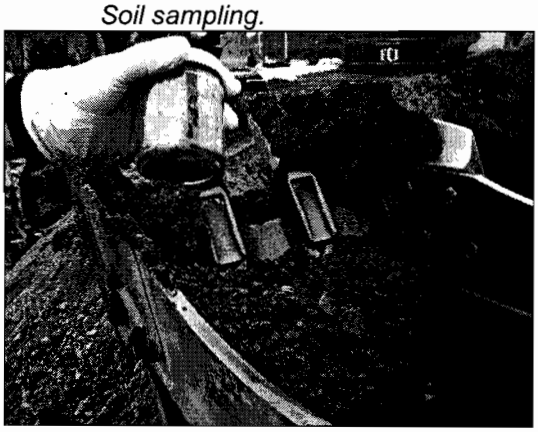


Tuesday, June 3, 2003
NYSDEC site inspector and Owner agreed overburden may be peeled back and later used as fill in the hole. Contractor removed 2'-3' of soil on the West, North and East sides of the pit as directed by Owner and NYDEC site inspector. After decontaminating the bucket, the Contractor removed representative samples of soil from the sidewalls (North, East, South and West) and bottom of the excavation area. The lab technician (hired by ECO) collected separate soil samples from all sides of the excavation for confirmatory analysis.. Some discolored soil was observed on the south-east wall, therefore two samples were taken on the south wall, one from the discolored region (SE) and one of more representative soil. The final size of the excavation was approximately 24' (parallel with the building) x 21' x 8' deep. After post-excavation sampling was complete, the hole was backfilled, first with overburden from the sides of excavation, then with imported gravel.

The final excavation, prior to backfill.



Soil sampling.



Wednesday, June 4, 2003
The Contractor continued backfilling in accordance with the Specifications and began site clean up.

Thursday, June 5, 2003
The Contractor loaded the concrete lid and apron (staged within and adjacent to the work area and covered with plastic) into a roll-off and moved all roll-offs to an area selected by the supervisor of the Facility (adjacent to and east of the rear driveway on the east side of the property). The Contractor finished repairing asphalt pavement and site restoration and left the site.

July 7 and July 8,2003
After characterization of the soils was complete and all waste documentation filled out, the roll-offs were removed from the site and transported to the CWM landfill facility in Model City, NY.

2.3 Health and Safety

All work on site was completed as specified in the site specified Health and Safety Plan (HASP). In addition to the work tasks anticipated in the HASP, the Contractor also elected to remove sludge from the sump utilizing the protocol specified in the Contractor's Confined Space Entry Program.

Throughout the construction the Contractor also monitored the site utilizing a dust monitor, four-gas (O2, H2S, CO, and LEL) meter, and the photo-ionization detector (PID).

There was one instance of slightly elevated dust readings (TWA, time weighted average, 0.245 mg/m^3) at the exclusion zone perimeter, which was just outside the immediate work area. In response to this reading, the Contractor used a water spray at the point of excavation, and the dust levels returned to background. After implementing the water spray, no further elevated dust readings were noted. No other unusual or unexpected readings or conditions were indicated by any of the instruments during the work.

There were no reportable workplace accidents or injuries.

2.4 Samples and Analytical Results

Analysis of samples taken from underside surface of the concrete sump lid determined that the surface had been impacted by the former pesticide rinse operations and long-term proximity to the contaminated sump contents. The following table summarizes the results of this analysis.

TABLE 1

	Analyte	Results	Soil Cleanup Levels [(a)]
METHOD 8081 TOTAL PESTICIDE (ug/kg)	Aldrin	ND (17)	41
	alpha-BHC	ND (17)	110
	beta-BHC	ND (17)	200
	gamma-BHC (Lindane)	ND (17)	60
	delta-BHC	ND (17)	300
	Chlordane	ND (170)	540
	4,4'-DDD	65	2,900
	4,4'-DDE	500	2,100
	4,4'-DDT	860	2,100
	Dieldrin	1400	44
	Endosulfan I	110	900
	Endosulfan II	61	900
	Endosulfan Sulfate	28	1000
	Endrin	43 PG	100
	Endrin aldehyde	ND (17)	NONE
	Heptachlor	ND (17)	100
	Heptachlor epoxide	ND (17)	20
	Methoxychlor	310	none
	Toxaphene	ND (670)	none

Notes:
(a) - New York State Department of Environmental Conservation, Division of Environmental Remediation, Technical and Administrative Guidance Memorandum (TAGM 4046)
PG the percent difference between the original and confirmation analyses is greater than 40%

As a result of the above sampling, the Contractor was told to dispose of this concrete lid off-site, rather than using the lid as initial backfill, as originally proposed.

Characterization testing of the remainder of the sump, sump sludge, soil, and gravel materials around the sump confirmed earlier testing results, which indicated significant levels of pesticides and related organic and inorganic contaminants. The characterization of this material resulted in the determination of these wastes as non-hazardous but still contaminated materials, and it was determined that all of these materials would be accepted at the CWM landfill in Model City, NY. Refer to Section III and Attachment 1 for Waste Characterization results.

Test results from the final soil tests at the conclusion of the excavation (bottom and side walls) are indicated in Table 2.

TABLE 2 (Revised 11/17/03)

	Analyte	BOTTOM	EAST	NORTH	SOUTH-EAST	SOUTH-WEST	WEST	Soil Cleanup Levels [a]
METHOD 8081 TOTAL PESTICIDE	Aldrin	ND (3.7)	ND (190)*	ND (19)	ND (380)*	9.5 J	ND (3.7)	41
	alpha-BHC	2.4 J	110 J	12 J	ND (380)*	20 J	2.0 J	110
	beta-BHC	14	110 J	ND (19)	ND (380)*	ND (36)	ND (3.7)	200
	gamma-BHC (Lindane)	ND (3.7)	67 J*	10 J	ND (380)*	23 J	ND (3.7)	60
(ug/kg)	delta-BHC	ND (3.7)	ND (190)	20	ND (380)*	ND (36)	ND (3.7)	300
	Chlordane	ND (37)	ND (1900) *	ND (190)	ND (3800)*	ND (360)	ND (37)	540
	4,4'-DDD	30	530	230	**16000**	280	9.6	2,900
	4,4'-DDE	28	300	130	920	110	22	2,100
	4,4'-DDT	110	400	320	520	450	100	2,100
	Dieldrin	ND (3.7)	**680**	**79**	**780**	**820**	3.7	44
	Endosulfan I	0.67 J	200	ND (19)	ND (380)	ND (36)	ND (3.7)	900
	Endosulfan II	0.96 J	71 J	ND (19)	ND (380)	ND (36)	0.80 J	900
	Endosulfan Sulfate	ND (3.7)	110 J	5.2 J	ND (380)	ND (36)	ND (3.7)	1000
	Endrin	ND (3.7)	ND (190)*	ND (19)	ND (380)*	ND (36)	ND (3.7)	100
	Endrin aldehyde	4.1	ND (190)	ND (19)	ND (380)	ND (36)	3.1 J	NONE
	Heptachlor	ND (3.7)	ND (190)*	ND (19)	ND (380)*	ND (36)	ND (3.7)	100
	Heptachlor epoxide	4.5	ND (190)*	12 J	ND (380)*	ND (36)*	ND (3.7)	20
	Methoxychlor	58	ND (190)	19	ND (380)	ND (37)	ND (3.7)	none
	Toxaphene	ND (73)	ND (3700)	ND (370)	ND (7500)	ND (720)	ND (72)	none
TCLP PESTICIDE	gamma-BHC (Lindane)	ND (0.00005)	0.00013	0.00017	0.00010	0.00067	ND (0.00005)	
	Chlordane	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	
	Endrin	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	
(mg/kg)	Heptachlor	ND (0.00006)	ND (0.00006)	ND (0.00006)	ND (0.00006)	ND (0.00006)	ND (0.00006)	
mg/l	Heptachlor epoxide	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	
	Methoxychlor	0.00026	ND (0.00018)	ND (0.00018)	ND (0.00018)	ND (0.00018)	ND (0.00018)	
	Toxaphene	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	

Notes:

Additional constituents under each analytical method were analyzed for but not detected at the method detection limit unless listed in the above table.

(a) - New York State Department of Environmental Conservation, Division of Environmental Remediation, Technical and Administrative Guidance Memorandum (TAGM 4046)

(b) - Value in ( ) is the site-specific soil background (SB) level based on the concentrations detected in surface soil sample SS-01 for the Site Investigation Report (March, 2003).

µg/kg - micrograms per kilogram, ppb; mg/kg - milligrams per kilogram, ppm

BOLD - Indicates constituent concentrations exceeded their associated TAGM 4046 level or background level (SS-01) whichever is higher.

E - The reported value is estimated.

J - Indicates an estimated concentration based on the data validation results or the constituent detected below the quantitation limit, above the detection limit but greater than zero.

N - Indicates spike sample recovery is not within the quality control limits.

ND - No constituents detected at or above the Practical Quantitation Limit noted within parenthesis.

* Indicates constituents exceeded TAGM or SB level but is an estimated value or was not detected above the reporting limit

ʃ Indicates analysis is not within the quality control limits.

TICs - Tentatively Identified Compounds

	Analyte	BOTTOM	EAST	NORTH	SOUTH-EAST	SOUTH-WEST	WEST	Soil Cleanup Levels [(a)(b)]
METHOD 6010 TAL METALS (mg/kg)	Aluminum - Total	7420 E*	7210 E*	6570 E	7820 E*	6870 E	9480 E*	SB (6,920 E)
	Antimony - Total	ND (17.2) N	ND (17.1) N	ND (17.5) N	ND (17.4) N	ND (17.2) N	ND (16.9) N	SB [ND (7.0)]
	Arsenic - Total	5.5	**9.4**	4.9	6.3	7.0	6.1	7.5
	Barium - Total	63.7 N	56.4 N	30.3 N	97.3 N	74.5 N	53.1 N	300
	Beryllium - Total	0.29	0.23	0.27	0.32	0.29	0.33	SB (1)
	Cadmium - Total	0.52	0.82	0.49	0.62	0.51	0.50	1
	Calcium - Total	15200 E ƒ*	937 E	588 E ƒ	878 E ƒ	1020 E	766 E ƒ	SB (1,510)
	Cobalt - Total	5.7	6.3	5.2	6.4	5.3	6.4	30
	Copper - Total	44.3 N*	40.4 N*	23.4 N	56.6 N*	30.9 N*	22.0 N	25
	Iron - Total	15900 E*	21300 E*	14500 E*	18100 E*	16100 E*	19500 E*	SB (14,000)
	Lead - Total	16.0	9.9	8.3	33.1	13.0	9.0	34.2
	Magnesium - Total	4320 N*	2270 N*	2030 N*	2510 N*	1990 N*	2740 N*	SB (1,460)
	Manganese - Total	673 E*	829 E*	396 E	226 E	747 E*	318 E	SB (514)
	Potassium - Total	**742**	**691**	**546**	**778**	**632**	**625**	SB (484)
	Selenium - Total	ND (4.6)*	ND (4.6)*	ND (4.7)*	ND (4.6)*	ND (4.6)*	ND (4.5)*	2
	Silver - Total	ND (0.57)*	ND (0.57)*	ND (0.58)*	ND (0.58)*	ND (0.57)*	ND (0.56)*	SB [ND (1.2)]
	Sodium - Total	ND (161)*	ND (160)*	ND (164)*	ND (162)*	ND (160)*	ND (158)*	SB [ND (64.5)]
	Thallium - Total	ND (6.9)*	ND (6.8)*	ND (7.0)*	ND (7.0)*	ND (6.9)*	ND (6.8)*	SB [ND (1.2)]
	Vanadium - Total	11.0	11.2	9.4	12.4	10.3	13.1	150
	Zinc - Total	91.8 N*	104 N*	66.3 N	146 N*	85.3 N*	81.9 N*	SB (67.1)
	Chromium - Total	9.1	9.1	7.7	**12**	8.8	**10.8**	SB (10.2)
	Nickel - Total	**15.7**	**16.3**	**14.5**	**18.5**	**14.1**	**18.9**	SB (13.5)
	Mercury - Total	ND (0.023)	0.087	ND (0.023)	0.037	0.021	0.021	0.1
METHOD 6010 TCLP METALS ~~(ug/kg)~~ ug/L	Arsenic - Total	ND (7.0)	ND (7.0)	ND (7.0)	ND (7.0)	ND (7.0)	ND (7.0)	
	Barium - Total	603	443	359	567	609	590	
	Cadmium - Total	2.6	1.4	ND (1.0)	2.6	ND (1.0)	1.3	
	Chromium - Total	ND (2.0)	2.4	2.4	2.7	3.1	5.9	
	Lead - Total	13.7	ND (10.0)	10.0	63.3	ND (10.0)	25.6	
	Selenium - Total	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	
	Silver - Total	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	
	Mercury - Total	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.200)	

Section III. Waste Segregation and Disposal

3.0 Waste Segregation and Characterization

The Work Plan required the contractor to provide watertight containers for up to five (5) separate waste materials. During the work, it was agreed that a smaller degree of segregation was appropriate. The following materials were segregated:

1. Sump contents and soil (liquid, sludge, sediments, and debris),
2. Concrete base, CMU block and gravel
3. Soil
4. Concrete lid and apron

All materials were placed in eight (8) lined roll-offs, covered and staged on the property prior to disposal.

As required by the approved Work Plan, the Contractor performed all sampling and analysis required for waste characterization as required by the selected waste disposal facility. Cornell assisted in assigning waste codes as required to ensure that necessary past use information is incorporated into this analysis.

3.1 Waste Disposal Documentation

Waste characterization performed by the contractor for transport and disposal indicated the waste was non-hazardous. The waste was disposed of in hazardous waste landfill (CWM landfill in Model City, NY).

Refer to Attachment 1 for Waste Characterization results. Waste disposal manifests are in Attachment 2.

3.2 Post-Excavation Sampling

At the conclusion of the excavation, the Contractor decontaminated the excavator bucket in preparation for post-excavation sampling. The Contractor removed representative samples of soil from the sidewalls and bottom of the excavation area. Under the direction of the Owner and NYSDEC representatives, a technician from the certified environmental laboratory (Severn Trent Laboratories, Inc.) collected separate soil samples from the North, East, South and West walls and placed them into appropriate sample containers for confirmatory sampling. Some discolored soil was observed on the south-east wall, therefore two samples were taken on the south wall, one from the discolored region (SE) and one of more representative soil. It should be noted that the SE sample did not verify "representative" conditions at the perimeter of the excavation but, rather, a limited area of apparently highest potential contamination (as judged by soil staining and character). All samples were analyzed by the licensed laboratory. Results are summarized in Section II of this report.

After those soils were sent off to the analytical laboratory, Cornell and the NYSDEC evaluated the soils in the excavation and determined that, based on a visual assessment, no additional testing was necessary.

Section IV: Assessments and Recommendations

4.0 Assessments

All work required by the approved IRM Work Plan was completed. Material removed as a result of this work, including sludge, gravel, soil, debris, and contaminated sump materials were segregated, characterized as non-hazardous, and disposed of off-site in a hazardous waste landfill.

This IRM resulted in the removal of significantly contaminated sludge, CMU block, gravel, and localized soil materials. Following the removal of these materials, the soil samples collected at the base and sidewalls of the excavation confirmed that the remaining "residual" contamination was at levels significantly lower than that of the removed materials. On this basis, it is concluded that the IRM was highly successful in removing the gross contamination from the site, including all material which represents a potential "source" for the spread of contamination, and greatly reducing the risk to the environment.

As documented in the Site Investigation Report, the more highly contaminated materials previously in place produced some highly localized areas of contamination, but did not result in the significant contamination of materials at further distances from the sump pit. The removal of these materials appears to have removed any further reasonable risk to the local environment from this past use.

4.1 Recommendations

Based on 1) observations made at the site prior to, during and after remedial activities; 2) analytical results from sampling; and 3) assessment of remaining risk, no further work is recommended at the Vineyard Research Facility in connection with this Voluntary Cleanup Agreement.

SEVERN TRENT STL

ANALYTICAL REPORT

Job#: A03-5322

STL Project#: NY3A9074
Site Name: NE Cornell University
Task: Vineyard Research

Tammi Aiken
Env. Comp. Office-Cornell Univ
Humphreys Service Building
Ithaca, NY 14850

STL Buffalo

Lisa E. Shaffer
Project Manager

06/20/2003

Severn Trent Laboratories, Inc.
STL Buffalo • 10 Hazelwood Drive, Suite 106, Amherst, NY 14228
Tel 716 691 2600 Fax 716 691 7991 • *www.stl-inc.com*

SAMPLE DATA SUMMARY PACKAGE

SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLED DATE	SAMPLED TIME	RECEIVED DATE	RECEIVED TIME
A3532206	BOTTOM	06/03/2003	16:30	06/03/2003	18:20
A3532205	EAST	06/03/2003	16:50	06/03/2003	18:20
A3532201	NORTH	06/03/2003	16:40	06/03/2003	18:20
A3532202	SOUTHEAST	06/03/2003	16:55	06/03/2003	18:20
A3532203	SOUTHWEST	06/03/2003	17:10	06/03/2003	18:20
A3532204	WEST	06/03/2003	16:20	06/03/2003	18:20

METHODS SUMMARY

Job#: A03-5322

STL Project#: NY3A9074
Site Name: NE Cornell University

PARAMETER	ANALYTICAL METHOD
METHOD 8081 - TCL PESTICIDES	SW8463 8081
METHOD 8081 - TCLP PESTICIDES	SW8463 8081
Aluminum - Total	SW8463 6010
Antimony - Total	SW8463 6010
Arsenic - Total	SW8463 6010
Barium - Total	SW8463 6010
Beryllium - Total	SW8463 6010
Cadmium - Total	SW8463 6010
Calcium - Total	SW8463 6010
Chromium - Total	SW8463 6010
Cobalt - Total	SW8463 6010
Copper - Total	SW8463 6010
Iron - Total	SW8463 6010
Lead - Total	SW8463 6010
Magnesium - Total	SW8463 6010
Manganese - Total	SW8463 6010
Mercury - Total	SW8463 7470
Mercury - Total	SW8463 7471
Nickel - Total	SW8463 6010
Potassium - Total	SW8463 6010
Selenium - Total	SW8463 6010
Silver - Total	SW8463 6010
Sodium - Total	SW8463 6010
Thallium - Total	SW8463 6010
Vanadium - Total	SW8463 6010
Zinc - Total	SW8463 6010
Toxicity Characteristic Leaching Procedure	SW8463 1311

References:

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A03-5322

STL Project#: NY3A9074
Site Name: NE Cornell University

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A03-5322
Sample Cooler(s) were received at the following temperature(s); 4.0 °C
All samples were received in good condition.

GC Extractable Data

For method 8081 Soil analysis, the recoveries and RPDs of several compounds in sample NORTH Matrix Spike and Matrix Spike Duplicate exceeded QC limits due to sample positives and dilution. The Matrix Spike Blank recoveries are compliant.

Metals Data

The analyte Barium was detected in the Extractor Blank at a level above the project established reporting limit. However, all samples had levels of Barium greater than ten times that of the Extractor Blank value, therefore, no corrective action was necessary.

The recovery of sample BOTTOM MS fell above quality control limits for Copper and Zinc and fell below quality control limits for Antimony, Barium, and Magnesium. The recovery of sample BOTTOM SD fell above quality control limits for Copper and Zinc and fell below quality control limits for Antimony and Magnesium. The LCS was acceptable for all elements.

The recovery of sample BOTTOM MS fell above quality control limits for Calcium and Iron and fell below quality control limits for Manganese. The recovery of sample BOTTOM SD fell above quality control limits for Iron and fell below quality control limits for Calcium and Manganese. The sample results are more than four times greater than the spike added, therefore, no qualifiers are needed. The relative percent difference between samples BOTTOM MS and BOTTOM SD exceeded quality control criteria for Calcium. The LCS was acceptable for all elements.

Wet Chemistry Data

No deviations from protocol were encountered during the analytical procedures.

****

Client Sample ID	Lab Sample ID	Parameter (Inorganic)/Method (Organic)	Dilution	Code
NORTH	A3532201	8081	10.00	008
NORTH	A3532201MS	8081	10.00	008
NORTH	A3532201SD	8081	10.00	008
SOUTHEAST	A3532202	8081	200.00	008
SOUTHWEST	A3532203	8081	20.00	008
WEST	A3532204	8081	2.00	008
EAST	A3532205	8081	100.00	008
BOTTOM	A3532206	8081	2.00	008

Dilution Code Definition:

002 - sample matrix effects
003 - excessive foaming
004 - high levels of non-target compounds
005 - sample matrix resulted in method non-compliance for an Internal Standard
006 - sample matrix resulted in method non-compliance for Surrogate
007 - nature of the TCLP matrix
008 - high concentration of target analyte(s)
009 - sample turbidity
010 - sample color
011 - insufficient volume for lower dilution
012 - sample viscosity
013 - other

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION
AND
ANALYTICAL REQUEST SUMMARY

LAB NAME: SEVERN TRENT LABORATORIES, INC.

CUSTOMER SAMPLE ID	LABORATORY SAMPLE ID	ANALYTICAL REQUIREMENTS						
		VOA GC/MS	BNA GC/MS	VOA GC	PEST PCB	METALS	TCLP HERB	WATER QUALITY
BOTTOM	A3532206	-	-	-	SW8463	SW8463	-	SW8463
EAST	A3532205	-	-	-	SW8463	SW8463	-	SW8463
NORTH	A3532201	-	-	-	SW8463	SW8463	-	SW8463
SOUTHEAST	A3532202	-	-	-	SW8463	SW8463	-	SW8463
SOUTHWEST	A3532203	-	-	-	SW8463	SW8463	-	SW8463
WEST	A3532204	-	-	-	SW8463	SW8463	-	SW8463

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYTICAL SUMMARY
INORGANIC ANALYSIS

LAB NAME: SEVERN TRENT LABORATORIES, INC.

SAMPLE IDENTIFICATION	MATRIX	METALS REQUESTED	DATE RECEIVED AT LAB	DATE DIGESTED	DATE ANALYZED
BOTTOM	SOIL	TAL METS	06/03/2003	06/05,06/09,06/05,	06/06,06/07,06/10, 06/16,06/10,
EAST	SOIL	TAL METS	06/03/2003	06/05,06/09,06/05,	06/06,06/07,06/10, 06/16,06/10,
NORTH	SOIL	TAL METS	06/03/2003	06/05,06/09,06/05,	06/06,06/07,06/10, 06/16,06/10,
SOUTHEAST	SOIL	TAL METS	06/03/2003	06/05,06/09,06/05,	06/06,06/07,06/10, 06/16,06/10,
SOUTHWEST	SOIL	TAL METS	06/03/2003	06/05,06/09,06/05,	06/06,06/07,06/10, 06/16,06/10,
WEST	SOIL	TAL METS	06/03/2003	06/05,06/09,06/05,	06/06,06/07,06/10, 06/16,06/10,

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
ORGANIC ANALYSIS

LAB NAME: SEVERN TRENT LABORATORIES, INC.

SAMPLE IDENTIFICATION	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILIARY CLEAN UP	DIL/CONC FACTOR
BOTTOM	SOIL	SW8463	SEPF; SONC	AS REQUIRED	AS REQUIRED
EAST	SOIL	SW8463	SEPF; SONC	AS REQUIRED	AS REQUIRED
NORTH	SOIL	SW8463	SEPF; SONC	AS REQUIRED	AS REQUIRED
SOUTHEAST	SOIL	SW8463	SEPF; SONC	AS REQUIRED	AS REQUIRED
SOUTHWEST	SOIL	SW8463	SEPF; SONC	AS REQUIRED	AS REQUIRED
WEST	SOIL	SW8463	SEPF; SONC	AS REQUIRED	AS REQUIRED

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

LAB NAME: SEVERN TRENT LABORATORIES, INC.

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
BOTTOM	SOIL	SW8463	SW8463	AS REQUIRED	AS REQUIRED
EAST	SOIL	SW8463	SW8463	AS REQUIRED	AS REQUIRED
NORTH	SOIL	SW8463	SW8463	AS REQUIRED	AS REQUIRED
SOUTHEAST	SOIL	SW8463	SW8463	AS REQUIRED	AS REQUIRED
SOUTHWEST	SOIL	SW8463	SW8463	AS REQUIRED	AS REQUIRED
WEST	SOIL	SW8463	SW8463	AS REQUIRED	AS REQUIRED

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U	Indicates compound was analyzed for, but not detected at or above the reporting limit.
J	Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at the secondary dilution factor.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
P	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
A	This flag indicates that a TIC is a suspected aldol-condensation product.
1	Indicates coelution.
*	Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U	Indicates element was analyzed for, but not detected at or above the reporting limit.
J or B	Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
N	Indicates spike sample recovery is not within the quality control limits.
K	Indicates the post digestion spike recovery is not within the quality control limits.
S	Indicates value determined by the Method of Standard Addition.
M	Indicates duplicate injection results exceeded quality control limits.
W	Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
E	Indicates a value estimated or not reported due to the presence of interferences.
H	Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
*	Indicates analysis is not within the quality control limits.
+	Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

METHOD 8081 - TCLP PESTICIDES
ANALYSIS DATA SHEET

Client No.

BOTTOM

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532206

Sample wt/vol: 250.00 (g/mL) ML Lab File ID: RA26571.TX0

% Moisture: 100.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SEPF Date Extracted: 06/07/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/17/2003

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 6.00 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
58-89-9	gamma-BHC (Lindane)	0.00005	U
57-74-9	Chlordane	0.00050	U
72-20-8	Endrin	0.00005	U
76-44-8	Heptachlor	0.00006	U
1024-57-3	Heptachlor epoxide	0.00005	U
72-43-5	Methoxychlor	0.00026	
8001-35-2	Toxaphene	0.0010	U

METHOD 8081 - TCLP PESTICIDES ANALYSIS DATA SHEET

Client No.: EAST

Lab Name: SIL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532205

Sample wt/vol: 250.00 (g/mL) ML Lab File ID: RA26570.TX0

% Moisture: 100.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SEPF Date Extracted: 06/07/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/16/2003

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 5.00 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
58-89-9	gamma-BHC (Lindane)	0.00013	
57-74-9	Chlordane	0.00050	U
72-20-8	Endrin	0.00005	U
76-44-8	Heptachlor	0.00006	U
1024-57-3	Heptachlor epoxide	0.00005	U
72-43-5	Methoxychlor	0.00018	U
8001-35-2	Toxaphene	0.0010	U

METHOD 8081 - TCLP PESTICIDES
ANALYSIS DATA SHEET

Client No.

NORTH

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532201

Sample wt/vol: 250.00 (g/mL) ML Lab File ID: RA26564.TX0

% Moisture: 100.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SEPF Date Extracted: 06/07/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/16/2003

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 5.00 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
58-89-9	gamma-BHC (Lindane)	0.00017	
57-74-9	Chlordane	0.00050	U
72-20-8	Endrin	0.00005	U
76-44-8	Heptachlor	0.00006	U
1024-57-3	Heptachlor epoxide	0.00005	U
72-43-5	Methoxychlor	0.00018	U
8001-35-2	Toxaphene	0.0010	U

METHOD 8081 - TCLP PESTICIDES
ANALYSIS DATA SHEET

Client No.

SOUTHEAST

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532202

Sample wt/vol: 250.00 (g/mL) ML Lab File ID: RA26565.TX0

% Moisture: 100.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SEPF Date Extracted: 06/07/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/16/2003

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 5.00 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
58-89-9	gamma-BHC (Lindane)	0.00010	
57-74-9	Chlordane	0.00050	U
72-20-8	Endrin	0.00005	U
76-44-8	Heptachlor	0.00006	U
1024-57-3	Heptachlor epoxide	0.00005	U
72-43-5	Methoxychlor	0.00018	U
8001-35-2	Toxaphene	0.0010	U

METHOD 8081 - TCLP PESTICIDES
ANALYSIS DATA SHEET

Client No.

SOUTHWEST

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532203

Sample wt/vol: 250.00 (g/mL) ML Lab File ID: RA26568.TX0

% Moisture: 100.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SEPF Date Extracted: 06/07/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/16/2003

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 5.00 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
58-89-9	gamma-BHC (Lindane)	0.00067	
57-74-9	Chlordane	0.00050	U
72-20-8	Endrin	0.00005	U
76-44-8	Heptachlor	0.00006	U
1024-57-3	Heptachlor epoxide	0.00005	U
72-43-5	Methoxychlor	0.00018	U
8001-35-2	Toxaphene	0.0010	U

METHOD 8081 - TCLP PESTICIDES
ANALYSIS DATA SHEET

Client No.

WEST

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532204

Sample wt/vol: 250.00 (g/mL) ML Lab File ID: RA26569.TX0

% Moisture: 100.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SEPF Date Extracted: 06/07/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/16/2003

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 5.00 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L	Q
58-89-9	gamma-BHC (Lindane)	0.00005	U
57-74-9	Chlordane	0.00050	U
72-20-8	Endrin	0.00005	U
76-44-8	Heptachlor	0.00006	U
1024-57-3	Heptachlor epoxide	0.00005	U
72-43-5	Methoxychlor	0.00018	U
8001-35-2	Toxaphene	0.0010	U

METHOD 8081 - TCL PESTICIDES
ANALYSIS DATA SHEET

Client No.

BOTTOM

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532206

Sample wt/vol: 30.41 (g/mL) G Lab File ID: RA26524.TX0

% Moisture: 11.2 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 06/05/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/14/2003

Injection Volume: 1.00 (uL) Dilution Factor: 2.00

GPC Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	3.7	U
319-84-6	alpha-BHC	2.4	J
319-85-7	beta-BHC	14	
58-89-9	gamma-BHC (Lindane)	3.7	U
319-86-8	delta-BHC	3.7	U
57-74-9	Chlordane	37	U
72-54-8	4,4'-DDD	30	
72-55-9	4,4'-DDE	28	
50-29-3	4,4'-DDT	110	
60-57-1	Dieldrin	3.7	U
959-98-8	Endosulfan I	0.67	J
33213-65-9	Endosulfan II	0.96	J
1031-07-8	Endosulfan Sulfate	3.7	U
72-20-8	Endrin	3.7	U
7421-93-4	Endrin aldehyde	4.1	
76-44-8	Heptachlor	3.7	U
1024-57-3	Heptachlor epoxide	4.5	
72-43-5	Methoxychlor	58	
8001-35-2	Toxaphene	73	U

METHOD 8081 - TCL PESTICIDES
ANALYSIS DATA SHEET

Client No.: EAST

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532205

Sample wt/vol: 30.47 (g/mL) G Lab File ID: RA26523.TX0

% Moisture: 12.4 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 06/05/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/14/2003

Injection Volume: 1.00 (uL) Dilution Factor: 100.00

GPC Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	190	U
319-84-6	alpha-BHC	110	J
319-85-7	beta-BHC	110	J
58-89-9	gamma-BHC (Lindane)	67	J
319-86-8	delta-BHC	190	U
57-74-9	Chlordane	1900	U
72-54-8	4,4'-DDD	530	
72-55-9	4,4'-DDE	300	
50-29-3	4,4'-DDT	400	
60-57-1	Dieldrin	680	
959-98-8	Endosulfan I	200	
33213-65-9	Endosulfan II	71	J
1031-07-8	Endosulfan Sulfate	110	J
72-20-8	Endrin	190	U
7421-93-4	Endrin aldehyde	190	U
76-44-8	Heptachlor	190	U
1024-57-3	Heptachlor epoxide	190	U
72-43-5	Methoxychlor	190	U
8001-35-2	Toxaphene	3700	U

METHOD 8081 - TCL PESTICIDES
ANALYSIS DATA SHEET

Client No.: NORTH

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532201

Sample wt/vol: 30.07 (g/mL) G Lab File ID: RA26514.TX0

% Moisture: 11.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 06/05/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/14/2003

Injection Volume: 1.00 (uL) Dilution Factor: 10.00

GPC Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	19	U
319-84-6	alpha-BHC	12	J
319-85-7	beta-BHC	19	U
58-89-9	gamma-BHC (Lindane)	10	J
319-86-8	delta-BHC	20	
57-74-9	Chlordane	190	U
72-54-8	4,4'-DDD	230	
72-55-9	4,4'-DDE	130	
50-29-3	4,4'-DDT	320	
60-57-1	Dieldrin	79	
959-98-8	Endosulfan I	19	U
33213-65-9	Endosulfan II	19	U
1031-07-8	Endosulfan Sulfate	5.2	J
72-20-8	Endrin	19	U
7421-93-4	Endrin aldehyde	19	U
76-44-8	Heptachlor	19	U
1024-57-3	Heptachlor epoxide	12	J
72-43-5	Methoxychlor	19	
8001-35-2	Toxaphene	370	U

METHOD 8081 - TCL PESTICIDES
ANALYSIS DATA SHEET

Client No.

SOUTHEAST

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532202

Sample wt/vol: 30.13 (g/mL) G Lab File ID: RA26520.TX0

% Moisture: 12.0 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 06/05/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/14/2003

Injection Volume: 1.00 (uL) Dilution Factor: 200.00

GPC Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	380	U
319-84-6	alpha-BHC	380	U
319-85-7	beta-BHC	380	U
58-89-9	gamma-BHC (Lindane)	380	U
319-86-8	delta-BHC	380	U
57-74-9	Chlordane	3800	U
72-54-8	4,4'-DDD	16000	
72-55-9	4,4'-DDE	920	
50-29-3	4,4'-DDT	520	
60-57-1	Dieldrin	780	
959-98-8	Endosulfan I	380	U
33213-65-9	Endosulfan II	380	U
1031-07-8	Endosulfan Sulfate	380	U
72-20-8	Endrin	380	U
7421-93-4	Endrin aldehyde	380	U
76-44-8	Heptachlor	380	U
1024-57-3	Heptachlor epoxide	380	U
72-43-5	Methoxychlor	380	U
8001-35-2	Toxaphene	7500	U

METHOD 8081 - TCL PESTICIDES
ANALYSIS DATA SHEET

Client No.: SOUTHWEST

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532203

Sample wt/vol: 30.75 (g/mL) G Lab File ID: RA26521.TX0

% Moisture: 10.9 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 06/05/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/14/2003

Injection Volume: 1.00 (uL) Dilution Factor: 20.00

GPC Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	9.5	J
319-84-6	alpha-BHC	20	J
319-85-7	beta-BHC	36	U
58-89-9	gamma-BHC (Lindane)	23	J
319-86-8	delta-BHC	36	U
57-74-9	Chlordane	360	U
72-54-8	4,4'-DDD	280	
72-55-9	4,4'-DDE	110	
50-29-3	4,4'-DDT	450	
60-57-1	Dieldrin	820	
959-98-8	Endosulfan I	36	U
33213-65-9	Endosulfan II	36	U
1031-07-8	Endosulfan Sulfate	36	U
72-20-8	Endrin	36	U
7421-93-4	Endrin aldehyde	36	U
76-44-8	Heptachlor	36	U
1024-57-3	Heptachlor epoxide	36	U
72-43-5	Methoxychlor	37	U
8001-35-2	Toxaphene	720	U

METHOD 8081 - TCL PESTICIDES
ANALYSIS DATA SHEET

Client No.

WEST

Lab Name: STL Buffalo Contract: _____

Lab Code: RECNY Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: A3532204

Sample wt/vol: 30.21 (g/mL) G Lab File ID: RA26522.TX0

% Moisture: 9.6 decanted: (Y/N) N Date Samp/Recv: 06/03/2003 06/03/2003

Extraction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 06/05/2003

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/14/2003

Injection Volume: 1.00 (uL) Dilution Factor: 2.00

GPC Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2	Aldrin	3.7	U
319-84-6	alpha-BHC	2.0	J
319-85-7	beta-BHC	3.7	U
58-89-9	gamma-BHC (Lindane)	3.7	U
319-86-8	delta-BHC	3.7	U
57-74-9	Chlordane	37	U
72-54-8	4,4'-DDD	9.6	
72-55-9	4,4'-DDE	22	
50-29-3	4,4'-DDT	100	
60-57-1	Dieldrin	3.7	
959-98-8	Endosulfan I	3.7	U
33213-65-9	Endosulfan II	0.80	J
1031-07-8	Endosulfan Sulfate	3.7	U
72-20-8	Endrin	3.7	U
7421-93-4	Endrin aldehyde	3.1	J
76-44-8	Heptachlor	3.7	U
1024-57-3	Heptachlor epoxide	3.7	U
72-43-5	Methoxychlor	3.7	U
8001-35-2	Toxaphene	72	U

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BOTTOM

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): SOIL Lab Sample ID: AD326428

Level (low/med): LOW Date Received: 6/3/03

% Solids: 89

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7420		E	P
7440-36-0	Antimony	17.2	U	N	P
7440-38-2	Arsenic	5.5			P
7440-39-3	Barium	63.7		N	P
7440-41-7	Beryllium	0.29			P
7440-43-9	Cadmium	0.52			P
7440-70-2	Calcium	15200		E*	P
7440-47-3	Chromium	9.1			P
7440-48-4	Cobalt	5.7			P
7440-50-8	Copper	44.3		N	P
7439-89-6	Iron	15900		E	P
7439-92-1	Lead	16.0			P
7439-95-4	Magnesium	4320		N	P
7439-96-5	Manganese	673		E	P
7440-02-0	Nickel	15.7			P
7440-09-7	Potassium	742			P
7782-49-2	Selenium	4.6	U		P
7439-97-6	Mercury	0.023	U		CV
7440-22-4	Silver	0.57	U		P
7440-23-5	Sodium	161	U		P
7440-28-0	Thallium	6.9	U		P
7440-62-2	Vanadium	11.0			P
7440-66-6	Zinc	91.8		N	P

Color Before: BROWN Clarity Before: N/A Texture: SILT

Color After: BROWN Clarity After: CLDY/FI Artifacts:

Comments:

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

BOTTOM TCLP

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): WATER Lab Sample ID: AD326537

Level (low/med): LOW Date Received: 6/3/03

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.0	U		P
7440-39-3	Barium	603			P
7440-43-9	Cadmium	2.6			P
7440-47-3	Chromium	2.0	U		P
7439-92-1	Lead	13.7			P
7782-49-2	Selenium	10.0	U		P
7439-97-6	Mercury	0.200	U		CV
7440-22-4	Silver	3.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: NONE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

EAST

Contract: NY03-124

Lab Code: STLBFLO Case No.: _____ SAS No.: _____ SDG NO.: A03-5322

Matrix (soil/water): SOIL Lab Sample ID: AD326427

Level (low/med): LOW Date Received: 6/3/03

% Solids: 88

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7210		E	P
7440-36-0	Antimony	17.1	U	N	P
7440-38-2	Arsenic	9.4			P
7440-39-3	Barium	56.4		N	P
7440-41-7	Beryllium	0.23			P
7440-43-9	Cadmium	0.82			P
7440-70-2	Calcium	937		E*	P
7440-47-3	Chromium	9.1			P
7440-48-4	Cobalt	6.3			P
7440-50-8	Copper	40.4		N	P
7439-89-6	Iron	21300		E	P
7439-92-1	Lead	9.9			P
7439-95-4	Magnesium	2270		N	P
7439-96-5	Manganese	829		E	P
7440-02-0	Nickel	16.3			P
7440-09-7	Potassium	691			P
7782-49-2	Selenium	4.6	U		P
7439-97-6	Mercury	0.087			CV
7440-22-4	Silver	0.57	U		P
7440-23-5	Sodium	160	U		P
7440-28-0	Thallium	6.8	U		P
7440-62-2	Vanadium	11.2			P
7440-66-6	Zinc	104		N	P

Color Before: BROWN Clarity Before: N/A Texture: SILT

Color After: BROWN Clarity After: CLDY/FI Artifacts: _____

Comments: _____

STL BUFFALO

CORNELL UNIVERSITY
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
EAST TCLP

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): WATER Lab Sample ID: AD326536

Level (low/med): LOW Date Received: 6/3/03

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.0	U		P
7440-39-3	Barium	443			P
7440-43-9	Cadmium	1.4			P
7440-47-3	Chromium	2.4			P
7439-92-1	Lead	10.0	U		P
7782-49-2	Selenium	10.0	U		P
7439-97-6	Mercury	0.200	U		CV
7440-22-4	Silver	3.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: NONE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

NORTH

Contract: NY03-124

Lab Code: STLBFLO Case No.: _____ SAS No.: _____ SDG NO.: A03-5322

Matrix (soil/water): SOIL Lab Sample ID: AD326423

Level (low/med): LOW Date Received: 6/3/03

% Solids: 89

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6570		E	P
7440-36-0	Antimony	17.5	U	N	P
7440-38-2	Arsenic	4.9			P
7440-39-3	Barium	30.3		N	P
7440-41-7	Beryllium	0.27			P
7440-43-9	Cadmium	0.49			P
7440-70-2	Calcium	588		E*	P
7440-47-3	Chromium	7.7			P
7440-48-4	Cobalt	5.2			P
7440-50-8	Copper	23.4		N	P
7439-89-6	Iron	14500		E	P
7439-92-1	Lead	8.3			P
7439-95-4	Magnesium	2030		N	P
7439-96-5	Manganese	396		E	P
7440-02-0	Nickel	14.5			P
7440-09-7	Potassium	546			P
7782-49-2	Selenium	4.7	U		P
7439-97-6	Mercury	0.023	U		CV
7440-22-4	Silver	0.58	U		P
7440-23-5	Sodium	164	U		P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	9.4			P
7440-66-6	Zinc	66.3		N	P

Color Before: BROWN Clarity Before: N/A Texture: SILT

Color After: BROWN Clarity After: CLDY/FI Artifacts: _____

Comments: _____

STL BUFFALO

CORNELL UNIVERSITY
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.: NORTH TCLP

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): WATER Lab Sample ID: AD326530

Level (low/med): LOW Date Received: 6/3/03

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.0	U		P
7440-39-3	Barium	359			P
7440-43-9	Cadmium	1.0	U		P
7440-47-3	Chromium	2.4			P
7439-92-1	Lead	10.0			P
7782-49-2	Selenium	10.0	U		P
7439-97-6	Mercury	0.200	U		CV
7440-22-4	Silver	3.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture: NONE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

STL BUFFALO

CORNELL UNIVERSITY
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SOUTHEAST

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): SOIL Lab Sample ID: AD326424

Level (low/med): LOW Date Received: 6/3/03

% Solids: 88

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7820		E	P
7440-36-0	Antimony	17.4	U	N	P
7440-38-2	Arsenic	6.3			P
7440-39-3	Barium	97.3		N	P
7440-41-7	Beryllium	0.32			P
7440-43-9	Cadmium	0.62			P
7440-70-2	Calcium	878		E*	P
7440-47-3	Chromium	12.0			P
7440-48-4	Cobalt	6.4			P
7440-50-8	Copper	56.6		N	P
7439-89-6	Iron	18100		E	P
7439-92-1	Lead	33.1			P
7439-95-4	Magnesium	2510		N	P
7439-96-5	Manganese	226		E	P
7440-02-0	Nickel	18.5			P
7440-09-7	Potassium	778			P
7782-49-2	Selenium	4.6	U		P
7439-97-6	Mercury	0.037			CV
7440-22-4	Silver	0.58	U		P
7440-23-5	Sodium	162	U		P
7440-28-0	Thallium	7.0	U		P
7440-62-2	Vanadium	12.4			P
7440-66-6	Zinc	146		N	P

Color Before: BROWN Clarity Before: N/A Texture: SILT

Color After: BROWN Clarity After: CLDY/FI Artifacts:

Comments:

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SOUTHEAST TCLP

Contract: NY03-124

Lab Code: STLBFLO Case No.: _____ SAS No.: _____ SDG NO.: A03-5322

Matrix (soil/water): WATER Lab Sample ID: AD326533

Level (low/med): LOW Date Received: 6/3/03

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.0	U		P
7440-39-3	Barium	567			P
7440-43-9	Cadmium	2.6			P
7440-47-3	Chromium	2.7			P
7439-92-1	Lead	63.3			P
7782-49-2	Selenium	10.0	U		P
7439-97-6	Mercury	0.200	U		CV
7440-22-4	Silver	3.0	U		P

Color Before: GRAY Clarity Before: CLOUDY Texture: NONE

Color After: GRAY Clarity After: CLOUDY Artifacts: _____

Comments: _____

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SOUTHWEST

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): SOIL Lab Sample ID: AD326425

Level (low/med): LOW Date Received: 6/3/03

% Solids: 89

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6870		E	P
7440-36-0	Antimony	17.2	U	N	P
7440-38-2	Arsenic	7.0			P
7440-39-3	Barium	74.5		N	P
7440-41-7	Beryllium	0.29			P
7440-43-9	Cadmium	0.51			P
7440-70-2	Calcium	1020		E*	P
7440-47-3	Chromium	8.8			P
7440-48-4	Cobalt	5.3			P
7440-50-8	Copper	30.9		N	P
7439-89-6	Iron	16100		E	P
7439-92-1	Lead	13.0			P
7439-95-4	Magnesium	1990		N	P
7439-96-5	Manganese	747		E	P
7440-02-0	Nickel	14.1			P
7440-09-7	Potassium	632			P
7782-49-2	Selenium	4.6	U		P
7439-97-6	Mercury	0.021			CV
7440-22-4	Silver	0.57	U		P
7440-23-5	Sodium	160	U		P
7440-28-0	Thallium	6.9	U		P
7440-62-2	Vanadium	10.3			P
7440-66-6	Zinc	85.3		N	P

Color Before: BROWN Clarity Before: N/A Texture: SILT

Color After: BROWN Clarity After: CLDY/FI Artifacts:

Comments:

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SOUTHWEST TCLP

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): WATER Lab Sample ID: AD326534

Level (low/med): LOW Date Received: 6/3/03

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	7.0	U		P
7440-39-3	Barium	609			P
7440-43-9	Cadmium	1.0	U		P
7440-47-3	Chromium	3.1			P
7439-92-1	Lead	10.0	U		P
7782-49-2	Selenium	10.0	U		P
7439-97-6	Mercury	0.200	U		CV
7440-22-4	Silver	3.0	U		P

Color Before: GRAY Clarity Before: CLOUDY Texture: NONE

Color After: GRAY Clarity After: CLOUDY Artifacts:

Comments:

STL BUFFALO

CORNELL UNIVERSITY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

WEST

Contract: NY03-124

Lab Code: STLBFLO Case No.: SAS No.: SDG NO.: A03-5322

Matrix (soil/water): SOIL Lab Sample ID: AD326426

Level (low/med): LOW Date Received: 6/3/03

% Solids: 90

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9480		E	P
7440-36-0	Antimony	16.9	U	N	P
7440-38-2	Arsenic	6.1			P
7440-39-3	Barium	53.1		N	P
7440-41-7	Beryllium	0.33			P
7440-43-9	Cadmium	0.50			P
7440-70-2	Calcium	766		E*	P
7440-47-3	Chromium	10.8			P
7440-48-4	Cobalt	6.4			P
7440-50-8	Copper	22.0		N	P
7439-89-6	Iron	19500		E	P
7439-92-1	Lead	9.0			P
7439-95-4	Magnesium	2740		N	P
7439-96-5	Manganese	318		E	P
7440-02-0	Nickel	18.9			P
7440-09-7	Potassium	625			P
7782-49-2	Selenium	4.5	U		P
7439-97-6	Mercury	0.021			CV
7440-22-4	Silver	0.56	U		P
7440-23-5	Sodium	158	U		P
7440-28-0	Thallium	6.8	U		P
7440-62-2	Vanadium	13.1			P
7440-66-6	Zinc	81.9		N	P

Color Before: BROWN Clarity Before: N/A Texture: SILT

Color After: BROWN Clarity After: CLDY/FI Artifacts:

Comments:

CHAIN OF CUSTODY DOCUMENTATION

Chain of Custody Record

IN WALK-IN
PAUL L

SEVERN TRENT SERVICES — Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client	Project Manager	Date	Chain of Custody Number
NE CORNELL	LISA SHAFFER	6-3-03	112234
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page ____ of ____
City: Fredonia	State: NY	Zip Code	Site Contact	Lab Contact
Project Name and Location (State): Vineyard Research	Carrier/Waybill Number
Contract/Purchase Order/Quote No.: NY3A9074	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: TAL Metals 6020	8 oz PEST	8 oz TCLP
NORTH	6-3-03	1640				X	X						1	1	1
SOUTHEAST		1655											1	1	1
SOUTHWEST		1710											1	1	1
WEST		1620											1	1	1
EAST		1650											1	1	1
BOTTOM		1630											1	1	1

Special Instructions/ Conditions of Receipt

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other ____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	6-3-03	1820	1. Received By: James Ruckin	6/3/03	1820
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

4.0°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

73916

Attachment 1

CES Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Corbett Management
4800 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 2058B
DATE: 06/12/2003

SAMPLE NUMBER- 324869 SAMPLE ID- Dumpster 00150 SAMPLE MATRIX- SO
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1305
DATE RECEIVED- 06/05/03 SAMPLER- Edward Horning RECEIVED BY- rlp
TIME RECEIVED- 0900 DELIVERED BY- Melissa Kane TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/11/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/11/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY: _____

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Fax 315-478-2107

REPORT OF ANALYSES

Corbett Management
4880 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 20088
DATE: 06/12/2003

SAMPLE NUMBER - 324870 SAMPLE ID- Dumpster 9871 SAMPLE MATRIX- SO
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1340
DATE RECEIVED- 06/05/03 SAMPLER- Edward Horning RECEIVED BY- rlp
TIME RECEIVED- 0900 DELIVERED BY- Mallnna Kane TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/11/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/11/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

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Certified Environmental Services, Inc.

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REPORT OF ANALYSES

Corbett Management
4080 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 20508
DATE: 06/12/2003

SAMPLE NUMBER- 324871 SAMPLE ID- Dumpster 976 SAMPLE MATRIX- SO
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1400
DATE RECEIVED- 06/06/03 SAMPLER- Edward Horning RECEIVED BY- rlp
TIME RECEIVED- 0900 DELIVERED BY- Mallnos Kane TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/09/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/09/03		KB	< 0.60	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/09/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.80	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.008	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

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REPORT OF ANALYSES

Corbett Management
4880 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 20588
DATE: 06/12/2003

SAMPLE NUMBER- 324872 SAMPLE ID- Concrete Lid Apron 01 SAMPLE MATRIX- OT
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1415
DATE RECEIVED- 06/05/03 SAMPLER- Edward Horning RECEIVED BY- rlp
TIME RECEIVED- 0900 DELIVERED BY- Melissa Kane TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/09/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/09/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/09/03		KB	0.56	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.008	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

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REPORT OF ANALYSES

Corbett Management
4880 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: #20588/Cornell, Fredonia
DATE: 06/12/2003

SAMPLE NUMBER- 324401 SAMPLE ID - Dumpster 9649 SAMPLE MATRIX- OT
DATE SAMPLED- 06/02/03 TIME SAMPLED- 1608
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning RECEIVED BY- nam
TIME RECEIVED- 0850 DELIVERED BY- Chris Nixon TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/05/03		RG	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.80	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		DLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.006	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.08	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

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Syracuse, NY 13210
Phone 315-478-2374
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REPORT OF ANALYSES

Corbett Management
4880 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

DATE: 06/16/2003

SAMPLE NUMBER- 324482 SAMPLE ID- Dumpster 0021 SAMPLE MATRIX- SO
DATE SAMPLED- 06/02/03 TIME SAMPLED- 1553
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning RECEIVED BY- nam
TIME RECEIVED- 0830 DELIVERED BY- Chris Nixon TYPE SAMPLE- Composite

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/05/03		RS	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/13/03		ELS		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/13/03		ELS	< 0.05	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/13/03		ELS	< 0.000	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/13/03		ELS	< 0.000	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/13/03		ELS	< 0.000	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/13/03		ELS	0.0378	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/13/03		ELS	0.0683	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/13/03		ELS	< 0.05	mg/L

Note: TCLP Pesticide analysis performedby ELAP #11376.

NYSDOH LAB ID NO. 11246 APPROVED BY:

CES Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
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REPORT OF ANALYSES

Corbett Management
4080 Dugald Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: #20588/Cornell, Fredonia
DATE: 06/12/2003

SAMPLE NUMBER- 324483 SAMPLE ID- Dumpster 9778 SAMPLE MATRIX- SO
DATE SAMPLED- 06/02/03 TIME SAMPLED- 1530
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning RECEIVED BY- nom
TIME RECEIVED- 0850 DELIVERED BY- Chris Nixon TYPE SAMPLE- Composite

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/05/03		RS	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Corbett Management
4800 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: #20500/Cornell, Fredonia
DATE: 06/12/2003

SAMPLE NUMBER- 324484 SAMPLE ID- Dumpster 9827 SAMPLE MATRIX- SO
DATE SAMPLED- 06/02/03 TIME SAMPLED- 1513
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning RECEIVED BY- nam
TIME RECEIVED- 0850 DELIVERED BY- Chris Nixon TYPE SAMPLE- Composite

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RB	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

(Terms and Conditions on Reverse Side)

CHAIN OF CUSTODY RECORD

CES
Certified Environmental Services, Inc.
1401 Erie Blvd. East
Syracuse, NY 13210
Phone: 315-478-2374 Fax: 315-478-2107

BATCH NO: 58238

Page 1 of 1

Turn-Around Time:
- ☐ Standard
- ☒ 1 Week
- ☐ 72 Hours
- ☐ 48 Hours
- ☐ 24 Hours

CLIENT NAME: AHD Environmental
ADDRESS: P.O. Box 370
Syracuse, NY 1321
PHONE: 315 471-2000
FAX: 315 455-6740
CONTACT NAME: Todd Clark

PROJECT NUMBER/NAME: #30599 / Cornell, Ithaca

PURCHASE ORDER NO:

Sampler's Name: Edward Harrington Signature: Edward H.

PARAMETERS FOR ANALYSIS

CES Sample Numbers (LAB USE ONLY)	Collected Date	Collected Time	Comp.	Grab	Aqueous	Soil	Other	CLIENT ID/SAMPLE LOCATION	TOTAL NUMBER OF CONTAINERS	Pesticides - TCLP	Metals - TCLP
324481	[illegible]	[illegible]	✓				✓	Dumpster 9649 (concrete)	1	X	X
324482	[illegible]	1553	✓				✓	Dumpster 9331 (sludges)	1	X	X
324483	[illegible]	1530	✓			✓		Dumpster 9778 (Soils)	1	X	X
324484	[illegible]	1511	✓			✓		Dumpster 9824 (Soils)	1	X	X

TOTAL NUMBER OF CONTAINERS: 4

SPECIAL REMARKS: Fax Waste Wetlands

SAMPLES RELINQUISHED BY:		SAMPLES RECEIVED BY:		Samples Received in Good Condition:
NAME: [illegible] SIGNATURE: [signature]	DATE: [illegible] TIME: [illegible]	NAME: Melissa Kane SIGNATURE: [signature]	DATE: [illegible] TIME: [illegible]	☐ Yes ☐ No Temperature ____ °C
NAME: Melissa Kane SIGNATURE: [signature]	DATE: [illegible] TIME: 9 am	NAME: SIGNATURE: Nichola [illegible]	DATE: 6/3 TIME: 0850	

White - CES's Copy • Canary - Return to Client With Report • Pink - Clients Initial Copy

CHAIN OF CUSTODY RECORD

CES
Certified Environmental Services, Inc.
1401 Erie Blvd. East
Syracuse, NY 13210
Phone: 315-473-2374 Fax: 315-478-2107

BATCH NO: 5X218

Page ____ of ____

Turn-Around Time:
- ☐ Standard
- ☐ 1 Week
- ☐ 72-Hours
- ☒ 48 Hours
- ☐ 24 Hours

CLIENT NAME: [illegible]
ADDRESS: [illegible]
PHONE: [illegible]
FAX: [illegible]
CONTACT NAME: [illegible]
PROJECT NUMBER/NAME: [illegible]
PURCHASE ORDER NO:
Sampler's Name: [illegible]
Signature: [illegible]

PARAMETERS FOR ANALYSIS

LAB USE ONLY CES Sample Numbers	Collected Date	Collected Time	TYPE Comp.	TYPE Grab	MATRIX Aqueous	MATRIX Soil	MATRIX Other	CLIENT ID/SAMPLE LOCATION	TOTAL NUMBER OF CONTAINERS	[illegible]	[illegible]
324869	[illegible]	[illegible]	✓			✓		[illegible]	1		
324870	[illegible]	[illegible]	✓			✓		[illegible]	1		
324871	[illegible]	[illegible]	✓			✓		[illegible]	1		
324872	[illegible]	[illegible]	✓				✓	[illegible]	1	[illegible]	

SPECIAL REMARKS:

TOTAL NUMBER OF CONTAINERS

SAMPLES RELINQUISHED BY:	SAMPLES RECEIVED BY:	
NAME: [illegible] DATE: [illegible] SIGNATURE: [illegible] TIME: [illegible]	NAME: [illegible] DATE: [illegible] SIGNATURE: [illegible] TIME: [illegible]	Samples Received in Good Condition: ☐ Yes ☐ No Temperature ____ °C
NAME: [illegible] DATE: [illegible] SIGNATURE: [illegible] TIME:	NAME: [illegible] DATE: [illegible] SIGNATURE: [illegible] TIME: [illegible]	[illegible] 6/5/03 [illegible] 900

White - CES's Copy • Canary - Return to Client With Report • Pink - Client's Initial Copy

Attachment 2

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N/A . . . .

Manifest Document No. 00001

2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853

4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.

6. US EPA ID Number: NJD054126164

A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:

8. US EPA ID Number:

B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

10. US EPA ID Number: NYD049836792

C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material ~~(Concrete)~~ (Soil & Sludge) SW	001	CM	EST. 40000	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile ~~#CW9548~~ #CW9541 SW
BOX ~~77~~

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
SR ~~77~~ 636921-1

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 8157447442

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
LARRY GEMBLEWICZ		07	08	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Actual Rec'd 34820P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Lynn Piechowski	Ly Piechowski	07	08	03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . . .

Manifest Document No. 00002

2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853

4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.

6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4

A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:

8. US EPA ID Number:

B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

10. US EPA ID Number: N. Y. D. 0. 4. 9. 8. 3. 6. 6. 7. 9

C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 40,000	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541
Box # 00150

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 636921-2 81574741

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Oliver E Ott JR		7	8	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Actual Read 38000P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Lynn Piechowski		07	08	03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . . .

Manifest Document No. 00003

2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107
10. US EPA ID Number: N. Y. D. 0. 4. 9. 8. 3. 6. 6. 7. 9
C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 15.	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: CMS (866) 734-2553
Service Request #686921-5

815747754

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: STEPHEN BEYERS — Signature — Month 7 Day 8 Year 03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: MARC SNYDER — Signature — Month 7 Day 8 Year 03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space
Act. Rec 42780P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Michelle Fleck — Signature: Michelle Fleck — Month 07 Day 09 Year 03

GENERATOR
TRANSPORTER
FACILITY

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N/A . . . . .

Manifest Document No. 0.0.0.0.4

2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107
10. US EPA ID Number: N.Y.D.0.4.9.8.3.6.6.7.9
C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 15	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686921-3

81574762

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
JOHN KOMOWICZ		7	8	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Act Rec 13520 P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck	Michelle Fleck	07	09	03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . .

Manifest Document No. 0.0.0.0.5

2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853

4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.

6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4

A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:

8. US EPA ID Number:

B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

10. US EPA ID Number: N.Y.D.0.4.9.8.3.6.6.7.9

C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 00015	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information TRANS. ID 0444349 ME NJ-113

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686921-4 81574763

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYER		07	08	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
ROBERT SMITH		07	08	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Act Rec. 28340P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck		07	09	03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N/A

Manifest Document No. 0.0.0.6

2. Page 1 of 1

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

GENERATOR

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853

4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

5. Transporter 1 Company Name: Freehold Cartage, Inc.

6. US EPA ID Number: NJD054126164

A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

10. US EPA ID Number: NYD049836679

C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 00012	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686921-L

8151480

TRANSPORTER

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: STEPHEN BEYERS — Signature: [signature] — Month 7 Day 7 Year 03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Oliver E Ott Jr — Signature: [signature] — Month 7 Day 7 Year 03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month . Day . Year .

FACILITY

19. Discrepancy Indication Space
Act Rec 36980P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Michelle Fleck — Signature: Michelle Fleck — Month 07 Day 14 Year 03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N/A | Manifest Document No. 10007 | 2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Freehold Cartage, Inc.	NJD054126164	732-462-1001
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
CWM Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107	NYD049836579	800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Concrete)	001	CM	EST. 15	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9540
~~SR# 686924-1 EB~~

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
Box #9706 Trans. ID 04-40416 ME NJ113

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686924-1

81574752

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Eric Bixby		07	08	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
Act:Rec 24840P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck		07	09	03

GENERATOR / TRANSPORTER / FACILITY

Printed by J. J. KELLER & ASSOCIATES, INC.
Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N/A
Manifest Document No. 0.0.0.0.8
2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name
8. US EPA ID Number
B. Transporter's Phone

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107
10. US EPA ID Number: N. Y. D. 0. 4. 9. 8. 3. 6. 6. 7. 3
C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Concrete)	001	CM	EST. 4.0000	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9540

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
SR # 686924-2
5.45 AM

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request #
81574759

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
LARRY GRABOWSKI		7	8	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
Act Rec 23740P

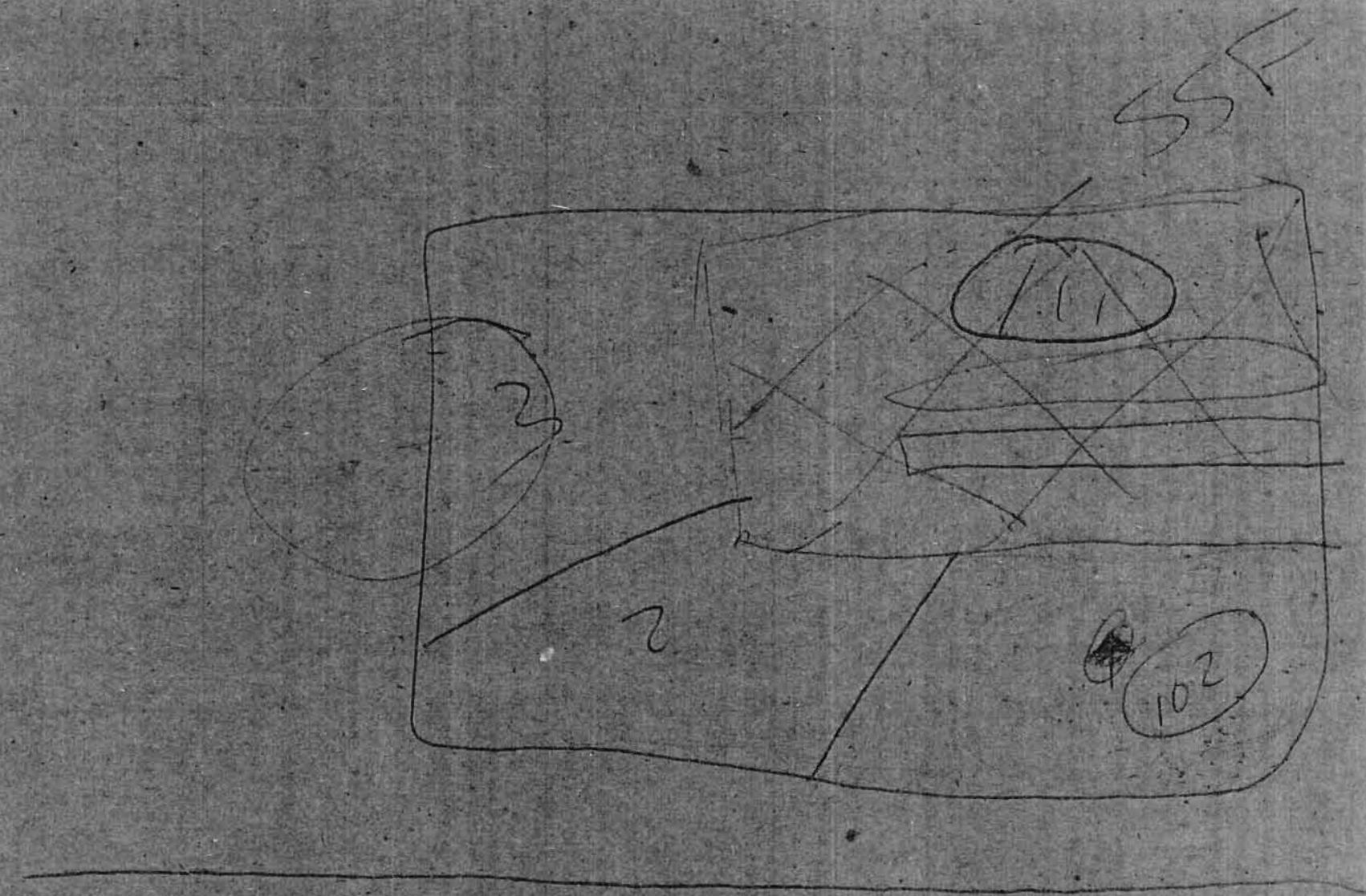
20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck	Michelle Fleck	07	09	03

GENERATOR — TRANSPORTER — FACILITY

Printed by J. J. KELLER & ASSOCIATES, INC.
Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR


SST
101
2
2
102

Attachment 1

Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Corbett Management
4800 Dugwid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 20588
DATE: 06/12/2003

SAMPLE NUMBER- 324069 SAMPLE ID- Dumpster 00150 SAMPLE MATRIX- SO
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1305
DATE RECEIVED- 06/05/03 SAMPLER- Edward Horning RECEIVED BY- rlp
TIME RECEIVED- 0900 DELIVERED BY- Melissa Kano TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/11/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/11/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

CES Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Corbett Management
4880 Dugald Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 20886
DATE: 06/12/2003

SAMPLE NUMBER- 324870 SAMPLE ID- Dumpster 9871 SAMPLE MATRIX- SO
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1340
DATE RECEIVED- 06/05/03 SAMPLER- Edward Morning RECEIVED BY- rlp
TIME RECEIVED- 0900 DELIVERED BY- Melissa Rano TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/11/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/11/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/11/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/11/03		KB	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

CES Certified Environmental Services, Inc.

1401 Erie Blvd. East
Syracuse, NY 13210
Phone 315-478-2374
Fax 315-478-2107

REPORT OF ANALYSES

Corbett Management
4080 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 20508
DATE: 06/12/2003

SAMPLE NUMBER- 324871 SAMPLE ID- Dumpster 976 SAMPLE MATRIX- SO
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1400
DATE RECEIVED- 06/06/03 SAMPLER- Edward Hornlay RECEIVED BY- mlp
TIME RECEIVED- 0900 DELIVERED BY- Mallnox Kane TYPE SAMPLE- Composite

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/09/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/09/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

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REPORT OF ANALYSES

Corbett Management
4880 Dugald Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: 20588
DATE: 06/12/2003

SAMPLE NUMBER- 324872 SAMPLE ID- Concrete Lid Apron 01 SAMPLE MATRIX- OT
DATE SAMPLED- 06/04/03 TIME SAMPLED- 1415
DATE RECEIVED- 06/05/03 SAMPLER- Edward Horning RECEIVED BY- rlp
TIME RECEIVED- 0900 DELIVERED BY- Melissa Kane TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/09/03	KB	06/09/03		KB		
ARSENIC, TCLP (AS)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/09/03	KB	06/09/03		KB	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/09/03	KB	06/09/03		KB	0.56	mg/L
MERCURY, TCLP (HG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/09/03	KB	06/09/03		KB	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/09/03	KB	06/09/03		KB	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.008	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

Tammi Aiken
Environmental Engineer
Environmental Compliance Office
Planning Design, and Construction

Telephone: 607 255-8314
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E-mail: tba1@cornell.edu
Web: eco.pdc.cornell.edu

Facilities Services

Cornell University
129 Humphreys Service Building
Ithaca, NY 14853-3701

LETTER OF TRANSMITTAL

TO: Jaspal Walia

FROM: Tammi Aiken, P.E.

DATE: October 1, 2003

CC: Mary-Lynn Cummings, Patricia McClary, Robert Seem, Gregg Travis, Richard Dunst, Steve Beyers

RE: **Vineyard Research Laboratory, Final Report – Sludge, Sump, and Soil Removal and Disposal.**

Jaspal,

Thank you for your continued patience while we finalized the enclosed report for your review. If you would like additional information, please do not hesitate to contact me.

Thank you,

Tammi

Environmental Compliance Office

Interim Remedial Measure (IRM)
Final Report

Sludge, Sump, and Soil Removal and Disposal

Vineyard Research Laboratory
New York State Agricultural Experiment Station
Cornell University
Fredonia, New York

Prepared by:
Environmental Compliance Office
Cornell University
129 Humphreys Service Building
Ithaca, NY 14850

October, 2003

Interim Remedial Measure (IRM) Final Report
Sludge, Sump, and Soil Removal and Disposal
Vineyard Research Laboratory
Fredonia, New York

Table of Contents

Engineer's Certification and Executive Summary

This Final Report documents the work done as part of an Interim Remedial Measure (IRM) approved by the New York State Department of Environmental Conservation for the Vineyard Research Facility in Fredonia, New York. The work was completed under the terms of a Voluntary Clean-Up Agreement (VCA) between Cornell University, the facility operator, and the NYSDEC.

The completed work included the following:

- Removal of the contents of a former drywell sump. The contents included liquids, sludge, sediment, and miscellaneous wood and metal debris.
- Removal of the sump, which was constructed of concrete masonry unit (CMU) block and cast-in-place concrete.
- Removal of contaminated stone and soil surrounding the sump (over 2'-0" on all sides).
- Characterization and disposal of all wastes.
- Soil sampling at the base and sidewalls of the excavation to determine the residual levels of contaminants at those locations.

All of the work was completed under the approved Health and Safety Plan (HASP) and in accordance with the approved Work Plan.

The IRM resulted in the removal of highly contaminated waste materials which formed a potential "source" for contamination of nearby soil or groundwater. Soil sampling confirmed that the removal of the sump contents and surrounding materials substantially reduced this risk, as the remaining contaminant levels in the soil were generally several orders of magnitude lower then the contaminant levels in the removed materials.

Cornell University thereby certifies that the IRM was completed in accordance with the approved Work Plan and recommends no further actions for this site.

Signed: _____ ***Dated:*** 10/1/03

Steve Beyers, P.E.
Cornell University Environmental Compliance Office

Section I: Overview

1.0 Introduction and Purpose

This Interim Remedial Measure (IRM) Final Report describes remedial work completed at the Vineyard Research Laboratory in Fredonia, New York. The remedial work included the removal of contaminated materials resulting from past use of the facility. The scope of work was as recommended by the Site Investigation Final Report prepared in September, 2002 by Blasland, Bouck, and Lee (BB&L), consultants to Cornell University (Owner) for the Site Investigation work. The specific construction scope was performed in accordance with the approved Remedial Work Plan submitted by Cornell to the New York State Department of Environmental Conservation (NYSDEC) in April, 2003.

The objective of the Project was to excavate and dispose of specific materials from the site that have been contaminated by past agricultural and research activities at the research facility. These materials included the following:

1. A sump, consisting of a reinforced concrete base, concrete masonry units forming the sump walls, and a pre-cast concrete cover section. The pesticide pit was approximately 12-feet long, 8-feet wide (outside dimensions) and 5-feet deep (from top of grade);
2. The sump contents, including a mix of sediments, sludge, and liquid;
3. Impacted soils immediately surrounding the sump area; and
4. A small area of surface soils located adjacent to former drain outlet from a former interior pesticide storage area.

The completed removal of these materials is expected to eliminate principal areas of pesticide and associated metal contamination at the site and the potential of future migration of contaminants from these areas into surrounding soils or groundwater.

1.1 Site Background

The Vineyard Research Laboratory, also known as the Taschenberg Laboratory, is located at 412 East Main Street in the Village of Fredonia, Town of Pomfret, Chautauqua County, New York. The Vineyard Research Laboratory was established in 1958 by the New York State Agricultural Experiment Station, Geneva, New York, in order to develop improved pesticide application methods; improve control of major grape insect, disease, and weed pests; and develop a mechanical harvester for grapes. The facility is currently operating to support research programs such as the mechanization of pruning and shoot positioning, long-term effects of insects and diseases on vineyard productivity, trickle irrigation, and weed control methods. Prior to 1958, the land was owned and operated by Renalski nursery.

The laboratory is adjacent to an active research farm. A dry well sump to the north (back side) of the facility was used as a dry well for several lab drains in the building and as a collection and disposal system for wash waters during pesticide fill and rinse operations until about 1990. The use of the sump was discontinued after new Federal underground injection control regulations were promulgated. Sampling in and around the sump, as documented in the Final Site Investigation Report, indicated elevated levels of pesticides and metals adjacent to the sump and significant contamination of the sump sludge.

1.2 Summary of IRM Work Plan

The IRM Work Plan described the specific work required to effect the removal of contaminated materials as recommended in the Site Investigation Final Report. Specifically, the Work Plan detailed the following actions:

1. Removal, characterization, and off-site disposal of sludge from the sump, the sump, and the following surrounding soils:
   - 2' of soil on all four sides of the sump
   - 2' of soil beneath the sump

2. Removal, characterization, and disposal of surface soils in a 3' by 3' area immediately adjacent to a former building drain line, to a uniform depth of 1'. The drain line extended from a former pesticide storage room. The room is no longer used for pesticide storage.

3. Field observation of the work and confirmatory soil sampling at the conclusion of the excavation.

1.3 Regulatory Framework

This Project was part of a Voluntary Clean-Up Program Agreement between Cornell University, Owner, and the New York State Department of Environmental Conservation, representing the State's public environmental interest. The review and approval authority for this work is the NYSDEC. This Final Report is a component of the process described in that Agreement.

Section II: Summary of Site Activities

2.0 Contracts and Timetable

The Owner advertised for bid from a select group of remediation contractors. The advertisement and bid processes included the distribution of Contract and Bid Documents to four contractors, an on-site pre-construction conference, and the submission of formal closed bids to the Owner by the Contractors. Of the four contractors who were invited to bid, the Owner received bids from two of those, and selected AAA Environmental, Inc. of Syracuse New York (AAA) to perform this work. AAA had previously visited the site and was therefore cognizant of site conditions.

This Project was carried out jointly by the Owner, the Contractor (AAA), a certified testing lab (Severn Trent Laboratories, Inc.), and the New York State Department of Environmental Conservation (NYSDEC). This Section of the Final Report specifies the roles and responsibilities of each party.

2.1 Personnel Involved

The Project Team for this project included the Owner, Contractor, and the NYSDEC.

Roles for the Owner included the following:

- Approving the Project.
- Preparing the Work Plan and the associated Health and Safety Plan (HASP).
- Contracting for the work.
- Promoting compliance with the Work Plan and HASP through appropriate contractual terms.
- Financing the work.
- Providing to the Contractor relevant information on site hazards so that the Contractor could appropriately protect site personnel during the work.
- Providing the Contractor with temporary site access and control of the Work Area.
- Providing the Contractor with relevant site history information and data in order to allow an accurate characterization of the waste materials.
- Observing the work in the field.
- Collecting and analyzing samples of the soil on the sides of the sump and the soils under the sump.
- Providing this Final Report.

The roles for the Contractor included:

- Completing the remediation work specified in the Contract Documents, which reference the Work Plan and HASP.
- Providing worker protection for Contractor's workers.
- Characterizing, transporting, and properly disposing of all remediation waste materials, in accordance with the Contract Documents.

The role of the NYSDEC included:

- Review and approval of the Work Plan, HASP, and Contract Documents.
- Oversight of the remedial work to promote protection of the environment and to assure substantive conformance with the approved Work Plan.
- Providing guidance and technical support to the Owner as appropriate.

The role of the certified testing laboratory included:

- Analysis of soil and material samples as directed by the Owner.
- Documentation of analysis and reporting of results.

2.2 Site Activities

The Contractor completed the remedial actions in accordance with the Contract Documents, which referenced and included the approved Work Plan and HASP. These actions included providing the manpower, equipment, resources, and all associated administrative and contractual elements as specified in the Contract between the Owner and Contractor. The Contractor was also responsible for all field testing as specified in the Contract.

In addition to the excavation of soils to the limits specified in the work plan (generally, all soil surrounding the sump within 2' of the sump sides or bottom) the Contractor, at the direction of the Owner, excavated, characterized, and disposed of some additional soils, removed based on a probability of contamination as judged by site observation (moisture level, consistency, and color). The total amount of soil removed was therefore significantly higher than proposed in the approved Work Plan.

The Contractor performed all sampling and analysis for waste characterization as required by the selected waste disposal facility, and was responsible for the health and safety of the Contractor's personnel and implementation of the Health and Safety Plan.

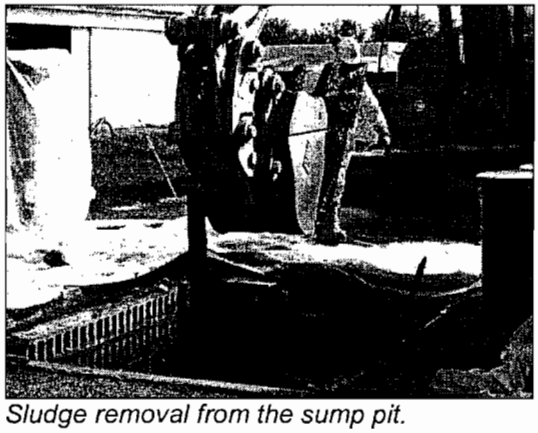
The following pages provide a brief written and photo chronology of site activities, as summarized from field notes of the work.

Work Summary Chronology:

Tuesday May 27, 2003
Mid-day: Contractor arrived on site, set up equipment, delineated work space (including decontamination zone), and held a site-specific health and safety meeting for Contractor employees (including a review of the health and safety instrumentation used to check "background" levels of dust and contaminants). The Contractor and Owner planned work. The NYSDEC site inspector arrived and stayed on-site for the duration of the excavation portion of the project.

Wednesday, May 28, 2003
The Contractor removed the tarp over the sump and sump cover.
The Owner took a sample of cover concrete and sent this sample to a certified laboratory for pesticide analysis to document that the cover was uncontaminated (proposed for backfill).
The Contractor pumped free liquids at surface of sump into two drums.

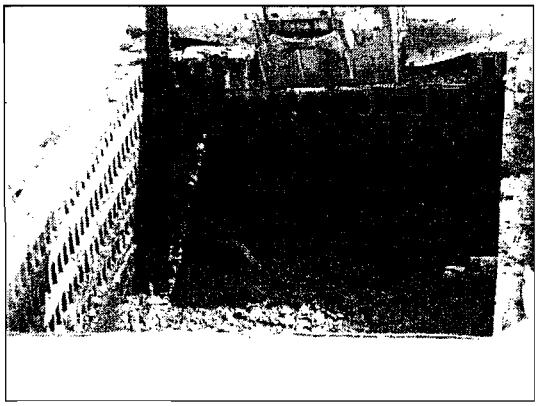
Thursday, May 29, 2003
The Contractor removed remaining sump contents (sludge, sediment, and debris) using the backhoe. The sump contents were loaded into a lined roll-off container.
The Contractor identified three penetrations through the bottom of the sump (not anticipated) and requested direction on next steps. The Owner directed the Contractor to continue work in accordance with the Work Plan, with the aim of investigating this further once removal of the sump bottom was complete.
Once the pit was empty, the Contractor removed the cinder block walls, concrete sidewalls, and bottom, and placed them into another roll-off. Discolored soils were observed at the sides of the excavation in a limited stratum between approximately two feet and four feet below the surface.

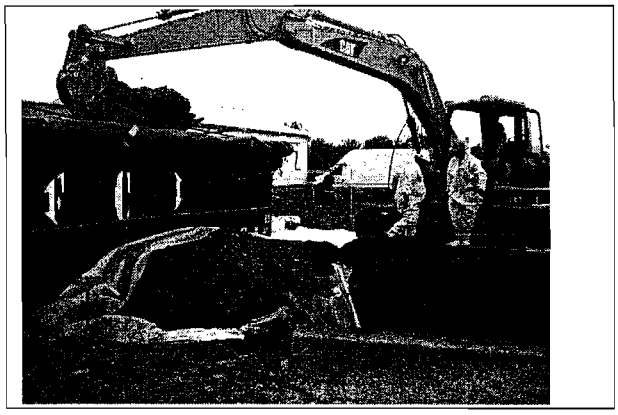


Sludge removal from the sump pit.

Friday, May 30, 2003
The Owner received laboratory analysis indicating that the sump cover had some contamination. Although the contamination was less than the levels constituting a "hazardous waste", the levels were sufficient to consider the cover material to be "industrial waste". After conferring with Environmental Health & Safety, ECO directed the Contractor to dispose of this material at a hazardous waste landfill, but not classify this waste as "hazardous".

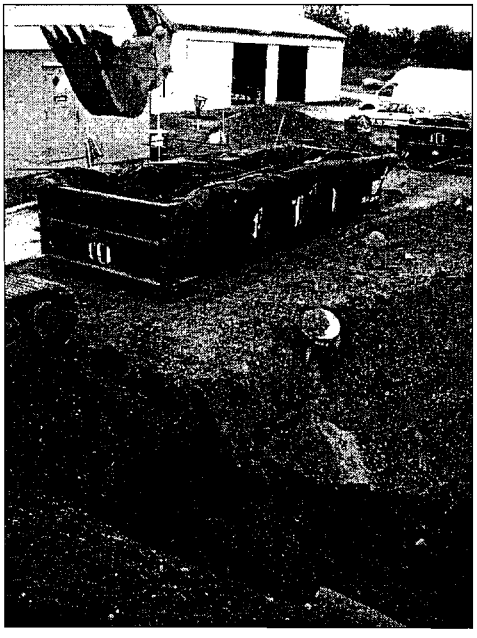
CMU inside walls of the sump pit.





The picture above illustrates the stone fill around the sump pit.

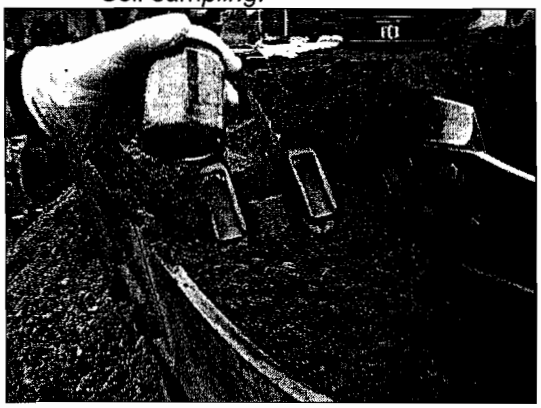
Monday, June 2, 2003
The Owner requested the Contractor to dig test pits approximately 3'-4' from the north and west sides of the excavation, extending approximately 5 to 6 feet. NYSDEC Project Manager Jaspal Walia was on site to observe the excavation and test pits. No further discoloration was observed and the holes were re-filled with the original soil as requested by the NYSDEC. The Owner and NYSDEC jointly decided to remove additional soil by scraping the sides of the excavation until clean soil is observed, i.e., no discolored soil visibly evident on sides of excavation.



Tuesday, June 3, 2003
NYSDEC site inspector and Owner agreed overburden may be peeled back and later used as fill in the hole. Contractor removed 2'-3' of soil on the West, North and East sides of the pit as directed by Owner and NYDEC site inspector. After decontaminating the bucket, the Contractor removed representative samples of soil from the sidewalls (North, East, South and West) and bottom of the excavation area. The lab technician (hired by ECO) collected separate soil samples from all sides of the excavation for confirmatory analysis.. Some discolored soil was observed on the south-east wall, therefore two samples were taken on the south wall, one from the discolored region (SE) and one of more representative soil. The final size of the excavation was approximately 24' (parallel with the building) x 21' x 8' deep. After post-excavation sampling was complete, the hole was backfilled, first with overburden from the sides of excavation, then with imported gravel.

The final excavation, prior to backfill.

Soil sampling.



Wednesday, June 4, 2003
The Contractor continued backfilling in accordance with the Specifications and began site clean up.

Thursday, June 5, 2003
The Contractor loaded the concrete lid and apron (staged within and adjacent to the work area and covered with plastic) into a roll-off and moved all roll-offs to an area selected by the supervisor of the Facility (adjacent to and east of the rear driveway on the east side of the property). The Contractor finished repairing asphalt pavement and site restoration and left the site.

July 7 and July 8,2003
After characterization of the soils was complete and all waste documentation filled out, the roll-offs were removed from the site and transported to the CWM landfill facility in Model City, NY.

2.3 Health and Safety

All work on site was completed as specified in the site specified Health and Safety Plan (HASP). In addition to the work tasks anticipated in the HASP, the Contractor also elected to remove sludge from the sump utilizing the protocol specified in the Contractor's Confined Space Entry Program.

Throughout the construction the Contractor also monitored the site utilizing a dust monitor, four-gas (O2, H2S, CO, and LEL) meter, and the photo-ionization detector (PID).

There was one instance of slightly elevated dust readings (TWA, time weighted average, 0.245 mg/m^3) at the exclusion zone perimeter, which was just outside the immediate work area. In response to this reading, the Contractor used a water spray at the point of excavation, and the dust levels returned to background. After implementing the water spray, no further elevated dust readings were noted. No other unusual or unexpected readings or conditions were indicated by any of the instruments during the work.

There were no reportable workplace accidents or injuries.

2.4 Samples and Analytical Results

Analysis of samples taken from underside surface of the concrete sump lid determined that the surface had been impacted by the former pesticide rinse operations and long-term proximity to the contaminated sump contents. The following table summarizes the results of this analysis.

TABLE 1

	Analyte	Results	Soil Cleanup Levels [(a)]
METHOD 8081 TOTAL PESTICIDE	Aldrin	ND (17)	41
	alpha-BHC	ND (17)	110
	beta-BHC	ND (17)	200
	gamma-BHC (Lindane)	ND (17)	60
(ug/kg)	delta-BHC	ND (17)	300
	Chlordane	ND (170)	540
	4,4'-DDD	65	2,900
	4,4'-DDE	500	2,100
	4,4'-DDT	860	2,100
	Dieldrin	1400	44
	Endosulfan I	110	900
	Endosulfan II	61	900
	Endosulfan Sulfate	28	1000
	Endrin	43 PG	100
	Endrin aldehyde	ND (17)	NONE
	Heptachlor	ND (17)	100
	Heptachlor epoxide	ND (17)	20
	Methoxychlor	310	none
	Toxaphene	ND (670)	none

Notes:
(a) - New York State Department of Environmental Conservation, Division of Environmental Remediation, Technical and Administrative Guidance Memorandum (TAGM 4046)
PG the percent difference between the original and confirmation analyses is greater than 40%

As a result of the above sampling, the Contractor was told to dispose of this concrete lid off-site, rather than using the lid as initial backfill, as originally proposed.

Characterization testing of the remainder of the sump, sump sludge, soil, and gravel materials around the sump confirmed earlier testing results, which indicated significant levels of pesticides and related organic and inorganic contaminants. The characterization of this material resulted in the determination of these wastes as non-hazardous but still contaminated materials, and it was determined that all of these materials would be accepted at the CWM landfill in Model City, NY. Refer to Section III and Attachment 1 for Waste Characterization results.

Test results from the final soil tests at the conclusion of the excavation (bottom and side walls) are indicated in Table 2.

TABLE 2

	Analyte	BOTTOM	EAST	NORTH	SOUTH-EAST	SOUTH-WEST	WEST	Soil Cleanup Levels [(a)]
METHOD 8081 TOTAL PESTICIDE (ug/kg)	Aldrin	ND (3.7)	ND (190)*	ND (19)	ND (380)*	9.5 J	ND (3.7)	41
	alpha-BHC	2.4 J	110 J	12 J	ND (380)*	20 J	2.0 J	110
	beta-BHC	14	110 J	ND (19)	ND (380)*	ND (36)	ND (3.7)	200
	gamma-BHC (Lindane)	ND (3.7)	67 J*	10 J	ND (380)*	23 J	ND (3.7)	60
	delta-BHC	ND (3.7)	ND (190)	20	ND (380)*	ND (36)	ND (3.7)	300
	Chlordane	ND (37)	ND (1900) *	ND (190)	ND (3800)*	ND (360)	ND (37)	540
	4,4'-DDD	30	530	230	**16000**	280	9.6	2,900
	4,4'-DDE	28	300	130	920	110	22	2,100
	4,4'-DDT	110	400	320	520	450	100	2,100
	Dieldrin	ND (3.7)	**680**	**79**	**780**	**820**	3.7	44
	Endosulfan I	0.67 J	200	ND (19)	ND (380)	ND (36)	ND (3.7)	900
	Endosulfan II	0.96 J	71 J	ND (19)	ND (380)	ND (36)	0.80 J	900
	Endosulfan Sulfate	ND (3.7)	110 J	5.2 J	ND (380)	ND (36)	ND (3.7)	1000
	Endrin	ND (3.7)	ND (190)*	ND (19)	ND (380)*	ND (36)	ND (3.7)	100
	Endrin aldehyde	4.1	ND (190)	ND (19)	ND (380)	ND (36)	3.1 J	NONE
	Heptachlor	ND (3.7)	ND (190)*	ND (19)	ND (380)*	ND (36)	ND (3.7)	100
	Heptachlor epoxide	4.5	ND (190)*	12 J	ND (380)*	ND (36)*	ND (3.7)	20
	Methoxychlor	58	ND (190)	19	ND (380)	ND (37)	ND (3.7)	none
	Toxaphene	ND (73)	ND (3700)	ND (370)	ND (7500)	ND (720)	ND (72)	none
TCLP PESTICIDE (ug/kg)	gamma-BHC (Lindane)	ND (0.00005)	0.00013	0.00017	0.00010	0.00067	ND (0.00005)	
	Chlordane	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	
	Endrin	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	
	Heptachlor	ND (0.00006)	ND (0.00006)	ND (0.00006)	ND (0.00006)	ND (0.00006)	ND (0.00006)	
	Heptachlor epoxide	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	
	Methoxychlor	0.00026	ND (0.00018)	ND (0.00018)	ND (0.00018)	ND (0.00018)	ND (0.00018)	
	Toxaphene	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	

Notes:

Additional constituents under each analytical method were analyzed for but not detected at the method detection limit unless listed in the above table.

(a) - New York State Department of Environmental Conservation, Division of Environmental Remediation, Technical and Administrative Guidance Memorandum (TAGM 4046)

(b) - Value in ( ) is the site-specific soil background (SB) level based on the concentrations detected in surface soil sample SS-01 for the Site Investigation Report (March, 2003).

µg/kg - micrograms per kilogram, ppb; mg/kg - milligrams per kilogram, ppm

BOLD - Indicates constituent concentrations exceeded their associated TAGM 4046 level or background level (SS-01) whichever is higher.

E - The reported value is estimated.

J - Indicates an estimated concentration based on the data validation results or the constituent detected below the quantitation limit, above the detection limit but greater than zero.

N - Indicates spike sample recovery is not within the quality control limits.

ND - No constituents detected at or above the Practical Quantitation Limit noted within parenthesis.

* Indicates constituents exceeded TAGM or SB level but is an estimated value or was not detected above the reporting limit

^{J} Indicates analysis is not within the quality control limits.

TICs - Tentatively Identified Compounds

	Analyte	BOTTOM	EAST	NORTH	SOUTH-EAST	SOUTH-WEST	WEST	Soil Cleanup Levels [(a)(b)]
METHOD 6010	Aluminum - Total	7420 E*	7210 E*	6570 E	7820 E*	6870 E	9480 E*	SB (6,920 E)
TAL METALS	Antimony - Total	ND (17.2) N	ND (17.1) N	ND (17.5) N	ND (17.4) N	ND (17.2) N	ND (16.9) N	SB [ND (7.0)]
	Arsenic - Total	5.5	**9.4**	4.9	6.3	7.0	6.1	7.5
(mg/kg)	Barium - Total	63.7 N	56.4 N	30.3 N	97.3 N	74.5 N	53.1 N	300
	Beryllium - Total	0.29	0.23	0.27	0.32	0.29	0.33	SB (1)
	Cadmium - Total	0.52	0.82	0.49	0.62	0.51	0.50	1
	Calcium - Total	15200 E f*	937 E	588 E f	878 E f	1020 E	766 E f	SB (1,510)
	Cobalt - Total	5.7	6.3	5.2	6.4	5.3	6.4	30
	Copper - Total	44.3 N*	40.4 N*	23.4 N	56.6 N*	30.9 N*	22.0 N	25
	Iron - Total	15900 E*	21300 E*	14500 E*	18100 E*	16100 E*	19500 E*	SB (14,000)
	Lead - Total	16.0	9.9	8.3	33.1	13.0	9.0	34.2
	Magnesium - Total	4320 N*	2270 N*	2030 N*	2510 N*	1990 N*	2740 N*	SB (1,460)
	Manganese - Total	673 E*	829 E*	396 E	226 E	747 E*	318 E	SB (514)
	Potassium - Total	**742**	**691**	**546**	**778**	**632**	**625**	SB (484)
	Selenium - Total	ND (4.6)*	ND (4.6)*	ND (4.7)*	ND (4.6)*	ND (4.6)*	ND (4.5)*	2
	Silver - Total	ND (0.57)*	ND (0.57)*	ND (0.58)*	ND (0.58)*	ND (0.57)*	ND (0.56)*	SB [ND (1.2)]
	Sodium - Total	ND (161)*	ND (160)*	ND (164)*	ND (162)*	ND (160)*	ND (158)*	SB [ND (64.5)]
	Thallium - Total	ND (6.9)*	ND (6.8)*	ND (7.0)*	ND (7.0)*	ND (6.9)*	ND (6.8)*	SB [ND (1.2)]
	Vanadium - Total	11.0	11.2	9.4	12.4	10.3	13.1	150
	Zinc - Total	91.8 N*	104 N*	66.3 N	146 N*	85.3 N*	81.9 N*	SB (67.1)
	Chromium - Total	9.1	9.1	7.7	**12**	8.8	**10.8**	SB (10.2)
	Nickel - Total	**15.7**	**16.3**	**14.5**	**18.5**	**14.1**	**18.9**	SB (13.5)
	Mercury - Total	ND (0.023)	0.087	ND (0.023)	0.037	0.021	0.021	0.1
METHOD 6010	Arsenic - Total	ND (7.0)	ND (7.0)	ND (7.0)	ND (7.0)	ND (7.0)	ND (7.0)	
TCLP METALS	Barium - Total	603	443	359	567	609	590	
	Cadmium - Total	2.6	1.4	ND (1.0)	2.6	ND (1.0)	1.3	
(mg/kg)	Chromium - Total	ND (2.0)	2.4	2.4	2.7	3.1	5.9	
	Lead - Total	13.7	ND (10.0)	10.0	63.3	ND (10.0)	25.6	
	Selenium - Total	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	
	Silver - Total	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	
	Mercury - Total	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.200)	

Section III. Waste Segregation and Disposal

3.0 Waste Segregation and Characterization

The Work Plan required the contractor to provide watertight containers for up to five (5) separate waste materials. During the work, it was agreed that a smaller degree of segregation was appropriate. The following materials were segregated:

1. Sump contents and soil (liquid, sludge, sediments, and debris),
2. Concrete base, CMU block and gravel
3. Soil
4. Concrete lid and apron

All materials were placed in eight (8) lined roll-offs, covered and staged on the property prior to disposal.

As required by the approved Work Plan, the Contractor performed all sampling and analysis required for waste characterization as required by the selected waste disposal facility. Cornell assisted in assigning waste codes as required to ensure that necessary past use information is incorporated into this analysis.

3.1 Waste Disposal Documentation

Waste characterization performed by the contractor for transport and disposal indicated the waste was non-hazardous. The waste was disposed of in hazardous waste landfill (CWM landfill in Model City, NY).

Refer to Attachment 1 for Waste Characterization results. Waste disposal manifests are in Attachment 2.

3.2 Post-Excavation Sampling

At the conclusion of the excavation, the Contractor decontaminated the excavator bucket in preparation for post-excavation sampling. The Contractor removed representative samples of soil from the sidewalls and bottom of the excavation area. Under the direction of the Owner and NYSDEC representatives, a technician from the certified environmental laboratory (Severn Trent Laboratories, Inc.) collected separate soil samples from the North, East, South and West walls and placed them into appropriate sample containers for confirmatory sampling. Some discolored soil was observed on the south-east wall, therefore two samples were taken on the south wall, one from the discolored region (SE) and one of more representative soil. It should be noted that the SE sample did not verify "representative" conditions at the perimeter of the excavation but, rather, a limited area of apparently highest potential contamination (as judged by soil staining and character). All samples were analyzed by the licensed laboratory. Results are summarized in Section II of this report.

After those soils were sent off to the analytical laboratory, Cornell and the NYSDEC evaluated the soils in the excavation and determined that, based on a visual assessment, no additional testing was necessary.

Section IV: Assessments and Recommendations

4.0 Assessments

All work required by the approved IRM Work Plan was completed. Material removed as a result of this work, including sludge, gravel, soil, debris, and contaminated sump materials were segregated, characterized as non-hazardous, and disposed of off-site in a hazardous waste landfill.

This IRM resulted in the removal of significantly contaminated sludge, CMU block, gravel, and localized soil materials. Following the removal of these materials, the soil samples collected at the base and sidewalls of the excavation confirmed that the remaining "residual" contamination was at levels significantly lower than that of the removed materials. On this basis, it is concluded that the IRM was highly successful in removing the gross contamination from the site, including all material which represents a potential "source" for the spread of contamination, and greatly reducing the risk to the environment.

As documented in the Site Investigation Report, the more highly contaminated materials previously in place produced some highly localized areas of contamination, but did not result in the significant contamination of materials at further distances from the sump pit. The removal of these materials appears to have removed any further reasonable risk to the local environment from this past use.

4.1 Recommendations

Based on 1) observations made at the site prior to, during and after remedial activities; 2) analytical results from sampling; and 3) assessment of remaining risk, no further work is recommended at the Vineyard Research Facility in connection with this Voluntary Cleanup Agreement.

CES Certified Environmental Services, Inc.

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REPORT OF ANALYSES

Corbett Management
4880 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: #20588/Cornell, Frodonia
DATE: 06/12/2003

SAMPLE NUMBER- 324401 SAMPLE ID- Dumpster 9649 SAMPLE MATRIX- OT
DATE SAMPLED- 06/02/03 TIME SAMPLED- 1608
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning RECEIVED BY- Dam
TIME RECEIVED- 0850 DELIVERED BY- Chris Nixon TYPE SAMPLE- Composite

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/05/03		RG	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.80	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.60	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.80	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		DLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.006	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.08	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		DLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

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REPORT OF ANALYSES

Corbett Management
4880 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

DATE: 06/16/2003

SAMPLE NUMBER- 324482 SAMPLE ID- Dumpster 9021
DATE SAMPLED- 06/02/03
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning
TIME RECEIVED- 0830 DELIVERED BY- Chris Nixon

SAMPLE MATRIX- SO
TIME SAMPLED- 1553
RECEIVED BY- nam
TYPE SAMPLE- Composite

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/05/03		RS	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/13/03		KLS		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/13/03		KLS	< 0.05	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/13/03		KLS	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/13/03		KLS	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/13/03		KLS	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/13/03		KLS	0.0378	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/13/03		KLS	0.0683	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/13/03		KLS	< 0.05	mg/L

Note: TCLP Pesticide analysis performed by ELAP #11375.

NYSDOH LAB ID NO. 11246 APPROVED BY:

(Terms and Conditions on Reverse Side)

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REPORT OF ANALYSES

Corbett Management
4080 Dugald Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: #20588/Cornell, Fredonia
DATE: 06/12/2003

SAMPLE NUMBER- 324483 SAMPLE ID- Dumpster 9778 SAMPLE MATRIX- SO
DATE SAMPLED- 06/02/03 TIME SAMPLED- 1530
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning RECEIVED BY- nom
TIME RECEIVED- 0850 DELIVERED BY- Chris Nixon TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/05/03		RS	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.90	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.80	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

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REPORT OF ANALYSES

Corbett Management
4800 Duguid Road
Manlius, NY 13104-
Attn: Mr. Jim Corbett

PROJECT NAME: #20580/Cornell, Fredonia
DATE: 06/12/2003

SAMPLE NUMBER- 324484 SAMPLE ID- Dumpster 9827 SAMPLE MATRIX- SO
DATE SAMPLED- 06/02/03 TIME SAMPLED- 1513
DATE RECEIVED- 06/03/03 SAMPLER- Edward Horning RECEIVED BY- nam
TIME RECEIVED- 0800 DELIVERED BY- Chris Nixon TYPE SAMPLE- Composite

Page 1 of 1

ANALYSIS	METHOD	SAMPLE PREP DATE	BY	ANALYSIS DATE	TIME	BY	RESULT	UNITS
TCLP Extraction	40CFR 1311			06/06/03		RS	Complete	
TCLP METALS	SW 846	06/06/03	KB	06/06/03		MM		
ARSENIC, TCLP (AS)	SW 846	06/06/03	KB	06/06/03		MM	< 0.60	mg/L
BARIUM, TCLP (BA)	SW 846	06/06/03	KB	06/06/03		MM	< 10.0	mg/L
CADMIUM, TCLP (CD)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
CHROMIUM, TCLP (CR)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
LEAD, TCLP (PB)	SW 846	06/06/03	KB	06/06/03		MM	< 0.60	mg/L
MERCURY, TCLP (HG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.02	mg/L
SELENIUM, TCLP (SE)	SW 846	06/06/03	KB	06/06/03		MM	< 0.10	mg/L
SILVER, TCLP (AG)	SW 846	06/06/03	KB	06/06/03		MM	< 0.50	mg/L
TCLP PESTICIDES	EPA 8081	06/09/03	MD	06/11/03		BLD		
CHLORDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.02	mg/L
ENDRIN, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
HEPTACHLOR EPOXIDE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
LINDANE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.005	mg/L
METHOXYCHLOR, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L
TOXAPHENE, TCLP	EPA 8081	06/09/03	MD	06/11/03		BLD	< 0.05	mg/L

NYSDOH LAB ID NO. 11246 APPROVED BY:

(Terms and Conditions on Reverse Side)

CHAIN OF CUSTODY RECORD

CES
Certified Environmental Services, Inc.
1401 Erie Blvd. East
Syracuse, NY 13210
Phone: 315-478-2374 Fax: 315-478-2107

BATCH NO: 58238

Page 1 of 1

Turn-Around Time:
- ☐ Standard
- ☒ 1 Week
- ☐ 72 Hours
- ☐ 48 Hours
- ☐ 24 Hours

CLIENT NAME: AHA Environmental
ADDRESS: P.O. Box 376, Syracuse, NY 13211
PHONE: 315 471-3600
FAX: 315 455-3740
CONTACT NAME: Jack Clark

PROJECT NUMBER/NAME: #3055 SS / Cargill, Fairmont

PURCHASE ORDER NO:

Sampler's Name: Edward Hanna Signature: Edward Hanna

LAB USE ONLY CES Sample Numbers	Collected Date	Collected Time	TYPE Comp.	TYPE Grab	MATRIX Aqueous	MATRIX Soil	MATRIX Other	CLIENT ID/SAMPLE LOCATION	TOTAL NUMBER OF CONTAINERS	PARAMETERS FOR ANALYSIS: Pesticides - TCLP	PARAMETERS FOR ANALYSIS: Metals - TCLP
324481	6/10/03	1649	✓				✓	Dumpster 1649 (Concrete)	1	X	X
324482	6/10/03	1553	✓				✓	Dumpster 9821 (Sludges)	1	X	X
324483	6/10/03	1530	✓			✓		Dumpster 9778 (Soils)	1	X	X
324484	6/10/03	1519	✓			✓		Dumpster 9824 (Soils)	1	X	X

SPECIAL REMARKS: For Waste Profiles

4 TOTAL NUMBER OF CONTAINERS

SAMPLES RELINQUISHED BY:		SAMPLES RECEIVED BY:	
NAME:	DATE:	NAME:	DATE:
SIGNATURE:	TIME:	SIGNATURE:	TIME:
NAME:	DATE: 6/13/03	NAME: Nichole Hunt	DATE: 6/13
SIGNATURE:	TIME: 8:45am	SIGNATURE:	TIME: 0850

Samples Received in Good Condition:
☐ Yes ☐ No
Temperature_____°C

White - CES's Copy - Canary - Return to Client With Report - Pink - Client's Initial Copy

CHAIN OF CUSTODY RECORD

CES
Certified Environmental Services, Inc.
1401 Erie Blvd. East
Syracuse, NY 13210
Phone: 315-473-2374 Fax 315-478-2107

SATCH NO: SX218 Page ___ of ___

Turn-Around Time:
- ☐ Standard
- ☐ 1 Week
- ☐ 72 Hours
- ☐ 48 Hours
- ☐ 24 Hours

CLIENT NAME:
ADDRESS:
PHONE:
FAX:
CONTACT NAME:

PROJECT NUMBER/NAME:
PURCHASE ORDER NO:

Sampler's Name: Signature:

LAB USE ONLY CES Sample Numbers	Collected Date	Collected Time	TYPE Comp.	TYPE Grab	MATRIX Aqueous	MATRIX Soil	MATRIX Other	CLIENT ID/SAMPLE LOCATION	TOTAL NUMBER OF CONTAINERS	PARAMETERS FOR ANALYSIS
224816										
324870										
324871										
324872										

SPECIAL REMARKS: TOTAL NUMBER OF CONTAINERS

SAMPLES RELINQUISHED BY:	SAMPLES RECEIVED BY:	Samples Received in Good Condition:
NAME: DATE: 6/14/03	NAME: DATE: 6/14/03	☐ Yes ☐ No
SIGNATURE: TIME: 1423	SIGNATURE: TIME: 1424	Temperature ___ °C
NAME: DATE: 6/15/03	NAME: DATE: 6/15/03	6/15/03
SIGNATURE: TIME: 900	SIGNATURE: TIME: 900	900

White - CES's Copy - Canary - Return to Client With Report - Pink - Client's Initial Copy

Attachment 2

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: N/A
Manifest Document No.: 0.0.0.0.1
2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107
10. US EPA ID Number: N.Y.D.0.4.9.8.3.6.6.7.9
C. Facility's Phone: 800-843-3604

	11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a.	Non RCRA, Non DOT Regulated Material ~~(Concrete)~~ (Soil & Sludge) SW3	001	CM	EST. 40000	P
b.					
c.					
d.					

D. Additional Descriptions for Materials Listed Above
A. Profile ~~#CW9548~~ #CW9541 SW3
BOX #7

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
SR # 636921-1

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request #
815744742

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
LARRY GEMBELUK		07	08	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACIL

19. Discrepancy Indication Space
Actual Rec'd 34820P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Lynn Piechowski		07	08	03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . . .
Manifest Document No. 00002
2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107
10. US EPA ID Number: N.Y.D.0.4.9.8.3.6.6.7.9
C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 40,000	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541
Box # 00150

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 636921-2
815747741

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Printed/Typed Name: STEPHEN BEYERS
Signature:
Month 7 Day 8 Year 03

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Oliver E Ott JR
Signature:
Month 7 Day 8 Year 03

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month . Day . Year .

19. Discrepancy Indication Space
Actual Reed 38000P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Lynn Piechowski
Signature:
Month 07 Day 08 Year 03

GENERATOR
TRANSPORTER
FACILITY

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . .
Manifest Document No. 00003
2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107
10. US EPA ID Number: N. Y. D. 0. 4. 9. 8. 3. 6. 6. 7. 9
C. Facility's Phone: 800-843-3604

	11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a.	Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 15	T
b.					
c.					
d.					

GENERATOR

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request #686921-5

815747754

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
MARC SNYDER		7	8	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Act Rec 42780P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck	Michelle Fleck	07	09	03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . .
Manifest Document No. 0 0 0 0 4
2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: N J D 0 5 4 1 2 6 1 6 4
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107
10. US EPA ID Number: N. Y. D. 0. 4. 9. 8. 3. 6. 6. 7. 9
C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	0 0 1	CM	EST. 15	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686921-3

815744762

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
JOHN KOMOROWICZ		07	08	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
Acf Rec 13520 P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck	Michelle Fleck	07	10	03

GENERATOR
TRANSPORTER
FACILITY

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . .
Manifest Document No. 0.0.0.0.5
2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Freehold Cartage, Inc.	N J D 0 5 4 1 2 6 1 6 4	732-462-1001
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
	. . . . .	
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
CWM Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107	N.Y.D.0.4.9.8.3.6.6.7.9	800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	0 0 1	CM	EST. 00015	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information TRANS. ID 0444349 mE NJ-113

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686921-4 81574763

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYER		07	08	03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
ROBERT Smith	Robert Smith	07	08	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
Act. Rec. 28340P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck	Michelle Fleck	07	09	03

GENERATOR — TRANSPORTER — FACILITY

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type.
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NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N / A

Manifest Document No. CC006

2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

5. Transporter 1 Company Name: Freehold Cartage, Inc.
6. US EPA ID Number: NJD054126164
A. Transporter's Phone: 732-462-1001

7. Transporter 2 Company Name:
8. US EPA ID Number:
B. Transporter's Phone:

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

10. US EPA ID Number: NYD049836679
C. Facility's Phone: 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Soil & Sludge)	001	CM	EST. 00012	T
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
A. Profile #CW9541

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686921-6
81574866

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS	[signature]	7	7	03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Oliver E Ott JR	[signature]	7	7	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
Act Rec 36980P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck	[signature]	07	7	03

GENERATOR / TRANSPORTER / FACILITY

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

12-BLS-C6 Rev. 1/97

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N/A . . . .

Manifest Document No. 10007

2. Page 1 of 1

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853
4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name
Freehold Cartage, Inc.

6. US EPA ID Number
NJD054126164

A. Transporter's Phone
732-462-1001

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
CWM Chemical Services, Inc.
1550 Balmer Road
Model City, NY 14107

10. US EPA ID Number
NYD049836579

C. Facility's Phone
800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Concrete)	001	CM	EST. 15	T
b.				
c.				
d.				

GENERATOR

J. Additional Descriptions for Materials Listed Above
A. Profile #CW9540
~~SA#686924-1-EB~~

E. Handling Codes for Wastes Listed Above
L

15. Special Handling Instructions and Additional Information
Box # 9706
TRANS. ID 04-40416 ME
NJ113

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request # 686924-1

81574752

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Eric Bixby		07	08	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space
Act Rec 24840P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck		10	09	03

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Neenah WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . N / A . . . .

Manifest Document No. 0 0 0 0 5

2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Cornell University, Contracts & Capital Projects Admin.
107 Humphries Srvc. Bldg., Ithaca, NY 14853

4. Generator's Phone (607) 255-5491 Attn: Steve Beyer

SITE: Cornell University
Vineyard Research Lab
412 E. Main St., Fredonia, NY 14063

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Freehold Cartage, Inc.	N J D 0 5 4 1 2 6 1 6 4	732-462-1001
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
	. . . . .	
9. Designated Facility Name and Site Address CWM Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107	10. US EPA ID Number N. Y. D. 0. 4. 9. 8. 3. 6. 6. 7. 9	C. Facility's Phone 800-843-3604

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA, Non DOT Regulated Material (Concrete)	0 0 1	CM	EST. 4 0 0 0 0	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above	E. Handling Codes for Wastes Listed Above
A. Profile #CW9540	L

15. Special Handling Instructions and Additional Information

5:45 AM

SR # 686924-2

24 Hour Emergency Contact: CMS (866) 734-2553
Service Request #

81574759

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
STEPHEN BEYERS		7	8	03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
LARRY GRABLEWS		7	8	03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

FACILITY

19. Discrepancy Indication Space

Act Rec 23740P

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Michelle Fleck		07	09	03

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Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

APPENDIX A

Remedial Work Plan

Sludge, Sump, and Soil Removal and Disposal

Cornell University/NYSAES

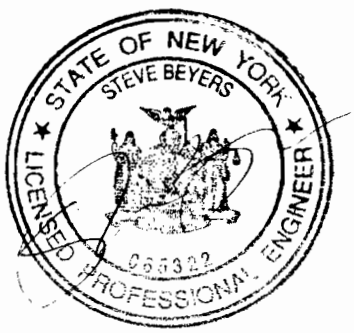
Vineyard Research Laboratory

Fredonia, New York

Prepared by:

Environmental Compliance Office

March, 2003



Remedial Work Plan

Sludge, Sump, and Soil Removal and Disposal
Vineyard Research Laboratory
Fredonia, New York

Table of Contents

Section I: Overview

1.0 Introduction and Purpose

This Remedial Work Plan describes remedial work (the "Project") to be completed at the Vineyard Research Laboratory in Fredonia, New York. The remedial work will remove contaminated materials resulting from past use of the facility. The scope of work is as recommended by the Site Investigation Final Report prepared in September, 2002 by Blasland, Bouck, and Lee (BB&L), consultants to Cornell University (Owner) for the Site Investigation work.

The objective of the Project is to excavate and dispose of specific materials from the site that have been contaminated by past agricultural and research activities at the research facility. These materials include the following:

1. A sump, consisting of a reinforced concrete base, concrete masonry units forming the sump walls, and a precast concrete cover section;
2. The sump contents, including a mix of sediments, sludge, and liquid;
3. Impacted soils immediately surrounding the sump area; and
4. A small area of surface soils located adjacent to former drain outlet from a former interior pesticide storage area.

Removal of these materials is expected to eliminate principal areas of pesticide and associated metal contamination at the site and the potential of future migration of contaminants from these areas into surrounding soils or groundwater.

1.1 Site Background

The Vineyard Research Laboratory, located in Fredonia, New York, is operated by Cornell University for the New York State Agricultural Experiment Station in Geneva New York. The facility was acquired by New York State in 1958. Prior to that time, the facility was owned and operated as a private nursery.

The laboratory is adjacent to an active research farm. A dry well sump to the north (back side) of the facility was used as a dry well for several lab drains in the building and as a collection and disposal system for wash waters during pesticide fill and rinse operations until about 1990. The use of the sump was discontinued after new Federal underground injection control regulations were promulgated.

1.2 Summary of Site Investigation Recommendations

The Site Investigation Final Report recommended the following actions for the site:

1. Removal and legal disposal of sludge from the sump, the sump, and the following surrounding soils:
   - 2' of soil on all four sides of the sump
   - 2' of soil beneath the sump

2. Removal of surface soils in a 3' by 3' area immediately adjacent to a former building drain line, to a uniform depth of 1'. The drain line extended from a former pesticide storage room. The room is no longer used for pesticide storage.

It is the intent of this work plan to detail the implementation of those recommendations.

1.3 Regulatory Framework

This Project is part of a Voluntary Clean-Up Program Agreement between Cornell University, representing the research center, and the New York State Department of Environmental Conservation, representing the State's public environmental interest. The review and approval authority for this work is the NYSDEC. This Remedial Work Plan is a component of the process described in that Agreement.

Section II: Roles and Responsibilities

2.0 Parties to the Project

This Project will be carried out jointly by the Owner, a Contractor, and the New York State Department of Environmental Conservation (NYSDEC). This Section of the Work Plan specifies the roles and responsibilities of each party.

2.1 Roles and Responsibilities of the Owner

The Owner has the role of approving the Project, contracting for the work, promoting compliance with this Work Plan and the associated Health and Safety Plan through appropriate contractual terms, and financing the work.

The Owner is also responsible for making available to the Contractor relevant information on site hazards (i.e., past test reports and the Final Report of the Site Investigation) so that the Contractor can appropriately protect site personnel during the work. During the work, the Owner will provide the Contractor with temporary site access and control of the Work Area.

The owner is responsible for collecting and testing a composite sample of the soil on the sides of the sump and a sample of the soils under the sump.

The Owner has also prepared the Work Plan and is responsible for providing documentation of the work in a Final Report to be submitted for approval to the NYSDEC.

2.2 Roles and Responsibilities of the Contractor

The Contractor is responsible for the actual remedial actions, and will provide manpower, equipment, resources, and all associated administrative and contractual elements as specified in the Contract between the Owner and Contractor. The Contractor is also responsible for all field testing as specified in the Contract.

The Contractor shall perform all sampling and analysis required for waste characterization as required by the selected waste disposal facility.

The Contractor is also responsible for the health and safety of the Contractor's personnel and is therefore responsible for the implementation of the Health and Safety Plan.

2.3 Role of the Regulatory Authorities

The NYSDEC is responsible for providing appropriate public oversight of the project in order to protect the environment. To accomplish this mission, the NYSDEC is responsible for review and approval of this Work Plan and of the final documentation as provided in the Final Report. Where elements of the Plan or Report are unacceptable, the NYSDEC is responsible to communicate those areas of unacceptable work so that the Owner can determine an appropriate response. The NYSDEC file a Notice of the intent in the Environmental News Bulletin and will coordinate public review and public comment.

Section III. Work Plan

3.0 General

This Section describes the components and actions that comprise the Project to be implemented under this Work Plan. The Project will be implemented through a contracted effort. Cornell University has developed Bid and Construction Documents to allow the competitive solicitation for the work.

3.1 Project Planning –General

All Work shall be planned in advance by the Contractor to minimize the risks inherent to remedial work of this type, including, but not limited to, the spread of contaminants through improper work practices, waste storage, or protection of excavations, personal injury, extended unavailability of portions of the site for Owner's activities, or legal issues involving storage, transport, or disposal of wastes. The means and methods of proceeding with the work and the appropriate protection of Contractor's personnel are the sole responsibilities of the Contractor.

3.2 Segregation of Wastes

Prior to the start of removal or excavation work, the Contractor shall provide, on site, lined containers for the storage of construction wastes. The containers shall be of appropriate size and dimensions to allow the characterization and disposal of all wastes without requiring additional handling or moving between containers, and shall be liquid-tight. Containers shall allow for at least the following separate waste segregation:

1. Sump contents (liquid, sludge, sediments, and similar material)
2. Sump (concrete block and reinforced concrete sections and pieces) above liquid/sludge level.

3. Sump (concrete block and reinforced concrete sections and pieces) below liquid/sludge level.
4. Soil
5. Personal Protective Equipment (PPE)

3.3 Remediation

The following sequence provides the general order of work required for the remediation only. The Contractor shall also anticipate additional work and stages of work as required to accomplish the project.

3.3.1 Accessing the Sump

Berm and line the work area as indicated in the contract documents.

Prior to removal of the sump the sump contents shall be removed. To provide appropriate and safe access to the sump for removal of the contents, Contractor shall first remove the reinforced concrete sump cover. Means and methods of removal shall be as determined by the contactor and may include both saw-cutting and crane work provided that no significant sections of the cover shall be allowed to fall, drop, or be placed into the sump such that the section could be contaminated by the sump contents.

3.3.2 Removal and Disposal of Sump Sludge

Once the sump cover is removed, the sump will be accessible for removal of the sludge and liquid contents. Based on past site experience, portions of the contents of the sump are too viscous to remove entirely using a pump or vacuum system. Therefore, a pump or vacuum system shall first be used to remove the liquid portion of the contents into drums for characterization and disposal.

Any portion of the liquid contents that cannot be removed by pumping or vacuum shall be removed by other manual methods as selected by the Contractor. During such operations no entry into the confined area of the pit shall be permitted unless the Contractor first submits a site specific confined space entry plan and provides, at the Contractor's sole expense, all monitoring equipment, personal protective equipment, and other safeguards required to permit such operation. While the final means and methods for removing the sludge shall be left to the discretion of the Contractor, all work shall comply with the Contractor's Health and Safety Plan for the site.

After all bulk sludge has been removed, sorbent pads or equivalent means shall be used to remove any remaining liquid from the sump. The intention of the work is not to clean the sump completely, since the sump itself is assumed contaminated and shall be characterized for proper disposal, but to remove sufficient material to prevent the loss or spillage of contaminated sludge material during the sump removal operation that could contaminate or impact the cost for disposal of surrounding soils.

3.3.3 Removal and Disposal of Sump and Surrounding Soil

The sump, once cleaned of free liquid and gross sludge, shall be removed in sections. To provide suitable access for the excavation, soil along the north face of the sump shall first be removed by the excavator or backhoe and placed into containers for disposal.

Next, the sump walls, starting with the north wall, shall be pushed in towards the pit center and removed by the excavator into a separate container, using the sump base as a working surface. Following the removal of the sump walls, the sump base will be broken into sections as required and removed by the excavator.

After the entire sump is removed, the Contractor shall decontaminate the excavator bucket in preparation for excavating the remaining soils. Contaminated soils surrounding the former sump shall be removed to the widths and depths specified in Paragraph 1.03 of this Plan. All specified soils not already removed during the preparation for sump removal will be removed at this time.

After the prescribed soils have been removed the Owner's site representative (with a NYSDEC representative if the NYSDEC so elects) will visually inspect the excavation from outside the excavation area and direct any further removals. Areas of soil that are obviously stained or soiled will be excavated and placed in the containers for characterization and disposal. After all such soil is removed, the Owner's site representative may request small amounts of soil to be excavated for testing with the field PID meter in order to judge whether additional excavation is necessary.

3.3.4 Post-Excavation Sampling

At the conclusion of the excavation, the Contractor shall decontaminate the excavator bucket in preparation for post-excavation sampling. After decontamination, the Contractor shall remove representative samples of soil from the sidewalls and bottom of the excavation area. A representative of the Owner will collect soil from these samples into appropriate sample containers for confirmatory sampling. The Contractor shall dispose of the excess sample soil into a waste container containing contaminated soil. The following table is a summary of the proposed sample analysis.

Parameter	Matrix	Method	Number of Samples
Appendix IX Pesticides	Soil	8081	2
TAL Metals	Soil	EPA 6010/7000	2

3.3.5 Waste Characterization

The Contractor shall perform all sampling and analysis required for waste characterization as required by the selected waste disposal facility. Cornell will assist in assigning of waste codes as required to ensure that necessary past use information is

incorporated into this analysis. Past sample test results will be made available to the Contractor to assist in the characterization to the extent such data is available.

3.3.6 Waste Transport and Disposal

After acceptance of the soil for disposal by the appropriate waste disposal facility, the Contractor shall promptly remove all waste containers from the site. The Contract will require such removal and transport within 7 days after approval has been received from the disposal facility. Similarly, all PPE and other construction wastes shall be properly characterized for disposal, and then sent to the appropriate and legal waste disposal facility.

3.3.7 Site Restoration

After post-excavation sampling is complete, the Contractor shall backfill the excavation in preparation for the concrete pad replacement. The concrete from the sump lid shall be cut or broken into sections small enough to fit into the excavation without bridging or resting on the sidewalls. The remainder of the excavation and all voids around the concrete shall be filled with clean soil as specified in the Contract Documents and compacted as specified in the Contract Documents.

Section IV: Waste Characterization and Disposal

4.0 Waste Characterization

Wastes from the excavation will be segregated into the separate waste streams as indicated in Section 3.2 of this Work Plan.

The Contract Documents may require further segregation of the soils, but will as a minimum require these four separate containers.

Historical test data will be used to characterize the sump sludge and soil. Additional characterization testing as required by the Contractor's selected disposal facility will be the responsibility of the Contractor, with the added requirement that the results of all analysis be transmitted to the Owner for reference in the Final Report.

4.1 Waste Disposal

After appropriate characterization, all waste materials will be transported and disposed of off-site at a licensed disposal facility. Similarly, all waste PPE, wash waters, and other construction waste materials will be characterized and properly disposed of. Waste manifests will be provided to the Owner prior to final Contractor payments and used to document legal disposal in the Final Report.

Section V: Schedule

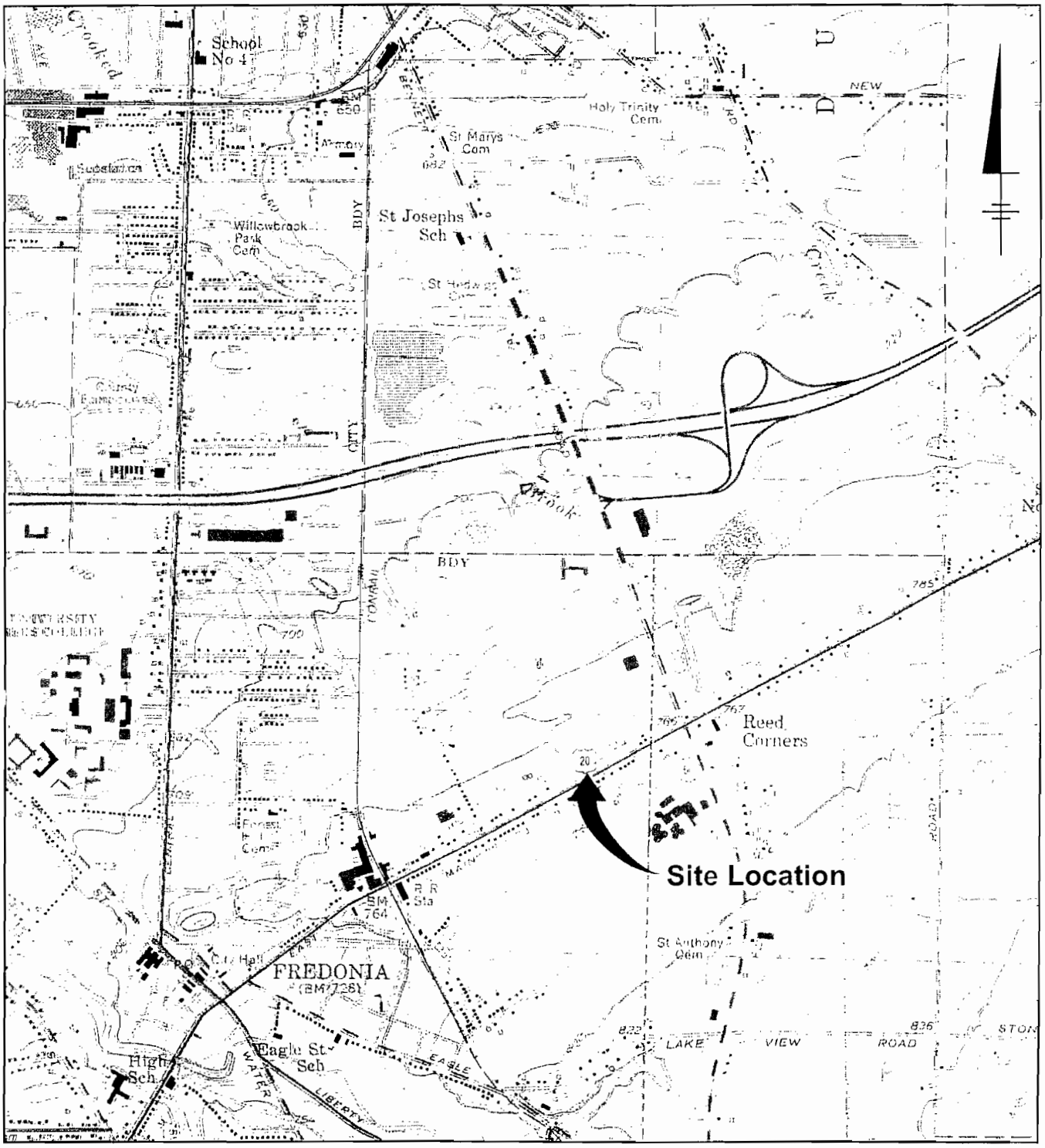
Conditional on the timely approval of this Work Plan and the continued availability of funding through New York State, the following schedule is proposed:

Task	Schedule Goal
Work Plan Submitted	March 7, 2003
Work Plan Tentative Approval	March 21, 2003
30-Day Public Comment Period Ends	April 21, 2003
Contractor Site Visit	March 26, 2003
Contractor questions due	March 31, 2003
Possible Addenda issued	April 7, 2003
Contract Bids Received	April 14, 2003
Contract Awarded and Notice to Proceed	April 21, 2003
Site Work Complete	May 14, 2003
Final Report	July 31, 2003

Section VI: Reporting Requirements

The Owner will provide monthly reports to NYSDEC as the work progresses.

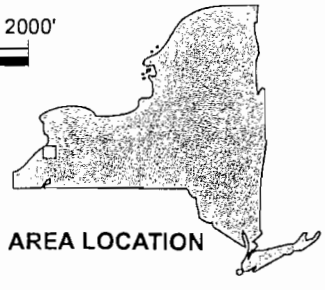
In addition, a Final Report will be prepared. The Contract will require the Contractor to provide the Owner with all waste sampling results and waste manifests to document appropriate waste characterization and disposal. Combining this information with the information gathered by the Owner during the progress of the work, the Owner will prepare a Final Report at the end of this work. The Final Report will document the work performed and include copies of the Engineer's Certification, all sampling results, and manifest records. The Final Report will also include a statement regarding whether the work was completed in accordance with the Work Plan and describing any deviations from the approved Plan, and will provide recommendations on future remedial or sampling requirements.



REFERENCE: BASE MAP SOURCE USGS 7.5 MINUTE QUADS. SERIES DUNKIRK, NEW YORK, 1954, PHOTOREVISED 1979.

2000' 0 2000'

Approximate Scale: 1" = 2000'



AREA LOCATION

FREDONIA SITE REMEDIATION

SITE LOCATION MAP

CORNELL UNIVERSITY

pdc

Figure 1

9/16/02 SYR D54-LBR LAS ROC-54-SLM
73631002/73631n01.cdr

GRAPE VINEYARD

GRAPE VINEYARD

DITCH

STONE/DIRT ROAD

GRASS FIELD

64.2'

METAL FRAME BLDG. (MAINTENANCE)

44.3'

METAL FRAME SHED (PESTICIDE STORAGE)

APPROXIMATE AREA OF LEACH FIELD B

DECONTAMINATION PAD

CONC. PAD W/ GAS TANKS

STONE/DIRT ROAD

CONC. PAD (PESTICIDE FILL PAD)

FORMER UST

GRASS FIELD

APPROXIMATE AREA OF LEACH FIELD A

100.4'

FORMER PESTICIDE STORAGE AREA

BIT. PARKING LOT

O/H WIRES

SEPTIC TANK

BUSH ROW

EX. PIPE

2-STY. WOOD FRAME AND CONC. BLOCK BLDG. (RESEARCH LAB)

NO. 412 EAST MAIN ST.

70.3'

STONE PARKING LOT

PINE TREE ROW

CONC. SIDEWALK

EX. PIN

GRASS

GRAPE VINE

GRASS FIELD

GRASS

BIT. DRIVEWAY

O/H WIRES

PINE TREE ROW

WATER METER PIT

TREE ROW

CONC. SIDEWALK

EX. PIPE

CONC. CURB

East Main Street (Width Varies)
(State Route 20)

LEGEND

PROPERTY LINE

VOLUNTARY CLEANUP AREA

UTILITY LINE

NOTES:

1. BASE MAP BY WENDEL DUCHSCHERER 3/01, "BOUNDARY SURVEY CORNELL VINEYARD RESEARCH LABORATORY TOWN OF POMFRET, COUNTY OF CHAUTAUQUA STATE OF NEW YORK", AT A SCALE OF 1" = 40'.

25 0 25

SCALE IN FEET

CORNELL UNIVERSITY

pdc

Planning, Design, and Construction

APPROVAL:

DATE:

WARNING:
It is a violation of New York State Law for any person, unless acting under the direction of a licensed Architect, to alter this document in any way. If a document bearing the seal of an Architect is altered, the altering Architect shall affix to such document his seal and the notation "altered by," followed by his signature, the date of such alteration, and a specific description of the alteration.

REVISIONS

FREDONIA SITE REMEDIATION

SITE PLAN

Cornell University
Ithaca, New York

DATE:	MARCH, 2003
PROJECT:	15809
FACILITY:	4948
DESIGN:	TBA/SMB
DRAWN:	TBA

Figure 2

Sludge, Sump, and Soil Removal and Disposal Health and Safety Plan

Cornell University/NYSAES
Vineyard Research Laboratory
Fredonia, New York

Prepared by:
Environmental Compliance Office
Environmental Health & Safety

March, 2003

Sludge, Sump, and Soil Removal and Disposal
Health and Safety Plan

Table of Contents

Sludge, Sump, and Soil Removal and Disposal
Cornell University/NYSAES, Vineyard Research Laboratory
Fredonia, New York

CONSTRUCTION HEALTH AND SAFETY PLAN APPROVALS

Facility Address: **412 East Main Street, Fredonia, NY 14063**

Facility Code: **8000**

Primary Contact: **Steve Beyers, P.E., smb75@cornell.edu, 607/255-5491**

Backup Contact: **Tammi Aiken, P.E., tba1@cornell.edu, 607/255-8314**

This plan has been prepared and reviewed by the following individuals that certify that this Vineyard Research Laboratory- Sludge, Sump, and Soil Removal and Disposal Health and Safety Plan has been prepared in accordance with 29 CFR 1910.

Prepared by:	Steve Beyers, P.E.	Cornell University Environmental Compliance Office	Project Manager	March 2003 3/12/03
Reviewed by:	Jim Grieger, CIH, CSP	Cornell University Environmental Health & Safety Office		March 2003 3/12/03

The Contractor(s) agree to implement work in accordance with the minimum requirements set forth in this Vineyard Research Laboratory- Sludge, Sump, and Soil Removal and Disposal Health and Safety Plan (HASP). The Contractor(s) also agree that they have verified the information provided and will supplement this Vineyard Research Laboratory- Sludge, Sump, and Soil Removal and Disposal Construction HASP with any specific procedures deemed appropriate to assure that the procedures are appropriate for use by their employees and subcontractors. Prior to the initiation of any work at the Site, the Contractor(s) will provide an approval sheet that will include acceptance of the plan with any revisions deemed appropriate so long as they meet the requirements set forth in this plan. The approval sheet will be at a minimum, signed by the Contractor(s) Project Manager and Site Safety Officer as well as an authorized representative each Sub-Contractor.

Accepted by:	Name and Signature	Company	Title	Date
Accepted by:	Name and Signature	Company	Title	Date
Accepted by:	Name and Signature	Company	Title	Date

HASP ACCEPTANCE FORM

I acknowledge having reviewed this Health & Safety Plan, understand its contents and agree to abide by it. All site personnel are required to sign this HASP acceptance form prior to commencing work at the site.

(Please Print Clearly)

NAME	SIGNATURE	DATE	COMPANY AFFILIATION

Section I: Overview

1.0 Background

This Health and Safety Plan (HASP) was written to provide standards of practice for remedial work to be completed at the Vineyard Research Facility in Fredonia, New York. The remedial work is required to remove contaminated materials resulting from the former use of a concrete sump dry well for the disposal of pesticide rinse water and a small amount of lab drain waste from the research laboratories.

This project is part of a Voluntary Clean-Up Program Agreement between Cornell University, representing the research facility, and the New York State Department of Environmental Conservation, representing the State's public environmental interest.

1.1 Project Objective

The objective of the project is to remove materials from the site that have been contaminated by past agricultural and research activities at the Research Laboratory. These materials include the following:

1. A sump, consisting of a reinforced concrete base, concrete masonry units forming the sump walls, and a precast concrete cover section;
2. The sump contents, including sediments, sludge, and liquid; and
3. Impacted soils immediately surrounding the sump area.
4. A small area of surface soils located adjacent to former drain outlet from a former interior pesticide storage area.

Removal of these materials is expected to eliminate areas of pesticide and associated metal contamination at the site and the potential of future migration of these contaminants into surrounding soils or groundwater.

1.2 Purpose of this Health and Safety Plan (HASP)

Personnel involved in the remediation of this site will encounter soil and liquid materials containing various contaminants. The levels of some contaminants in the soil are above their respective environmental clean-up levels. In additional to the potential risks associated with the chemical and biological properties of these materials, earthwork construction involves a level of personal risk. These risks including falls, heavy equipment, confined space entry hazards, and similar construction risks. Therefore, it is important for personnel to use appropriate personal protective equipment (PPE) and to follow appropriate safety requirements to protect against anticipated and/or potential hazards. This Plan addresses the typical risks and protections appropriate for the work proposed.

Because the Contractor directly supervises the work and determines the detailed means and methods of completing the work, the Contractor shall be directly responsible for the health and safety of the Contractor's employees and, through the Contract, for the health and safety of employees of all subcontractors hired by the contractor. To enforce this requirement, the Contract Documents for the project shall reference this HASP as a minimum requirement for the work.

The Contractor must amend the HASP with specific additional requirements pertinent to the means and methods of construction and in doing so form their own HASP specific to the contractor's approach to the work. The HASP thus formed, with amendments, shall be referred to as the "Contractor's HASP" (CHASP). The CHASP shall be submitted in accordance with the General Requirements of Contract Documents In no case that the Contractor's HASP reduce the protection of health and safety below the level indicated in this HASP.

It is not the intent of this HASP to replace or otherwise modify any OSHA or other worker health and safety requirement or regulation, to relieve the Contractor from any responsibility to protect employees of the Contractor or any sub-contractor, nor does this HASP discuss all types of hazards. Rather, this HASP is focused on the site-specific hazards accompanying the work of the project, namely, the excavation, loading, and transport for disposal of a concrete sump, associated sludge and impacted soils as described in Section 1.1.

Section II: Roles and Responsibilities

2.0 Description of Roles and Responsibilities

The project will be undertaken by a number of parties, including the following:

1. Project Manager (employee of Cornell)
2. Health and Safety Advisor (employee of Cornell)
3. Construction Manager (employee of Contractor)
4. Contractor's Health and Safety Supervisor
5. Contractor's Site Supervisor
6. Subcontractors (under direction of Contractor)
7. All on-site personnel

This Section specifies the roles of each of these personnel.

Project Manager (PM)

The PM, an employee of Cornell, shall provide the project team with the information required to properly identify potential project risks and plan for project contingencies. Specifically, the project manager will provide access to the results of past site investigations and resources necessary to develop with Health and Safety Plan. The Project Manager will also ensure that the Contract include appropriate provisions which incorporate the requirements of this HASP and applicable site information.

Health and Safety Advisor (HSA)

The HSA, an employee or Cornell, will help develop and review this HASP so that it provides a high level of protection against the probable and potential risks associated with the project. The Health and Safety Advisor will also provide assistance in developing the requirements for the Contractor's site specific HASP. The HSA must approve changes or addenda to this HASP.

Construction Manager (CM)

The CM will be an employee of the Contractor. The CM shall be responsible for the health and safety of Contractor's employees. Specifically, the CM shall:

- Prepare a Contractor HASP (CHASP) specific to the means and methods the Contractor intends to employ at the project site.
- Ensure that all contractor's and subcontractor's employees understand and adhere to the approved HASP.
- Review as incident prevention and reporting forms developed under the approved HASP.

- Verify that all accidents or incidents are thoroughly investigated and procedures revised as applicable to prevent the re-occurrence of such accidents or incidents
- Review and inform all site workers of any approved changes to the contractor's HASP
- Suspend or modify work as appropriate for improved personnel protection, protection of property, and regulatory compliance.

Contractor's Health and Safety Supervisor (CHSS)

The CHSS shall be an employee or subcontractor of the Contractor and is responsible on behalf of the contractor for all site health and safety issues, including the execution of this HASP and the contractor's HASP. The CHSS will be responsible for:

- Providing on-site health and safety advice and assistance
- Participate actively in all incident investigations and provide a report to the PM and HSA on all incidents within 24 hours.
- Coordinate site and personal air monitoring where such monitoring is required by the Contractor's HASP.
- Conduct site safety training and safety meetings
- Review site activities with respect to compliance with this HASP
- Maintain required health and safety documentation pertaining to this project
- Provide a technical resource to the Site Supervisor regarding health and safety issues

Contractor's Site Supervisor (CSS)

The CSS is responsible for the implementation of this HASP. The CSS is expected to consult with the CHSS on health and safety issues and to report all incidents to the CHSS, sharing with the CHSS all information and documentation regarding incidents. Specific responsibilities also include:

- Completing incident reports
- Observing site activities to ensure that all employees and subcontractors adhere to the requirements of the contractor's HASP.
- Obtain all permits and conform to all regulatory requirements.

Subcontractors (Under direction of Contractor)

All subcontractors are contractually under the control and direction of the CSS as if they were employees of the Contractor. Subcontractors shall bear the same responsibilities and have the same requirements as the Contractors who hire them. Modifications in the contractor's HASP to reflect the means and methods of subcontractors work must be submitted by the HSS to the PM and approved before becoming effective.

All on-site personnel

All personnel and regulatory visitors within the Work Zone must read and acknowledge in writing their understanding of the HASP prior to beginning work on site. Once on site, all persons must follow the HASP. A daily sign-in sheet shall be used to document each employee's knowledge of, and agreement to adhere to, the HASP. In addition, all personnel on site shall immediately communicate to the SS and CHSS all incidents and areas of concern related to health and safety. Incidents shall include at least the following:

- Personal injuries and illnesses of all kinds
- Unexpected, accidental, or uncontrolled releases of chemical substances
- Unsafe situations
- Hazardous or malfunctioning equipment
- Changes in site conditions that may increase health or safety risks
- Activities for which the employee is unsure or not clearly trained
- Damages to equipment or property

Section III: Site Activities, Hazards, and Controls

3.0 General Site Activities and Hazards

The scope of this work includes the removal, transport, and legal disposal of materials that are known to contain the residual of chemicals at levels high enough to exceed regulatory clean-up objectives, and other chemical components at lower but measurable levels. Contaminants of concern include pesticide residuals, associated volatile organic compounds, and metals.

An investigation of the site was completed under the terms of a Voluntary Clean-Up Program (VCP) Agreement between Cornell University, representing the Owners and operators of the site, and the New York State Department of Environmental Conservation (NYSDEC), representing the public interest. The investigation and its findings are documented in the Remedial Investigation Final Report, which is available for review by all parties to this work. A summary of the report findings is included in the Work Plan and this HASP.

3.1 Measured Contaminant Levels

Tables 1 through 3, which follow, provided for reference only, summarize data obtained during the Site Investigation in 2002. Table 1 (summarizing groundwater data) and Table 2 (summarizing soil data) are derived from the SI Final Report. Analytical results of sludge samples obtained during the same period (Table 3) were not part of the SI scope but are provided here for completeness. For the soil and water samples, the tables report only those contaminants identified in and around the sump area at levels above their respective water quality standard or soil clean-up guidance. All sludge sample results are indicated, along with the Toxicity Characteristics for those contaminants included in 40 CFR 261.24. The regulatory levels indicated in Table 3 therefore represent criteria for classification of waste as hazardous waste by toxicity characteristic.

It is not expected that the excavation will extend to the groundwater layer. Groundwater sampling information is presented for information only. In addition, the levels indicated for the contaminants in the soils represent the highest level detected in the various test borings and surface samples collected, for the purpose of providing appropriate personnel protection. Refer to the entire SI Final Report for more complete results.

In addition to these listed chemicals, numerous lower contaminant levels were detected which remained below the respective water quality or clean-up objectives but could still represent hazards to personnel. Therefore, the CHSS shall review the entire SI Final Report in order to better understand the potential site hazards and allow the appropriate level of protection for personnel on site.

Table 1: Contaminants Identified in **Groundwater** Adjacent to the Sump above applicable Water Quality Standards

Contaminant	Level Detected (µg/kg)	NYS Water Quality Standard GA (µg/kg)
Volatiles and Semi-Volatiles		
Bis (2-ethylhexyl)phthalate	7.5	5
Pesticides		
4,-4'-DDE	0.7	0.2
4,4'-DDT	3.3	0.2
4,4'-DDD	7.8	0.2
Dieldrin	0.6	0.004
Metals		
Arsenic	326	25
Barium	4,050	1,000
Berylium	11.3	3
Cadmium	23.8	5
Chromium	412	50
Copper	1,100	200
Iron	585,000	300
Lead	484	25
Magnesium	123,000	300
Selenium	31	10
Sodium	42,300	20,000
Zinc	2,900	2,000

Table 2: Contaminants above the applicable Soil Clean-Up Guidance Levels Identified in the Surface and Subsurface **Soil Samples** in the Areas to be Excavated

Contaminant	**Max. Level Detected (µg/kg)**	**Applicable Clean-Up Objective (µg/kg)**
Pesticides		
4-4'-DDE	2,400	2,100
4-4'DDT	6,500	2,100
Heptaclor Epoxide	24	20
Dieldrin	63	44
Metals		
Aluminum	7,600,000	6,920,000
Berylium	1,100	1,000
Cadmium	2,800	1,000
Calcium	44,800,000	1,510,000
Chromium	26,300	10,200
Copper	887,000	25,000
Iron	17,800,000	14,000,000
Lead	188,000	34,200
Magnesium	65,100,000	1,460,000
Manganese	579,000	514,000
Mercury	430	100
Nickel	17,500	13,400
Potassium	676,000	484,000
Sodium	97,800	64,500
Zinc	979,000	67,100

Table 3: Contaminants Identified in the Sump Sludge

Contaminant	Level Detected (µg/kg)	40 CFR 261 Toxicity Characteristic Regulatory Level (µg/kg)
TCL Volatiles		
Acetone	1,100	
Benzene	910	500
Carbon Disulfide	20,000	
Chlorobenzene	67,000	100,000
Chloroform	64 J	6,000
Ethylbenzene	12,000	
Methyl Ethyl Ketone	280	200,000
Methylene Chloride	58 J	
Tetrachloroethane	170	700
Toluene	20,000	
Trichloroethene	85	500
Xylene, total	69,000	
Appendix IX Pesticides		
4,4' - DDD	1,900,000	
4,4" - DDE	150,000	
4,4" - DDT	2,000,000	
Methoxychlor	6,500,000	10,000
Organophosphorus Pesticides		
Parathion	58,000	
Herbicides		
2,4,5 - TP	12,000	400,000
2,4,5 - TP (Silvex)	12,000	1,000
TAL Metals		
Aluminum	5,500,000	
Arsenic	19,500	5,000
Barium	190,000	
Cadmium	6,900	1,000
Calcium	17,500,000	
Chromium	93,900	5,000
Copper	19,600,000	
Iron	16,400,000	
Lead	196,000	5,000
Magnesium	6,890,000	
Manganese	790,000	
Mercury	2,700	200
Nickel	88,300	
Potassium	600,000	
Silver	3,300	5,000
Sodium	163,000	
Zinc	1,130,000	

3.2 Construction Activity Risks

Various risks to health and safety exist during the excavation and containerizing of soils, sludge, and debris. These potential impacts include two basic categories, specifically, the typical construction risks associated with the operation of heavy machinery and equipment involved in excavations, and human health risks associated with the contaminants of the site.

Typical risks associated with the operation of heavy machinery for excavation and loading include vehicular collisions, roll-overs, burns from hot metal surfaces or engine fires, cuts or abrasions, or similar injuries.

Operation of heavy machinery create risks in relation to above and underground utilities, adjacent properties, and personnel both on the equipment and on the ground. The existence and location of all utilities and structures must be determined prior to equipment excavation activities to reduce the risks of incident in connection with such utilities. At the Fredonia site, the north side of the building includes an overhead electrical line serving the new pesticide storage building and is between two septic drain fields which need to be avoided to protect the integrity of the fields and prevent damage or collapse to septic structures near the surface.

Excavations present significant risks to health and safety. Regulations are in place to help control some of these risks, including 29 CFR 1926 Subpart P (covering excavations and slope cut-back) and 29 CFR 1926 Subpart M (concerning fall hazards). Requirements under these regulations include the requirement to have a competent person inspect each excavation for collapse potential and the requirement for appropriate site maximum allowed slope in accordance with 29 CFR 1926 Subpart P. Conformance to these regulations and other OSHA regulations will reduce risk during these activities.

To best manage the inherent risks of the excavation work, no personnel will be permitted to enter excavations. All activities shall be performed from outside of the excavation using appropriate excavation equipment. Personnel on the ground in the vicinity of excavation equipment shall carefully coordinate their work with the equipment operator and Site Superintendent to avoid inadvertently coming into the path of equipment during the work.

Should it become necessary to enter into any excavation or confined space, such actions shall only be completed by appropriately trained personnel within the context of the Contractor's written confined space entry program. Such program shall be submitted by the Contractor to the HSA as an amendment to the HASP and reviewed by the HSA prior to any confined space entry actions. All personnel entering any confined space shall operate under the terms of the written program and the Contractor shall remain fully responsible for the health and safety of those personnel.

3.3 Risks from Chemical Contact

In addition, the work shall be progressed such that no personnel are permitted to come into direct skin contact with contaminated liquids, soils, or other excavated materials. Equipment excavation and appropriate PPE during equipment cleaning and soil sampling operations shall be used to prevent direct contact with contaminated soil, sludge, liquids, and concrete debris.

During the excavation of the sump and associated materials, the potential exists that chemical volatile compounds which may be in the sump or soils may become liberated by the site activities. To reduce the risk of impact from such chemicals, monitoring for oxygen, flammable vapors, hydrogen sulfide, and organic vapors shall be conducted during any excavation activities.

Because the short-term environmental risk is not excessive, workers will not be permitted to assume high levels of risk during the Project. All work activities shall stop where tests indicate the concentration of flammable vapors exceeding 10% of the LEL at any location and may not resume until the hazardous conditions are no longer present. At lower (but measurable) detection levels, the level of protective equipment may need to be increased as per the following section.

Section IV: General Personnel Safety Summary and Levels of Protection

4.0 Safe Work Practices

A general awareness and attention to safety concerns is recommended for all construction projects. General safe practices include the following:

- Maintain at least one copy of this HASP at an on-site location accessible to all employees.
- Follow the recommendations of the HASP and all written warnings, signs, tags, and barriers.
- Wear all recommended PPE and replace PPE whenever it is damaged.
- Enter Work zones only when necessary to do your job, and stay upwind of excavations and transfer areas whenever possible.
- Secure PPE at all openings to prevent contaminants from entering around pant legs, sleeves, etc.
- Avoid skin contact with contaminated materials. Should inadvertent contact occur, remove contaminated clothing and wash the areas thoroughly. Report any such incidents to the CSS and CHSS immediately and follow the advice of the applicable MSDS sheets when the type of contaminant is known.
- Remove PPE within decontamination areas to prevent the migration of contaminants out of this area.

- At the end of each shift or whenever leaving the Work Area, dispose of all disposable PPE in appropriate waste containers.
- Only alter or modify equipment for which you are properly trained and certified.
- Only perform tasks for which you are trained and knowledgeable regarding the hazards.

4.1 Levels of Personal Protection for this Project

PPE is available in varying levels of protection, listed as Level A, Level B, Level C, and Level D protection. Based on knowledge derived from the Site Investigation, all work on site shall be conducted using at least a modified version of Level D protection. This "modified Level D" protection shall include at least the following:

- Disposable coveralls. In the event that the worker is handling liquids or may potentially be splashed with liquids, the coveralls shall made from polyethylene coated Tyvek® or equivalent suits for handling liquids.
- Latex or PVC overboots for workers who may come in contact with contaminants of concern and steel-toed boots for all workers meeting ANSI Z41.
- Safety glasses or goggles meeting ANSI Z87.1 A face shield shall also be worn if the means and methods of work provide a risk of splash hazard.
- Work gloves for equipment operators not at risk from liquid or splash hazards; Outer latex gloves over inner nitrile surgical gloves for workers potentially exposed to liquid wastes.
- Hardhat meeting ANSI Z89 for all workers in the work area whenever a backhoe or excavator is in use.
- Hearing protection as appropriate to the noise level of the Work Area.

In addition, certain activities on site will require the use of Level C PPE. Specifically, all Contractors involved in the sump sludge cleaning operation shall be protected by Level C PPE during the cleaning operation until such time as the sludge removal from the sump is complete to the level required by the Contract and air monitoring confirms that the atmosphere in the work area is appropriate for the return to Modified Level D.

Regardless of the work activity underway, all Contractor personnel shall have available on site additional protective equipment as necessary to upgrade their level of protection to Level C. Level C Protection shall be required whenever the airborne contamination of any constituents of concern reaches a level equal to half of the OSHA Permissible Exposure Limit (PEL) or the Threshold Limit Value (TLV) as published by the American Conference of Government Industrial Hygienists (ACGIH), whichever is less.

Level C shall include all of the protection of Modified Level D with the additional requirement to use a full-face, air-purifying respirator with appropriate cartridges for the site constituents of concern (volatiles and small dust particles).

4.2 Procedure for Higher Risk Environments

Should unexpected conditions warrant higher levels of protection than Level C, work shall be discontinued immediately and the HSA and CHSS shall determine the appropriate course of action. Generally, due to the relatively low environmental risk from this site, it will not be appropriate to place individuals at a higher risk at any time in the project and work will be discontinued until conditions return to a lower level of risk.

In all cases, use of PPE shall not preclude practices intended to restrict or eliminate contact with constituents of concern. Exposures should always be maintained as low as reasonably possible throughout the work.

Section V: Air Monitoring

5. Air Monitoring during the Work

Based on the results of the site investigation, concentrations of specific chemicals above the regulatory clean-up levels were identified in the soils in the vicinity of the sump and also in the sump contents (liquids and sludge). Excavation and removal of the sump, sump contents, and soils surrounding the sump will impact these contaminated soils and materials. Therefore, the potential exists that fugitive dusts generated during excavation of impacted soils may also contain levels of these same chemical constituents.

Potential risks to employees include risks to equipment operators and oversight personnel, although only during the relatively short periods of excavation and container loading. Potential exposure route include inhalation of dust and dermal contact from dust or liquids. Therefore, the presence of these chemicals of concern will be evaluated using a particulate monitor. A field photo-ionization detector (PID) shall be used to evaluate for the presence of volatile organic compounds. Real-time monitoring of both VOCs and respirable particulates will be continuously conducted during all excavation work. If necessary, the level of personal protection required in the work zone will be upgraded based upon these readings.

The Contractor shall coordinate control of fugitive dusts with the Engineer if they are a problem during excavation activities.

Section VI: Determination of Site Specific Level of Hazard

6. Hazards from Chemical Contaminants

In addition to typical hazards associated with excavation activities, specific chemical hazards of concern have been identified in the Site Investigation Final Report. These contaminants include the chemicals described in Section III of this HASP.

The potential risk pathways include inhalation, ingestion, and skin exposure. The level of risk for each of the pathways can be controlled through control of construction means and methods, by appropriate monitoring activities, and through the appropriate use of PPE.

Based on the site investigation, the ambient levels of pollutants of concern are expected to be too small to measure. Therefore, the inhalation risks are minimal except during excavation activities. During excavation activities, contaminants could be liberated as dust. In addition, volatile contaminants could be freed from underground containment by excavation activities, including removal of liquid or sludge layers and removal of the sump pit over underlying soils. Despite the minimal risk associated with ambient conditions, there is a much higher risk of inhalation during the actual excavation and loading operations. Therefore, no work within the pit shall begin until the VOC's in "breathing zone" of personnel are below 1ppm based on field instrumentation (PID). Full time monitoring of the air during excavation activities will alert personnel to this risk.

The risk of ingestion from these contaminated soils is minimal if workers practice appropriate good hygiene. Good hygiene means that workers shall wash thoroughly prior to eating, drinking, smoking, or using the toilet and that the consumption of food or drink and smoking shall only be allowed outside of the areas designated as the work zone and decontamination zone. Similarly, no gum-chewing, application of cosmetics, or any similar activity which might contribute to inadvertent ingestion of dust or contaminants shall take place within the Work Zone or decontamination zone.

Due to the very high inherent hazard of cigarettes, smoking is not recommended anywhere on the site or off site. The effects of smoking have been shown to greatly increase the risk of other environmental contaminants.

The risk of skin exposure is minimal if workers refrain from unnecessary activities (utilizing equipment for excavation and containerizing), wear appropriate PPE during the excavation and containerizing work, and wash thoroughly immediately after any inadvertent contact.

No excessive facial hair (beards, etc.) which interferes with the satisfactory seal of a respirator shall be allowed during any period in which respirator use is necessary.

Because alcohol can increase the effect of exposure to toxic chemicals, the intake of Alcohol anywhere on the work site is prohibited. Similarly, prescribed drugs shall not be taken by personnel on the site where the potential for absorption, inhalation, or ingestion of toxic substances exist unless specifically approved by a physician.

Section VII: Work Zones and Decontamination Areas

7.0 Delineation of the Work Zone

Prior to the start of any excavation or invasive work, a Work Zone will be identified and demarcated on site. The Work Zone shall remain delineated until the site is backfilled with clean soil and the backfilled material compacted. The only persons allowed in the work zone shall be those who have reviewed this HASP, signed the Acceptance Form, and received appropriate training and equipment to protect themselves from the risks associated with the contaminants at the Site.

7.1 Delineation and Contents of the Decontamination Zone

Similarly, at the start of construction a decontamination zone ("Decon") will be identified and demarcated. The Decon shall be arranged to permit either Level C or Modified Level D protection and be located immediately adjacent to the Work Zone. The Decon shall include at least the following stations:

Station 1: Hand equipment storage and cleaning area.
Station 2: Outer boot and glove removal/disposal container.
Station 3: Canister or mask change (available should Level C protection be required)
Station 4: Boots, gloves, and outer garment removal/disposal container.
Station 5: Respirator face piece removal and cleaning area (available should Level C protection be required)
Station 6: Hand and Face Wash

In addition, there shall be a contained cleaning area demarcated for the cleaning of the excavating equipment bucket and associated components. The area shall be designed to allow the bucket and excavation still to be thoroughly cleaned and all cleaning water and materials collected and stored for disposal such that no cleaning waters or residual from the cleaning operations comes in contact with the soils or surfaces of the site.

Section VIII: Training

8. Training Requirements

All personnel involved in field work shall be trained to carry out their designated field operations. Training shall be provided in the use of all equipment, including respiratory protection apparatus and protective clothing; safety practices and procedures, general safety requirements, first aid; and hazard recognition and evaluation. Each individual involved with the field work must provide documentation of training and medical surveillance, as per 29 CFR 1910.120.

All personnel shall also review this HASP and the final Contractor's HASP and sign a statement (Appendix A) indicating they have read and understood its contents.

Section IX: Control of Access

9. Access to the Site

The research laboratory is a private operation and the excavation activities will occur to the north of the facility, out of general view of the public. During all work periods access to the site will be limited to those properly trained and protected personnel needed to implement and oversee the work. During non-working periods the Contractor shall be responsible for securing all equipment and protecting any excavations left open. Signage will also be posted warning against entry into the Work Area.

At all times when any personnel is working in the Work Area, there shall be on site at least one other employee of the Contractor available as a "buddy" to ensure that help can be made available should the person have any kind of health and safety emergency.

In general, excavations will remain open for as short a period as practical.

Section X: Emergency and Contingency Plan

10.0 Preparation

Prior to the start of work at the site, the Contractor shall assemble and post in a prominent place the following:

1. Name, address, and contact number of the nearest medical treatment facility, including directions for locating the facility and estimated travel time.
2. Names and telephone numbers for emergency service providers in the area, including ambulance, police, and fire departments.
3. Names and contact information for the HSA, CHSS, and CSS assigned to the site.
4. Emergency eyewash and first aid equipment location.
5. Specific procedures for handling personnel with excessive exposure to chemicals or contaminated soil.
6. Readily available dry-chemical fire extinguisher.

The Contractor shall also have immediately available to all staff a fully-charged cell or mobile phone so that emergency contacts may be made.

10.1 Emergency Actions – General

The CHSS (or CSS, in the event that the CHSS is not immediately available) shall initiate emergency actions in the event of any injury or chemical exposure on site. Emergency actions shall be initiated by contacting trained emergency personnel and providing a detailed description of the victims condition and situation.

In the event of personnel exposure to excessive contamination, the following additional procedures shall be undertaken:

Disposable clothing contaminated with observable amounts of chemical residue shall be removed and replaced immediately

In the event of direct skin contact with an unknown chemical, the affected area shall be washed immediately with soap and water or other solutions as recommended by medical personnel or by the MSDS for the chemical.
The CHSS or other individuals who hold a current first aid certificate shall apply appropriate first aid.

Immediately following the care of the victim, a written accident report shall be prepared by the CHSS detailing the events of the accident and actions taken while awaiting the response of professional staff.

10.2 Avoiding Weather-related Emergencies

Health risks due to either extreme heat or extreme cold are common considerations in planning and conducting site operations. Hot or cold weather can cause physical discomfort, loss of efficiency, and personal injury. Of particular concern for remediation projects is heat stress resulting when protective equipment or clothing decreases natural body ventilation or restricts breathing.

Due to the proposed short duration of the project, workers shall not be subjected to excessive weather related risks on this project. It is recommended that work not be planned or proceed when temperatures exceed 85 F or are expected to be below freezing during the work period. Combining these common sense precautions with the supply of plenty of fluids and appropriate work breaks should limit these concerns on this project. Workers shall be allowed to leave the work zone whenever encountering conditions of uncomfortable cold or heat impairing their ability to work effectively.

Section XI: Summary

11. Summary

This HASP establishes minimum standards for the protection of the health and safety of workers. However, this HASP does not ensure that all workers will be protected. Protection of worker safety is the responsibility of the Contractor on the work site and most affected by the competence and vigilance of the personnel on site. Also, because the Contractor will control the means, methods, rate, and manner of work, the Contractor shall provide additional amendments to this Plan wherever such amendments are needed to protect Contractor or subcontractor personnel against the risks inherent in the specific work to be completed.

Although all construction projects involve a degree of risk, the specific risks associated with this project also include the potential for contact with contaminated substances and the specific risks associated with excavation and heavy equipment operation.

As minimum steps, the following must be followed:

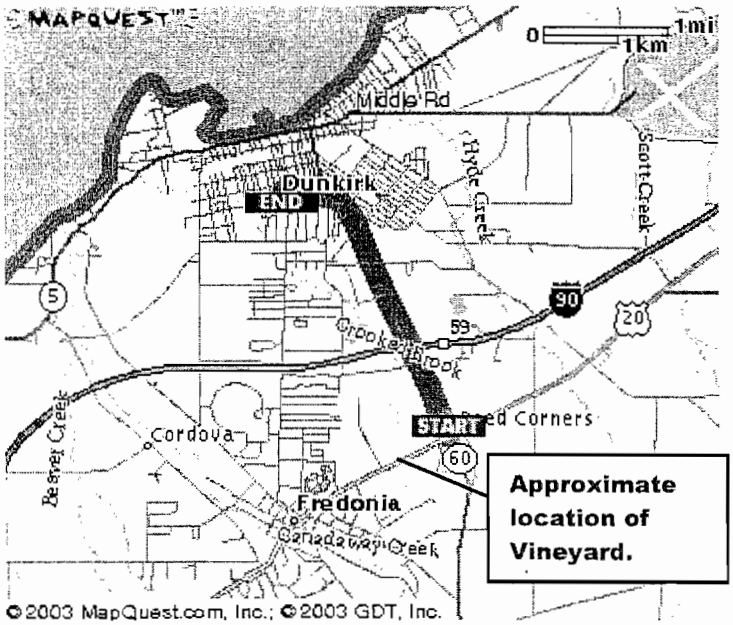
1. The Contractor's HASP, consisting of this HASP and all amendments thereto presented by the Contractor, shall be made readily available to all personnel who will enter the Work Zone or Deconamination Zone on site. All such personnel must sign this plan, indicating that they have read the plan, understand its terms, and agree to its procedures.
2. All personnel entering the site shall be adequately trained and thoroughly briefed on anticipated hazards, required PPE, safety practices to be followed, emergency procedures, and communications.
3. All required PPE, appropriate to the level of protection required on site, shall be worn by all personnel entering the site.

Emergency Contacts

Cornell Remediation Project Manager, Steve Beyers	607-255-5491
Cornell Environmental Health and Safety, Jim Grieger	607-255-5615
Cornell Police	607-255-1111 (Emergency) 607-255-8200 (Non-emergency)
NYSDEC Spill Hotline	1-800-457-7362
Hazardous Waste National Response Center	1-800-424-8802
Chautauqua County Sheriffs Department 15 East Chautauqua Street P.O. Box 128 Mayville, NY	716-753-4231
Village of Fredonia Fire Department 80 West Main Street Fredonia, NY 14063	716-672-2123
Chautauqua County Ambulance Service 738 Monroe Street Dunkirk, NY 14063	716 366-8178
Brooks Memorial Hospital 529 Central Ave Dunkirk, NY 14063	716-366-1111 716-366-5282
NYSEG To report natural gas odors/emergencies To report electricity interruptions/emergencies	 1-800-572-1121 1-800-572-1131
NYSDEC Project Manager Gerald Pietrezeck 270 Michigan Avenue Buffalo, NY	1-716-851-7220

Directions to Brooks Memorial Hospital

529 Cental Ave, Dunkirk, NY
(716)-366-1111, (716)-366-5282



1. Start out going Northeast on Rt. 20
2. Northwest on NY-60/BENNETT RD toward MAIN ST. Continue to follow NY-60. 2.31 miles
3. Turn LEFT onto E 6TH ST. 0.34 miles
4. Turn RIGHT onto CENTRAL AVE. 0.08 miles

Total Estimated Distance: 3 miles

BID AND CONTRACT DOCUMENTS

For the Project:

SLUDGE, SUMP, AND SOIL REMOVAL AND DISPOSAL

at the

VINEYARD RESEARCH LABORATORY

Fredonia, NY

Prepared by:

Cornell University
Environmental Compliance Office
129 Humphries Service Building
Ithaca, NY

For the Owner:

CORNELL UNIVERSITY
ITHACA, NEW YORK

March, 2003

Bid and Contract Documents for the Project:

SLUDGE, SUMP, AND SOIL REMOVAL AND DISPOSAL at the VINEYARD RESEARCH LABORATORY, Fredonia, NY

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INSTRUCTIONS TO BIDDERS

Project: **Sludge, Sump, and Soil Removal and Disposal at the Vineyard Research Laboratory, Fredonia, New York**

Owner: Cornell University
Ithaca, New York 14853

Engineer: Environmental Compliance Office (Steve Beyers, P.E., Project Manager)
Cornell University
129 Humphries Service Building
Ithaca, NY 14853
(Phone: 607-255-5491; Fax: 607-273-7324)

1. PROPOSAL FORMS

a. Proposals shall be made only on the forms provided and all blank and underlined spaces in the forms shall be fully filled in, in ink or typed; amount shall be fully stated both in writing and in figures. Proposals shall be signed by Principals or Officers duly authorized to execute such documents on behalf of their respective firms or organizations, and the Certificate included in the Bid Form shall be completed accordingly. Bidder's legal name must be fully stated. Completed form shall be without interlineation, alterations, or erasures unless initialed and dated by the signer.

2. RECAPITULATION OR PROPOSAL

a. Proposals shall not contain any recapitulation of the work to be done. No oral, telegraphic or telephonic proposals or modifications will be considered.

3. METHOD OF SUBMISSION

a. Proposals shall be prepared in **triplicate** and enclosed in a sealed envelope. Envelope shall be addressed to:

Mr. Robert H. Southward, University Capital Contracts Officer
Contracts & Capital Projects Administration
107 Humphreys Service Building
Cornell University
Ithaca, New York 14853

Proposal for: Sludge, Sump, and Soil Removal and Disposal at the Vineyard Research Laboratory, Fredonia, New York

Submitted by: _____
(Bidder)

b. Proposals shall be delivered to the Owner at the address listed above not later than 1:00 p.m. on April 14, 2003.

4. BID OPENING

a. Proposals will be opened privately by the Owner at the time and date listed in 3b. The Owner reserves the right to postpone the date and time of opening of proposals at any time prior to the date and time announced in this Instruction to Bidders or amendments thereto.

5. BIDDING DOCUMENTS

a. The Bidding Documents will consist of the following:

(1) Instructions to Bidders.

(2) Bid Form.

(3) General Conditions of the Contract and Division 1 - "General Requirements".

(4) Drawings and Specifications.

(5) Addenda and/or bulletins issued prior to date of opening of Proposals.

6. DRAWINGS AND SPECIFICATIONS FURNISHED

a. Contract Documents may be obtained from the Owner. Up to three (3) sets of contract documents may be obtained by invited bidders.

b. Additional sets will be available at $20.00 per set without refund. All subcontractors and suppliers requiring may order these at $20.00 per set without refund. No partial sets will be issued. The Contract Documents remain the property of the Owner.

c. All checks for sets of the Contract Documents to be made payable to Cornell University.

d. The successful bidder will be allowed ten (10) sets of drawings and specifications.

7. START OF WORK

a. Work at the site shall be started within fourteen (14) calendar days from the date of issuance of written authorization to proceed. All excavation and backfill work shall be completed no later than dates indicated on the Bid Form.

8. BONDS

a. Performance and Payment Bonds. The successful Bidder shall furnish the Owner with "Performance" and "Labor and Material Payment Bonds", each in the amount of 100% of the Contract Price. The cost of such bonds shall be included in the Bidders Proposal. Each of these Bonds are to be in a form with such sureties as the Owner may approve.

b. Bid Bond. Each Bidder will be required to furnish a Bid Bond in the amount of 10% of the Bid Amount. Such Bid Bond shall guarantee that the Bidder will execute the Contract if it is awarded to him in conformity with his Proposal. Such Proposal Guarantee Bond shall include a statement that the Insurer shall, at the option of the Bidder, be willing to provide to the Bidder the Contract Bonds as described in 8a above.

9. AWARD OF CONTRACT

a. It is the intent of the Owner to enter into a Contract with one General Contractor for the entire project. All labor and services and materials and supplies, etc. are to be furnished in accordance with the Contract.

b. The competence and responsibility of the Bidders' proposed principal subcontractors will be considered in making the Award.

c. The Owner reserves the right to reject any or all Proposals, and to waive any informalities in Bidding.

d. All Proposals shall remain in force and effect for a period of not less than sixty (60) calendar days following the bid opening date.

10. EXAMINATION OF SITE AND CONTRACT DOCUMENTS

a. Each Bidder shall visit the Site of the proposed work, fully acquaint and familiarize himself with the conditions as they exist and the character of the operations to be carried on under the proposed Contract, and make such investigation as he may see fit so that he shall fully understand the facilities, physical conditions and restrictions attending the work under the Contract.

b. Each Bidder shall also thoroughly examine and become familiar with the Drawings, Specifications and associated Bid Documents.

c. By submitting a Proposal, the Bidder convenants and affirms that he has carefully examined the Drawings, Specifications, associated Bid Documents, the Addenda and Bulletins, if any, and the Site, that he relies on no representation by the Owner, and that from his own investigation he has satisfied himself as to the nature and location of the work, the general and local conditions, and all matters which may in any way affect the work or its performance, and that as a result of such examination and investigation, he fully understands the conditions of bidding and that he will not make any claim for, and waives any right to damage because of misinterpretation or misunderstanding of the Bid Documents and the conditions of bidding.

11. DISCREPANCIES

a. Should a Bidder find discrepancies in or omissions from the Drawings, Specifications and associated Bid Documents, or should he be in doubt as to their meaning, he shall at once notify the Owner, who will send written instructions to all bidders. Questions should be submitted via facsimile to Steve Beyers at 607-255-5377. Neither the Owner nor the Engineer will be responsible for oral instructions. Every request for such interpretation should be in writing, addressed to the Owner. Inquiries received seven (7) or more days prior to date fixed for opening of Bids will be given consideration. All questions must be submitted to the Owner no later than 5:00 p.m. two-weeks prior to the bid due date. Responses to all questions will be published in an Addenda no later than one-week prior to the bid due date.

12. SITE CONFERENCE

a. The Engineer will be available at the site from 1:00 p.m. to 3:00 p.m. on March 26, 2003 at the project site for Contractor visits.

13. TRADE SUBCONTRACTORS, MATERIAL SUPPLIERS

a. Each portion of the work shall be performed by an organization equipped and experienced to do work in that particular field, and no portion of the work shall be reserved by the Bidder to himself unless he is so equipped and experienced. Subcontracts shall be awarded only to parties satisfactory to the Owner and the Engineer. Each subcontractor and materials supplier shall be approved individually.

b. In the spaces provided in the Bid Form, the Bidder shall list all portions of the work he proposes to perform directly with his own forces.

c. A list of names from which the Bidder proposes to select subcontractors, materials suppliers, and/or manufacturers for the principal trades or subdivisions of the work is required as part of the Proposal.

d. In the Bid Form, there has been listed the principal trades or subdivisions of the work for which such a listing is required, together with the provisions which govern the listing, selection and approval of principal subcontractors.

14. UNIT PRICES

a. Certain Unit Prices may be requested. They will be listed in the Bid Form and all Bidders are required to bid on all Unit Prices without exception, in the spaces provided.

b. Unit Prices shall include all overhead, profit and other expenses in connection therewith.

15. SCHEDULE OF VALUES

a. A partial "Schedule of Values" for certain trades and/or subdivisions of the work is required as part of the Bidder's Proposal in the Bid Form.

b. The successful Bidder shall submit a complete "Schedule of Values" showing the amounts allocated to the various trades, suppliers, subcontractors, installers and General Contractor's work, aggregating the total sum of the Contract. If requested by the Owner or Engineer, the complete "Schedule of Values" shall be submitted prior to award of Contract.

16. ADDENDA AND BULLETINS

a. Addenda and/or bulletins issued during the bidding period shall be acknowledged in the space provided in the Bid Form.

17. SUBSTITUTIONS

a. Proposals shall conform to the requirements of the Bid Documents.

b. The Bidder may offer substitutions for any item of material or equipment, element of work, or method of construction set forth in the Bid Documents, with the exception of Form of Contract, General Conditions and General Requirements - Division 1, by listing the proposed substitutions and the amounts to be deducted from the Base Bid corresponding to each such proposed substitution in the spaces provided in the Bid Form. However, the Bidder is cautioned to make his base proposal on the materials and items specified by name or other particular reference.

18. SUB-SURFACE CONDITIONS

a. Boring information, water levels, indications of sub-surface conditions and similar information given on the Drawings or in the Specifications are furnished only for the convenience of the Bidders. The Owner, Engineer and Consulting Engineer make no representation regarding the character and extent of the soil data or other sub-surface conditions to be encountered during the work and no guarantee as to the accuracy or validity of interpretation of such data or conditions is made or intended.

b. Each Bidder shall, by careful examination, inform himself as to the nature and location of the work, the conformation of the ground, subsoil and ground water conditions, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. The Bidder may, at his option, conduct tests at his expense, including borings, by prior notification to the Owner. Each Bidder shall make his own deductions of sub-surface conditions which may affect methods or cost of construction of the work hereunder and he agrees that, if awarded the construction contract, he will make no claim for damages or other compensation, except such as are provided for in the Contract Documents, should he encounter conditions during the progress of the work different from those as calculated and/or anticipated by him.

19. SALES AND USE TAX EXEMPTION

a. The Owner, Cornell University, a non-profit educational institution, is exempt from payment of certain Sales and Use Taxes.

20. FEDERAL EXCISE TAX

a. The Owner, Cornell University, a non-profit educational institution, is exempt from payment of certain Federal Excise Taxes.

21. TAX EXEMPT STATUS

a. Bidders shall inform all prospective subcontractors and suppliers from whom they expect to obtain proposals or quotations of the tax exempt status of the Owner as set forth above and request that they reflect anticipated tax credits in their proposals or quotations.

22. EXEMPTION CERTIFICATES

a. At the Contractor's request, following the award of a Contract, Contractor exempt purchase certificates will be furnished by the Owner to the Contractor with respect to such tax exempt articles or transactions as may be applicable under the Contract.

23. REQUIRED SUBMISSIONS

a. Provide with Bid Proposal:

(1) Acknowledgement of Addenda and/or Bulletins issued prior to bid opening
(2) Certificate as to Corporate Bidder
(3) List of Proposed Subcontractors
(4) Schedule of Values
(5) Alternate Proposals and Unit Prices
(6) *The following Technical Information shall be provided at bid time*:

- A description of the transport and disposal means which are the basis for the bid. Include waste transport permits and disposal facility identification, agency approvals, and types of wastes permitted at each.
- Identification of the analytical laboratory and the laboratory procedures to be used to analyze the soil samples for the purpose of characterizing the waste, including a copy of applicable State approvals for such analytical procedures.
- Evidence that the Bidder has 40-hour trained personnel and a statement that they reviewed the approved Work Plan, understand the hazards associated with the site, and can adequately protect their personnel to at least level C.
- A specific written commitment indicating that the bidder is prepared to meet the project schedule.

b. Within five days after bid opening:

(1) Use of Minority and Female Vendor Forms
(2) Summary of Bid Activity with Minority and Female Subcontractors/Vendors
(3) Workforce Projection for the totality of the work

c. Execution of Contract:

(1) Insurance Certificate
(2) Performance Bond
(3) Labor and Material Payment Bond
(4) Schedule of Work (bar chart)
(5) Federal Tax Identification Number

END OF SECTION

SLUDGE, SUMP, AND SOIL REMOVAL AND DISPOSAL
at the
VINEYARD RESEARCH LABORATORY
Fredonia, NY

Cornell University/NYSAES

BID FORM

Submitted by: _____ Date _____

To: Mr. Robert H. Southward, University Capital Contracts Officer
Contracts & Capital Projects Administration
107 Humphreys Service Building
Cornell University
Ithaca, New York 14853

Gentlemen:

The undersigned, _____
(Name of Bidder)

a _____
(Type of Firm, State of Incorporation, if applicable)

of _____
(Address)

having carefully examined the Instructions to Bidders, the "Conditions of the Contract" (General Conditions, Division 1 - "General Requirements"), and the Drawings, Specifications and associated Bid Documents dated March, 2003 prepared by Cornell's Environmental Compliance Office, Ithaca, New York, as well as the premises and conditions affecting the work, proposes to furnish all material, equipment, labor, plant, machinery, tools, supplies, services, applicable taxes and specified insurance necessary to perform the entire work, as set forth in, and in accordance with the said documents for the following considerations:

1. BASE BID

All work, including transportation and disposal of waste, complete for the sum of:

_____ ($ _____)
for MATERIALS, SUPPLIES, LABOR, and
SERVICES AND ALL OTHER COSTS.

2. ADDITIONAL BID SUBMISSION INFORMATION

Provide the following additional information with the bid as an attachment to this bid page:

a. A description of the transport means and hazardous waste disposal facility that form the basis for the bid. Include waste transport permits and disposal facility identification, agency approvals, and types of wastes permitted by each.

    i. Transport vehicles licensed to transport hazardous wastes in each of the states located between the project site (New York) and the disposal facility, inclusive.

    ii. USEPA Licensed Hazardous Waste Incinerator facility authorized to accept the wastes described in this Project.

b. Identification of the analytical laboratory and the laboratory procedures to be used to analyze the soil samples for the purpose of characterizing the waste, including a copy of applicable State approvals for such analytical procedures.

c. Evidence that the Bidder has 40-Hour HAZWOPER trained personnel and a statement that they reviewed the approved Work Plan, understand the hazards associated with the site, and can adequately protect their personnel to at least level C.

d. A specific written commitment indicating that the bidder is prepared to meet the project schedule.

3. START OF WORK AND TIME FOR COMPLETION

a. The undersigned agrees, if awarded the Contract, to commence work at the site within fourteen (14) calendar days after date of issuance of written notice to proceed. All site work shall be completed as indicated in the Work Plan Schedule. Final disposal, submittal, and final contract close-out documents are due two-weeks after site work completion.

4. LIST OF PROPOSED PRINCIPAL SUBCONTRACTORS

a. The undersigned agrees, if awarded the Contract, to employ subcontractors from the following list for the Sections or Subdivisions of work stated below subject to the following provisions:

(1) Prior to the award of the Contract, the Owner and Architect reserve the right to review the list of "Proposed Principal Subcontractors", and to delete from it the name or names of any to whom they may have a reasonable objection. The Contractor may make the final selection of principal subcontractors at his option from the resulting list after the award of the Contract.

b. Bidder shall list the names of at least one subcontractor for each Section or Subdivision of the work listed below and shall limit the listing for each such Section or Subdivision to THREE (3) names.

c. If Bidder does not propose to employ a Subcontractor for any Section or Subdivision of the work listed below, he shall enter the name of his firm for each such Section or Subdivision.

Sub-Contractor(s) to be used for any work included in Division 2 of the Specifications. Specify type of work and firm (refer to Instructions to Bidders for additional information to be provided with the bid):

_____ _____

_____ _____

Transportation Sub-Contractor (refer to Instructions to Bidders for additional information to be provided with the bid):

_____ _____

_____ _____

Laboratory to be used for Characterization of Wastes for Disposal (Refer to Section 02315 for characterization requirements):

_____ _____

_____ _____

5. PRINCIPAL SUBDIVISIONS OR ELEMENTS OF THE WORK TO BE PERFORMED BY GENERAL CONTRACTOR'S FORCES

a. If awarded a Contract, we will perform the following portions of the Work with forces directly employed by the undersigned:

_____	_____
_____	_____
_____	_____

6. PROJECT SCHEDULE

a. The undersigned agrees, if awarded the Contract, to furnish a "Project Schedule" showing the Contractor's proposed sequence of remediation activities. For each task show the duration, start date and completion date in order to complete the remediation with the contract time Refer also to Section 01330 for requirements of this schedule.

7. BONDS

a. Performance and Payment Bonds. The undersigned agrees, if awarded the Contract to execute and deliver to the Owner "Performance" and "Labor and Material Payment Bonds" in such form as acceptable to the Owner and in an amount equal to 100% of the Contract Sum. Such bonds will be furnished by

_____
(Name of Surety)

b. Bid Bond. A Bid Bond in the amount of $_____ (10% of Bid Amount) is attached to this Bid.

8. SCHEDULE OF VALUES

a. The undersigned agrees, prior to the award of a construction contract and upon the request of the Architect or Owner, to submit a complete, itemized and detailed "Schedule of Values" including Alternates elected, if any, showing the amount allocated to the various trades and subdivisions of the work, aggregating the total Contract Sum.

b. To facilitate the evaluation of Bids, the undersigned has included in each part of his Bid the following values for the trades and/or subdivisions of the work as listed below. Values for work included under Alternate Proposals are excluded. Values relative to General Contractor's costs for General Conditions are excluded.

Spec Section	Trades and/or Subdivision	Values Included in Base Bid Labor	Material
	General Requirements		
Division 1	Administrative Provisions		
Division 2	Remediation and Backfilling		
Division 3	Concrete		
	Total		
	Total Combined Bid	$	

9. SUBSTITUTIONS

a. The Base Bid is predicated on compliance with the Drawings and Specifications without substitutions.

b. The Bidder may offer substitutions for any item noted in the Specifications, with the exception of Form of Contract, General Conditions and General Requirements - Division 1, by listing in the space below the proposed substitution, together with the amount to be deducted from the Base Bid if the substitution is accepted.

c. The Owner reserves the right to accept or reject any proposed substitution.

d. The sum stated includes any modifications of work or additional work that may be required by reason of acceptance of substitution. Substitute materials must be approved and accepted by the Owner in writing before same may be used in lieu of those named in the Specifications.

Item and Description of Substitution	Specification Reference Section & Page No.	Deduction from Base Bid Labor	Material

10. ACCEPTANCE

a. The undersigned agrees that this Proposal shall remain in force and effect for a period of not less than sixty (60) calendar days following the bid due date.

b. If written notice of acceptance of this Proposal is mailed, telegraphed or delivered to the undersigned within sixty (60) calendar days after the date of opening of Bids, or any time thereafter before this Proposal is withdrawn, the undersigned will within ten (10) calendar days after the date of such mailing, telegraphing or delivery of such notice, execute an Agreement between Contractor and Owner, amended and/or supplemented, if required, in accordance with the Proposal as accepted.

c. The undersigned further agrees, if requested by the Owner, to furnish Performance and Payment Bonds pursuant to Article 7 herein within ten (10) calendar days of issuance of such notice.

d. It is understood and agreed that the Owner reserves the right to reject any or all proposals, to waive any informalities in bidding, and to hold all proposals for the above noted period of time.

11. UNIT PRICE SCHEDULE

a. The undersigned agrees, if awarded the Contract, to perform work "In addition to" or "deducted from" the scope of the Contract Documents as directed by the Owner and/or Architect, computed in accordance with the unit prices hereinafter listed, which prices include all overhead, profit and other expense items in connection therewith, subject to the terms of the Contract Documents.

b. All unit prices include the complete cost for each item, together with all work in connection therewith and shall include all other incidental work.

c. Unit prices shall be the total compensation for the item and includes all overhead, profit and any other charges of the Contractor and/or subcontractor in connection therewith.

d. Adjustments will be computed on net variation of total quantities of like items.

e. The Owner reserves the right to accept or reject any or all of the unit prices listed below prior to the execution of the Contract.

UNIT PRICES (Refer to Section 02315):

Unit Price 1A:

Waste transportation and disposal at a USEPA-licensed hazardous waste incinerator, utilizing the facility identified on Page BF-2, per TON:

In words: _____ dollars and _____ cents

In figures: $_____

NOTE: The lump sum Base Bid includes the transportation and disposal of all waste materials, as detailed in Specification Section 02315. For the purpose of bidding it shall be assumed that all wastes shall be classified as hazardous wastes requiring incineration with the exception of the sump cover (which is assumed non-hazardous) and that the total weight of hazardous materials will be 110 tons.

Unit Price 1A shall be used only to adjust the final contract price based on the actual final weight of hazardous wastes.

12. ADDENDUM RECEIPT

a. Receipt of the following addenda to the Terms and Conditions, Drawings or Specifications is acknowledged:

Addendum No.	_____	Dated:	_____
Addendum No.	_____	Dated:	_____
Addendum No.	_____	Dated:	_____
Addendum No.	_____	Dated:	_____
Addendum No.	_____	Dated:	_____

_____
(Bidder)

By: _____

Print Name and Title: _____

Business Address: _____

_____

_____

Dated: _____

CERTIFICATE OF NON-COLLUSION

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief:

a. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.

b. Unless required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or with any competitor.

c. No attempt has been made or will be made by the bidder to induce any other persons, partnership, or corporation to submit or not submit a bid for the purpose of restricting competition.

_____
(Bidder)

By: _____

Print Name and Title: _____

Dated: _____

CERTIFICATE AS TO CORPORATE BIDDER

I, _____, certify that I am the _____ of the Corporation named as Bidder within this Bid Form for General Contractors; that _____, who signed said Bid Form on behalf of the bidder was then _____ of said Corporation; that I know his signature; that his signature thereto is genuine and that said Bid Form and attachments thereto were duly signed, sealed and executed for and in behalf of said Corporation by authority of its governing body.

_____
(Secretary-Clerk)

(CORPORATE SEAL)

Dated: _____

GENERAL CONDITIONS

FOR THE PROJECT:

SLUDGE, SUMP, AND SOIL REMOVAL AND DISPOSAL

at the

VINEYARD RESEARCH LABORATORY

Fredonia, NY

CORNELL UNIVERSITY
ITHACA, NEW YORK

GENERAL CONDITIONS
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ARTICLE 1 -- INTERPRETATION OF CONTRACT DOCUMENTS

Section 1.01 - Owner

A. Ownership of Documents: All drawings, specifications, computations, sketches, test data, survey results, photographs, renderings and other material relating to the Work, whether furnished to or prepared by the Contractor, are the property of Cornell University. The Contractor shall use such materials or information therefrom only in connection with the Work of this Contract. When requested, the Contractor shall deliver such materials to Cornell University.

B. The Owner shall give all orders and directions contemplated under the Contract relative to the execution of the Work. The Owner shall determine the amount, quality, acceptability, and fitness of the Work and shall decide all questions which may arise in relation to said Work. The Owner's estimates and decisions shall be final except as otherwise expressly provided.

C. Any differences or conflicts concerning performance which may arise between the Contractor and other Contractors performing Work for the Owner shall be adjusted and determined by the Owner.

D. The table of contents, titles, captions, headings, running headlines, and marginal notes contained herein and in said documents are intended to facilitate reference to various provisions of the Contract Documents and in no way affect the interpretation of the provisions to which they refer.

Section 1.02 - Meaning and Intent of Specifications, Plans and Drawings

The meaning and intent of all specifications, plans and drawings shall be determined in a manner approved by the Owner.

Section 1.03 - Order of Precedence

A. Should a conflict occur in or between or among any parts of the Contract Documents that are entitled to equal preference, the more expensive way of doing the Work, the better quality or greater quantity of material shall govern, unless the Owner otherwise so directs.

B. Drawings and specifications are reciprocal. Anything shown on the plans and not mentioned in the specifications, or mentioned in the specifications and not shown on the plans, shall have the same effect as if shown or mentioned in both.

C. In case of a conflict between parts of the Contract Documents, the following shall be given precedence: (1) large scale detail drawings; (2) large scale plan and section drawings; (3) small scale detail drawings (4) small scale plan and section drawings.

D. Requirements of reference standards form a part of these specifications to the extent indicated by the reference thereto. When provisions of reference standards conflict with provisions in these specifications, the specifications shall govern.

ARTICLE 2 -- CONTRACTOR

Section 2.01 - Contractor's Obligations

A. The Contractor shall, in good workmanlike manner, perform all the Work required by the Contract within the time specified in the Contract. The Contractor shall comply with all terms of the Contract, and shall do, carry on, and complete the entire Work to the satisfaction of the Owner.

B. The Contractor shall furnish, erect, maintain, and remove such construction plant and such temporary Work as may be required.

C. Whenever a provision of the Specifications conflicts with agreements or regulations in force among members of trade associations, unions, or councils which regulate or distinguish what work shall or shall not be included in the work of a particular trade, the Contractor shall make all necessary arrangements to reconcile such conflict without delay, damage, or cost to the Owner and without recourse to the Architect or the Owner. In case progress of the Work is affected by undue delay in furnishing or installing items of material or equipment required under the Contract because of a conflict involving such agreement or regulations, the Architect may require that other material or equipment of equal kind and quality be provided at no additional cost to the Owner.

Section 2.02 - Contractor's Title to Materials

A. The Contractor warrants that the Contractor has full, good and clear title to all materials and supplies used by the Contractor in the Work, free from all liens, claims or encumbrances.

B. All materials, equipment and articles which become the property of the Owner shall be new unless specifically stated otherwise.

Section 2.03 - "Or Equal" Clause

A. Whenever a material, article or piece of equipment or method is identified on the plans or in the specifications by reference to manufacturers' or vendors' names, trade name, catalogue number, or make, no others may be substituted. Any and all other "Or Equal" considerations will be handled under this Section in accordance with General Requirements, Section 01640.

B. Where the Architect approves a product proposed by the Contractor and said proposed product requires a revision or redesign of any part of the Work covered by this Contract, or the Work covered by other contracts, all said revision or redesign, and all new drawings and details required therefor shall be provided by the Contractor and shall be approved by the Architect. All time spent by the Architect or his agents to evaluate the proposed substitution and or necessary engineering cost to accommodate the requested change shall be reimbursed to the Owner by the Contractor via the Change Order procedure.

Section 2.04 - Quality, Quantity and Labeling

A. The Contractor shall furnish materials and equipment of the quality and quantity specified in the Contract. Unless otherwise provided, all materials and articles incorporated into

the work shall be new and of the most suitable grade of their respective kinds for the purpose. When required by the Contract Documents or when directed by the Owner, the Contractor shall supply the Owner, for his acceptance, full information concerning any material which he contemplates incorporating into the work. Materials and articles installed or used without such acceptance shall be at the risk of subsequent rejection.

B. When materials are specified to conform to any standard, the Owner may require that the materials delivered to the Site shall bear manufacturer's labels stating that the materials meet said standards.

C. The above requirements shall not restrict or affect the Owner's right to test materials as provided in the Contract.

D. Whenever several alternative materials or items are specified by name or other particular reference for one use, the Owner may require the Contractor to submit in writing a list of the particular materials or items he intends to use before the Contract is executed.

Section 2.05 - Superintendence by Contractor

A. The Contractor shall employ a full-time competent construction superintendent and necessary staff; the construction superintendent shall devote full time to the Work and shall have full authority to act for the Contractor at all times.

B. If at any time the superintendent is not satisfactory to the Owner, the Contractor shall, if requested by the Owner, replace said superintendent with another superintendent satisfactory to the Owner. There shall be no change in superintendent without the Owner's approval.

C. The Contractor shall remove from the Work any employee of the Contractor or of any Subcontractor when so directed by the Owner.

Section 2.06 - Subsurface or Site Conditions

A. The Contractor acknowledges that he has assumed the risk and that the contract consideration includes such provision as he deems proper for all subsurface conditions as he could reasonably anticipate encountering from the provisions of the Contract Documents, borings, rock cores, topographical maps and such other information as the Owner made available to him or from his own inspection and examination of the site prior to the Owner's receipt of bids.

B. In the event that the Contractor encounters subsurface physical conditions at the site differing substantially from those shown on or described or indicated in the Contract Documents and which could not have been reasonably anticipated from the aforesaid information made available by the Owner or from the Contractor's aforesaid inspection and examination of the site, he shall give immediate notice to the Owner of such conditions before they are disturbed. The Owner will thereupon promptly investigate the conditions and if Owner finds that they do substantially differ from that which should have been reasonably anticipated by the Contractor, the Owner shall make such changes in the drawings and specifications as may be necessary and a change order shall be issued.

Section 2.07 - Representations of Contractor

The Contractor represents and warrants:

A. That the Contractor is financially solvent and is experienced in and competent to perform the Work;

B. That the Contractor is familiar with all Federal, State, or other laws, ordinances, orders, rules and regulations, which may in any way affect the Work;

C. That any temporary and permanent Work required by the Contract can be safely and satisfactorily constructed.

D. That the Contractor has carefully examined the Contract and the Site of the Work and that, from the Contractor's own investigations is satisfied as to the nature and location of the Work, the character, quality and quantity of surface and subsurface materials likely to be encountered, the character of equipment and other facilities needed for the performance of the Work, the general and local conditions, and all other materials or items which may affect the Work.

Section 2.08 - Verifying Dimensions and Site Conditions

A. The Contractor shall take all measurements at the Site and shall verify all dimensions and site conditions at the Site before proceeding with the Work. If said dimensions or conditions are found to be in conflict with the Contract, the Contractor immediately shall refer said conflict to the Owner.

B. During the progress of Work, the Contractor shall verify all field measurements prior to fabrication of building components and equipment, and proceed with the fabrication to meet field conditions.

C. The Contractor shall consult all Contract Documents to determine exact location of all Work and verify spatial relationships of all Work. Any question concerning said location or spatial relationships shall be submitted in a manner approved by the Owner.

D. Specific locations for equipment, pipelines, ductwork and other such items of Work, where not dimensioned on plans, shall be determined in consultation with the Owner and other affected Contractors and Subcontractors.

E. The Contractor shall be responsible for the proper fitting of the Work in place.

Section 2.09 - Copies of Contract Documents for Contractors

A. The Owner shall furnish to the Contractor, without charge, up to ten (10) sets of Contracts Documents and one (1) set of reproducible sepias.

B. Any sets in excess of the number mentioned above may be furnished to the Contractor at the cost of reproduction and mailing.

C. All drawings, specifications, and copies thereof furnished by the Owner are the property of the Owner. They are not to be used on other work, and with the exception of the signed Contract Set, are to be returned to the Owner on request at the completion of the work.

Section 2.10 - Meetings

The Contractor and all subcontractors as requested shall attend all meetings as directed by the Owner.

Section 2.11 - Related Work

The Contractor shall examine the Contract for related work to ascertain the relationship of said work to the Work under the Contract.

Section 2.12 - Surveys and Layout

Unless otherwise expressly provided in the Contract, the Owner shall furnish the Contractor all surveys of the property necessary for the Work, but the Contractor shall lay out the Work.

Section 2.13 - Errors, Omissions or Discrepancies

The Contractor shall examine the Contract thoroughly before commencing the Work and report in writing any errors or discrepancies to the Owner.

Section 2.14 - Project Labor Rates

The Contractor shall submit to the Owner within thirty (30) days after Contract is awarded all trade labor rates inclusive of fringe benefits, taxes, insurance for the duration of the individual craft agreement. Revised rates shall be provided within thirty (30) days of signing any new agreements with the individual crafts during this project.

ARTICLE 3 -- INSPECTION AND ACCEPTANCE

Section 3.01 - Access to the Work

The Owner and Architect, or their duly authorized representatives, assistants, or inspectors shall at all times and for any purpose have access to the work and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities therefor. In addition, the Contractor shall, whenever so requested, give the Owner and Architect or their duly authorized representatives access to the proper invoices, bills of lading, specifications, etc., which may be required in determining the adequacy and/or quantity of materials used in completion of the work.

Section 3.02 - Notice for Testing

If the Contract Documents, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any work to be inspected, tested, accepted, or approved, the Contractor shall give the Owner timely notice of its readiness and of the date arranged so the Owner may observe such inspection, testing, or approval. The Contractor shall bear all costs of such inspection, tests, and approvals unless otherwise provided.

Section 3.03 - Inspection of Work

A. The Contractor will cooperate in all ways to facilitate the inspection and examination of the work. The inspections and examinations will be carried out in such a manner that the work will not be delayed.

B. All Work, all materials whether or not incorporated in the Work, all processes of manufacturer, and all methods of construction shall be, at all times and places, subject to the inspection of the Owner and the Owner shall be the final judge of the quality and suitability of the Work. Any Work not approved by the Owner shall immediately be reconstructed, made good, replaced or corrected by the Contractor including all Work of other Contractors destroyed or damaged by said removal or replacement.

C. Required certificates of inspection, testing, acceptance, or approval shall be secured by the Contractor and promptly delivered by him to the Owner.

Section 3.04 - Inspection and Testing

All materials and equipment used in the Work shall be subject to inspection and testing in accordance with accepted standards to establish conformance with specifications and suitability for uses intended, unless otherwise specified in the Contract. If any Work shall be covered or concealed without the approval or consent of the Owner, said Work shall, if required by the Owner, be uncovered for examination. If any test results are below specified minimums, the Owner may order additional testing. The cost of said additional testing, any additional professional services required, and any other expenses incurred by the Owner as a result of said additional testing shall be paid by the Contractor. Reexamination of any part of the Work may be ordered by the Owner, and if so ordered the Work must be uncovered by the Contractor. If said Work is found to be in accordance with the Contract, the Owner shall pay the cost of reexamination and replacement. If said Work is found not to be in accordance with the Contract, the Contractor shall pay the cost of reexamination and replacement.

Section 3.05 - Defective or Damaged Work

If, in the opinion of the Owner, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the Work injured or not performed in accordance with the Contract, the compensation to be paid to the Contractor shall be reduced by an amount which, in the judgment of the Owner, shall be deemed to be equitable.

Section 3.06 - Acceptance

No previous inspection shall relieve the Contractor of the obligation to perform the Work in accordance with the Contract. No payment, either partial or full, by the Owner to the Contractor shall excuse any failure by the Contractor to comply fully with the Contract Documents. The Contractor shall remedy all defects, paying the cost of any damage to other Work resulting therefrom.

ARTICLE 4 -- CHANGES IN WORK

Section 4.01 - Changes

A. The Owner, without invalidating the Contract, may order changes within the general scope of the Contract and the Contractor shall promptly comply with such change orders.

B. A change order is a written direction to the Contractor signed by the Owner, issued after execution of the Contract, authorizing a change in the Work, extra work, or an adjustment in the Contract price or time of performance.

C. No claims for changes, extra work or additional time to complete the Contract or an adjustment in the Contract price shall be allowed unless such change is ordered in writing by the Owner.

D. The Owner shall determine the amount by which the Contract consideration is to be increased or decreased by a change order by one (1) or more of the following methods:

1. By agreement with the Contractor.

2. By applying the applicable price or prices previously bid and approved. This method shall be used if the Contract contains applicable unit prices.

3. (a) By estimating the fair and reasonable cost of:

(i) Labor, including all wages, required wage supplements and insurance required by law paid to employees below the rank of superintendent directly employed at the Site.

(ii) Materials

(iii) Equipment, excluding hand tools, which in the judgment of the Owner, would have been or will be employed exclusively and directly on the Work.

(b) Mark-ups:

(i) Work performed by the Contractor. Where the Work is performed directly by the Contractor by adding to the total of such estimated costs a sum equal to fifteen percent (15%) thereof.

(ii) Work performed by a Subcontractor. Where the change order work is performed by a Subcontractor under contract with the Contractor, by adding a sum equal to fifteen (15%) of said costs for the benefit of said Subcontractor, and by adding for the benefit of the Contractor an additional sum equal to ten percent (10%) of said costs.

(iii) Work performed by a Sub-Subcontractor. Where work is performed by a Sub-Subcontractor, by adding the sum equal to fifteen percent (15%) of said costs for the benefit of said Sub-Subcontractor, by adding for the benefit of the Subcontractor an additional sum equal to five percent (5%) of said cost and by adding for the benefit of the Contractor an additional sum equal to five percent (5%) of said cost.

No markup shall be paid on the premium portion of overtime pay.

No markup shall be paid on insurance, taxes, fringe benefits or bond cost. Where the Work involves both an increase and a reduction in similar or related Work, the above percentage override shall be applied only on the amount, if any, that the cost of the increase exceeds the cost of the reduction.

4. By determining the actual cost of the extra work in the same manner as in Subsection 3 except the actual costs of the Contractor shall be used in lieu of estimated costs.

E. Regardless of the method used by the Owner in determining the value of a change order, the Contractor, within thirty (30) calendar days after a request for the estimate of value shall submit to the Owner a detailed breakdown of the Contractor's estimate, including all subcontractors details, of the value of the Change Order Work, in a form acceptable to the Owner.

F. Unless otherwise specifically provided for in a change order, the compensation specified therein includes a full payment for both the Work covered by the order and for any damage or expense incurred by the Contractor by any delays, including any delays to other Work to be done under the Contract resulting from said change order. The Contractor waives all rights to any other compensation for said damage or expense.

G. The Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost and when requested by the Owner shall give the Owner access to accounts and records relating thereto.

Section 4.02 - Form of Change Orders

All change orders shall be processed, executed and approved on the Owner's change order form, which is included herein as Exhibit "A" and made a part of the Contract Documents. No alteration to this form shall be acceptable to the Owner and no payment for change order Work shall be due the Contractor unless a change order has been issued and approved on said form.

ARTICLE 5 -- TIME OF COMPLETION

Section 5.01 - Time of Completion

A. The Work shall be commenced at the time stated in the written order of the Owner and shall be completed no later than the date of completion specified in the Contract.

B. The date of beginning and the time for completion of the Work, as specified in the Contract, are essential conditions of the Contract.

C. The Work shall be prosecuted diligently at such rate of progress as shall insure full completion within the time specified. It is expressly understood and agreed, that the time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic range and usual business and labor conditions prevailing in the locality of the Site.

D. Time is of the essence on each and every portion of the Work. In any instance in which additional time is allowed for the completion of any Work, the new time of completion established by said extension shall be of the essence.

E. The Contractor shall not be charged with damages or any excess cost if the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner. The Contractor shall not be charged with damages or any excess cost for delay in completion of the work if the Owner determines that the delay is due to:

1. any preference, priority or allocation order duly issued by the Government of the United States or the State of New York;

2. unforeseeable cause beyond the control and without the fault or negligence of the Contractor, and approved by the Owner, including, but not limited to, acts of God or of public enemy, acts of the Owner, fires, epidemics, quarantine, restrictions, strikes, freight embargoes and unusually severe weather.

F. The time for completion can only be extended by change order and may be extended for:

1. all of the Work, or

2. only that portion of the Work altered by the change order.

G. Any claim for extension of time shall be made in writing to the Owner not more than twenty (20) days after the commencement of the delay; otherwise it shall be waived.

ARTICLE 6 -- TERMINATION

Section 6.01 - Termination for Cause

In the event that any provision of this Contract is violated by the Contractor or by any Subcontractor of the Contractor, the Owner may serve written notice upon the Contractor, and upon the Contractor's surety, if any, of the Owner's intention to terminate the Contract. The notice shall briefly state the reasons for the termination and shall specify a termination date. If arrangements satisfactory to the Owner are not made to remove and remedy the violation, the Contract shall terminate upon the date specified by the Owner in the notice. In the event of termination, the Owner may take over and complete the Work at the expense of the Contractor. The Contractor and Contractor's surety shall be liable to the Owner for all costs thereby incurred by the Owner. In the event of such termination the Owner may take possession of and may utilize such materials, appliances, and plant as may be located on the Site and which may be necessary or useful in completing the Work.

Section 6.02 - Termination for Convenience of Owner

The Owner, at any time, may terminate the Contract in whole or in part. Any said termination shall be effected by delivering to the Contractor a notice of termination specifying the extent to which performance of Work under the Contract is terminated and the date upon which said termination becomes effective. Upon receipt of the notice of termination, the Contractor shall act promptly to minimize the expenses resulting from said termination. The Owner shall pay the Contractor for costs actually incurred by the Contractor up to the effective date of said termination, but in no event shall the Contractor be entitled to compensation in excess of the total consideration of the Contract. In the event of said termination the Owner may take over the Work and prosecute same to completion.

Section 6.03 - Owner's Right to do Work

The Owner may, after notice to the Contractor, without terminating the Contract and without prejudice to any other right or remedy the Owner may have, perform or have performed by others all of the Work or any part thereof and may deduct the cost thereof from any monies due or to become due the Contractor.

ARTICLE 7 -- DISPUTES

Section 7.01 - Disputes Procedure

A. If the Contractor claims that any Work which the Contractor has been ordered to perform will be Work which should have been authorized or directed by change order, or that any action or omission of the Owner is contrary to the terms of the Contract, the Contractor shall:

1. File a notice with the Owner which sets forth the basis of the Contractor's claim and requests a resolution of the dispute. Such notice shall be filed within fifteen (15) working days after being ordered to perform the disputed work or within fifteen (15) working days after commencing performance of the disputed work, whichever is earlier, or within fifteen (15) working days after the act or omission of the Owner which the Contractor claims is contrary to the terms of the Contract.

2. Proceed diligently with the performance of the work in accordance with the instructions of the Owner pending the resolution of the dispute by the Owner.

3. Promptly comply with the order of the Owner regarding the disputed matter.

4. Any such decision, or any other decision of the Owner in respect to a dispute, shall be final unless the Contractor, within ten (10) workings days after such decision, shall deliver to the Owner a verified written statement which sets forth the Contractor's contention that the decision is contrary to a provision of the contract. Pending the decision of the Owner, the Contractor shall proceed in accordance with the original decision. The Owner shall determine the validity of the Contractor's claim and such determination shall be final. The Contractor may file a notice with the Owner reserving its rights in connection with the dispute but shall comply with the Owner's decision and complete the work as directed.

B. No claim for additional costs regarding changed or extra work shall be allowed unless the work was done pursuant to a written order of the Owner.

C. The value of claims for extra work, if allowed, shall be determined by the methods described in the Contract.

D. The Contractor's failure to comply with any or all parts of Article 7 shall be deemed to be:

1. a conclusive and binding determination on the part of the Contractor that the order, work, action or omission is not contrary to the terms and provisions of the Contract;

2. a waiver by the Contractor of all claims for additional compensation, time extension, or damages as a result of said order, work, action or omission.

ARTICLE 8 -- SUBCONTRACTS

Section 8.01 - Subcontracting

A. The Contractor may utilize the services of Subcontractors.

B. The Contractor shall submit to the Owner, in writing, the name of each proposed Subcontractor and Sub-Subcontractor, as required by the Contract. The Contractor shall not award any Work to any Subcontractor or Sub-Subcontractor without the prior written approval of the Owner.

C. The Contractor shall be fully responsible for the Work, acts and omissions of Subcontractors, and of persons either directly or indirectly employed by Subcontractors.

D. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by the terms of the Contract insofar as applicable to the Work of Subcontractors, indemnification and to give the Contractor the same power to terminate any subcontract that the Owner may exercise over the Contractor.

E. The Contractor's use of Subcontractors shall not diminish the Contractor's obligation to complete the Work in accordance with the Contract. The Contractor shall control and coordinate the Work of Subcontractors.

F. Nothing contained in the Contract shall create any contractual relationship between Subcontractors and the Owner.

ARTICLE 9 -- COORDINATION AND COOPERATION

Section 9.01 - Cooperation with Other Contractors

A. Normally, the Work will be performed by a single Contractor. However, the Owner reserves the right to perform work related to the Work with its own forces or award separate contracts. In that event, the Contractor shall coordinate its operations with the Owner's forces or separate Contractors.

B. The Owner cannot guarantee the responsibility, efficiency, unimpeded operations or performance of any contractor. The Contractor acknowledges these conditions and shall bear the risk of all delays including, but not limited to, delays caused by the presence or operations of other contractors.

C. The Contractor shall keep informed of the progress and workmanship of other contractors and shall notify the Owner immediately of lack of progress or defective workmanship on the part of other contractors where said delay or defective workmanship may interfere with the Contractor's operations.

D. Failure of a Contractor to keep so informed and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by the Contractor of said progress and workmanship as being satisfactory for proper coordination with the Work.

E. If the Contractor notifies the Owner, in writing, that another contractor on the Site is failing to coordinate the work of said contractor with the Work, the Owner shall investigate the charge. If the Owner finds it to be true, the Owner shall promptly issue such directions to the other contractor with respect thereto as the situation may require. The Owner shall not be liable for any damages suffered by the Contractor by reason of the other contractor's failure to promptly comply with the directions so issued by the Owner, or by reason of another contractor's default in performance.

F. If the Owner shall determine that the Contractor is failing to coordinate the Work with the work of other contractors as the Owner has directed:

1. the Owner shall have the right to withhold any payments due under the Contract until the Owner's directions are complied with by the Contractor; and

2. The Contractor shall indemnify and hold the Owner harmless from any and all claims or judgments for damages and from any costs or damages to which the Owner may be subjected or which the Owner may suffer or incur by reason of the Contractor's failure promptly to comply with the Owner's directions.

G. Should the Contractor sustain any damage through any act or omission of any other contractor having a contract with the Owner or through any act or omission of any Subcontractor of said other contractor, the Contractor shall have no claim against the Owner for said damage.

H. Should any other contractor having a Contract with the Owner sustain damage through any act or omission of the Contractor or its Subcontractor, the Contractor shall reimburse said other contractor for all said damages and shall indemnify and hold the Owner harmless from all said claims.

ARTICLE 10 -- PROTECTION OF RIGHTS, PERSONS AND PROPERTY

Section 10.01 - Accidents and Accident Prevention

A. The Contractor shall at all times take reasonable precautions for the safety of persons engaged in the performance of the work. The Contractor shall comply fully with all applicable provisions of federal, state, and local law. The Contractor alone shall be responsible for the safety, efficiency and adequacy of the Contractor's Work, plant, appliances and methods, and for any damage which may result from the failure or the improper construction, maintenance, or operation of said Work, plant, appliances and methods.

B. The Contractor shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of or in the course of employment on Work under the Contract, and shall immediately notify the Owner in writing of any injury which results in hospitalization or death.

C. The Contractor, shall provide to the Project Manager, Material Safety Data Sheets (OSHA Form 20 or the equivalent) for all chemicals to be used on site. All chemicals requiring any precautionary measures (eg. special storage or disposal requirements, personal protective equipment, or additional ventilation), shall be brought to the attention of Cornell University for review and approval, prior to their use on site.

1. All chemicals brought on site by the Contractor shall be clearly labeled. The label shall state the identity of the chemical, any associated hazards, and the Contractor's name.

2. All Contractor employees who are using chemicals shall be made aware of the hazards associated with their use. Safe chemical handling procedures in accordance with OSHA or other governmental agencies, and manufacturer's recommendations shall be used at all times.

3. The Contractor shall dispose of all chemicals in accordance with EPA and Cornell University requirements, regardless of the size of the container or the quantity of waste, and must receive prior approval of Cornell University.

D. The Contractor shall be responsible for the initiation, maintenance and supervision of safety precautions and programs in connection with the Work.

E. The Contractor shall, at all times, guard the Owner's property from injury or loss in connection with the Work. The Contractor shall, at all times, guard and protect the Contractor's Work. The Contractor shall replace or make good any said loss or injury unless said loss or injury is caused directly by the Owner.

F. The Contractor shall have full responsibility to install, protect and maintain all materials and supplies in proper condition and forthwith repair, replace and make good any damage thereto until Final Acceptance.

Section 10.02 - Adjoining Property

A. The Contractor shall be required to protect all the adjoining property and to repair or replace any such properties damaged or destroyed by him, his employees or subcontractors thereof, by reason of, or as a result of activities under, for or related to the Contract.

Section 10.03 - Emergencies

A. In case of an emergency which threatens loss or injury to persons or property, the Contractor will be allowed to act, without previous instructions from the Owner, in a diligent manner, to the extent required to avoid or limit such loss or injury, and he shall notify the Owner immediately thereafter of the action taken.

Section 10.04 - Bonds

A. Before commencing the performance of any work covered by the Contract, the Contractor shall furnish to the Owner any required Bonds. The failure of the Contractor to supply the required Bonds within ten (10) days after the Contract signing shall constitute a default.

Section 10.05 - Risks Assumed by the Contractor

A. Indemnification. The Contractor shall indemnify and hold harmless the Owner and its agents and employees from and against all claims, damages, losses, fines, and expenses, including attorneys' fees, arising out of or resulting from the performance of the work to the extent that any such claim, damage, loss, fine, or expense including but not limited to those arising out of bodily or personal injury, sickness, disease, or death, or to injury or destruction of tangible property, including the loss of use resulting therefrom, to which the Owner and its agents and employees may be subjected by reason of any negligent act or omission, willful misconduct, violation of law, or breach of this Contract by the Contractor, or any of its subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by the Owner.

1. In the event that any party is requested but refuses to honor the indemnity obligations hereunder, then the party indemnifying shall, in addition to all other obligations, pay the cost of bringing any such action, including attorneys' fees, to the party requesting indemnity.

B. Neither the Owner's final acceptance of the work to be performed hereunder nor the making of any payment shall release the Contractor from his obligations under this Section. The enumeration elsewhere in the Contract of particular risks assumed by the Contractor or of particular claims for which he is responsible shall not be deemed to limit the effect of the provisions of this Section or to imply that he assumes or is only responsible for risk or claims of the type enumerated.

Section 10.06 - Contractor's Compensation and Liability Insurance

A. The Contractor shall procure and maintain, at his own cost and expense, until final acceptance by the Owner of all the work covered by this Contract, the following kinds of insurance:

1. Worker's Compensation Insurance. A policy complying with the requirements of the laws of the State of New York, including Coverage B - Employer's Liability.

2. Contractor's Comprehensive General Liability Insurance. A standard comprehensive general liability insurance policy, with contractual, completed operations, explosion, collapse and underground property damage coverages issued to and covering the liability of the Contractor for all work and operations under this Contract, all obligations assumed by the Contractor under this Contract and all damage to work performed by subcontractors on your behalf. The Contractor shall provide Broad Form Comprehensive General Liability Insurance, and the Owner shall be an additional insured in the policy. The policy shall include cross liability coverage and shall be endorsed to indicate that it is primary coverage. The completed operations coverages shall be maintained for not less than two years after acceptance of the work. The coverage under such policy shall be not less than a combined single limit for Bodily Injury and Property Damage of:

BODILY INJURY AND PROPERTY DAMAGE LIABILITY (BROAD FORM)	
$ 5,000,000	Each Occurrence
$ 5,000,000	Aggregate

3. Automobile Liability Insurance. A policy covering the use in connection with the work covered by the Contract Documents of all owned, non-owned and hired vehicles bearing, or, under the circumstances under which they are being used, required by the Motor Vehicle Laws of the State of New York to bear license plates. The coverage under such policy shall be not less than a combined single limit for Bodily Injury and Property Damage of:

BODILY INJURY AND PROPERTY DAMAGE LIABILITY	
$ 1,000,000	Each Person
$ 1,000,000	Each Accident

B. In addition to maintaining all of the above insurances, the Contractor shall indemnify and hold harmless the Owner and its agents and employees from and against liability, including additional premium due because of the Contractor's failure to maintain coverage limits as required under this section.

C. Insurance similar to that required of the Contractor shall be provided by or on behalf of all subcontractors to cover their own operations performed under this Contract. The Contractor shall be held responsible for any modifications in these insurance requirements as they apply to subcontractors.

D. Before commencing the performance of any work covered by the Contract, the Contractor shall furnish to the Owner a current certificate or certificates, in duplicate, of the insurance required under the foregoing provisions including copies of subcontractors certificates. Such certificates shall be on a form prescribed by the Owner, shall list the various coverages and shall contain, in addition to any provisions hereinbefore required, a provision that the policy shall not be changed or cancelled and that it will be automatically renewed upon expiration and continued in force until final acceptance by the Owner of all the work covered by the Contract, unless the Owner is given thirty (30) days written notice to the contrary. Upon renewal of each of the Contractor's insurance coverages, the Owner shall be provided with a new certificate of insurance showing such renewal. Certificates and written notices shall be directed to the Director of Contracts Management. Upon request, the Contractor shall furnish the Owner with a certified copy of each policy.

E. If at any time any of the above required insurance policies should be cancelled, terminated or modified so that insurance is not in effect as above required, then, if the Owner shall so direct, the Contractor shall suspend performance of the work covered in the Contract. If the said work is so suspended, no extension of time shall be due on account thereof. The Owner may, at its option, obtain insurance affording coverage equal to that above required, at the Contractor's expense.

Section 10.07 - Liability Insurance of the Owner

A. The Owner, at its own cost and expense, shall procure and maintain such liability insurance as will, in its opinion, protect the Owner from its contingent liability to others for damages because of bodily injury, including death, and property damage which may arise from operations under this Contract.

Section 10.08 - Owner's and Contractor's Responsibilities for Fire and Extended Coverage Insurance Hazards

A. The Owner shall assume responsibility for maintaining insurance to cover not less than the value of work performed and materials delivered to the site of the project which are to be included in and remain a part of the permanent construction, whether or not installed except as otherwise provided in Paragraph D of this section. The policy or policies maintained by the Owner to cover such values shall include (without specifically naming any party other than the Owner in said policies) any interests of the Contractor and subcontractors in such work performed and material delivered.

B. Losses, if any, under such insurance shall be payable to the Owner.

C. The Contractor shall be responsible for any and all loss of materials connected with the construction due to unexplainable disappearance, theft or misappropriation of any kind or nature.

D. The foregoing provisions shall not operate to relieve the Contractor and subcontractors of responsibility for any loss or damage to their own or rented property or property of their employees, of whatever kind or nature, or on account of labor performed under the Contract incident to the repair, replacement, salvage, or restoration of such items, including but not limited to tools, equipment, forms, scaffolding, and temporary structures, including their contents, regardless of ownership of such contents, except for such contents as are to be included in and remain a part of the permanent construction. The Owner shall in no event be liable for any loss or damage to any of the aforementioned items, or any other property of the Contractor, subcontractors and the Architect, or employees, agents, or servants of same, which is not to be included in and remain a part of the permanent construction. The Contractor and subcontractors severally waive any rights of recovery they may have against the Owner and the Architect for damage or destruction of their own or rented property, or property of their employees of whatever kind or nature.

Section 10.09 - Effect of Procurement of Insurance

A. Neither the procurement nor the maintenance of any type of insurance by the Owner or the Contractor shall in any way be construed or be deemed to limit, discharge, waive or release the Contractor from any of the obligations and risks imposed upon him by the Contract or to be a limitation on the nature or extent of such obligations and risks.

Section 10.10 - No Third Party Rights

A. Nothing in the Contract shall create or give to third parties, any claim or right of action against the Contractor, the Architect, the Owner beyond such as may legally exist irrespective of the Contract.

ARTICLE 11 -- USE OR OCCUPANCY PRIOR TO ACCEPTANCE BY OWNER

Section 11.01 - Occupancy Prior to Acceptance

A. If, before Final Acceptance, the Owner desires Beneficial Occupancy of the Work, or any part thereof, which is completed or partly completed, or to place or install therein equipment and furnishings, the Owner shall have the right to do so, and the Contractor shall in no way interfere with or object to said Beneficial Occupancy by the Owner.

B. Said Beneficial Occupancy (1) shall not constitute acceptance of space, systems, materials or elements of the Work, nor shall said Beneficial Occupancy affect the start of any guarantee period, and (2) shall not affect the obligations of the Contractor for Work which is not in accordance with the requirements of the Contract or other obligations of the Contractor under the Contract.

C. The Contractor shall continue the performance of the Work in a manner which shall not unreasonably interfere with said use, occupancy and operation by the Owner.

ARTICLE 12 -- PAYMENT

Section 12.01 - Provision for Payment

A. The Owner agrees to pay the Contract Price to the Contractor for the performance of this Contract and the fulfillment of all the Contractor's obligations. The Contract Price means all costs reimbursable under the Contract Documents.

B. The final certificate of the Architect shall certify that the Contract has been completed within the stipulated time, and shall not be issued until all drawings and specifications have been returned to the Owner. The issuance of said certificates, however, or any payments made thereon shall not lessen the total responsibility of the Contractor to complete the work to the satisfaction of the Owner in accordance with the Contract.

C. Payments on the Contract Price shall be made each month as the work progresses in accord with the following procedure:

1. The Contractor's schedule of values, including quantities, aggregating the total Contract Price, divided so as to facilitate payments to subcontractors as specified herein, shall be the basis for monthly progress payments. This schedule, attached hereto as Exhibit "B" and made a part of the Contract Documents, when approved by the Owner and Architect shall be used as a basis for progress payments. In applying for payments, the Contractor shall submit a statement based upon this approved schedule.

2. (a) On a date agreed upon by the Owner, Architect, and Contractor, a meeting shall be held by the Owner to review the work completed and materials on hand. This meeting shall review each item to be submitted by the Contractor in his requisition for payment.

(b) On the first day of each month, or as soon thereafter as practicable, the Contractor shall submit a written statement, including Contract Number, full name of the project and the name of the Owner as set forth in Article 15, Section 15.08, in approved format to the Architect with five (5) copies, setting forth in detail the cost of the work done and materials delivered to the job site up to and including the last day of the previous month and shall make application for payment of ninety percent (90%) of the amount of said statement, less the aggregate of all previous payments made by the Owner against the Contract Price.

(c) Each statement and application shall be accompanied by duplicate copies of an affidavit, executed by the Contractor, certifying that the statement is true and correct, and that all bills for labor, and materials incorporated in or delivered to the job, due and payable at the time of the preceding progress payment, have been paid. Before final payment is made, the Contractor shall submit evidence that all payrolls, material bills and other indebtedness incurred in connection with the Contract have been paid, including final waivers of any liens.

(d) If, pursuant to a prior written agreement with the Owner, payments are requested on account of materials or equipment not incorporated in the work which have been delivered and suitably stored at the site, or at some other location, such payments shall be conditioned upon submission by the Contractor of bills of sale, insurance certificates, notice of bonded warehousing, or such other procedures satisfactory to the Owner to establish the Owner's title to such materials or equipment or otherwise sufficient to protect the Owner's interest. The Contractor shall bear the cost of transporting materials stored off-site to the site.

3. Each such application for payment shall be subject to the review and approval of the Architect. If the Architect finds that the affidavit and application for payment are acceptable and that all the above requirements in connection therewith have been complied with, the Architect shall, within seven (7) calendar days after receiving such application for payment, certify to the Owner that the payment applied for is due and payable to the Contractor.

The Architect shall submit the approved applications for payment to:

Lisa Rose
Contracts and Capital Projects Administration
110 Humphreys Service Building
Cornell University
Ithaca, New York 14853-3701

4. The issuance of a Certificate for Payment constitutes a representation by the Architect to the Owner, based on the date of the Application for Payment, that the work has progressed to the point indicated, that, to the best of his knowledge, information, and belief, the quality of the work is in accordance with the Contract Documents and that the Contractor is entitled to payment in the amount certified.

After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner provided in the Agreement within thirty (30) calendar days of receipt and approval of the Certificate from the Architect.

However, by issuing a Certificate for Payment, the Architect shall not hereby be deemed to represent that he has made exhaustive or continuous on-site inspections to check the quality or quantity of the work or that he has reviewed the construction means, methods, techniques, sequences, or proceedings or that he has made any examination to ascertain how or for what purpose the Contractor has used the monies previously paid on account of the Contract Sum.

5. Any reduction with respect to retention shall be done in accordance with the Change Order provisions as outlined in Article 4 of these General Conditions. The Contractor shall submit to the Owner a written request for such reduction including a consent of the Surety for such reduction.

6. The remaining ten percent (10%) of the value of the work done and materials furnished and installed under this Agreement shall be retained by the Owner as part security for the faithful performance of his work within the time specified, and shall be paid as indicated in Section 12.04.

Section 12.02 - Withholding Payments

A. The Owner may, on account of subsequently discovered evidence, withhold or nullify the whole or a part of any Certificate to such extent as may be necessary to protect the Owner from loss on account of:

1. Defective work not remedied.

2. To assure payment of just claims of any persons supplying labor or materials for the work and to discharge any lien filed against the Owner's property.

3. A reasonable doubt that the Contract can be completed for the balance of the Contract Price then unpaid.

4. Damage to another Contractor.

5. Unsatisfactory prosecution of the work by the Contractor.

6. Failure to provide and maintain an acceptable Critical Path Method Network Schedule.

Section 12.03 - Conditions Precedent to Final Payment

A. Prior to acceptance by the Owner of all work covered by the Contract, the Contractor shall furnish to the Owner through the Architect one (1) set of current reproducible full-size Contract Drawings on which the Contractor has recorded in a neat and workmanlike manner all instances where actual field construction differs from work as indicated on the Contract Drawings. These "Record" drawings shall show the following information:

1. all significant changes in plan, sections, elevations and details, such as shifts in location of walls, doors, windows, stairs and the like made during construction;

2. all significant changes in foundations, columns, beams, openings, concrete reinforcing, lintels, concealed anchorages and "knock-out" panels made during construction;

3. final location of electric signal system panels, final arrangement of all circuits and any significant changes made in electrical signal system design as a result of Change Order or job conditions;

4. final location and arrangement of all mechanical equipment and major concealed gas, sprinkler, domestic, sanitary and drainage systems piping and other plumbing, including, but not limited to, supply and circulating mains, principal valves, meters, clean-outs, drains, pumps and controls, vent stacks, sanitary and storm water drainage; and

5. final location and arrangement of all underground utilities, connections to building and/or rerouting of existing utilities, including, but not limited to, sanitary, storm, heating, electric, signal, gas, water and telephone.

A complete set of shop drawings shall be submitted but not as a substitute for "Record" drawings. (See General Requirements 01720)

B. Submission of an acceptable "Fixed Equipment Inventory" (see General Requirements 01760).

Section 12.04 - Final Payment and Release

A. When the Contractor determines that the work or a designated portion thereof is substantially complete, the Contractor shall prepare for submission to the Owner a list of items to be completed or corrected. This list, prepared by the Contractor, shall constitute a complete detailed list of defects and deficiencies which, when remedied, will complete all Contract requirements. The submittal shall be accompanied by a statement to that effect.

B. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all work in accordance with the Contract Documents. When the Architect, on the basis of an inspection, determines that the work is substantially complete, he will then prepare a Certificate of Substantial Completion.

C. Upon receipt of written notice that the work is ready for final inspection and acceptance, the Architect will promptly make such inspection and, when he finds the work acceptable under the provisions of the Contract Documents, and the Contract fully performed, and if bonds have been required, the written Consent of the Surety to the payment of the balance due, and a satisfactory Release of Lien, attached hereto as Exhibit "C" and made a part of the Contract Documents, has been submitted by the Contractor, each subcontractor and sub-subcontractor, he will promptly issue a final Certificate for Payment, stating that to the best of his knowledge, information, and belief, and on the basis of his observations and inspections the work has been completed in accordance with the terms and conditions of the Contract Documents, and that the entire balance is due and payable.

D. All prior certificates upon which progress payments may have been made, being estimates, shall be subject to correction to the final certificate.

E. The acceptance by the Contractor of the final payment aforesaid shall constitute a general release of the Owner and its agents or representatives from all claims and liability to the Contractor.

Section 12.05 - Forms Required

A. "Schedule of Amounts for Contract Payments" and "Schedule Contractors Monthly Requisitions" (AIA Document G702; Application and Certificate for Payment) must be submitted, in the form as those contained herein as Exhibit "D", to comply with requirements for tax exemption.

ARTICLE 13 -- TAX EXEMPTION

Section 13.01 - Tax Exemption

A. The Owner is exempt from payment of Federal, State and local taxes, including sales and compensating use taxes on all materials and supplies incorporated into the completed Work. These taxes are not to be included in bids. This exemption does not apply to tools, machinery, equipment or other property leased by or to the Contractor or a Subcontractor, or to supplies and materials which, even though they are consumed, are not incorporated into the completed Work, and the Contractor and Subcontractors shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on said leased tools, machinery, equipment or other property and upon all said unincorporated supplies and materials.

B. The Contractor and Subcontractor shall obtain any and all necessary certificates or other documentation from the appropriate governmental agency or agencies, and use said certificates or other documentation as required by law, rule or regulation.

ARTICLE 14 -- GUARANTEE

Section 14.01 - Guarantee

A. The Contractor, at the convenience of the Owner, shall remove, replace and/or repair at his own costs and expense any defects in workmanship, materials, ratings, capacities or characteristics occurring in or to the work covered by Contract within one (1) year or within such longer period as may otherwise be provided in the Contract, the period of such guarantee to commence with the Owner's final acceptance of all work covered under the Contract, and the Contractor, upon demand, shall pay for all damage to all other work resulting from such defects and all expenses necessary to remove, replace and/or repair such work which may be damaged in removing, replacing or repairing the said defects.

B. In some instances the nature of the work may require the Owner to accept various components, equipment, spaces or phase of the project. In such cases the Contractor shall submit a separate guarantee for the Owner's acceptance on the form attached hereto as Exhibit "E". Upon completion of the project, the Contractor shall submit to the Owner a guarantee for the project on the form attached hereto as Exhibit "E".

ARTICLE 15 -- STANDARD PROVISIONS

Section 15.01 - Provisions Required by Law Deemed Inserted

Each and every provision of law or clause required by law to be inserted in the Contract shall be deemed to be inserted therein.

Section 15.02 - Laws Governing the Contract

The Contract shall be governed by the laws of the State of New York, without reference to conflict of law principles. Any and all proceedings relating to the subject matter hereof shall be maintained in New York State Supreme Court, Tompkins County or the federal district court for the Northern District of New York, which courts shall have exclusive jurisdiction for such purposes.

Section 15.03 - Assignments

The Contractor shall not assign the Contract in whole or in part without prior written consent of the Owner.

Section 15.04 - No Third Party Rights

Nothing in the Contract shall create or shall give to third parties any claim or right of action against the Owner, beyond such rights as may legally exist irrespective of the Contract.

Section 15.05 - Waiver of Rights of Owner

A. None of the provisions of the Contract will be considered waived by the Owner except when such waiver is given in writing.

Section 15.06 - Nondiscrimination and Affirmative Action

A. Prior to execution of the Contract or the commencement of the work thereunder, the Contractor shall submit copies of his Affirmative Action Program and the Affirmative Action Programs of his proposed subcontractors. A meeting to review these forms will be scheduled by the Owner after receipt of the same. Such Affirmative Action Programs must be satisfactory to the Owner. The Contractor shall designate a Compliance Officer in his organization who shall be responsible for implementing the Affirmative Action Program of the Contractor and his subcontractors. Said Compliance Officer shall make such periodic, but not less than monthly, reports on the Plans' progress and on the number of women and minority workers employed. These reports shall be submitted to the Owner Representative on the Affirmative Action Workforce Report and Minority - Women Utilization Report attached hereto as Exhibit "F".

B. The Contractor agrees, in addition to any other nondiscrimination provisions of the Contract, that the Contractor shall comply fully with and shall cooperate in the implementation of any Affirmative Action Requirements for Equal Employment Opportunity and Minority Business Enterprises (MBE) participation required by the Owner, at no additional cost to the Owner. Any such requirements shall be incorporated in their entirety in all subcontracts of any tier.

C. These provisions shall be deemed supplementary to the nondiscrimination provisions required by applicable federal and state law.

D. The apparent low bidder shall submit for Owner approval, a plan of affirmative action designed to assure minority group members an equal opportunity in employment and subcontract work. The bidder's Affirmative Action Plan must be approved by the Owner before a Contract shall be executed.

E. The following forms, attached hereto as Exhibit "F" and made a part of the Contract Documents, are to be used in submitting Affirmative Action Plans and hereby made a part of the Contract Documents.

1. Use of MBE and WBE Vendors (Form I)
2. Summary of bid Activity with MBE and WBE Subcontractors and Vendors (Form II)
3. Affirmative Action Workforce Report (Form III)
4. Minority-Women Utilization Report (Form IV)

This Plan is supplementary to all federal and state nondiscrimination requirements. Cornell University is an Equal Employment Opportunity Employer.

Section 15.07 - Limitation on Actions

No action or proceeding shall lie or shall be maintained by the Contractor against the Owner unless said action shall be commenced within six (6) months after receipt by the Owner of the Contractor's final requisition or, if the Contract is terminated by the Owner, unless said action is commenced within six (6) months after the date of said termination.

Section 15.08 - Owner's Representative

Only directives from Cornell's Administrative Facilities & Finance shall be recognized by the Contractor.

ARTICLE 16 -- ACCOUNTINGS, INSPECTION AND AUDIT

The Contractor agrees to keep books and records showing the costs incurred for the Work. Such books and records (including, without limitation, any electronic data processing files used by the Contractor in analyzing and recording the Work) shall be open for inspection and audit by the Owner and its authorized representatives at reasonable hours at the Contractor's local office or at the Owner's office, if necessary, and shall be retained by the Contractor for a period of seven years after the Work has been completed, except that if any litigation, claim or audit is started before the expiration date of the seven year period, the records shall be retained until all litigation, claims or audit findings involving the records have been resolved.. Each Contractor shall be similarly obligated to maintain, for inspection and audit by the Owner, books and records respecting the Work. If requested by the Owner, the Contractor shall furnish copies of any and all subcontracts, purchase orders and/or requisitions of any nature associated with the project.

ARTICLE 17 -- ROYALTIES AND PATENTS

The Contractor shall pay all royalties and license fees and shall defend all suits or claims for infringement of any patents, and shall save Cornell University harmless from loss on account thereof; except that Cornell University shall be responsible for all such loss when a particular process or product is specified by Cornell University unless the Contractor shall have reason to believe that the particular process or product infringes a patent, in which event it shall be responsible for loss on account thereof unless it promptly provides such information to Cornell University.

ARTICLE 18 -- CONFIDENTIALITY AND USE OF OWNER'S NAME

Section 18.01 - Release of Information

The Contractor shall not divulge information concerning the Work (including news releases, internal house organs, applications for permits, etc.) to anyone without Cornell University's prior written approval, except to subcontractors and suppliers to the extent that they need such information to perform their work. The Contractor shall require a similar agreement from each such subcontractor and supplier, requiring their compliance with the foregoing. Cornell University reserves the right to release all information, as well as to time its release and specify its form and content. The Contractor may obtain Cornell University's approval to release information by submitting such request to the Cornell University Project Manager.

Section 18.02 - Confidential Information

The term "Confidential Information" means all unpublished information obtained or received from Cornell University during the term of this Contract which relates to Cornell University's research, development, manufacturing and business affairs. The Contractor shall not disclose confidential information to any person, except to its employees and subcontractors to the extent that they require it in the performance of their Work, during the term of this Contract and until authorized by Cornell University in writing. The Contractor and its subcontractors shall hold all confidential information in trust and confidence for Cornell University, and shall use confidential information only for the purpose of this Contract. The Contractor and its subcontractors shall require all of their employees to whom confidential information is revealed to comply with these provisions. The Contractor shall have an agreement with each subcontractor, requiring their compliance with the foregoing. If it becomes necessary for the Contractor to defend in case of litigation related to its services rendered, permission shall be sought from Cornell University, who shall not unreasonably withhold such permission, before any disclosures are made. This Section does not apply to information which (1) is or becomes known in public domain or (2) is learned by the Contractor from third parties.

Section 18.03 - Use of Owner's Name

The Contractor shall not use, in its external, advertising, marketing program, or other promotional efforts, any date, pictures, or other representation of the Owner.

EXHIBIT "A"

CHANGE ORDER

Cornell University
Contracts Management
107 Humphreys Service Building
Ithaca, New York 14853-3701

Distribution to:
OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

PROJECT:

CHANGE ORDER NUMBER:

TO (Contractor):

INITIATION DATE:

OWNER'S CONTRACT NO:

CONTRACT DATE:

You are directed to make the following changes in this Contract:

Item No.	Description	Reference	Amount

Not valid until signed by both the Owner and Contractor.
Signature of the Contractor indicates his agreement herewith, including any adjustments in the Contract Price or Contract Time.

The original (Contract Price) was ..... $
Net change by previously authorized Change Orders ..... $
The (Contract Price) prior to this Change Order was ..... $
The (Contract Price) will be (increased) (decreased) (unchanged) by this Change Order ..... $
The new (Contract Price) including this Change Order will be ..... $
The Contract Time will be (increased) (decreased) (unchanged) by ( ) Days.
The Date of Substantial Completion as of the date of this Change Order therefore is

AUTHORIZED SIGNATURES:

_____	CORNELL UNIVERSITY
CONTRACTOR	OWNER
BY _____	BY _____
TITLE _____	TITLE _____
DATE _____	DATE _____

SCHEDULE OF VALUES FOR CONTRACT PAYMENTS
(Based on Original Estimate)

EXHIBIT "B"

Name of Contractor

Project Title

Item No. (1)	Description of Item (2)	Quantity (3)	Unit of Measure (4)	Labor Cost (5)	Material Cost (6)	Other Costs (7)	Total Cost of Item (8)	Cost Per Unit (9)
			TOTALS	$	$	$	$	$

NOTE: Each Allowance must be listed as a Separate Item.

Approved:

Contractor	Date	Architect	Date	Owner	Date

FINAL RELEASE EXHIBIT "C"

FINAL WAIVER OF CLAIMS AND LIENS AND RELEASE OF RIGHTS

Date	_____	Contract Date	_____
Project	_____	Contract Price	_____
Address	_____	Net Extras and Deductions	_____
City	_____	Adjusted Contract Price	_____
County	_____	Amount Previously Paid	_____
State	_____	Balance Due - Final Payment	_____

The undersigned hereby acknowledges that the above Balance Due when paid represents payment in full for all labor, materials, etc., furnished by the below named Contractor or Supplier in connection with its work on the above Project in accordance with the Contract.

In consideration of the amounts and sums previously received, and the payment of $_____ being the full and Final Payment amount due, the below named Contractor or Supplier does hereby waive and release the Owner from any and all claims and liens and rights of liens upon the premises described above, and upon improvements now or hereafter thereon, and upon the monies or other considerations due or to become due from the Owner or from any other person, firm or corporation, said claims, liens and rights of liens being on account of labor, services, materials, fixtures or apparatus heretofore furnished by the below named Contractor or Supplier to the Project. The premises as to which said claims and liens are hereby released are identified as follows:_____ _____.

The undersigned further represents and warrants that he/she is duly authorized and empowered to sign and execute this waiver on his/her own behalf and on behalf of the company or business for which he/she is signing; that it has properly performed all work and furnished all materials of the specified quality per plans and specifications and in a good and workmanlike manner, fully and completely; that it has paid for all the labor, materials, equipment and services that it has used or supplied, that it has no other outstanding and unpaid applications, invoices, retentions, holdbacks, expenses employed in the prosecution of work, chargebacks or unbilled work or materials against the Owner as of the date of the aforementioned last and final payment application; and that any materials which have been supplied or incorporated into the above premises were either taken from its fully-paid or open stock or were fully paid for and supplied on the last and final payment application or invoice.

The undersigned further agrees to defend, indemnify and hold harmless the Owner for any losses or expenses (including without limitation reasonable attorneys' fees) should any such claim, lien or right of lien be asserted by the below named Contractor or Supplier or by any of its or their laborers, material men or subcontractors.

In addition, for and in consideration of the amounts and sums received, the below named Contractor or Supplier hereby waives, releases and relinquishes any and all claims, rights or causes of action in equity or law whatsoever arising out of through or under the above mentioned Contract and the performance of work pursuant thereto.

The below named Contractor or Supplier further guarantees that all portions of the work furnished and installed are in accordance with the Contract and that the terms of the Contract with respect to this guarantee will remain in effect for the period specified in said Contract.

Sworn to before me this

_____ Day of _____ 20_

_____

_____
Corporation or Business Name

By: _____

Title: _____

APPLICATION AND CERTIFICATE FOR PAYMENT AIA DOCUMENT G702 (Instructions on reverse side) PAGE ONE OF .AGES

TO OWNER:	PROJECT:	APPLICATION NO.:	Distribution to:
		PERIOD TO:	☐ OWNER
		PROJECT NOS.:	☐ ARCHITECT
			☐ CONTRACTOR
FROM CONTRACTOR:	VIA ARCHITECT:	CONTRACT DATE:	☐
			☐

CONTRACT FOR:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. **ORIGINAL CONTRACT SUM** . . . . . $_____
2. **Net change by Change Orders** . . . . . $_____
3. **CONTRACT SUM TO DATE** (Line 1 ± 2) . . . . . $_____
4. **TOTAL COMPLETED & STORED TO DATE** . . . . . $_____
   (Column G on G703)
5. **RETAINAGE:**
   a. _____% of Completed Work $_____
   (Columns D + E on G703)
   b. _____% of Stored Material $_____
   (Column F on G703)
   Total Retainage (Line 5a + 5b or
   Total in Column I of G703) . . . . . $_____
6. **TOTAL EARNED LESS RETAINAGE** . . . . . $_____
   (Line 4 less Line 5 Total)
7. **LESS PREVIOUS CERTIFICATES FOR PAYMENT**
   (Line 6 from prior Certificate) . . . . . $_____
8. **CURRENT PAYMENT DUE** . . . . . $
9. **BALANCE TO FINISH, INCLUDING RETAINAGE**
   (Line 3 less Line 6) $_____

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of:
County of:
Subscribed and sworn to before
me this day of

Notary Public:
My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED . . . . . $_____

(Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

EXHIBIT "D"

CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side) PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.
In tabulations below, amounts are stated to the nearest dollar.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO.:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (IF VARIABLE) RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					

EXHIBIT "D"

EXHIBIT "E"

GUARANTEE

Date: _____

In accordance with plans and specifications and the terms and conditions of our contract with Cornell University dated _____, we hereby guarantee the _____ as found in the specifications for _____, Ithaca, New York to be free
(Project Title)
from defects in materials and workmanship for the period of _____ year(s) from _____, the date of acceptance by the Owner.
(Date)

_____
(COMPANY)

By: _____

Title: _____

EXHIBIT "F"

FORM I

CORNELL UNIVERSITY

CONTRACTOR'S AFFIRMATIVE ACTION PLAN

Use of MBE and WBE Vendors

Please print or type all information, except where a signature is required.

PROJECT: _____

Amount of Contract: $_____

Name of Prime Contract Bidder:

_____

Address (Street, City, State and Zip Code):

_____

Telephone Number (Including Area Code): _____ Trade: _____

1. List previous Cornell University work done by your firm:

_____

_____

_____

2. Do you intend to subcontract any work on this project? Yes ____ No ____

   A. What is the total dollar value of work you intend to subcontract?

   Amount $_____ AND Range: From $_____ to $_____

3. Do you intend to purchase supplies and/or use vendor services?

   A. What is the total dollar value of your intended purchase and/or vendor?

   Amount $_____ AND Range: From $_____ to $_____

4. List the work you plan to subcontract in area A. below and list the items you propose to purchase and/or vendor services you propose to use in area B. Use additional sheet(s) if required.

A. Trade Amount of Work to be Subcontracted		B. Supplies and/or Vendor Services	
Trade	Amount	Item	Amount
_____	$_____	_____	$_____
_____	$_____	_____	$_____
_____	$_____	_____	$_____

5. Indicate by dollar value and percentage of contract, the total of your goal for minority and female vendors and subcontractor participation including your goal for purchases and services. (The percentage given should be a percentage of your total contract amount.

MBE Amount	$_____	AND	Percentage	_____%
WBE Amount	$_____	AND	Percentage	_____%

6. Indicate your goal for minority participation in the labor force by dollar value and percentage of total monthly manpower per trade.

MBE Amount	$_____	AND	Percentage	_____%
WBE Amount	$_____	AND	Percentage	_____%

7. List MBE and WBE vendors utilitzed by your firm over the past five (5) years:

MBE or WBE Vendor (Indicate which)	CONTRACT ADDRESS	PROJECT	TRADE	AMOUNT

This space provided for any comments your organization may have regarding the utilization of MBE and WBE vendors:

OFFICER OF PRIME CONTRACT BIDDER:

Name and Title: Date:

_____ _____

Signature:

_____

_____

EXHIBIT "F"
FORM II

CONTRACTOR'S AFFIRMATIVE ACTION PLAN

Summary of Bid Activity with MBE and WBE Subcontractors and Vendors

Please print or type all information, except where a signature is required.

PROJECT: _____

Name of Prime Contract Bidder:

_____

Address (Street, City, State and Zip Code):

_____

Contact Person (Name, Title and Telephone Number):

_____

MBE and WBE Subcontractor/Vendor (Indicate which)	Item/ Trade	Bid Submitted: Date	Amount	Award Status Date	Amount	Date of Elimination

EXPLANATION OF ELMINATION: Include meetings held for negotiation, etc.
(Use additional sheet if necessary)

OFFICER OF FIRM:

Name and Title: _____ Date: _____

Signature:

_____

EXHIBIT "F"

FORM III

CORNELL UNIVERSITY

Please print or type all information.

PROJECT

PRIME CONTRACTOR

AFFIRMATIVE ACTION WORKFORCE REPORT

For the period of _____ (Month/Year)

Prime Contractor, Subcontractor and Sub-Subcontractor's Name	Craft and/or Trade	Total of All Employee Hours By Trade	Non-Hispanic / Caucasian		Black		Hispanic		Asian / Pacific Islander		American Indian / Alaskan Native		Minority Employee Hours as a Percentage of Total Employee Hours	Total Number of Employees		Total Number of Minority Employees	
			Hours Male	Hours Female	Hours Male	Hours Female	Hours Male	Hours Female	Hours Male	Hours Female	Hours Male	Hours Female		Male	Female	Male	Female
MONTHLY PROJECT TOTALS																	

NOTE: The Prime Contractor shall provide a single monthly report inclusive of all subcontractor information for the project.

EXHIBIT "F" FORM IV

CORNELL UNIVERSITY

Please print or type all information.

PROJECT

PRIME CONTRACTOR

MINORITY - WOMEN UTILITZATION REPORT

DATE

Prime Contractor, Subcontractor and Sub-Subcontractor's Name	Craft and/or Trade	Dollar Amount of Subcontract	Minority Firm Name - Awards	Trade	Dollar Amount of MBE Contract	% of Total	Women Firm Name - Awards	Trade	Dollar Amount of WBE Contract	% of Total
TOTALS		$			$				$	

Rev. 03-06-01

GENERAL REQUIREMENTS

FOR

SLUDGE, SUMP, AND SOIL REMOVAL AND DISPOSAL

at the

VINEYARD RESEARCH LABORATORY

Fredonia, NY

For the Owner:

CORNELL UNIVERSITY
ITHACA, NEW YORK

PART 1 - GENERAL

1.01 - ABBREVIATED SUMMARY

A. The purpose of the project is to excavate and dispose of pesticide-impacted sludge, soils, and concrete materials located in and adjacent to a concrete sump at the Cornell University Vineyard Research Laboratory in Fredonia, New York. A small area of surface soil adjacent to a nearby building drain is also included in the scope of work.

B. The following is an abbreviated Summary of the Work. Briefly and without force and effect on the Contract, the work covered by the Contract Documents is summarized as follows:

1. Removal of a reinforced concrete sump cover.
2. Removal of sump contents, consisting of liquid, sediments, and sludge.
3. Removal of sump and a specified area of soil surrounding the sump.
4. Removal of soils near the surface of an adjacent area, near an above-ground drain from a former pesticide storage area.
5. Waste characterization sampling and analysis.
6. Confirmatory end-point sample retrieval.
7. Transportation and disposal of pesticide-impacted media.
8. Removal and decontamination of equipment.
9. Backfilling and surface restoration.
10. Constructing a concrete pad in the area of the former pit.
11. All other work specified within the Contract Documents.

1.02 – BRIEF CONTRACT DESCRIPTION

A. The Contract Documents indicate the work included in the Contract. Related requirements and conditions covered by the Contract Documents include, but are not limited to, the following:

1. Site safety in accordance with all applicable regulations.
2. Debris removal and clean up during the contract period.
3. Site utilization and management so as not to disrupt the Owner's ability to operate the existing facility, to allow for stockpiling of debris, excavated soil and imported fill, and to allow for the safe, unimpeded travel way of vehicles and equipment about the entire site. Site space is limited and it shall be the

Contractor's responsibility to manage the site during the soil remediation project with input from Owner as to meeting their needs.

1.03 – BRIEF PROJECT DESCRIPTION

A. The following is a brief description of the history and background as relates to the proposed soil remediation project. It is not complete and is provided to acquaint the Bidder with the overall project.

1. The Vineyard Research Laboratory is an agricultural research center administered by Cornell University through the New York State Agriculture Research Experiment Station in Geneva, New York. The program includes planting and care of vineyards in experimental land plots located both in open fields and in greenhouses. Various pesticides were mixed and applied to crops in different experimental plots. The sump was located in an area where the pesticide application tanks were filled and rinsed, with both clean water and rinse water discharged to the pit dry well. While these practices are no longer in effect, the cumulative operation of the sump over many years resulted in the accumulation of some pesticide products and by-products in the sump and immediate surrounding soils.

2. A small room on the north side of the research laboratory was previously used for pesticide storage. A floor drain in that room discharged to the ground surface outside of the building, just west of the pesticide sump. Over the years, some pesticide products may brave been released through that system during floor cleaning operations or fill operations within the room. That room is no longer used for pesticide storage and a new structure north of the main laboratory building is now used for that purpose.

3. To resolve environmental concerns over these past practices, Cornell entered into a Voluntary Clean-Up Program (VCP) Agreement with the NYSDEC. The agreement included a plan for a site investigation, with remediation to be conducted dependent on the results of that investigation.

4. To evaluate the impacts of these past practices, Cornell conducted a Site Investigation of the Vineyard Research Laboratory, focusing attention on the sump area, the area around the surface drain, and several other areas of interest. The results of that investigation, combined with some earlier tests, confirmed that various pesticide products as well as volatile produces and certain metals were present in the sump sludge, sump surrounding soil, surface soil near the former pesticide storage room drain, and groundwater immediately adjacent to the sump. The results of the site investigation are summarized in a report entitled "Site Investigation Final Report', prepared in September 2002 by the consulting firm Blasland, Bouck, and Lee (BB&L). The results of sampling of the sludge in the sump, conducted earlier, are summarized in a table prepared by BB&L. Both of

these documents are available for review by all Bidders and included in a separate attachment to these Contract Documents.

5. In consideration of the above, Cornell submitted a work plan to NYSDEC for the work described within these Contract Documents. This work plan is entitled the Sump Sludge, Sump, and Soil Removal and Disposal Remedial Work Plan for the Vineyard Research Laboratory, Fredonia New York dated September 2002.

   A copy of this NYSDEC-approved Work Plan is attached as a reference document to these specifications.

   Location and site map depicting the locations of the work is attached to the end of this document and labeled as Figure 1, Location Plan and Figure 2, Site Plan.

1.04 - OWNER SUPPLIED PRODUCTS AND UTILITIES

A. The Owner will not be supplying products, equipment, labor, tools, or materials for the soil remediation project.

   1. The Owner will provide the Contractor with a temporary water source as specified in Section 01500-Construction Facilities and Controls.

1.05 - PROTECTION OF EXISTING WORKS

A. Should the Contractor impair, halt, or otherwise hinder the operation of the Owner's facility, including ongoing farm research operations, the Owner will take necessary measures to restore proper operations. The costs to restore site operations will be deducted from payments due the Contractor.

B. The Contractor shall maintain the work areas in such a manner that they will be fully accessible to inspection by the Owner and Engineer throughout the project.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

PART 1 - GENERAL

1.01 - SUMMARY

A. Contractor use of the site and buildings located on the site of the project.

B. Contract requirements related to the sequencing and scheduling of the Project.

1.02 - ACCESS TO THE SITE

A. The Vineyard Research Laboratory is an active agricultural research facility with an active planting area. The Contractor shall limit his/her use of the site to those areas requiring remediation and as approved by the Owner. The Contractor shall not enter or use any of the restricted areas indicated in Figure 1, Site Plan.

B. The Contractor shall use the designated entrance to the site.

C. The area around the site is a mix of residential and agricultural use. The Owner intends to be a good neighbor. The Contractor shall not close any road for any period in time.

D. In accordance with Section 01352 (Spill Control), all exposed soils shall be covered by a protective liner system and the Work Zone shall be bermed, boomed, or otherwise contained. Spills of soil, liquid, or any other material shall be immediately cleaned and removed from the area. If in the course of importing fill or removing impacted materials it falls to the roadway surface, then the Contractor shall employ labor to remove it and otherwise return the roadway surface to a clean condition as soon as possible.

E. The Owner reserves the right to backcharge the Contractor for all costs associated with maintaining the grounds should the Contractor fail to maintain the site in a condition acceptable to the Owner.

1.03 - CONTRACTOR USE OF THE SITE

A. The Contractor shall use and manage the site and the associated remediation activities as follows:

1. To not hinder the Owner's ability to operate the existing facility,
2. To allow for the stockpiling/storage of excavated soils and imported fill without any significant hardship on the Owner,
3. To allow for the safe, unimpeded travel way of the Owners vehicles about the entire site.

B. Due to the limited site area, the Work Zone and staging areas will need to be approved prior to the start of work.

C. The Contractor shall prepare an Operations Plan showing Work Zone, staging areas, parking areas, stockpile areas, container areas and loading areas for review by the Owner and Engineer, as specified in Section 01330 - Submittals.

1. A meeting will be held at the site with all concerned parties to assist the Contractor in developing the criteria for the Operations Plan. During this meeting, all parties will present their needs and requirements for site utilization.

2. The Contractor shall then prepare and submit to the Owner and Engineer a draft Operations Plan that attempts to incorporate the needs of all concerned parties. The Owner and Engineer will review the draft Operations Plan and provide the Contractor with any comments. The Operations Plan shall then be revised and adopted for use if it is acceptable to all relevant parties. If all parties cannot agree on an acceptable plan, then the Engineer will establish the Operations Plan without any claims from any Contractor.

D. Maintain the site in a safe condition throughout the remediation project. Compliance with OSHA regulations and site safety shall be the responsibility of the Contractor as it relates to work of the Contract.

E. Immediately repair or replace damage caused by remediation activities, employees or equipment employed by the Contractor. If directed to do so by the Engineer, the Contractor shall immediately repair or replace such damaged property. Protect the physical structures at the site from damage. All labor, materials and equipment and outside contractors that are employed by the Owner to repair damage caused by the Contractor shall be billed to the Contractor directly or withheld from money due the Contractor for work already completed.

F. Refer to Section 01500 - Construction Facilities and Controls for minimum rubbish removal requirements.

G. Trash: Provide labor, as required, to police the site to pick up all trash, regardless of who generated it, such as cups, wrappers, loose papers, boxes, cardboard, cans, and bottles.

H. Open fires will not be permitted on the site.

I. Do not discard or dispose of any solid or liquid waste on-site.

J. Limit use of the site to the area(s) approved by the Owner. Confine operations to permit others working on the site easy access to the buildings and site.

K. Keep all existing operations areas, driveways, roads, and parking areas free and clear of materials and equipment. Do not unreasonably encumber the site with materials and equipment. Confine stockpiling of excavated soils, materials and equipment to areas selected under the Operations Plan or as designated by the Owner.

L. Lock all automotive type vehicles when parked or unattended to prevent unauthorized use. Do not leave vehicles or equipment unattended with the motor running or the ignition key in place.

1.04 - CONTRACTOR'S WORKING HOURS

A. The Contractor will be permitted to schedule working hours as follows: 8:00 AM to 5:00 PM Monday through Friday. Work on weekends and Owner holidays will not be permitted unless written approval is issued by the Owner. The Contractor shall pay all excess costs for inspection services provided by the Engineer for working beyond the times specified. These hours may be adjusted if all parties agree on a set work period.

1.05 - CONTRACTOR USE OF PREMISES

A. Premises, for the purpose of this Contract, shall mean the site and buildings and other structures located within the property.

B. Confine premise storage areas to locations designated by the Owner. Immediately repair or replace damaged facilities to the satisfaction of the Owner and to a condition that existed before the damage occurred.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

END OF SECTION

PART 1 - GENERAL

1.01 - SECTION INCLUDES

A. Requirements for making project submissions.

B. Requirements for submission of the Project Schedule, Operations Plan, Contractor's Health and Safety Plan, and MSDS sheets.

C. Refer to Section 01780 for close-out submittals including waste manifests and sampling documentation.

D. Refer to Section 01351 for waste disposal submittal requirements.

E. Refer to Sections 02316, 03200, and 03300 for Sieve Analyses, Concrete test results, and reinforcing steel test results submittal requirements.

1.02 - IDENTIFICATION OF SUBMITTALS

A. Identify each submittal and re-submittal by showing the following information on a letter of transmittal:

1. Name of project, owner, and contract number.
2. Specification Section number and paragraph number to which submittal applies.
3. When it is an original submittal (first submission) or a resubmittal.
4. Identification of variations from Contract Documents.

B. Submissions not containing the above will be returned to the Contractor, unreviewed by the Engineer.

1.03 - TIMING OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dates of remediation activities to provide time for reviews, for securing necessary approvals, and for possible revisions and resubmittals. The Engineer will review submittals in a manner as expedient as possible, and will generally send a written response to the Contractor within three (3) calendar days of receipt of submittals.

B. Submissions may be returned reviewed, unreviewed, rejected for several reasons, or returned conditioned upon submission of related items or for other reasons set forth in the Contract Documents.

C. Make submissions well in advance as the returning, rejecting or disapproval of submissions or other similar circumstances are possible and are deemed "avoidable delays". Costs for these delays or those attributed to Contractor's tardiness in making submittals shall be borne by the Contractor.

1.04 DESTINATION OF SUBMITTALS

A. All submissions shall be sent to the Engineer's office as follows:

Cornell University
Environmental Compliance Office
129 Humphreys Service Building
Ithaca NY 14850
Attention: Steve Beyers, P.E.

1.05 - CLARITY OF SUBMITTALS

A. All printed materials shall be neat, clean, professionally drafted by hand or by computer, clear, legible, and of such quality that they can be easily reproduced by normal photocopying machines.

1.06 - ENGINEER'S REVIEW

A. Engineer will review and comment on each submission conforming to the requirements of this Section, with the exception of the Contractor's Health and Safety Plan, which will only be filed for record purposes. Engineer's review will be for conformance with the remediation concept and will be confined to general arrangement and compliance with the Contract Documents only.

B. Submittals will be marked as follows:

1. NO EXCEPTION TAKEN - No corrections, no marks. The content of this submittal has been reviewed by the Engineer and been found to be in general compliance with the Contract Documents. No further submission of this submittal is required.

2. MAKE CORRECTIONS NOTED - Minor amount of corrections. The content of this submittal has been reviewed by the Engineer and has been found in general to be in compliance with the Contract Documents. The notations made on the submittal by the Engineer shall be incorporated into the work in accordance with

the terms and conditions of the Contract Documents. No further submission of this submittal is required.

3. AMEND AND RESUBMIT - The content of this submittal has been reviewed by the Engineer and this review has determined that additional data and/or modification to the submitted data or other changes are required to bring the work represented in this submittal into compliance with the Contract Documents. This submittal shall be reviewed and revised in accordance with the Engineer's comments and resubmitted to the Engineer for review. The information contained on the resubmittal shall not be incorporated into the work until the submittal is returned to the Contractor marked "NO EXCEPTION TAKEN" or "MAKE CORRECTIONS NOTED".

4. RECEIVED - This submittal is accepted on the project and filed for record purposes only, in accordance with the terms and conditions of the Contract Documents.

C. No payment will be made on any item for which a submission is required if such submission:

1. has not been made,

2. has been made but was not stamped "No Exceptions Taken" by Engineer,

3. has been made and stamped "Make Corrections Noted", but Contractor has not complied with Engineer's notes marked on the submittal,

D. Submittals not requested will not be recognized or processed.

1.08 - CONTRACTOR'S RESPONSIBILITIES

A. Engineer's review of submittals shall not relieve the Contractor of his/her responsibility for any deviation from the requirements of the Contract Documents nor relieve the Contractor from responsibility for errors or omissions in the submittals.

B. No portion of the work requiring a submission shall be commenced until the Engineer has found the submission in general compliance with the Contract Documents.

PART 2 - SUBMITTALS

2.01 - PROJECT SCHEDULE

A. Within seven (7) calendar days from Award of Contract, the Contractor shall submit a Project Schedule for review and approval by the Engineer.

1. The Project Schedule shall show, in detail, the Contractor's proposed sequence of remediation activities. A suggested sequence is provided in Section 02315.

2. For each task show the duration, start date and completion date in order to complete the remediation within the contract time.

B. No remediation work shall commence until the Project Schedule has been reviewed and approved by the Engineer.

C. Coordinate the work and maintain the Project Schedule. In the event actual progress begins to lag, promptly employ additional means and methods to make up the lost time.

D. Notify Engineer, in writing, (1) 72 hours before commencing any work at the site and (2) at least 48 hours before resuming work in the case of a temporary suspension of work.

E. The Project Schedule, when approved by the Engineer and the Owner, shall establish the dates for starting and completing work for the various portions of the Contract. It shall be the duty of the Contractor to conform to his/her own schedule and to perform the work within the time limits indicated.

F. Coordinate letting of subcontracts, material purchases, submissions, delivery of materials, and sequence of operations, to conform to the schedule.

2.02 – OPERATIONS PLAN

A. Within *seven (7)* calendar days from Award of Contract, the Contractor shall submit an Operations Plan for review and approval by the Engineer.

1. The Operations Plan shall describe in detail the methods and procedures to be employed by the Contractor in completing the soil remediation project, and specify proposed Work Area, staging area(s), material/equipment storage area(s), environmental controls, excavation techniques, sampling techniques and any other methods and procedures the Contractor will utilize.

B. No remediation work shall commence until the Operations Plan has been reviewed and approved by the Engineer.

2.03– CONTRACTOR'S HEALTH AND SAFETY PLAN (CHASP)

A. The Engineer has prepared a Work Plan for the project. The Work Plan includes, as attachments, a site-specific Health and Safety Plan (HASP). As indicated in the HASP, various portions of the remediation work shall be completed in Modified Level D personal protective equipment (PPE) while for other portions Level C PPE in warranted, and upgrade of all workers to Level C could be required. The Work Plan with attachments which have been reviewed and approved by the New York State Department of Environmental Conservation (NYSDEC) and as such have become requirements of the work. Therefore, the Contractor shall, at a minimum, comply will all portions of the Work Plan and HASP as relates to the remediation portion of the work.

B. The Contractor remains entirely responsible for the safety and health of the Contractor's workers. The Contractor shall carefully review the Work Plan, these Contract Documents, and the HASP attached to the Work Plan and determine the appropriate protection of the Contractor's work force (including subcontractors) utilizing qualified

health and safety professionals as appropriate. Based on that independent assessment, the Contractor shall prepare Addenda to the HASP in the Work Plan defining all additional health and safety procedures which will be part of the work. These Addenda together with the HASP in the Work Plan shall be hereinafter defined as the "Contractor's Health and Safety Plan (CHASP).

C. Within *seven* (*7*) calendar days from Award of Contract, the Contractor shall acknowledge review of the Engineer's HASP or submit for the Engineer and Owner's information all Addenda and additional information to form the CHASP.

D. The site-specific CHASP shall be prepared in accordance with the requirements of 29 CFR 1910.120.

E. The Contractor shall be responsible for ensuring that all work is performed in accordance with safe working practices, including all OSHA requirements.

F. All personnel employed by the Contractor entering a confined space shall have Confined Space Entry Training.

G. All personnel employed by the Contractor on the project shall have completed the requisite OSHA Hazardous Waste Operations and Emergency Response training, including that training identified in the HASP and at least the following:

1. Initial 40-hour training,
2. Annual 8-hour refresher training.

H. The Contractor shall provide the Engineer with documentation that all personnel involved in the remediation project have the required OSHA training.

2.05 - MATERIAL SAFETY DATA SHEETS (MSDS)

A. The Contractor shall comply with "Right to Know" requirements of Chapter 551 of Laws of New York, 1980, concerning notification of the use of toxic substances.

B. Any product or substance used by the Contractor which is listed or with ingredients listed in Subpart Z of OSHA Part 1910 Title 29 of the Code of Federal Regulations entitled "Toxic and Hazardous Substances" shall be identified to the Engineer by the Contractor's submission of a standard Material Safety Data Sheet. The Contractor shall remove products and substances found on site without a Material Safety Data Sheet submitted to the Engineer.

PART 3 - EXECUTION

Not Used

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL

A. This Section and the listed Related Sections provides minimum requirements for the protection of the environment during the project. The requirements of this Section shall apply to both Contractor and all tiers of sub-contactors involved in the project.

B. In addition to the requirements of this Section and the listed Related Sections, all laws and regulations by applicable local, state, and federal agencies shall apply to the work of this contract. In some cases the requirements of these Specifications may by intention exceed such legal requirements, but in no case shall this Specification be interpreted or understood to reduce or eliminate such requirements.

C. Prior to bidding, review the entire Bidding Documents and report in writing to the Owner's Representative any error, inconsistency, or omission that may have environmental impacts.

1.2 RELATED SECTIONS

A. Section 01352 – Spill Control

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01330 – Submittals:

1. Material Certifications for all imported soil and granular materials ("borrow").
2. Waste Material Disposal Plan.

1.4 JOB SITE ADMINISTRATION

A. In accordance with Article 2 of the General Conditions, provide a competent supervisory representative with full authority to act for the Contractor at the site during all working hours.

B. If at any time operations under the representative's supervision do not comply with this Section, or the representative is otherwise unsatisfactory to the Owner, replace, if requested by the Owner, said representative with another representative satisfactory to the Owner. There shall be no change in superintendent without the Owner's approval.

C. Remove from the Work any employee of the Contractor or any Subcontractor when so directed by the Owner. The Owner may request the removal of any employee who does not comply with these specifications.

1.5 CLEARING, SITE PREPARATION AND SITE USE

A. In accordance with Section 01140 (Contractor Use of Site), only that portion of the working area that is absolutely necessary and essential for the work shall be cleared for construction. All clearing should be approved and performed to provide minimum practical exposure of soils.

B. In accordance with Section 01352 (Spill Control), all exposed soils shall be covered by a protective liner system and the Work Zone shall be bermed, boomed, or otherwise contained.

B. The Contractor shall make every effort to avoid the destruction of common native plants, trees, or shrubs outside the area of construction so as not to unduly disturb the ecological or environmental quality of the area.

C. Topsoil excavated as part of the Project, which can be reused as part of the Project, shall be stockpiled for future use in a manner such as to prevent erosion.

1.6 SPOIL AND BORROW

A. Spoil

1. Dispose of excavated material which, in the opinion of the Owner's Representative, is unfit to be used as backfill or embankment which is in excess of the amount required under the Contract, at a location as directed by the Owner's Representative.

2. All spoil areas shall be graded and seeded to match the surrounding area.

3. Spoil areas shall be covered and protected from erosion into adjacent storm sewers, drainage ways, land areas, or water bodies.

B. Borrow Material

1. Borrow material shall be provided from a clean source. Submittals of proposed borrow material shall be reviewed by the Owner prior to delivery on-site. Submittals shall include the quantity of materials, source location and certification by the material supplier that it is free of chemicals or other foreign matter.

1.7 NOISE AND VIBRATION

A. Noise and vibration

1. Limit and control the nature and extent of activities at all times to minimize the effects of noise and vibrations. Take adequate measures for keeping noise levels, as produced by construction related equipment, to safe and tolerable limits as set forth by the Occupational Safety and Health Administration (OSHA), the New York State Industrial Code Guidelines and Ordinances and all City, Town and Local ordinances. Equip all construction equipment presenting a potential noise nuisance with noise-muffling devices adequate to meet these requirements.

1.8 DUST CONTROL

A. Take adequate measures for controlling dust produced by drilling, excavation, backfilling, loading, or other means. The use of calcium chloride or petroleum-based materials for dust control is prohibited. Dust control measures are required throughout the duration of construction.

B. If, in the opinion of the Owner's Representative, the Contractor is not adequately controlling dust, the Owner will first notify the Contractor. If the Contractor does not take adequate actions necessary, the Owner may, at the Contractor's expense, employ alternative means to control dust.

C. Erect, maintain, and remove when appropriate barriers or other devices, including mechanical ventilation systems, as required by the conditions of the work for the

PART 1 – GENERAL

1.1 SPILL PREVENTION

A. In order to minimize the potential for discharge to the environment of sump contents or components, contaminated soils, oil, petroleum, or hazardous substances on site, the following requirements shall apply to all projects:

1. All exposed soils in the Work Zone shall be covered by a protective liner system and the Work Zone shall be bermed, boomed, or otherwise contained.

2. All oil, petroleum, or hazardous materials stored or relocated temporarily on site during the construction process shall be stored in such a manner as to provide protection from vehicular damage and to provide containment of leaks or spills. Horizontal diked oil storage tanks, temporary berms or barriers, or similar methods shall be employed as appropriate at each site.

3. Any on-site excavation, filling or dispensing activities shall occur within an area in which a temporary berm, boom, or similar containment barrier has been placed to prevent the inadvertent discharge to the environment of harmful quantities of any products.

4. All oil, petroleum, or hazardous materials stored on site shall be located in such a manner as to minimize the potential of damage from construction operations or vehicles, away from drainage ways and environmentally sensitive areas, and in accordance with all fire and safety codes.

B. Remove immediately from the site any storage, dispensing, or operating equipment that is leaking oil or hazardous substances or is in anyway unsuitable for the safe storage of such materials.

1.2 SUBMITTALS

A. Submit the following in accordance with Section 01330-Submittals

Spill Containment Plan: The Plan shall show the Work Area including the sump and areas of filling or dispensing activities. The Plan shall indicate barrier and containment methods.

1.3 SPILL CONTROL PROCEDURES

All Contractor personnel working at the project site shall be knowledgeable of the potential health and safety concerns associated with petroleum and other hazardous substances that could potentially be released at the project site and shall be familiar with the Health and Safety Plan. Following are a list of activities that should be conducted by the Contractor in the event of an oil/petroleum spill or the release of any other hazardous substance. In the event of a large quantity spill that would require cleanup procedures that are beyond the means of the Contractor, an emergency spill cleanup contractor shall be hired by the Contractor. In the event the Contractor has the personnel necessary to cleanup the spill, the following procedures shall be followed:

A. Personnel discovering/responding to a spill shall:

1. Identify and locate the source of the spill. If unsafe conditions exist, then leave the area, inform nearby personnel, notify the site supervisor, and initiate spill reporting (Section 1. 3).

2. Limit the discharge of product, if safely possible, by: (1) diverting discharge to a containment area; (2) creating temporary dikes with soils or other available materials; and (3) utilizing sorbent materials. If secondary containment is present, verify that valves and drains are closed prior to diverting the product to this area.

3. The individual discovering a spill shall initiate containment procedures to prevent material from reaching a potential migratory route, through implementation of the following actions, or any other methods necessary. Methods employed shall not compromise worker safety.

   a. Stop the spill at once (if possible).

   b. Extinguish sources of ignition (e.g., flames, sparks, hot surfaces, cigarettes, etc.).

   c. Clear personnel from the spill location and rope off the area.

   d. Utilize available spill control equipment in an effort to ensure that fires, explosions, and releases do not occur, recur, or spread.

   e. Use sorbent materials to control the spill at the source.

   f. Construct a temporary containment dike of sorbent materials, cinder blocks, bricks, or other suitable materials to help contain the spill.

   g. Attempt to identify the character, exact source, amount, and area of the released materials. Identification of the spilled material should be made as soon as possible so that the appropriate cleanup procedure can be identified.

   h. Assess possible hazards to human health or the environment as a result of the release, fire. or explosion.

   i. If spill response measures involve the temporary cessation of any operations, the Contractor shall monitor the affected equipment for: (1) leaks; (2) pressure buildup; (3) gas generation; or (4) ruptures in valves, pipes, or other equipment.

B. Spill Cleanup:

1. Following containment of the spill, the following spill cleanup procedures shall be initiated.

   a. Use proper waste containers.

b. Remove bulk liquid by using vacuum, pump, sorbents, or shovel and place material in properly labeled waste container. Be sure not to collect incompatible or reactive substances in the same container.

c. Cleanup materials not reclaimed on-site shall be disposed of in accordance with all applicable state and federal regulations.

d. Apply sorbent materials to pick up remaining liquid after bulk liquid has been removed. The Contractor shall not walk over spilled material. Absorbed material shall be picked up with a shovel and placed in a separate waste container, and shall not be mixed with bulk liquid.

e. Clean spill control equipment and containers. Replace equipment in its proper location. Restock or reorder any sorbents used to cleanup the spill.

f. Carefully wash spilled product from skin and clothing using soap. Change clothes, if necessary, to avoid further contact with product.

g. Disposal of all spilled product shall be made off-site, and shall be arranged through the Contractor.

h. A Spill Report shall be completed, including a description of the event. A sample Spill Documentation Form is provided in Appendix B.

C. Fire or Explosion:

1. In the event of a fire or explosion at the site, the Contractor shall:

a. Verify that the local fire department and the appropriate response personnel (e.g., ambulance, police) have been notified.

b. Report to the scene, if safe to do so, and evaluate the situation (e.g., spill character, source, etc.). Coordinate, as necessary, with other appropriate site and emergency personnel.

c. Ensure that people are cleared from the area.

d. Ensure that fires are safely extinguished (if possible), valves closed, and other immediate actions necessary to mitigate the emergency, if safe to do so.

e. Initiate responsible measures necessary to prevent subsequent fires, explosions, or releases from occurring or spreading to other areas of the site. These measures include stopping processes or operations, collecting and containing released oil, or removing and isolating containers.

f. Take appropriate action to monitor for: (1) leaks; (2) pressure build-ups; (3) gas generation; or (4) ruptures in pipes, valves, or other equipment.

1.4 SPILL REPORTING AND DOCUMENTATION

Refer to the Emergency Contacts in the HASP

In the event of a spill CALL CORNELL POLICE AT 607-255-1111 who will notify the appropriate departments within the university and coordinate with the contractor for external reporting, if required.

The contractor shall be responsible for the initiation of spill reporting and documentation procedures. All petroleum spills must be reported to **NYSDEC Spill Hotline at 1-800- 457-7362,** less than two hours following discovery. Any petroleum spill must be reported to NYSDEC unless ***ALL*** of the following criteria apply:

TABLE 1
CRITERIA TO EXEMPT SPILL REPORTING

CRITERIA	DESCRIPTION
Quantity	The spill must be known to be less than 5 gallons.
Containment	The spill must be contained on an impervious surface or within an impervious structure, such that it cannot enter the environment.
Control	The spill must be under control and not reach a drain or leave the impervious surface.
Cleanup	The spill must be cleaned-up within two hours of occurrence.
Environment	The spill must not have already entered into the soil or groundwater or onto surface water.

A release of a "reportable quantity"[1] or unknown amount of a hazardous substance must also be immediately reported to NYSDEC Spill Hotline. Spills of reportable quantities of chemicals or "harmful quantities"[2] of oil to navigable waters must be reported to the federal **National Response Center, 1-800-424-8802**.

Spill Reporting Information. When making a telephone report, the caller should be prepared to provide the following information, if possible:

1. The date and time of the spill or release.

2. The identity or chemical name of the material released or spilled, including an indication of whether the material is defined as an extremely hazardous substance.

3. An estimate of the quantity of material released or spilled into the environment and the approximate duration of the event.

4. The exact location of the spill, including the name(s) of the waters involved or threatened, and/or other medium or media affected by the release or spill.

5. The source of the release or spill.

6. The name, address, and telephone number of the party in charge of, or responsible for, the facility or activity associated with the release or spill.

7. The extent of the actual and potential water pollution.

8. The name and telephone number of the person in charge of operations at the spill site.

9. The steps being taken or proposed to contain and cleanup the released or spilled material and any precautions taken to minimize impacts, including evacuation.

10. The extent of injuries, if any.

11. Any known or anticipated acute or chronic health risks associated with the emergency, and information regarding necessary medical attention for exposed individuals.

12. Assistance required, if any.

If the release of a hazardous substance or oil occurs in an amount which exceeds a reportable quantity (RQ) as defined in 40 CFR Part 110, 40 CFR Part 117, 40 CFR Part 302, or 6 NYCRR Part 597, then the Contractor shall do the following:

1. Call to the National Response Center shall be made by the person in charge of the site. The applicable phone numbers are 1-800-424-8802 or 1-202-426-2675.

2. Within 14 days of the release, submit a written description of the release. The description should include: (1) a description of the release, (2) the type of material released, (3) estimated amount of the spill; (4) the date of the release, (5) an explanation of why the release occurred; and (6) a description of the measures to be implemented to prevent and control future releases.

[1] *Reportable Quantity*: A *Reportable Quantity* is the quantity of a hazardous substance or oil that triggers reporting requirements under the Comprehensive Emergency Response, Compensation, and Liability Act (CERCLA) (USEPA, September 1992). While the Contractor is legally responsible for knowing the risks of materials that are part of construction, members of the owner's spill response team have access to information that may help identify these quantities with you.

[2] *Harmful Quantity*: A *Harmful Quantity* of oil includes discharges that violate applicable water quality standards; cause a film, sheen, or discoloration on a water surface or adjoining shoreline; or cause a sludge or emulsion to be deposited beneath the water surface or shoreline (40 CFR 110.3).

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION 01352

PART 1 - GENERAL

1.01 - SECTION INCLUDES

A. Codes

B. Governing agencies

1.02 - CODES

A. Comply with the requirements of the various codes referred to in these Specifications. Such codes shall be the date of the latest revision in effect at the time of receiving bids.

1.03 - GOVERNING AGENCIES

A. All work shall conform to and be performed in strict accordance with all governing agencies such as, but not limited to:

1. Occupational Safety and Health Act - OSHA
2. New York State Department of Environmental Conservation
3. Chautauqua County Department of Health Services
4. Town Codes, Rules, Laws and Ordinances

B. Representatives of the Owner, Town and New York State Department of Environmental Conservation shall have access to the work for inspection purposes.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

END OF SECTION

PART 1 - GENERAL

1.01 - SECTION INCLUDES

A. Temporary facilities and utilities, and controls to be furnished by the Contractor for this project.

B. Related work specified elsewhere includes:

1. Section 01110 - Summary of Work
2. Section 01140 - Work Restrictions

1.02 - CARE AND PLACEMENT

A. All temporary facilities and controls and all other elements on the project site shall meet all standards of the Occupational Safety and Health Act of 1970 and subsequent revisions. Comply with all requirements of the Act.

B. Take every precaution and provide such equipment and facilities as are necessary or required for the safety of employees and persons at the site.

C. In the event of damage to existing facilities, including but not limited to: driveways, walks, pavement, buildings, pipes, conduits, valves, and electrical facilities then immediately make all repairs and replacements to an equal condition prior to the event.

1.03 - QUALITY PERFORMANCE

A. Comply with and perform all work in accordance with the requirements of local authorities having jurisdiction, and all applicable codes, regulations and ordinances.

B. All barricades, warning signs, lights, temporary signals and other protective devices shall conform with "Manual on Uniform Traffic Control Devices for Streets and Highways", US Government Printing Office.

1.04 - SUBMITTALS

D. Provide a list of contact numbers as follows:

1. Contractor's superintendent and office project manager (home, beeper, cellular, office, fax, and email address).
2. All subcontractors.
3. Emergency services such as fire department, police, and ambulance.

E. Submit the following:

1. Name and qualifications of person or persons who shall be available to render first aid.

2. Names, addresses and telephone numbers of personnel who can be telephoned and act on behalf of Contractor in the event of emergencies or other problems requiring prompt attention during holidays, nights and other periods when Contractor's superintendent is absent from the project site.

3. Project Schedule as specified in Section 01330 – Submittals.

4. Operations Plan as specified in Section 01330 – Submittals.

5. Contractor's Health and Safety Plan as specified in Section 01330 – Submittals.

6. Material Safety Data Sheets as specified in Section 01330 – Submittals.

7. Waste disposal documentation as specified in Section 01351 – General Environmental Requirements and Section 01780 – Closeout Submittals. Section 01780 also includes additional submittals needed for project closeout and final payment.

1.05 - CONTRACTOR'S RESPONSIBILITY

A. The Contractor shall be responsible for the installation, performance, maintenance, and repair of all construction facilities and controls specified in this Section.

B. The Owner reserves the right to immediately correct a Contractor caused action, if in the opinion of the Owner, the situation may result in the immediate loss of life or property. The costs for actions taken by the Owner shall be deducted from money due or to become due the Contractor.

C. If the Contractor caused situation is not deemed immediate, then the Contractor shall, within 24 hours of receipt of written and/or verbal notice, correct the defect or unsatisfactory condition. The Owner may repair, correct, replace, or install temporary facilities to correct the situation if the Contractor fails to perform within the allowed time. The costs to make the corrections shall be deducted from money due or to become due the Contractor.

PART 2 - PRODUCTS

2.01 - GENERAL

A. The location of all temporary power lines, roadways, and other necessary temporary facilities shall be subject to the approval of the Engineer, and these shall be located and operated so as not to interfere with the operation of the Owner's facility.

2.02 - TELEPHONE SERVICE

A. The Contractor shall provide a cellular phone for his/her on-site project superintendent.

2.03 – TEMPORARY WATER SERVICE

A. Obtain water from the nearest water source as designated by the Owner. The Owner will pay for water usage for soil remediation activities.

B. Install backflow prevention device at the supply point. The device shall be tested and certified as functioning properly.

C. Exercise measures to conserve water.

D. The Contractor, subcontractors and personnel involved in the project shall be permitted to use water for construction purposes as provided under this paragraph.

2.04 - SANITARY FACILITIES

A. Sanitary facilities in the Vineyard Research Laboratory buildings may not be used.

B. The Contractor shall provide and maintain temporary toilet and hand wash facilities, and enclosures. These facilities shall be maintained in a strictly sanitary manner and be screened from the general public. All facilities shall be in accordance with the Occupational Safety and Health Act (OSHA) standards and all other applicable local codes.

C. The locations of such facilities shall be determined by the Engineer or the Owner.

D. All applicable codes and regulations regarding the maintenance and method of waste disposal for these facilities will be strictly enforced.

2.05 - BARRIERS AND PROTECTION

A. Provide railings, barricades, signs, fences and other protective devices to prevent unauthorized entry to work areas, to allow for the Owner's safe use of the site and to protect existing facilities and adjacent structures from damage from the work.

B. Protect vehicular traffic, stored materials, public utilities, site and structures from damage.

C. Provide warning signs, detour signs and other traffic control devices to insure the safety of facility personnel and to adequately direct traffic around the work. Illuminate barricades, obstructions, and warning signs from sunset to sunrise.

2.06 - TEMPORARY FENCING

A. Provide temporary safety fence around all open excavations or other dangerous conditions on the work areas. Fence shall be bright orange in color, a minimum of 4 feet high, and properly secured using 1 inch diameter steel pipe at 4 feet on-center as support posts. Stake each support post to a depth of 18 inches and tamp securely into place. Each post shall be plumb. Secure fencing to posts using heavy-duty cable ties or tie wire. This fence shall remain the property of the Contractor. Post the following sign every 20-ft. along the perimeter of the fence: "RESTRICTED AREA KEEP OUT". Each sign shall be commercially printed and be 18" x 36". Signs shall be secured to the fence with heavy-duty tie wraps.

2.07 - RUBBISH REMOVAL

A. Clean up trash as specified in Section 01140 - Work Restrictions or more often if the trash interferes with the work of others, presents a hazard or if directed by the Engineer. The Contractor shall be responsible to prevent trash from being blown about the site and off the site.

Provide a worker to police the site at the end of each day that work is being undertaken by the Contractor.

B. Dispose of rubbish and waste materials in accordance with NYSDEC Part 360 regulations and local ordinances.

C. Place rubbish containers at locations selected by the Engineer. Furnish adequately sized rubbish containers from the date of initial mobilization to the date of Final Completion.

D. Burning of rubbish will not be permitted.

2.08 - PARKING

A. Do not allow heavy construction vehicle parking on existing pavement.

B. Contractor employees shall park in areas designated in the Operations Plan.

2.09 - DAMAGES

A. Promptly repair, to the approval of the Owner/Engineer, damage directly or indirectly caused by the Contractor's operations.

2.10 - FIRST AID FACILITIES & EMERGENCY TELEPHONE NUMBERS

A. **Refer to the Emergency Contacts in the HASP**

B. Provide and maintain adequately equipped first aid kit in a location or at locations that are readily accessible to workmen.

C. Provide at least one on-site employee who is properly trained in first aid and who shall be available to render first aid whenever work is in progress.

PART 3 - EXECUTION

3.01 - PROTECTION OF EXISTING UTILITIES AND PUBLIC WORKS

A. Maintain and protect existing utilities including, but not limited to, conduits, sewers, water mains, electric and telephone conductors or conduits, and gas mains encountered during the work.

B. In the event that damage shall result to any service pipe for water or gas, or any private or public sewer or conduit, the Contractor shall immediately, and at its own expense, repair the same to the satisfaction of the Engineer.

3.02 - PROTECTION OF EXISTING PROPERTY

A. Protect existing structures during performance of the work.

B. Protect existing trees and plants during performance of the work. Do not deposit excavated materials around trees or plants or attach guy wires to trees.

END OF SECTION

PART 1 – GENERAL

1.01 - SECTION INCLUDES

A. Closeout Submittals required in addition to those described in the General Conditions.

1.02 - SUBMITTALS

A. Submit the following documents to the Engineer with the final application for payment:

1. Copies of the results of all sampling performed on site, whether for personnel protection, waste characterization, or similar means.
2. Copies of all work area sign-in/sign-out and acknowledgement forms as contained with the Health and Safety Plan.
3. Copies of all Incident or Accident Reports or summaries completed during the course of the work.
4. Copies of all communications between the waste disposal facility and Contractor regarding characterization requirements.
5. Documentation of transport and disposal.
6. Waste Manifests for all impacted media generated by Contractor in carrying out the remediation project.

B. All documents shall be complete, signed, dated, and notarized (where applicable) and be subject to the Engineer's acknowledgment of receipt or approval.

C. Refer to Section 01351 – General Environmental Requirements, regarding the creation of a waste manifest system. All submittals shall conform to the approved system submittal and to applicable law.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

PART 1 - GENERAL

1.01 - SECTION INCLUDES

A. Remediation Requirements

B. Coordination and Planning

C. Sequence of Site Remediation

D. Excavation filling and backfilling

E. Environmental Sampling

F. Containing of Wastes

G. Characterization of Wastes

H. Waste Manifest System and Documentation

1.02 - RELATED DOCUMENTS

A. Section 01351 – General Environmental Requirements

B. Section 02316 – Backfilling

C. Remedial Work Plan and Site Investigation Final Report (both separately bound)

1.03 - SUBMITTALS

Submit the following in accordance with Section 01330-Submittals and Section 01780-Closeout Submittals.

A. Qualifications of testing laboratory

B. Documentation of transport and disposal

C. Waste Manifests

D. Waste characterization reports

1.04 – REMEDIATION REQUIREMENTS

A. Work must be completed in accordance with the Remedial Work Plan approved by the New York State Department of Environmental Conservation, a copy of which was provided to all bidders prior to bidding.

B. The work shall include the excavation, removal, containment, characterization, transport, and legal disposal of the following materials:

1. A sump constructed of reinforced concrete and concrete masonry units;

2. The contents of the sump, including liquids, sludge, sediments, and mixtures thereof;
3. The following areas of soil immediately surrounding the sump:
    a. All soil within 2' of four sides of the sump;
    b. All soil within 2' under the sump;
    c. An area of soil immediately surrounding a former building drain measuring 3' x 3' in area, to a uniform depth of 1'.

C. Based on previous testing, the highest level of various contaminants of concern are within the contents (liquid, sludge, and sediments) of the sump. Therefore, removal of the sump contents shall precede the removal of the sump such that there is no spread of these contaminants to the surrounding soil. Should the means and methods of performing the work, as selected by the Contractor, result in spreading of contaminants to surrounding areas or soils, the Contractor shall collect, contain, characterize, transport, and dispose of this contamination at the Contractor's sole expense.

D. An essential element of the work is the complete documentation of legal waste disposal. Refer to Sections 01330 – Submittals; 01351 – General Environmental Requirements, and 01780 – Closeout Submittals, for requirements pertaining to this work. As portions of waste materials removed as part of this work are likely to be classified as Hazardous Waste under 40 CFR Part 261 et al, documentation of the appropriate waste characterization, transport, and disposal is considered a primary element of this work. Cornell University's Environmental Health & Safety (EH&S) office shall be contacted prior to characterization and disposal to ensure appropriate coordination and proper waste coding. Failure to properly document appropriate and legal waste handling and disposal will be cause of denial of payment applications and may be cause for further financial or legal redress as per applicable law.

E. All work shall be undertaken by properly trained and qualified persons within the context of a site-specific Health and Safety Plan. Refer to Section 01330 – Submittals and the Health and Safety Plan appended to the Work Plan (included in bid packages) for specific requirements pertaining to health and safety.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 – REMEDIATION

A. Project Planning -General

All Work shall be planned in advance by the Contractor to minimize the risks inherent to remedial work of this type, including, but not limited to, the spread of contaminants through improper work practices, waste storage, or protection of excavations, personal

injury, extended unavailability of portions of the site for Owner's activities, or legal issues involving storage, transport, or disposal of wastes. The means and methods of proceeding with the work and the appropriate protection of Contractor's personnel are the sole responsibilities of the Contractor.

As part of project planning, the Contractor shall coordinate the containment, characterization, and disposal of wastes with Cornell's Environmental Health & Safety (EH&S) office. EH&S will act on behalf of the site representative to oversee the appropriate classification and labeling of wastes and similar issues related to hazardous waste classification and disposal.

B. Segregation of Wastes

Prior to the start of removal or excavation work, the Contractor shall provide, on site, lined containers for the storage of construction wastes. The containers shall be of appropriate size and dimensions to allow the characterization and disposal of all wastes without requiring additional handling or moving between containers, and shall be liquid-tight. Containers shall allow for at least the following separate waste segregation:

1. Sump contents (liquid, sludge, sediments, and similar material)
2. Sump cover (reinforced concrete)
3. Sump (concrete block and reinforced concrete sections and pieces)
4. Soil
5. Personal Protective Equipment (PPE)

C. Remediation

The following sequence provides the general order of work required for the remediation only. The Contractor shall also anticipate additional work and stages of work as required to accomplish the project.

1. Accessing the Sump

Prior to removal of the sump, the sump contents shall first be removed. To provide appropriate and safe access to the sump for removal of the contents, Contractor shall first remove the reinforced concrete sump cover. Means and methods of removal shall be as determined by the contactor and may include both saw-cutting and crane work provided that no significant sections of the cover shall be allowed to fall, drop, or be placed into the sump such that the section could be contaminated by the sump contents.

2. Removal and Disposal of Sump Sludge

Once the sump cover is removed, the sump will be accessible for removal of the sludge and liquid contents. Based on past site experience, portions of the contents of the sump are too viscous to remove entirely using a pump or vacuum system. Therefore, a pump or

vacuum system shall first be used to remove the liquid portion of the contents into drums for characterization and disposal.

Any portion of the liquid contents that cannot be removed by pumping or vacuum shall be removed by other manual methods as selected by the Contractor. During such operations no entry into the confined area of the pit shall be permitted unless the Contractor first submits a site specific confined space entry plan and provides, at the Contractor's sole expense, all monitoring equipment, personal protective equipment, and other safeguards required to permit such operation. While the final means and methods for removing the sludge shall be left to the discretion of the Contractor, all work shall comply with the Contractor's Health and Safety Plan for the site.

After all bulk sludge has been removed, sorbent pads or equivalent means shall be used to remove any remaining liquid from the sump. The intention of the work is not to clean the sump completely, since the sump itself is assumed contaminated and shall be characterized for proper disposal, but to remove sufficient material to prevent the loss or spillage of contaminated sludge material during the sump removal operation that could contaminate or impact the cost for disposal of surrounding soils.

3. Removal and Disposal of Sump and Surrounding Soil

The sump, once cleaned of free liquid and gross sludge, shall be removed in sections. To provide suitable access for the excavation, soil along the north face of the sump shall first be removed by the excavator or backhoe and placed into containers for disposal.

Next, the sump walls, starting with the north wall, shall be pushed in towards the pit center and removed by the excavator into a separate container, using the sump base as a working surface. Following the removal of the sump walls, the sump base will be broken into sections as required and removed by the excavator.

After the entire sump is removed, contaminated soils formerly surrounding the sump shall be removed to the widths and depths specified in Paragraph 1.03 of this Section. All specified soils not already removed during the preparation for sump removal will be removed at this time.

After the prescribed soils have been removed the Owner's site representative (with a NYSDEC representative if the NYSDEC so elects) will visually inspect the excavation from outside the excavation area and direct any further removals. Areas of soil that are obviously stained or soiled will be excavated and placed in the containers for characterization and disposal. After all such soil is removed, the Owner's site representative may request small amounts of soil to be excavated for testing with the field PID meter in order to judge whether additional excavation is necessary.

D. Post-Excavation Sampling

At the conclusion of the excavation, the Contractor shall decontaminate the excavator bucket in preparation for post-excavation sampling. After decontamination, under the direction of the Owner, the Contractor shall remove representative samples of soil from the sidewalls and bottom of the excavation area. A representative of the Owner will collect soil from these samples into appropriate sample containers for confirmatory sampling. The contractor shall dispose of the excess sample soil into a waste container containing contaminated soil.

E. Waste Characterization

The Contractor shall be responsible for all waste disposal characterization (sampling, sample analysis, and completion of manifests) as required by the selected waste disposal facility. EH&S and the Environmental Compliance Office (contact: Steve Beyers 607-255-5491) will assist in assigning of waste codes as required following completion of testing. Past sample test results as available may be used to assist in the characterization and such data to the extent available will be made available to the Contractor upon Contractor's request.

F. Waste Transport and Disposal

As soon as possible after acceptance of the soil for disposal by the appropriate waste disposal facility, all containers shall be promptly removed from the site. Under no circumstances shall containers remain on site more than 7 days after approval has been received from the disposal facility.

G. Site Restoration

After post-excavation sampling is complete, the Contractor shall backfill the excavation. The concrete from the sump lid shall be cut or broken into sections small enough to fit into the excavation without bridging or resting on the side walls. The remainder of the excavation and all voids around the concrete shall be filled with clean soil and compacted as specified in the Contract Documents.

H. Concrete Pad

A Concrete Pad shall be constructed as indicated on Sheet CO1 and the Contract Documents.

END OF SECTION

PART 1 - GENERAL

1.01 - SECTION INCLUDES

A. Excavation filling and backfilling.

B. Consolidation and compaction.

1.02 - RELATED SECTIONS

A. Section 02315 – Remediation

1.03 - REFERENCES

A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 kg) Rammer and 18-inch (457-mm) Drop.

C. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

D. ASTM D1557 – Test Methods of Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18 inch Drop.

E. ASTM D2487 – Classification of Soils for Engineering Purposes

F. ASTM D2922 – Density of Soil and Soil Aggregate in Place by Nuclear Methods.

G. ASTM D3017 - Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods.

H. ASTM D2216 – Water Content Determination

1.04 - QUALITY ASSURANCE

A. Do not backfill with or over wet materials.

1.05 – TESTS AND CONTROL METHODS

A. Contractor shall take samples and perform gradation, compaction and density tests during placement of backfill materials in accordance with applicable standards and regulations.

1.05 – SUBMITTALS

A. Submit the following in accordance with Section 01330-Submittals

1. Qualifications of independent testing laboratory
2. Certified test results of sieve analysis.

PART 2 – PRODUCTS

2.01 - MATERIALS

A. Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ANSI/ASTM C136, within the following limits:

Sieve Size	Percent Passing
No. 4 (4.75 mm)	100
No. 14 (1.18 mm)	10 - 100
No. 50 (0.30 mm)	5 - 90
No. 100 (0.15 mm)	4 - 30
No. 200 (0.075 mm)	0 – 1

B. Gravel: Crushed Stone or bank run; Uniform, washed, free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ANSI/ASTM C136, within the following limits:

Sieve Size Designation	Percent Passing By Weight
No. 3/4 (19 mm)	100
No. 3/8 (9.5 mm)	70-100
No. 4 (4.75 mm)	55-95
No. 10 (2 mm)	35-90
No. 20 (0.85 mm)	20-80
No. 40 (0.425 mm)	10-55
No. 100 (0.15 mm)	0-2

PART 3 - EXECUTION

3.01 - BACKFILLING

A. Backfill excavations to pre-existing contours and elevations.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet or spongy materials.

C. Place and compact materials in continuous layers not exceeding 24 inches (600 mm) compacted density. Use a vibratory roller or other *approved* mechanical compaction device to assure suitable compaction from 3-1/2 feet below the finished grade.

D. Compact backfilled materials to 95 percent maximum dry density in accordance with ANSI/ASTM D1557 or ASTM D2922. Maintain optimum moisture content to attain required density.

E. Immediately remove surplus materials from the site.

3.02 - TOLERANCES

A. Maximum Variation From Top Surface of Backfilling: 1 inch (25 mm).

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall furnish all required materials and shall properly place for embedment in the concrete, at the specified locations and in the manner indicated on the Construction Drawings, or as directed by the Owner's Representative, all required reinforcing steel for properly reinforcing all structures built under this Contract. In general, this shall include the steel reinforcing for foundation and slab of the office addition, extension of concrete pads for air compressor system, and manholes.

1.02 RELATED SECTIONS

A. Section 03300 - Cast-in-Place Concrete.

1.03 REFERENCES

B.. ACI 315 - Details and Detailing of Concrete Reinforcement.

C. ACI 318 - Building Code Requirements for Reinforced Concrete.

D. American Welding Society (AWS) D1.4- Structural Welding Code- Reinforcing Steel.

E. ASTM A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.

1.04 SHOP DRAWINGS

A. Detailed, dimensioned shop drawings and schedules conforming to the requirements of this contract shall be submitted to the Engineer and approved before fabrication, shipment or Work specified under this Section begins.

B. The schedules shall show the number, size, length, bending, lap splicing and the placing of the steel. Bending diagrams and reinforcing details shall conform to "The Manual of Standard Practice for Detailing Concrete Structures," as issued by the American Concrete Institute (ACI 315-65) except as herein modified.

1.05 – SUBMITTALS

A. Submit the following in accordance with Section 01330-Submittals

1. Qualifications of independent testing laboratory.
2. Steel Mill test for reinforcement bars or mesh.

PART 2 - PRODUCTS

2.01 QUALITY AND GRADE

A. All wire mesh reinforcement shall be in sheets and of the minimum weight indicated on the Construction Drawings. Wire mesh shall meet the requirements of the "Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement", A.S.T.M. Designation: # 185-79.

B. All steel used for reinforcement purposes shall be clean, new stock, and free from defects and bends not required by the Construction Drawings.

C. No reinforcing steel shall be welded unless specifically approved by the Engineer.

D. All structural steel (sole plates, angle seats, clips) shall be hot dip galvanized when surfaces will be exposed after the concrete is finished.

2.02 TESTS

A. The Contractor shall provide a copy of the reinforcing steel mill tests reports to the Engineer upon request.

B. Reinforcement bars and wire mesh shall be inspected and tested at the mill at which they are fabricated, in accordance with A.S.T.M. Designation: A 185-79, and two (2) certified copies of such tests shall be furnished to the Engineer.

PART 3 - EXECUTION

3.01 BENDING

A. Reinforcement partially embedded in concrete shall not be field bent without the prior permission of the Engineer.

3.02 STORAGE AND PROTECTION

A. All steel for reinforcement shall be delivered at the site of the Work without rust, other than that which may have accumulated in normal transit. It shall be sorted for size and length and shall be properly tagged, with substantial tags securely attached to each bundle properly identifying the bars as to use intended.

B. Reinforcing steel shall not be stored in contact with the ground.

C. All steel shall be kept free from oil, grease, dirt, or other objectionable adhering substances, and it shall be satisfactorily cleaned of scale and heavy or flaky rust before being placed in the Work.

D. If, after having been placed in the Work, the concreting shall be delayed or interrupted for any considerable number of days, the steel shall be well protected.

3.03 PLACING/SPACING

A. All steel reinforcement shall be carefully placed and fastened in position so as to maintain the proper spacing between adjacent bars.

B. Joints shall be wired with annealed iron wire, of diameter not less than No. 18 U.S. Standard gauge, or by using acceptable clips.

C. All reinforcement shall be firmly supported and properly spaced by the use of metal bolsters, bars, spacers, chairs, or hangers, or by the use of pre-cast concrete piers. Plastic tipped or stainless steel bolsters and chairs shall be used for support of reinforcement bars in all slabs, floors and decks built upon supported forms.

D. Care shall be used in maintaining proper spacing between the forms and reinforcing steel.

E. Welding of crossing steel not be permitted unless approved by the Engineer.

F. Parallel reinforcement placed in two (2) or more layers, shall be separated by a minimum distance of one (1) inch.

3.04 CONCRETE COVER

A. Concrete cover over the principal reinforcing steel shall be as shown in the Construction Drawings. In general, the following shall apply:

Concrete in Contact with water and weather - 2 inches.

Concrete cast against earth - 3 inches.

3.05 SPLICES

A. Lap splices are permitted as shown on the Construction Drawings, or where sheet length is not sufficient to permit continuous reinforcing. All lap splices shall be clearly indicated on the shop drawings, and are subject to the approval of the Engineer. All lap splices shall be Class B as per ACI 318-89.

B. Welded splices are permitted only with the permission of the Engineer. All welding shall conform to the American Welding Society (AWS) "Structural Welding Code-Reinforcing Steel" (AWS #D1.4).

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Formwork, shoring, bracing and anchorage.

B. Cast-in-place concrete foundation, slab and equipment pads.

C. Concrete curing and finishing.

1.02 RELATED WORK

A. Section 02316-Backfill

B. Section 03200 - Concrete Reinforcement.

1.03 REFERENCES, CODES, STANDARDS

A. ACI 301, "Specifications for Structural Concrete for Buildings."

B. ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete."

C. ACI 308, "Standard Practice for Curing Concrete."

D. ACI 318, "Building Code Requirements for Reinforced Concrete."

E. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

F. ACI-MCP-1-74 - Manual of Concrete Practice

G. ASTM C 33 - Concrete Aggregates

H. ASTM C 94 - Ready-Mixed Concrete

D. ASTM C 150 - Portland Cement

E. ASTM A 185- Steel Welded Wire Fabric

1.04 QUALITY ASSURANCE

A. Perform testing and placement of concrete in accordance with ACI-301.

B. Obtain materials from same source throughout the Work.

C. Defective Work: Any concrete found to be defective from any cause whatever, at any time before the final acceptance of the Work, shall be either repaired or removed and replaced at the expense of the Contractor.

1.05 – SUBMITTALS

A. Submit the following in accordance with Section 01330-Submittals

1. Qualifications of independent testing laboratory.

2. Compression, slump, and air entrainment test results.
3. Certified test results of sieve analysis for aggregates.

1.05 TESTS

A. Compression Tests: During the progress of the work, compression tests shall be made in accordance with the "Standard Method of Making and Curing Concrete Test Specimens in the Field" (A.S.T.M. Designation: C 31-84) and Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens (A.S.T.M. Serial Designation: C 39-83b).

1. The Contractor will arrange for laboratory testing of the compression cylinders by the testing laboratory.
2. Strength tests should be taken not less than once a day, two per pour, and two for each 150 cubic yards of concrete.
3. The concrete used shall have 28-day compressive strength of 5,000 psi.

B. Slump Tests:

1. Slump tests shall be performed by the Contractor under the direction of the Engineer. The slump for all concrete shall be within plus or minus one inch of that determined for the design mix (Section 2.02) and in no case shall the slump be more than four inches.
2. Obtain samples for one slump test for each pour in accordance with ASTM C-172.
3. Not less than two (2) specimens shall be made for each pour totaling fifty (50) or more cubic yards in any one day. Concrete used in making slump tests shall not be used to make test cylinders. No water shall be added to the batch after the test cylinders are taken.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement: ASTM C150 - Type I - All cement shall be dry, free from lumps, and its color shall be a uniform bluish-gray.

B. Ready-Mix Concrete: Type I General Purpose

C. Fine Aggregates: ASTM C 33 - The fine aggregate shall be clean, high-silica sand, having not more than three (3) percent by weight of foreign matter such as loam, clay, dirt, or other impurities and shall be free from injurious amounts of organic impurities. Fine aggregates shall be well graded from coarse to fine.

D. Coarse Aggregates: ASTM C33 - Coarse aggregate, unless otherwise specified, shall be well graded.

E. Admixtures: ASTM C260 - Admixtures to the concrete may be used to provide a benefit in water reduction, increased density, improved workability, control of shrinkage, or control of rate of setting, but only with the permission of the Engineer.

1. The admixture selected shall produce an air content in the freshly mixed concrete of 6% plus or minus 1% as determined in accordance with "Standard Test Method for Air Content of Freshly Mixed Concrete By the Pressure Method", A.S.T.M. Designation C 231-82; or "Standard Test Method for Air Content of Freshly Mixed Concrete By the Volumetric Method", A.S.T.M. Designation: C 173-78.

2. Acceptable evidence must be presented to the Engineer that such proposed admixtures, in addition to imparting the desired quality, shall cause no detrimental effect in any of the other desirable properties of the concrete.

3. The admixture, if used, shall be added by means of an approved dispenser, to accurately control the amount used in each batch of concrete.

F. Water: The water used in mixing concrete shall be clean and accurately measured for each batch. In general, all water for mixing and curing purposes shall be obtained from a local municipality water supply. Water contaminated with sewage or oil, or water containing dirt, clay, filth or vegetable matter, or river or lake water, shall not be used.

2.02 CONCRETE MIX

A. Proportions: Concrete shall be composed of a thorough mixture of cement and fine and coarse aggregates with mixing water. Prior to the beginning of concrete work, a statement of the proportions proposed for the concrete mixture shall be submitted to the Engineer in quadruplicate, for his information and appropriate action.

B. Cement: Unless specifically permitted by the Engineer, the cement content of the concrete shall not be less than the following:

Class A - 6 bags per cubic yard, the weight of a bag of Portland cement will be taken as ninety-four (94) pounds.

C. Aggregates: The relative volume of fine and coarse aggregates shall be subject to adjustments by the Engineer to obtain the concrete mix best suited to the use intended, but except as otherwise required, the fine aggregate shall constitute not less than thirty (30) percent nor more than fifty (50) percent of the total volume of aggregates.

D. Water: The amount of water used in concrete, inclusive of free water contained in the aggregates but exclusive of water absorbed by the aggregates, shall not exceed five (5) gallons per sack of cement for Class A concrete. So long as the water-cement ratio is kept below these maxima, the water content may be varied by the Engineer to obtain desired consistencies measured by "slump," not to exceed 4 inches determined by the procedures of "Standard Test Method for Slump of Portland Cement Concrete," A.S.T.M. Designation: C 143-78.

2.03 FORMWORK

A. The forms for such exposed surfaces shall be of metal or plywood, adequately supported, or shall be lined with plywood, masonite board or similar lining, and/or with metal. The design of the forms shall be satisfactory to the Engineer, but need not be submitted for approval unless specifically requested.

B. Metal wall ties shall be of a type that will permit removal to a distance approximately 1-1/2 inches from the face of the wall, free from spilling and allowing for patching immediately after removal of forms.

C. Twisted wire ties will not be permitted: Concrete blocks or other approved means must be used to maintain proper distance between steel and forms.

2.04 REINFORCING MATERIALS

A. Steel Wire: ASTM A82 and 185, plain, cold-drawn steel.

2.05 ACCESSORIES

A. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 7,000 psi in 28 days.

B. Joint Filler: Ram-Nek Plastic Joint Sealer or approved equal, thickness indicated on Contract Drawings. Extend Joint filler from bottom of slab to finished slab grade.

PART 3 - EXECUTION

3.01 PREPARATION

A. Design, erect, support, brace, and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position.

B. Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.

C. Construct forms to sizes, shapes, lines, and dimensions shown, and to obtain accurate alignment, location, grades, and level in finished structures. Provide for openings, offsets, keyways, anchorages, and inserts, and other features required in Work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

D. Provide and install pipe penetrations as shown on the Construction Drawings or as directed by the Engineer.

E. All forms shall be thoroughly cleaned and wetted just before placing the concrete, and if necessary to secure a smooth surface, they shall be coated with an approved nonstaining substance. Suitable moldings or bevel strips shall be placed in the forms to prevent inside or outside sharp edges. No sharp edges will be permitted in the finished Work. All exposed corners and edges of concrete shall have 3/4-inch chamfer unless otherwise shown on the Construction Drawings.

F. Verify anchors, pre-cast sections, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.

G. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with Manufacturer's instructions.

H. At locations where new concrete is dowelled to existing work, dowel holes shall be core drilled approximately 1/8 inch to 3/16 inch larger than the diameter of the dowels, and at least eight inches deep, and epoxy set in place with Rawl Power-Fast or an approved equal. The core drilled holes should be thoroughly cleaned and dried before placement of dowels.

3.02 PLACING REINFORCEMENT

A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports, and as herein specified.

B. Clean reinforcement of loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.

C. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

D. Place reinforcement at joints as shown on Construction Drawings and as herein specified.

3.03 PLACING CONCRETE

A. Notify Engineer a minimum of 24 hours prior to commencement of concreting operations. Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.

B. Delivery: Weigh-tickets shall be prepared for each truck showing the normal batch size; the actual weights of cement, aggregate and water; and the time of loading at the plant.

1. A blank shall also be provided on the weigh ticket for the time of arrival at the site, to be filled in and initialed by the Contractor's Superintendent or Foreman.

2. A copy of the weigh-ticket shall be delivered to the Owner's Representative for each batch of concrete delivered to the site.

C. Rejection of Concrete: Ready-mixed concrete (central-mixed and transit-mixed) will be rejected if there is evidence of any of the following:

1. Improper proportions of ingredients, inclusive of water;
2. Initial set;
3. More than sixty (60) minutes transpires after bathing or mixing before concrete is placed;
4. Mixers or trucks are overloaded; and/or
5. Successive batches are not uniform.

D. Except as provided herein, water shall not be added to the concrete mixtures at the site unless approved by the Engineer for each instance.

E. Consolidation: Concrete shall be consolidated by means of mechanical vibration equipment.

1. Vibrators shall be of the immersion type, and shall maintain a speed of not less than 7,000 impulses per minute when in operation submerged in concrete.
2. They shall be used only by personnel experienced in their use, and shall be inserted and removed vertically (not dragged horizontally) at such regular intervals to insure uniform consolidation throughout the entire section of concrete being placed.
3. In no case shall vibrators be used to transport concrete inside the forms.
4. The number of vibrators used shall be sufficient to consolidate the concrete properly.
5. At least one standby vibrator shall be on hand at all times.

F. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.

3.04 BONDING AND JOINTS

A. Joints, either vertical or horizontal, shall be made only where called for by the Contract Drawings or as permitted by the Engineer.

B. If the Contractor chooses to make his major slab pours in sections smaller than those indicated on the Contract Drawings between expansion joints or between edges and expansion joints, he shall submit his schedule of pours for approval at the same time

that the reinforcing bars for those pours are submitted. The Contractor shall take into account the location of reinforcing bar laps when determining the limits of each pour.

C. All joints subject to hydrostatic pressure and all joints which are at or below finished grade shall be provided with plastic waterstops.

3.05 FINISHING

A. Forms shall not be struck or removed until permitted by the Engineer. In general, forms shall not be removed until the concrete has attained sufficient strength to assure structural stability under all dead and construction loads, and until removal can be accomplished without marring concrete surfaces.

B. All form ties shall be carefully snapped back, to a depth of at least one and one-half (1-1/2) inches below the concrete surface. The tie holes shall be patched with the driest 1:2 cement-sand mortar that can be made to stay in place.

C. All horizontal surfaces shall receive broom finish.

F. Unless otherwise directed, all edges and corners which will be exposed in the finished Work shall be beveled or rounded by the use of appropriate forms or form inserts, and care shall be taken to prevent chipping or cracking of finished edges.

3.06 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01400 (Quality Control).

B. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.07 CONCRETE CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, by covering slab with a continuously saturated burlap for 72 hours, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

D. Concrete shall be maintained above fifty (50) degrees Fahrenheit and in a continuously moist condition for a least the first seventy-two (72) hours after placement. Curing

compounds shall not be used. Concrete curing shall be in accordance with ACI 308, "Standard Practice for Curing Concrete."

3.08 WEATHER CONDITIONS

A. When the temperature is below forty (40) degrees Fahrenheit, or predicted to go below thirty-six (36) degrees in the next twenty-four (24) hours, or predicted to go below thirty-two (32) degrees in the next seventy-two (72) hours, no concrete shall be poured without express permission of the Engineer. All concrete placed during cold weather shall conform to AC1 306R.

1. Permission so granted shall be for the day and location only, and must again be requested on subsequent days when temperatures are as above.
2. When such permission is granted, no concrete shall be poured until adequate covering material is on site, and until a sufficient number of workmen are present to expedite finishing and covering to keep both as close behind the pouring as is practicable.
3. The Contractor shall provide and use proper facilities for heating water and aggregates and protecting the newly mixed concrete from freezing, and satisfactory appliances shall be provided and used for covering and keeping warm the newly laid concrete.
4. The use of chemicals in the concrete mix to reduce the temperature of freezing will not be permitted.

B. All concrete materials, and all reinforcement, forms, inserts and ground with which the concrete is to come in contact, shall be free from frost.

C. All concrete placed shall have a temperature of between fifty (50) and ninety (90) degrees Fahrenheit.

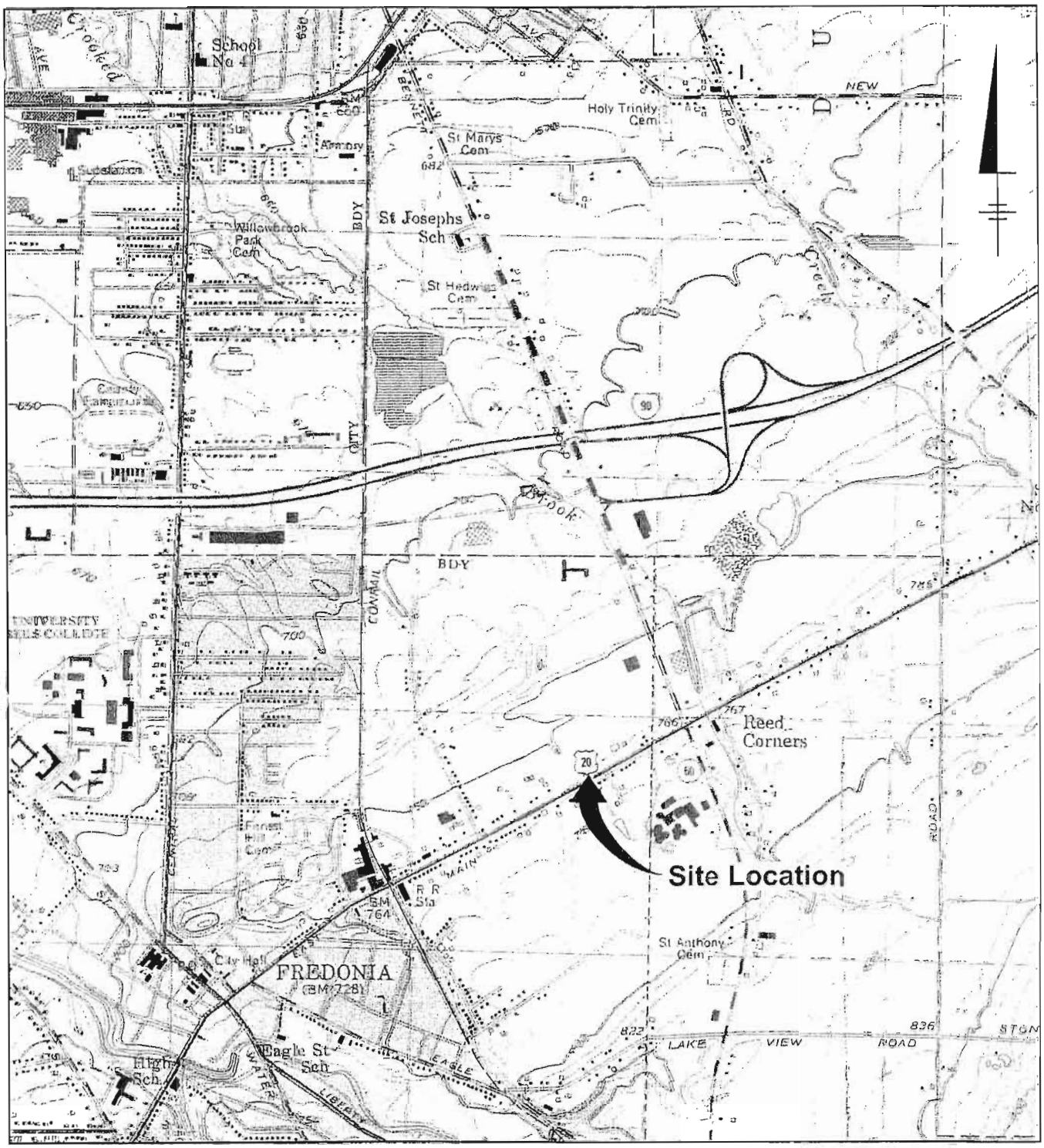
D. The housing, covering or other protection used in connection with the curing shall remain in place and intact at least twenty-four (24) hours after artificial heating is discontinued.

E. When concrete is mixed during extremely warm weather, the Engineer may require the Contractor to pre-cool aggregates with water sprays and to schedule the placing of successive layers of concrete so as to cause maximum release and dissipation of the heat of setting. All concrete placed during hot weather shall conform to AC1 305R.

3.09 INSERTS AND OPENINGS

A. The Contractor shall build into the concrete the steel reinforcement, pipes, and other inserts, and shall leave the small openings shown upon the Contract Drawings or as directed. Great care shall be taken to keep inserts and openings at proper lines and grade, and to thoroughly tamp under and around them so that there will not be a passage for water. Where inserts are placed in the floors for openings, the top of such shall be two (2) inches above the elevation of the finished floor, unless otherwise specified.

END OF SECTION



REFERENCE: BASE MAP SOURCE USGS 7.5 MINUTE QUADS. SERIES DUNKIRK, NEW YORK, 1954, PHOTOREVISED 1979.

2000' 0 2000'

Approximate Scale: 1" = 2000'

AREA LOCATION

FREDONIA SITE REMEDIATION

SITE LOCATION MAP

CORNELL UNIVERSITY

pdc

Figure 1

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