459-01

BUILDING 360 CLOSURE PLAN

PREPARED FOR:

SENECA ARMY DEPOT

ROMULUS, NY

Prepared By:
CAMPBELL DESIGN GROUP, P.C.
301 South Main Street
Horseheads, NY 14845
CDG File No. 60-9422

September 14, 1990

SENECA ARMY DEPOT
BUILDING 360 CLOSURE PLAN
STEAM JENNY PIT

I. FACILITY CONDITIONS

A. General Information

Building 360 at the Seneca Army Depot is a building where old equipment is refurbished and reconstructed. One of the initial procedures for this process is to degrease the equipment with steam in the cleaning area. After steam cleaning the equipment is moved to other portions of Building 360 for rehabilitation.

The existing cleaning area is a 20' - 6" wide by 38' - 6" long portion of Building 360 separated from the rest of Building 360 by a high bay cinder block wall. Track mounted carts carrying the equipment to be refurbished, are rolled into the cleaning area, through a roll-up-door, on a permanently installed rail system. Metal grating has been placed adjacent to and in the middle of the rail system. The floor slopes to the metal grating. Please refer to the attached sketch.

Under the metal grating is a trench system which slopes from a depth of 2' - 0" on the west end to a depth of 2' - 10" toward the east end. Water and grease flow through the trench system to an accumulation pit at the east end. The accumulation pit is constructed with openings thru both rail foundation walls. The pit depth is 3' - 4" under the metal grating. The width of the pit is 10' - 6". The pit length is 3' - 0". The accumulation pit is emptied into approved waste removal vehicles and disposed of as hazardous waste at an approved storage facility.

B. Equipment

The equipment used in the cleaning process is a track mounted cart. Also, equipment to be cleaned can be hand carried or dollies used for transport into the cleaning area. There is no available inventory of equipment which has been cleaned in Building 360.

C. Schedule of Closure

The cleaning of equipment in Building 360 cleaning area ceased prior to January 2, 1990. By September 13, 1990, the Closure Plan is to be submitted to the New York State Department of Environmental Conservation. It is anticipated that New York State Department of Environmental Conservation

who is sampling
only 3 samples?

will approve the plan by October 1, 1990. Sampling and testing should be complete by November 1, 1990. Finally, Construction and Closure Certification should be complete by December 31, 1990.

II. WASTE REMOVAL

The volume of waste which can accumulate in the tank prior to backflowing into the trenches is approximately 120 gallons. When the accumulation pit and trenches are full, the total waste volume is approximately 5,000 gallons. In the past, the waste was pumped from the accumulation pit into an approved tank truck and transported to an approved hazardous waste disposal facility. Currently, the cleaning area is not being used.

III. SAMPLING

Vertical soil borings will be taken at locations shown on the attached sketches. The concrete flooring of the accumulation pit will be core drilled 2 inch diameter, for the thickness of the concrete.

In boring holes B-1 and B-2, split spoon samples will be taken to a depth of 4 feet. In boring hole B-3, samples will be taken every 2 feet to a total depth of twelve feet. The borings shall be backfilled with gravel to the bottom of the concrete. The concrete shall then be filled with non-shrink grout.

To analyze the potential effects of groundwater contamination, two fifteen foot deep monitoring wells should be installed. One monitoring well is to be placed upgrade of Building 360 and one monitoring well is to be placed downgrade of Building 360.

An existing sump pump adjacent to the clean area in Building 360 is used to relieve ground water levels. This pump will be used as a monitoring well. Ground water will be sampled once a month for a three month period.

During sampling procedures, all testing personnel are to be equipped with Level C Protective Equipment. All rules and regulations of this requirement shall be adhered to.

Ground water who is sampling

IV. TESTING

Concrete and soil samples obtained from the site will be tested TCLP using EPA Method 1311 Extraction Process, EPA Method 8010 and 8020 and EP-Tox-Metals. Also, PCB'S will be tested using EPA Method 3540. Ground water will be tested using EPA Method 624 and 625 and EP-Tox-Metals. PCB'S will be tested using EPA Method 608. Results of testing will be supplied to the New York State Department of Environmental Conservation.

Cadmium, chromium, lead and PCB's will be tested for in the concrete cores, soil samples & water samples. The specific criteria that will be used to determine that the contaminant levels are acceptable is 1.0 milligram per liter (mg/l) for cadmium, 5.0 mg/l for chromium and 5.0 mg/l for lead. The acceptable contaminant level for PCB's is 50 parts per million (ppm).

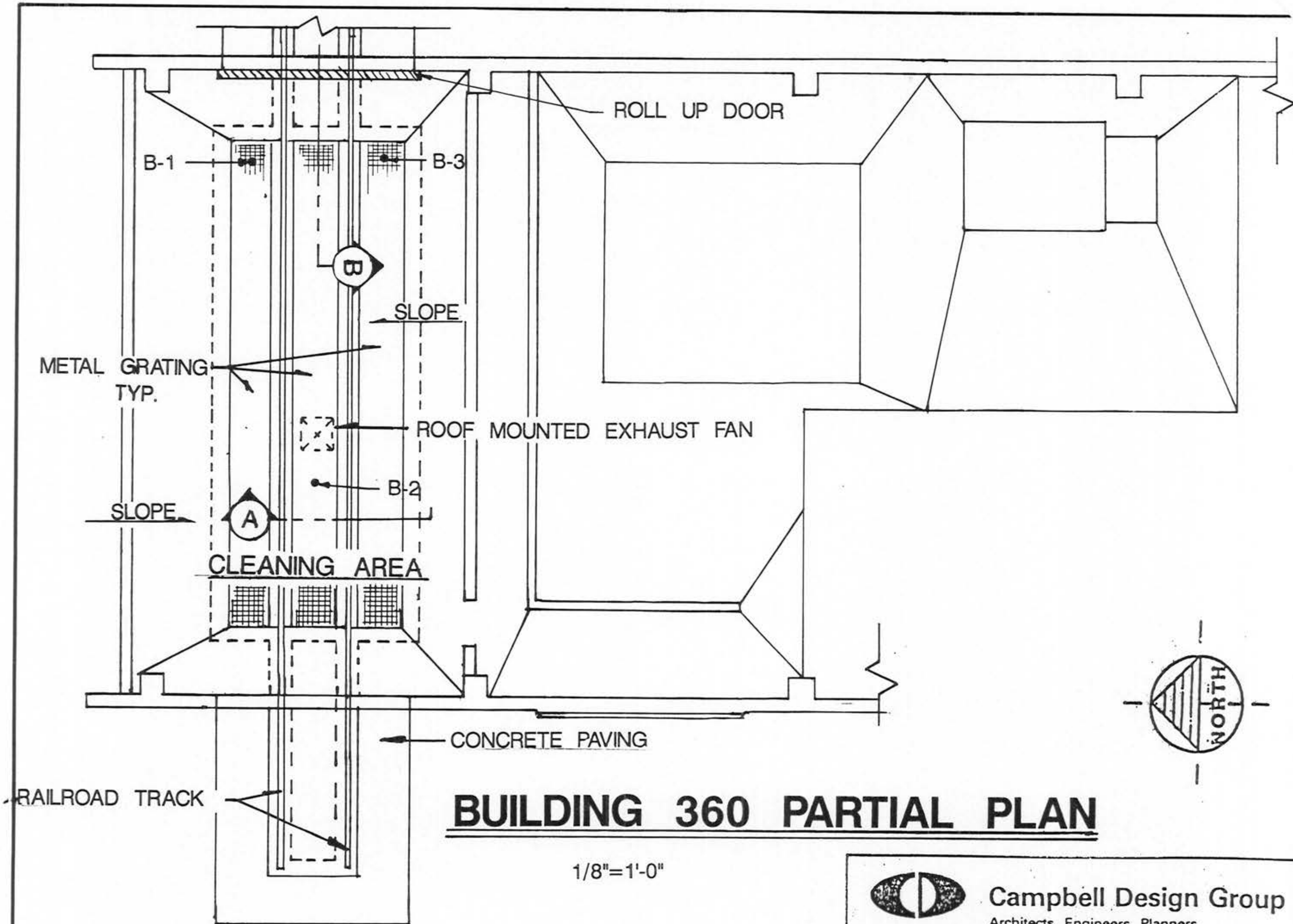
V. HAZARDOUS WASTE DISPOSAL

Contaminated soil, if any, would be transported by approved methods and be disposed of in an approved manner at an approved off-site disposal area. The amount of contaminated soil, if any, to be disposed, will have to be determined at the conclusion of the laboratory testing of the soil samples.

Depending on the amount of contamination of concrete, the surface concrete can be cleaned by scrubbing with fresh water and cleaning agents, steam cleaned, or by neutralization.

VI. CERTIFICATION

Certification by an independent New York registered professional engineer can begin once activities listed in this closure plan are complete. The amount of contaminated soil and concrete will then be known for disposal purposes. Samples and tests required by the New York State Department of Environmental Conservation will be taken at that time.



BUILDING 360 PARTIAL PLAN

1/8"=1'-0"

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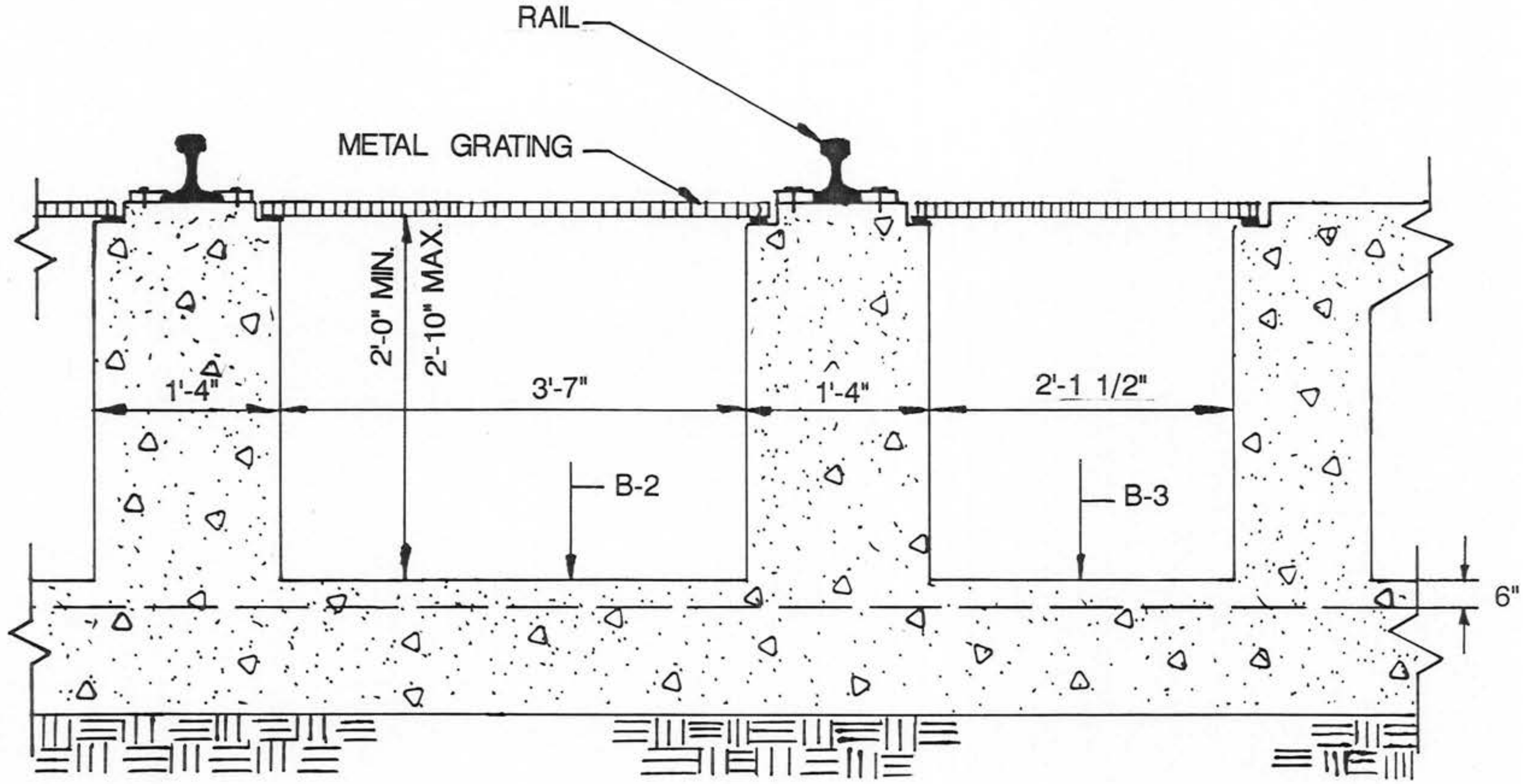

SECTION A

3/4"=1'-0"

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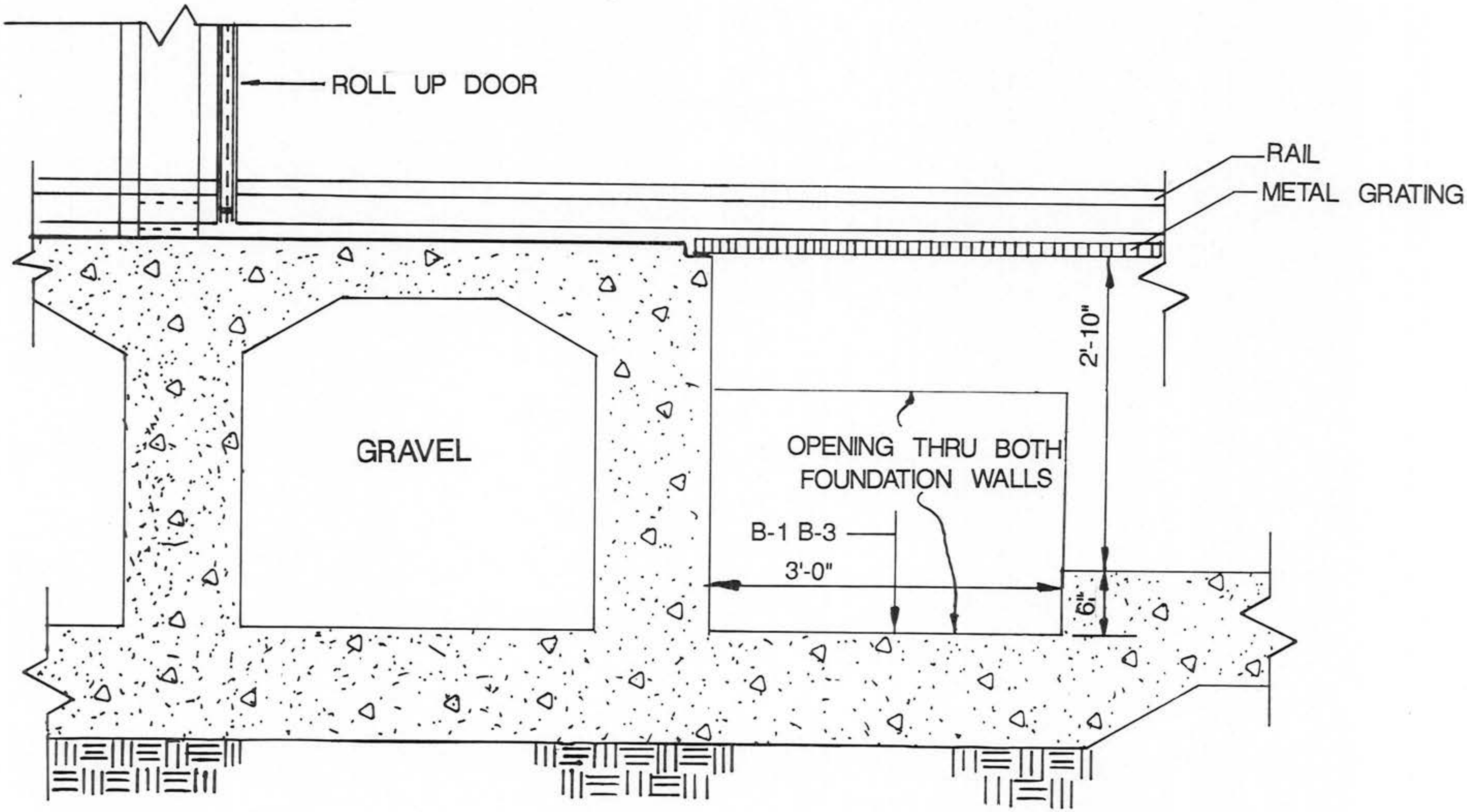

SECTION B

3/4'=1'-0"

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New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

FEB 28 1991

Thomas C. Jorling
Commissioner

Mr. Stephen Absolom
Engineering/Environmental Management Division
Seneca Army Depot
Rt. 96
Romulus, NY 14541-5001

Dear Mr. Absolom:

Re: Steam Jenny Pit Closure Plan

The New York State Department of Environmental Conservation has completed its review of Seneca Army Depot's (SEAD) Steam Jenny Pit Closure Plan. Enclosure I are comments concerning deficiencies of the closure plan. Enclosure II is a proposed schedule for closure once the closure plan approval becomes final and Enclosure III is a proposed test method scheme, both of which are provided as guidance to assist you in developing a complete closure plan.

The response to the deficiencies should consist of a set of concise item-by-item responses and a set of revised pages for insertion into the closure plan. Please respond to these comments by April 15, 1991.

If you should have any questions in regard to this matter, please contact Ms. Denise Gurtler of my staff at (518) 457-7269.

Sincerely,

John L. Middelkoop
Director
Bureau of Haz. Waste Facility Compliance
Division of Haz. Substances Regulation

Enclosures

cc w/enc: M. Jon, EPA R2
D. Rollins, R8
A. Butkas, R8
R. Battaglia, SEAD

w/o enc: R. Scott, R8

Enclosure I
6NYCRR Part 373 Closure Comments
Steam Jenny Pit
Seneca Army Depot(SEAD)
EPA I.D.# NY0213820830
Romulus(T), Seneca(C)

GENERAL COMMENTS

1. Please provide a description of the general purpose of the Steam Jenny Pit. Describe what type of operations for which the pit was used.

2. Please provide a brief description of the objective of the Steam Jenny Pit closure plan. Include information on assurance of proper decontamination and abandonment of the tank system.

3. Provide a brief description of any historical data and/or information concerning periodic testing and inspections which may be used to determine the degree of the physical integrity of the tank system. Any records of prior rinsing or decontamination steps should be included.

FACILITY CONDITIONS

1. The engineering drawings provided do not clearly and fully describe all the dimensions of the various aspects of the steam cleaning pit. Please provide information giving the necessary dimensions of the entire pit, the floor gratings, the rail system, the individual trenches including the dimensions of the openings through the foundation walls, etc...

2. Cross-section A of the facility drawings seems to indicate there are only two trenches. If this is the case, what is the purpose of the adjacent grating described as B-1 in the Building 360 Partial Plan.

3. Figures must be provided to demonstrate the slope of the floor towards the metal grating as indicated in cross-section A of the facility drawings.

4. Please indicate on the engineering drawings of the facility which is the north end of the Steam Jenny Pit.

5. Describe the material surrounding the area marked "gravel" in cross-section B of the facility drawings.

EQUIPMENT

1. Please provide a list of the level C protective clothing and the equipment to be used

during decontamination and sampling operations. Describe how these items will be disposed of or decontaminated.

SCHEDULE OF CLOSURE

1. The plan should state that in accordance with 6NYCRR Part 373-3.7(d)(2), all closure activities must be complete within 180 days after approval of the closure plan.

2. The sequence of events during closure is not clearly described in the closure plan. Please include as part of the Steam Jenny Pit closure plan a schedule of closure in accordance with the schedule provided in Enclosure II.

WASTE REMOVAL

1. Please provide information on the types and amounts of hazardous waste generated during the operating life of the Steam Jenny Pit.

2. Provide a copy of the manifest, detailing information on the removal and disposal of the final volume of waste including date of removal, the designated disposal site, and the permitted transporter.

SAMPLING

1. An 8 1/2" x 11" grid drawing of the floor area of the accumulation pit should be provided (please include dimensions) to show the exact locations where the vertical soil borings will be taken. The locations are not shown in the sketches as stated in the closure plan.

2. Please include the number of samples to be taken at boring holes B-1 and B-2. Explain why samples will be taken at a depth of 4 feet at boring holes B-1 and B-2 and 12 feet at boring hole B-3.

3. Three sampling locations are not sufficient to determine the extent of contamination due to the hazardous waste activities involving the Steam Jenny Pit. A sampling scheme must be devised to determine the pattern of waste stratification and the criteria for the determination must be provided.

4. Samples of the concrete cores must be analyzed to determine whether the accumulation pit itself is contaminated. Please include this information in the sampling section of the closure plan.

5. Analysis of the potential effects of groundwater contamination through the use of monitoring wells would be necessary if sampling results of the soil surrounding the pit warranted this situation (i.e. extensive contamination). Revise the closure plan to include groundwater monitoring if soil analysis results show that further investigation is required.

6. In the event the soil surrounding the accumulation pit is determined to be contaminated, a provision for further sampling must be included in order to determine the extent of contamination. Include this as part of the closure schedule.

7. In accordance with 6NYCRR Part 373-3.10(h)(2), the closure plan should state that if it can not be demonstrated that all contaminated soils can be practicably removed or decontaminated, then the tank system must be closed as a landfill and 6NYCRR Part 373-3.14(d) would apply. In addition, all the requirements for landfills specified in 6NYCRR Part 373-3.7 and 373-3.8 would have to be met.

TESTING

1. Enclosure III has been provided as a sample testing and analytical scheme based upon the information provided in the closure plan regarding possible hazardous constituents. Other constituents may need to be considered for testing once a waste analysis has been established.

2. The following are general comments based upon the information provided in the closure plan and should be used as guidelines in developing a complete and adequate testing scheme to be used in the closure of the accumulation pit:

   a. Methods from various sources have been described in this section of the closure plan. If methods from one or more sources are to be used, please state the method and the associated reference. Keep in mind the difference between a preparatory method and an analysis method.

   b. In the revision of the closure plan test scheme, clearly state the constituents to be analyzed, the media to be analyzed, the methods utilized, and the allowable detection limits for each of the analysis. The allowable detection levels for ground water are not the same as those allowed for soil and concrete. Please provide the specific criteria to be used to establish allowable detection levels for each constituent as it pertains to each media. Include background level information where necessary.

   c. EPA methods 8010, 8020 and EP-Tox-Metals are not the same as the Toxicity Characteristic Leaching Procedure (TCLP) method. EPA method 8010 is an analysis method for halogenated volatiles and 8020 is an analysis method for aromatic volatiles. EP-Tox-Metals and TCLP are both preparatory methods for determining leachability characteristics and serve the same purpose but with EP-Tox-Metals to a lesser degree. SEAD should use the TCLP as a preparatory method as a replacement for EP-Tox-Metals.

   d. It is stated PCB's will be tested using EPA Method 3540. This is a suitable preparatory method for use on any PCB's that may be present in the soil, but EPA method 3510 or 3520 should be used as a preparatory method for the concrete samples. The method of analysis for PCB's and for both the concrete samples and the soil samples is EPA Method 8080.

HAZARDOUS WASTE DISPOSAL

1. Provide information on the types of cleaning agents, equipment, and/or methods to be used to decontaminate the surface concrete. Describe how run-off will be controlled through the overhead door.

2. Describe the equipment and methods to be used to remove any contaminated soil.

3. Describe how waste water, soil, and other contaminated residues (e.g. tools, clothing, etc...) will be stored prior to disposal to off-site facilities. Identify the types of off-site hazardous waste management facilities to be used.

ABANDONMENT/CONSTRUCTION

1. Details of the construction planned must be provided as part of the closure plan.

CERTIFICATION

1. The plan must state that within 60 days of final completion of closure, a certification of closure documenting the closure activities must be made by a qualified independent engineer registered in New York State. The certification must state that closure was executed in accordance with the approved closure plan.

Enclosure III
Steam Jenny Pit Closure
Test Method Scheme

Media	Constituent	Preparatory Method	EPA SW-846 Method
Concrete	PCB's	3510/3520	8080
	Cd	1311(TCLP)	6010
	Cr	"	"
	Pb	"	"
Soil	Volatiles	-------------	8240
	PCB's	3540/3550	8080
	Cd	3050	6010
	Cr	"	"
	Pb	"	"
Water	Volatiles	-------------	8240
	Semi-volatiles	-------------	8270
	PCB's	3510/3520	8080
	Cd	3010	6010
	Cr	3010	6010
	Pb	3020	7421

Note: The methods indicated above are referenced from EPA SW-846, "Test Methods for Evaluating Solid Waste".

ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

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Closure Activity in Days                 0          30          60          90              120         150     180

NYSDEC APPROVAL OF CLOSURE PLAN          X

ASSESSMENT
Gather and Review Historical Data        XXXXXXXXXXXXXXX
System Contamination Assessment               XXXXXXXXXXXXXXX

IMPLEMENTATION
Decontamination of Tank System                          XXXXXXXX
Sampling and Test Analysis                                     XXXXXXXXXXXXXX
Disposal of Waste Residues                                                   XXXXXXXXXXXX
Tank Abandonment/Construction                                                XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

FINAL REPORT/CERTIFICATION OF CLOSURE                                                                           XXXXXXXX

CLOSURE REPORT SUBMITTED TO DEC                                                                                        X
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ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

Closure Activity in Days	0	30	60	90	120	150	180
NYSDEC APPROVAL OF CLOSURE PLAN	X						
ASSESSMENT							
Gather and Review Historical Data	XXXXXXXXXXXXXXXX						
System Contamination Assessment	XXXXXXXXXXXXXXXX						
IMPLEMENTATION							
Decontamination of Tank System		XXXXXXXX					
Sampling and Test Analysis			XXXXXXXXXXXXXXX				
Disposal of Waste Residues				XXXXXXXXXXXX			
Tank Abandonment/Construction				XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
FINAL REPORT/CERTIFICATION OF CLOSURE						XXXXXXXX	
CLOSURE REPORT SUBMITTED TO DEC							X

ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

Closure Activity in Days	0	30	60	90	120	150	180
NYSDEC APPROVAL OF CLOSURE PLAN	X						
ASSESSMENT							
Gather and Review Historical Data	XXXXXXXXXXXXXXXX						
System Contamination Assessment	XXXXXXXXXXXXXXXX						
IMPLEMENTATION							
Decontamination of Tank System		XXXXXXXX					
Sampling and Test Analysis			XXXXXXXXXXXXXXX				
Disposal of Waste Residues				XXXXXXXXXXXX			
Tank Abandonment/Construction				XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
FINAL REPORT/CERTIFICATION OF CLOSURE						XXXXXXXX	
CLOSURE REPORT SUBMITTED TO DEC							X

ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

Closure Activity in Days	0	30	60	90	120	150	180
NYSDEC APPROVAL OF CLOSURE PLAN	X						
ASSESSMENT							
Gather and Review Historical Data	XXXXXXXXXXXXXXXX						
System Contamination Assessment	XXXXXXXXXXXXXXXX						
IMPLEMENTATION							
Decontamination of Tank System		XXXXXXXX					
Sampling and Test Analysis		XXXXXXXXXXXXXXX					
Disposal of Waste Residues				XXXXXXXXXXXX			
Tank Abandonment/Construction				XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
FINAL REPORT/CERTIFICATION OF CLOSURE						XXXXXXXX	
CLOSURE REPORT SUBMITTED TO DEC							X

ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

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Closure Activity in Days               0               30              60              90                  120               150       180
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NYSDEC APPROVAL OF CLOSURE PLAN        X


ASSESSMENT
Gather and Review Historical Data      XXXXXXXXXXXXXXXX
System Contamination Assessment              XXXXXXXXXXXXXXXX


IMPLEMENTATION
Decontamination of Tank System                             XXXXXXXX
Sampling and Test Analysis                                        XXXXXXXXXXXXXXX
Disposal of Waste Residues                                                       XXXXXXXXXXXX
Tank Abandonment/Construction                                                    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX


FINAL REPORT/CERTIFICATION OF CLOSURE
                                                                                                                           XXXXXXXX


CLOSURE REPORT SUBMITTED TO DEC
                                                                                                                                   X
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ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

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Closure Activity in Days             0              30             60            90                 120           150      180


NYSDEC APPROVAL OF CLOSURE PLAN      X


ASSESSMENT
Gather and Review Historical Data     XXXXXXXXXXXXXXXX
System Contamination Assessment             XXXXXXXXXXXXXXXX


IMPLEMENTATION
Decontamination of Tank System                         XXXXXXXX
Sampling and Test Analysis                                    XXXXXXXXXXXXXXX
Disposal of Waste Residues                                                   XXXXXXXXXXXX
Tank Abandonment/Construction                                                XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX


FINAL REPORT/CERTIFICATION OF CLOSURE                                                                                       XXXXXXXX


CLOSURE REPORT SUBMITTED TO DEC                                                                                                     X
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Regulatory Analysis of Closure Options
for the OB Grounds
at Seneca Army Depot

Background

The Army Environmental Center (AEC) conducted the following analysis to evaluate whether there are any significant differences between the ongoing CERCLA remedial actions at the SEAD-23 Open Burning Grounds and the RCRA closure process that would be required for an open burning/open detonation (OB/OD) site. RCRA closure for the OB Grounds was initially deferred when Seneca Army Depot was proposed for the National Priority List (NPL). Once Seneca was officially added to the NPL, the Army, Environmental Protection Agency (EPA), and the New York State Department of Environmental Conservation (NYSDEC) entered into a Federal Facilities Agreement (FFA), which in part consolidated the RCRA and CERCLA cleanup requirements under one program (CERCLA), and RCRA became an applicable or relevant and appropriate requirement (ARAR) pursuant to Section 121 of CERCLA. While the RCRA-CERCLA integration provisions of the Seneca FFA include RCRA corrective action, it does not explicitly identify RCRA Closure.

OB GROUNDS CLOSURE

The SEAD-23 OB Grounds is a RCRA treatment, storage and disposal facility (TSDF) that has ceased operations. The RCRA closure and post-closure regulations in 40 CFR Parts 264 and 265, Subpart G, are designed to ensure that hazardous waste management facilities undergoing closure will not pose a threat to human health and the environment. Part 264 is applicable to permitted facilities and Part 265 is applicable to interim status facilities. New York is a RCRA-authorized state, so NYSDEC is the lead regulatory authority for RCRA closures. The New York RCRA TSDF permitting regulations are outlined in 6 NYCRR Subpart 373. Subpart 373-2 closely resembles the 40 CFR Part 264 requirements for permitted facilities, and Subpart 373-3 resembles the 40 CFR Part 265 requirements for interim status facilities.

The Army submitted a RCRA Part A and Part B permit application to NYSDEC in 1987, and a 40 CFR Part 264, Subpart X permit application was submitted in August 1990. Since the Army submitted necessary permits in a timely manner, and NYSDEC has not acted on these permits, Seneca has retained interim status. Section 373-2.1 further supports this position when it summarizes the relationship between interim status standards and standards for permitted facilities as follows:

> *a facility owner or operator who has fully complied with the requirements for interim status, as defined in section 373-1.3 of this Part, must comply with the regulations specified in Section 373-3 of this Part, in lieu of the regulations of this Subpart, until final administrative disposition of the permit application is made, except as provided under section 373-2.19.*

Section 373-2.19 addresses corrective action at solid waste management units so it is not pertinent to the discussion of whether the Section 373-2 (permitted facilities) or 373-3 (interim status) requirements should be addressed. Since NYSDEC did not issue a Section 373 permit, final administrative disposition of the permit has not been made. Thus, the Section 373-3 requirements should be followed.

In addition to the RCRA closure requirements, the following state regulations need to be considered in the evaluation of RCRA Closure:

6 NYCRR Part 374-1.13	Military Munitions
6 NYCRR Part 376	Land Disposal Restrictions

A complete listing of the New York regulations can be found at the following web site: www.dec.state.ny.us/website/regs/index.html.

RCRA Closure Requirements

The RCRA Closure requirements include two parts: the general closure performance standards and the unit-specific standard. The general closure requirements for permitted and interim status facilities are similar; however, the unit-specific standards will vary depending on whether the closure is for a permitted or interim status facility. RCRA requires that interim status OB areas follow both the general closure performance standards and the unit-specific closure requirements.

General Closure Performance Standards

The SEAD-23 ROD identifies RCRA Closure requirements as a remedial action objective (Parsons, 1998 – Table 8-1), 40 CFR Part 264 was identified as an action-specific ARAR (Parsons, 1998 – p. D-7). Subpart 373-3 should be used for interim status facilities, and the closure performance standards under 6 NYCRR 373-3.7(b) require the Army to close the OB Site in a manner that:

- minimizes the need for further maintenance after closure;
- controls, minimizes, or eliminates (based on risk) the post-closure escape to surface waters, groundwater, or the atmosphere of hazardous waste, hazardous constituents, leachate, contaminated run-off, and hazardous waste decomposition products; and
- complies with the closure requirements of Section 373.

Unit-Specific Closure Standards

The ROD identified 40 CFR Part 264 Subpart X (Miscellaneous Units) as a chemical-specific ARAR, which covers permitted rather than interim status facilities. However, because Seneca submitted a Subpart X permit application, the regulators might agree to proceed with closure under those regulations. The Subpart X closure requirements are more tailored to atypical units including the OB/OD area and allow for greater flexibility through a risk-based approach.

The New York Subpart X regulations are located at Section 373-2.24, which requires that miscellaneous units be maintained and closed in a manner that ensures protection of human health and the environment. Section 373-2.24(d) requires identical measures throughout the post-closure care period and requires submittal of a post-closure plan outlying the same information as that required for a permitted unit.

While a unit-specific standard for interim status OB units is not identified in the ROD, Section 373-3.16 (Thermal Treatment) applies to facilities that conduct OB operations. At closure, Section 373-3.16(e) requires removal of all hazardous waste and hazardous waste residues from the thermal treatment process or equipment. It is unclear whether this requirement applies

only to the burn pans or to the entire site, so it is possible to negotiate with the regulators to apply RCRA closure requirements to the burn pans only, if support for CERCLA is not garnered. Another consideration is whether the site contaminants are considered a hazardous waste. Before a waste is considered hazardous, it must be a solid waste. 6 NYCRR Part 374-1.13(c)(2) defines an unused munition as a solid waste when the munition is abandoned by being disposed of, burned, detonated, incinerated, or treated prior to disposal. Typically, waste munitions are considered characteristic hazardous waste because they are reactive. Kick-out or other fragments or scrap may or may not meet the definition of a RCRA characteristic waste.

Clean Closure v. Closure with Waste in Place

There are two primary RCRA closure options: clean closure or closure with waste in place (in this case, as a landfill). The premise of clean closure is that all hazardous wastes have been removed from a RCRA regulated unit and any releases at or from the unit have been remediated so that further regulatory control is not necessary to protect human health and the environment.

In March 1998, EPA issued a memorandum that confirmed and clarified guidance on risk-based clean closure for RCRA units (USEPA, 1998a). This closure option allows hazardous constituents and degradation products to remain in place, provided that they do not endanger human health and the environment. However, for this option, all hazardous waste must still be removed.

If clean closure is not attainable, RCRA allows closure with waste in place. When closing with waste in place, the unit-specific requirements for landfills, which are provided in 6 NYCRR Section 373-3.14, must be followed. Closure as a landfill involves specific requirements, including the construction of a cap to mitigate the potential for waste migration and long-term post-closure maintenance and groundwater monitoring requirements. Land use restrictions will also be appropriate, particularly since UXO may be present.

Closure Certification and Survey Plat

Once closure activities have been concluded, the Army must sign a certification stating that closure activities were conducted in accordance with the approved closure plan. If the OB unit closes and wastes will remain in place after closure (i.e., the site does not clean close), a survey plat must be submitted to the local zoning authority (or the authority with jurisdiction over local land use) and to the regulatory agency. The plat must identify the dimensions of the OB unit with respect to permanently surveyed benchmark and must be prepared by a professional land surveyor. If the

what is this.

It will be difficult for the Army to certify that all UXO/OE has been removed. Frost-heave or erosion may allow UXO or OE to surface over time. Thus, it may be necessary to conduct periodic UXO/OE surveys after the ROD requirements are complete.

Groundwater Monitoring

To ensure land-based hazardous waste management units are not contaminating groundwater, RCRA requires TSDFs to monitor groundwater in the uppermost aquifer underlying the facility. The interim status groundwater monitoring program is similar to the permitted groundwater monitoring program, but does not include cleanup provisions. If cleanup is required at an interim status facility, it will be addressed under RCRA §3008(h) or §7003 corrective action authorities.

The requirements for permitted facilities are found in 6 NYCRR Section 373-2.6 (Releases from Solid Waste Management Units), and the requirements for interim status facilities are found in 6 NYCRR Section 373-3.6 (Groundwater Monitoring).

The interim status groundwater monitoring program is comprised of two phases: an indicator evaluation and a groundwater quality assessment. If there is reason to believe that a release has occurred, the owner or operator of a facility may initiate a groundwater quality assessment instead of an indicator evaluation program. The groundwater monitoring system must consist of at least one monitoring well installed hydraulically upgradient and at least three monitoring wells installed hydraulically downgradient from the limit of the waste management area. For all monitoring wells, samples must be collected quarterly for one year to establish background or baseline conditions.

During the SEAD-23 Remedial Investigation two rounds of groundwater samples were collected. A total of 28 wells were sampled during the first round and 36 samples were submitted during the second round. Lead concentrations exceeded the Federal Action Level for drinking water of 15 ug/l in 2 of the 36 wells. If hazardous waste or hazardous waste constituents from the facility have entered groundwater, Section 373-3.6(d)(4)(vii) requires quarterly monitoring of groundwater until final closure of the facility. The SEAD-23 ROD notes that groundwater monitoring has been ongoing at the site since 1990 for compliance with RCRA (Parsons, 1998 p. 6-5); however, it is not clear how many wells are included in the quarterly monitoring program. It is also possible that the lead concentrations in groundwater are associated with the turbidity of the samples. After the first RI sampling round, groundwater samples were collected using the low flow purging technique. Over a two year period, quarterly groundwater samples collected using the low flow purging techniques had lead concentrations less than the detection limit of 1.7 ug/l (Parsons, 1998 – Page 6-7).

Groundwater sampling at SEAD-23 started under the CERCLA program, but after making an initial determination of groundwater quality, the Army has continued with the requisite RCRA monitoring. The selected CERCLA remedy for SEAD-23 OB Grounds will reduce the lead concentrations in soil and sediments to risk based levels. While there may be residual UXO/OE after completing, an argument can be made that there is a low probability for lead migration to groundwater or surface water. The basis of this argument should be Section 373-3.6(a)(3), which allows for all or part of the groundwater monitoring requirements to be waived if the Army can demonstrate that there is a low potential for migration of hazardous waste or hazardous waste constituents from the facility via the uppermost aquifer to supply wells or to surface water. The SEAD-23 ROD includes a groundwater-monitoring program; however, the Army should have the opportunity to end this requirement after closure is completed or data from several rounds of post closure monitoring are available.

Comparison of SEAD-23 CERCLA Responses Actions to RCRA Closure

The RCRA closure process involves the preparation of a closure plan, the performance of closure in accordance with regulatory requirements, and certification. For closure with wastes in place, a post-closure plan (or in some cases, an alternative enforcement mechanism) is required. Section 373-3.7(a)(4) gives NYSDEC the authority to replace all or part of the closure and post-closure requirements with alternative enforceable requirements provided they will be protective of human health and the environment and will satisfy the closure performance standards.

For the OB Grounds, the enforceable document is the ROD, which was developed to accomplish the following:

- Remediate OE to meet the Department of Defense Explosive Safety Board (DDESB) requirements for unrestricted use or put into place land use restrictions as may be required by DDESB.
- Excavate soils with lead concentrations greater than 500 mg/kg and Reeder Creek sediments with copper and lead concentrations exceeding the NYSDEC criteria of 16 mg/kg and 31 mg/kg, respectively.
- Treat soils exhibiting the toxicity characteristic of a hazardous waste, which is defined using results of the Toxicity Characteristic Leaching Procedure (TCLP)
- Off-site disposal of excavated soils, including soils requiring pretreatment, in a Subtitle D landfill.
- Provide 9-inches of compacted soil for areas where lead concentrations exceed 60 mg/kg.
- Control surface water runoff to minimize erosion of the vegetative cover and solids loading to Reeder Creek;
- Conduct a monitoring program for site groundwater and sediment in Reeder Creek.

Based on a review of the work completed to meet the ROD requirements, the CERCLA action is equivalent to a RCRA closure by removal of wastes or decontamination. Table 1 provides more detail on the comparison between RCRA and CERCLA. Since soils exceeding risk based concentrations were covered with 9-inches of compacted soil and the Army cannot certify that all UXO/OE has been removed from the site, there is a need for a survey plat to be provided within 60 days of closure and the Army will need to include future deed restrictions when the parcel containing the OB site is transferred. Section 373-3(c) outlines specific requirements for the written RCRA closure plan. Several of these requirements are missing from the SEAD-23 ROD. For example, a RCRA Closure Plan requires a schedule for closure of the hazardous waste management unit and an estimate of the maximum inventory of hazardous waste ever on-site over the active life of the facility. These elements, however, are considered more administrative and do not change the actual remedy selected. To ensure the CERCLA ROD meets RCRA closure requirements, approval from the regulators, preferably in writing, is required.

Post-Closure Permits

Post-Closure Permits are required when waste is left in place. EPA began encouraging the use of risk-based levels in 1996, to better coordinate between RCRA and CERCLA. (USEPA, 1996a). EPA formalized this notion in October 1998 by amending the RCRA closure and post-closure regulations to allow for greater regulatory flexibility (e.g., use of corrective action or alternative enforcement processes) for closure with waste in place (USEPA, 1998b). The amendment to the post-closure regulation allows EPA and authorized States to use a variety of authorities to impose requirements on interim status land disposal units requiring post-closure care.

Under the New York regulations, Section 373-1.5(o) sets out the information that must be included in a post-closure permit. Section 373-1.2(e)(3) defines the types of documents considered to be alternative enforceable documents. The same information is required to be submitted whether it is for a post-closure permit or an alternative enforcement document.

It is entirely within the regulators' discretion to allow an alternative enforceable document. Even if the regulators issue an enforceable document, facility-wide corrective action, and public involvement are still required. When an enforceable document is used in lieu of a post-closure permit, the groundwater monitoring requirements of Section 373-2 need to be met rather than Section 373-3 requirements. However, the existing data suggest that there are no adverse impacts to groundwater, so using the ROD as the enforceable document should be explored with the regulators since it could save money and paperwork.

Amending the ROD

Section 300.435(c)(2)(ii) of the NCP requires ROD amendment when a fundamental change is made to the basic features of the remedy with respect to scope, performance, or cost. The lead agency is required to develop and document the change consistent with the ROD process, including the publication of a proposed plan and a public comment period. The final decision to amend should not be made until after consideration of public comment.

If a decision is made to relocated the debris pile from the OB Grounds cleanup (i.e., Mt. Molle) to the Open Detonation Area, the ROD may need to be amended.

OPEN DETONATION AREA CLOSURE

The Army is evaluating a conceptual plan where a RCRA cap would be used for the OD Area and waste would be left in place. The plan also includes relocating a large pile of debris containing OE material generated as part of the cleanup/closure of the SEAD-23 OB Grounds soils. The following sections highlight some of the key technical and regulatory issues associated with this option.

Land Disposal Restrictions

6 NYCRR 376 prohibits the disposal of hazardous waste, including characteristic hazardous waste, on land. Section 376.1(b)(1)(iii) describes "land disposal" as "placement in or on the land, except in a corrective action management unit…" and specifically includes landfills.

The disposal on land of reactive waste is prohibited under Section 376.3(g)(2), unless it is appropriately treated. However, if the waste qualifies as nontoxic characteristic hazardous debris (debris is defined as solid manufactured material exceeding a 60 mm particle size), pursuant to Section 376.4(g)(4)(ii), it is not subject to treatment standards. However, it still must be deactivated prior to land disposal.

Section 376.4(e)(1) provides for a variance from a treatment standard but requires approval from the EPA Administrator and the State Commissioner. To qualify, it must either be physically impossible to treat the waste as specified, or it must be "technically inappropriate (for example, resulting in combustion of large amounts of mildly contaminated environmental media)."

Section 376.1(f) allows a person to seek an exemption from the disposal restrictions through a petition to the EPA Administrator and the State Commissioner, demonstrating to a reasonable certainty that there will be no migration of hazardous constituents from the disposal unit for as long as the wastes remain hazardous. The requirements for an exemption include a comprehensive characterization of the unit site, an analysis of the waste, simulation models, a quality assurance and quality control plan, use of state-of-the-art technology, a monitoring plan and program - all of which require sampling, testing and analysis techniques approved by the

Commissioner.

If none of the above is obtainable, the regulators might agree to establishing the area as a corrective action management unit.

Corrective Action Management Unit

Placement of waste in a corrective action management unit (CAMU) does not constitute land disposal under the state land disposal restrictions. Section 373-2.19 lists the requirements for designation as a CAMU, including minimization of the land area where waste will remain in place, and management and containment to minimize future releases, to the extent practicable. Designation as a CAMU requires approval of the Commissioner, who issues a permit or order that includes the specifications for the design, operation and closure requirements. The Commissioner determines the closure and post-closure requirements, including the frequency of monitoring and maintenance activities. Closure of a CAMU requires capping when wastes will remain in place.

Area of Contamination

EPA guidance allows wastes to be consolidated in situ within an area of contamination (AOC) without triggering land disposal restrictions or minimum technology requirements. Based on an interpretation of RCRA, EPA's AOC policy states that "certain discrete areas of generally dispersed contamination... could be equated to a RCRA landfill and that movement of hazardous wastes within those areas would not be considered land disposal and would not trigger the RCRA land disposal restrictions." (USEPA, 1996b).

EPA stated that when waste is consolidated or moved within an AOC, placement does not occur. Placement does occur, however, "when wastes are moved from one AOC to another (e.g., for consolidation) or when waste is actively managed (e.g.,treated ex situ) within or outside the AOC and returned to the land." Thus, the areal extent (or boundary) of contiguous contamination defines the AOC. (USEPA, 1996b). Certainly, the OB area itself is a single AOC that would not trigger land disposal restrictions. If the facts support it, an argument could be made that the entire OB/OD area constitutes one AOC.

EPA encourages the use of a CAMU or AOC for the consolidation of hazardous wastes. Although advance approval at the Federal level is not required, consultation is essential to ensure the AOC concept is being implemented appropriately. The state regulators will need to be contacted to see if they have adopted or approve of the AOC policy.

Department of Defense Policy

In 1996, DoD issued Directive 6055.9 entitled "DoD Explosives Safety Board (DDESB) and DoD Component Explosives Safety Responsibilities." The directive establishes uniform safety standards for ammunition and explosives, and addresses issues of disposal, transfer and remediation requirements. It requires decontamination of real property known to be contaminated with ammunition or explosives in a manner that will ensure protection of the public consistent with the end use of the property. Of particular importance, Chapter 12, Section B.2., prohibits the final disposal of ammunition and explosives by land burial, except during authorized destruction by detonation.

Section C.4. addresses remediation methods and use restrictions and outlines certain

TABLE 1
COMPARISON OF RCRA AND CERCLA ACTIONS

Reference	RCRA Requirement	CERCLA Equivalent
373-3.7(a)(4)(ii) & EPA, 1998	Protection of Human Health	Protection of human health from lead contaminated soils was evaluated using the IEUBK model. This model is considered conservative since it evaluated the impacts to children from a residential scenario at the OB Grounds. Lead concentrations in soil greater than 500 mg/kg are being excavated to be protective of human health.
373-3.7(a)(4)(ii) & EPA, 1998	Protection of the Environment	For the OB site and Reeder Creek, the ecological risk screening shows that there is a potential risk from heavy metals (lead and copper) to protect aquatic life and wildlife consumers of aquatic life. Sediments from Reeder Creek exceeding NYSDEC Sediment Screening Criteria were excavated and disposed of off-site.
373-3.7(b)(1)	Minimize the need for further maintenance.	A vegetative cover is being provided for areas exceeding 60 mg/kg. This will minimize erosion, solids loading to Reeder Creek and future maintenance. On-going maintenance of the soil cover will be required.
373-3.7(b)(2)	Control the post-closure escape to surface waters, groundwater, or the atmosphere of hazardous waste, hazardous constituents, leachate, contaminated run-off, and hazardous waste decomposition products	To the extent possible, all hazardous waste is being removed. A vegetative cover is being provided and will control runoff. Groundwater is not considered a media of concern; however, post-closure monitoring will be conducted for confirmation.

TABLE 1
COMPARISON OF RCRA AND CERCLA ACTIONS
(Continued)

Reference	RCRA Requirement	CERCLA Equivalent
373-3.16(e)	Remove all hazardous waste and hazardous waste residues (including, but not limited to, ash) from the thermal treatment process or equipment	As part of the planned excavation, soils exceeding the Toxicity Characteristic Leaching Procedure (TCLP) would be treated by solidification/stabilization to address the RCRA toxicity characteristic. To the extent it can be detected, UXO and OE material that is considered hazardous because of its reactive characteristic will be removed from the site. The ROD also says OE will be remediated to meet the Department of Defense Explosive Safety Board (DDESB) requirements for unrestricted use or put into place land use restrictions as may be required by DDESB.
373-3.7(f)	Certification of closure and survey plat -	Hazardous waste constituents (i.e., lead concentrations in soil exceeding ecological cleanup goals) will remain on-site. Thus, a survey plat should be required. It was not clear where the requirements for submitting a survey plat were included in the ROD.
373-3.7(g)	Post-closure use of property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover.	This is typically achieved using deed restrictions. SEAD-23 will be restricted to conservation/recreation area, but this restriction will not be put in place until the property is transferred. It is not clear who maintains responsibility for inspecting the soil cover. The ROD also stipulates that land use controls may be required to address DDESB's OE requirements.
373-3.6	Conduct a groundwater indicator evaluation program and groundwater quality assessment.	While groundwater sampling started during a RI sampling effort, once a determination was made that groundwater underlying the facility was impacted, quarterly RCRA monitoring began.

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Hazardous Waste Management, 8th Floor
625 Broadway, Albany, New York 12233-7251
Phone: (518) 402-8612 • **FAX:** (518) 402-9025
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

August 6, 2002

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Steven M. Absolom
Commander's Representative
Department of the Army
Seneca Army Depot Activity
Romulus, New York 14541-5001

Dear Mr. Absolom:

Ref: Closure of RCRA Units
EPA. I.D. No: NYD0213820830

At various meetings and conference calls over the last few years, the Department has made several requests to the Seneca Army Depot Activity (SEAD) to submit a closure plan for each of its hazardous waste units.

On July 12, 2002, we again requested the same and SEAD agreed to submit a schedule for closure within 30 days followed by submission of updated closure plans. The schedule and closure plans have not been received by the Department. Please submit the schedule and closure plans within 30 calendar days of the date of this letter.

It is a violation for a facility to fail to amend a closure plan due to the change in the expected year of closure pursuant to 6NYCRR 373-3.7(c)(3) and it is also a violation to not submit a closure plan for each unit prior to that unit receiving its final volume of hazardous waste pursuant to 6NYCRR 373-3.7(c)(4).

Please note that for violations of the New York State Hazardous Waste Regulations an owner/operator is exposed to potential civil and criminal sanctions under the Environmental Conservation Law. Upon determination of culpability after opportunity for hearing, a civil penalty of up to $25,000 per day may be imposed for a first offense and $50,000 per day for a second offense. If SEAD fails to provide a complete updated RCRA closure plan for each of its hazardous waste units within 30 calender days of the date of this letter, the Department will consider commencement of legal proceedings against the SEAD.

STATE OF NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Permits
Region 8 Office
6274 East Avon-Lima Road, Avon, NY 14414

PUBLIC NOTICE OF CLOSURE PLANS
Seneca Army Depot
EPA ID # NY0213820830

The US Army has submitted closure plans pursuant to 6NYCRR 373-3.7 for two of the Resource Conservation Recovery Act (RCRA) hazardous waste storage units located at the Seneca Army Depot, 5786 State Route 96, Romulus, New York 14541-5001. The units are: Building 307 - container storage (SEAD-1) and Building 301 - Polychlorinated Biphenyl (PCB) transformer storage (SEAD-2).

All hazardous wastes were previously removed from these units. The closure plans include inspection of the containment area and floor of each facility, high pressure washing, and confirmatory sampling and analysis of the concrete floors for the substances of concern. The decontamination residues and wash water will be collected, sampled and then disposed of at authorized off-site facilities.

There are the following four other hazardous waste units at this facility: Building 803 - Mixed Waste Storage Building (SEAD-72 located within SEAD-12), the Deactivation (Popping) Furnace (SEAD- 17), the Open Burn Area (SEAD-23) and the Open Detonation Area (SEAD-45). The responsibility for RCRA closure of these four units has been transferred to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) site remediation program within the NYSDEC. These units will be closed as part of the CERCLA actions that are undertaken at this facility.

State Environmental Quality Review (SEQR) Status: Closure of the hazardous waste storage units areas will not result in significant impact to the environment. The closure activities will be performed entirely inside the buildings and consists of cleaning the units.

Public Comment: State regulation requires that the public be given an opportunity to provide written comments on the draft closure plans. All comments will be considered and evaluated in making the final determination for approving the closure plans. Prior to the approval of the closure plans, the Department will respond to any comments submitted by the public. The Department will approve, modify or disapprove the draft closure plans based on the information received during the comment period. A notice of the final decision will be sent to each interested citizen or organization who submitted written comments or have requested such notice.
The public comment period extends through March 21, 2003. The closure plans are available for public review at New York State Department of Environmental Conservation, Region 8,

Division of Environmental Permits, 6274 East Avon-Lima Road, Avon, NY 14414. For more information contact Mr. Robert Scott, Deputy Permit Administrator, at the above Region 8 address, phone 585-226-5395, e-mail: rkscott@gw.dec.state.ny.us, or Mr. Eric K. Blackwell, P.E., Environmental Engineer, at 625 Broadway, Albany NY 12233-7251, phone: 518-402-8610, e-mail: ekblackw@gw.dec.state.ny.us. In addition, the closure reports are available through Mr. Steve Absolom, Seneca Army Depot, 5786 Rt. 96, Romulus, NY 14541, 607-869-1309.

Comments on the closure plans must be sent with a post mark no later than March 21, 2003 to Mr. R. Scott at the above Region 8 address.

BUILDING 36Ø CLOSURE PLAN

PREPARED FOR:

SENECA ARMY DEPOT
ROMULUS, NY

Prepared By:

CAMPBELL DESIGN GROUP, P.C.
3Ø1 South Main Street
Horseheads, NY 14845
CDG File No. 6Ø-9422

August 1991

SENECA ARMY DEPOT
BUILDING 360 CLOSURE PLAN
STEAM JENNY PIT

I. FACILITY CONDITIONS

A. General Information

The objective of closing the Steam Jenny Pit at Building 360 at the Seneca Army Depot is that the existing hazardous collection pit does not conform to current underground tank regulations. This objective does not include the remediation of contaminated ground water. If necessary, this will be done in the future as part of separate mitigation measures.

Building 360 at the Seneca Army Depot is a building where old equipment is refurbished and reconstructed. Lathes, presses, metal working machines are degreased with steam in the cleaning area. After steam cleaning the equipment is moved to other portions of Building 360 for rehabilitation.

The existing cleaning area is a 20'- 6" wide by 38'- 6" long portion of Building 360 separated from the rest of Building 360 by a high bay cinder block wall. Track mounted carts carrying the equipment to be refurbished, are rolled into the cleaning area, through a roll-up-door, on a permanently installed rail system. Metal grating has been placed adjacent to and in the middle of the rail system. The floor slopes to the metal grating. Please refer to the attached sketch.

Under the metal grating is a trench system which slopes from a depth of 2'- 0" on the west end to a depth of 2'-10" toward the east end. Water and grease flow through the trench system to an accumulation pit at the east end. The accumulation pit is constructed with openings through both rail foundation walls. The pit depth is 3'- 4" under the metal grating. The width of the pit is 10'-6". The pit length is 3'- 0". The accumulation pit is emptied into approved waste removal vehicles and disposed of as hazardous waste at an approved storage facility.

Since cleaning operations ceased on January 2, 1990, Seneca has periodically monitored the depth of water in the accumulation pit to determine if water levels in the pit are affected by varying groundwater levels. Seneca has also periodically rinsed the pit and disposed of the rinseate as hazardous waste but has never had the pit tested after rinsing for contamination.

B. Equipment

The equipment used in the cleaning process is a track mounted cart. Also, equipment to be cleaned can be hand carried or dollies used for transport into the cleaning area. There is no available inventory of equipment which has been cleaned in Building 360.

C. Schedule of Closure

The cleaning of equipment in Building 360 cleaning area ceased prior to January 2, 1990. According to 6NYCRR Part 373-3.7 (d)(2), all closure activities must be completed within 180 days after approval of the closure plan. Please refer to the schedule of closure activities at the end of this report for closure schedule. Groundwater remediations are not included in the schedule.

II. <u>WASTE REMOVAL</u>

The volume of waste which can accumulate in the tank prior to backflowing into the trenches is approximately 120 gallons. When the accumulation pit and trenches are full, the total waste volume is approximately 5,000 gallons. In the past, the waste was pumped from the accumulation pit into an approved tank truck and transported to an approved hazardous waste disposal facility. Currently, the cleaning area is not being used.

According to the Seneca Army Depot, EPA hazardous waste number D008 (LEAD) is the only hazard identified as being removed from the Steam Jenny Pit during the pit life. The quantities and dates of removal are indicated as follows:

June 16, 1983	5,000 Gal.
June 23, 1983	5,000 Gal.
March 9, 1984	5,000 Gal.
June 22, 1984	5,000 Gal.
August 12, 1985	5,000 Gal.
July 9, 1986	5,000 Gal.
September 30, 1986	4,500 Gal.
January 26, 1988	4,107 Gal.
January 27, 1988	4,107 Gal.
June 17, 1988	3,700 Gal.
October 26, 1988	3,700 Gal.
October 27, 1988	1,420 Gal.
December 21, 1988	4,775 Gal.
January 2, 1990	2,000 Gal.

A copy of the manifest detailing information on the removal and disposal of the final volume of waste is included at the end of this report.

C. [illegible]

The [illegible] used in the [illegible] the [illegible] [illegible] [illegible] [illegible].

D. Schedule for Closure

The closure of equipment (including the cleaning area) began prior to January 1, 1985. [illegible] to EPA Form 3510-3 (6/21). All closure activities must be completed within 180 days after approval of the closure plan. Please refer to the schedule of closure activities at the end of this report for closure schedule. Documentation of modifications are not included in the appendices.

XIV. WASTE REMOVAL

The volume of waste which can accumulate at the tank prior to transferring into the transporter is approximately 100 gallons. When the recirculation pit and trenches are full, the total waste volume is approximately 6,500 gallons. In the past, the waste was pumped from the recirculation pit into an approved tank truck and transported to an approved hazardous waste disposal facility. Currently, the cleaning area is not being used.

According to the Seneca Army Depot, the hazardous waste manifests (DD Form) is the only record identified as being removed from the Steam Jenny Pit during its pit life. The quantities and dates of removal are indicated as follows:

June [illegible], 198[illegible]	[illegible]
June 2[illegible], 198[illegible]	5,1[illegible] Gal.
March [illegible], 1984	[illegible],494 Gal.
July 2[illegible], 1984	[illegible]
August 1[illegible], 1985	[illegible] Gal.
July [illegible], 1986	1,[illegible] Gal.
September [illegible], 1986	[illegible],[illegible]00 Gal.
January [illegible], 1987	[illegible] Gal.
January [illegible], 1988	[illegible] Gal.
[illegible], 198[illegible]	[illegible]
October 1[illegible], 198[illegible]	[illegible] Gal.
October 2[illegible], 1988	[illegible] Gal.
December 2[illegible], 1988	[illegible] Gal.
[illegible] [illegible], 1990	[illegible] Gal.

A [illegible] of the [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of the [illegible] [illegible].

III. SAMPLING

Existing metal grating will be removed with wrenches and torches. The grating will be scrubbed with detergent and water and stored for reuse. The rinseate will be wet-vacuumed and disposed of as a hazardous waste.

Vertical soil borings will be taken at locations shown on the attached sketches. The concrete flooring of the accumulation pit will be core drilled 4 inch diameter, for the thickness of the concrete.

Sampling Scheme: The middle of each of the three trenches are approximately 4 ft. on-center. Sample locations will originate on the centerline of each trench at the pit midpoint. Samples will be taken on eight foot centers along the trench centerline. Samples will be taken on eight foot centers beyond the end of the trenches and beyond the end of the pit. Additional samples will be taken parallel to and 4 ft. from the pit centerlines on eight foot centers. Basically, samples will be taken on a 4 ft. x 8 ft. grid for a total of 38 samples.

The 4 ft. x 8 ft. grid has been shown on the Building 360 Sampling Plan. The 4 ft. grid lines have been labeled A, B, C, D, and E. The 8 ft. grid lines have been labeled 1, 2, 3, 4, 5, 6, 7 and 8. The origin of the sampling is location C-6. Locations A-2 and E-2 will not be sampled due to their proximity to exterior foundations and walls.

The concrete will be core drilled at each sample location. The concrete core will be sent to a laboratory for testing. Samples of the gravel and soil strata below the concrete will be taken at two foot intervals to the water table. The gravel and soil samples will be sent to a laboratory for testing. One sample of ground water will be taken from each location and sent to a laboratory for testing.

The concrete cores will be analyzed to determine whether the accumulation pit is contaminated and the extent of contamination. The concrete core will be tested at the top edge, middle and bottom edge of each core.

If the testing of the groundwater and soil samples indicate hazardous materials concentrations in excess of the allowable limits stated in the testing section of the closure plan, monitoring wells will be installed. Two fifteen foot deep monitoring wells will be installed. One monitoring well will be placed upgrade of Building 360, and one monitoring well is to be placed downgrade of Building 360.

An existing sump pump adjacent to the cleaning area in Building 360 is used to relieve groundwater levels. This pump will be used as a monitoring location. Groundwater will be sampled and tested once a month for three months.

If the groundwater sampling and testing reveals extensive contamination, groundwater cleanup will be addressed as part of a separate remediation plan, not this closure plan.

In the event the soil surrounding Building 360 is determined to reveal extensive contamination levels in excess of the allowable limits stated in the testing section of the closure plan, additional soil sampling and testing will be required. Additional samples will be taken on the "C" grid line, every eight feet from the end of the samples for a distance of 48 foot.

In accordance with 6NYCRR Part 373-3.10 (h)(2), if it cannot be demonstrated that all contaminated soils can be practicably removed or decontaminated, then the tank system must be closed as a landfill and 6NYCRR Part 373-3.14 (d) would apply. All the requirements for landfills specified in 6NYCRR Part 373-3.7 and 373-3.8 would have to be met.

IV. TESTING:

The following table showing the media, constituent, preparatory method and EPA SW-846 method will be utilized for testing criteria of the Steam Jenny Closure.

[illegible] in the [illegible] cleanup [illegible] facility [illegible]. [illegible] will [illegible] contracting [illegible]. [illegible] sampled and tested [illegible] the three months.

If the results of sampling and analysis indicate the presence of contamination [illegible] of a confirmed contamination [illegible].

If the sample results [illegible] to reveal additional contamination [illegible] the allowable limits stated in the remedial [illegible], additional soil sampling and testing will be required. Additional samples will be taken [illegible] eight feet from the end of the [illegible] a distance of 10 feet.

In accordance with NYCRR Part 360-3.10 [illegible], if it can not be demonstrated that all contamination [illegible] removed or decontaminated, then the [illegible] as a landfill and NYCRR Part 360 [illegible] the requirements for landfills [illegible] NYCRR Part 360-[illegible] and 360-[illegible] would have to be met.

IV. [illegible]

The following table showing the media, constituent, [illegible] method and EPA SW-846 method will be utilized for [illegible] criteria at the [illegible] Closure.

Table
Steam Jenny Pit Closure
Test Method Scheme

Media	Constituent	Preparatory Method	EPA SW-846 Method
Concrete	PCB's	3510/3520	8080
	Cd	1311(TCLP)	6010
	Cr	1311(TCLP)	6010
	Pb	1311(TCLP)	6010
Soil	Volatiles	-----------	8240
	PCB's	3540/3550	8080
	Cd	3050	6010
	Cr	3050	6010
	Pb	3050	6010
Water	Volatiles	------------	8240
	Semi-volatiles	------------	8270
	PCB's	3510/3520	8080
	Cd	3010	6010
	Cr	3010	6010
	Pb	3020	7421

Note: The methods indicated above are referenced from EPA SW-846, "Test Methods for Evaluating Solid Waste".

The specific criteria that will be used to determine that the contaminant levels are detectable is 1.Ø part per million (ppm) for cadmium, 5.Ø ppm for chromium and 5.Ø ppm for lead for all 3 media tested and testing methods. The detectable contaminant level for PCB's is 5Ø ppm. The detectable contaminant levels for volatiles and semi-volatiles is _____ ppm.

Concrete cores will be backfilled with new crushed gravel and non-shrink grout.

V. DECONTAMINATION PROCEDURES FOR FINAL CLOSURE

A. General

If soil and groundwater samples reveal extensive contamination, and if all contaminated soils cannot practicably be removed or decontaminated, then the tank system must be closed as a landfill.

If the concrete cores are contaminated, then the concrete, (except for foundations and footings) will be removed and disposed. New concrete will then be placed in kind. Underpinning and shoring of foundation walls will be required.

B. Decontamination

If contaminant is limited to the surfaces of the concrete, then the following decontamination procedures will apply:

1. All contaminated areas including walls and floors will be scrubbed with industrial detergent and water, then rinsed.
2. Water will be collected with a wet-vacuum.
3. Additional samples of the surface concrete will be taken by core drilling the concrete for a depth of one inch and chipping the concrete loose. Samples will be taken randomly but within one foot of the original samples. Concrete samples will be placed in plastic sealable bags for transport to a laboratory for testing. Concrete core holes will be filled with non-shrink grout.
4. If testing reveals the need for further decontamination, then muriatic acid will be used for decontamination and resampling will be done as noted in Item 3.

The [illegible] will [illegible] the [illegible] [illegible] [illegible] the [illegible] and [illegible] [illegible]. The [illegible] [illegible]

Concrete [illegible] will be [illegible] [illegible] construction phase.

[illegible] DECONTAMINATION PROCEDURES [illegible]

1. Concrete

If soil and groundwater [illegible] contamination [illegible] and [illegible] will [illegible] potentially [illegible] [illegible].

If [illegible] concrete [illegible] concrete, [illegible] for foundations and footings will be removed and disposed. New concrete will then be poured in kind. Investigation and sampling of foundation walls will be required.

2. Decontamination

If contaminant is limited to the surfaces of the concrete, then the following decontamination procedures will apply:

1. All contaminated areas of surface walls and floors will be scrubbed with industrial detergent and water, then rinsed.
2. Water will be collected with a [illegible]
3. [illegible] for [illegible] and [illegible] will be [illegible] in plastic [illegible] laboratory for [illegible]. Concrete [illegible] will be [illegible].
4. If [illegible] reveals [illegible] decontamination, [illegible] will be [illegible].

C. Equipment

An inventory of the equipment to be used during decontamination and sampling procedures may include but not be limited to the following:

1. Personnel protective equipment
2. Boring machine
3. Detergents and solvents (if necessary)
4. Muriatic acid
5. Brooms, buckets, brushes, scrapers
6. Hose and nozzles
7. Wrenches, cutting torches (for removal of grating)
8. Clean plastic sealable bags for placing concrete and soil samples
9. Labels
10. Wet-vacuum, HEPA vacuum
11. Six mil plastic over sandbags sealed with duct tape for contaminant dike at doorway openings.
12. Backhoe (for removal of extensive contamination if necessary)
13. 55 gallon DOT approved drums for disposal of equipment, concrete, and soils
14. Jackhammer
15. Concrete saws

A list of personnel protective equipment may include but not be limited to the following:

1. "TYVEK" brand coveralls with hoods
2. Safety goggles
3. Steel toed shoes
4. Butyl or viton gloves
5. Duct tape
6. Half face or full face respirators with HEPA filters
7. Emergency eyewash

D. Runon, Runoff Control

Rinseate from decontamination operations will be contained using sand-bag diking and 6-mil plastic sheets connected with duct tape. The plastic will be used to facilitate collection of wastewater. Wastewater will be collected using a "wet-vac" type vacuum. The wastewater, or rinseate, will be vacuumed from the plastic or directly from concrete surfaces. Since the facility is above grade, runon is not a concern.

VI. HAZARDOUS WASTE DISPOSAL

Wastewater, rinseate, concrete, soil, protective equipment, tools, plastic, etc. will be placed in 55 gallon DOT approved drums. Drums can be placed at Seneca's hazardous waste conforming storage building.

[illegible] not be limited to the following:

1. [illegible]
2. [illegible]
3. Detergents and solvents [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. Clean plastic [illegible] and [illegible]
9. [illegible]
10. [illegible]
11. Six mil plastic [illegible] with [illegible]
12. [illegible]
13. [illegible]
14. [illegible]
15. [illegible]

A list of personnel protective [illegible] may include but not be limited to the following:

1. "Tyvek" [illegible] coveralls with hoods
2. [illegible]
3. [illegible]
4. Butyl or Viton gloves
5. [illegible]
6. [illegible] with HEPA filters
7. [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

The accumulated hazardous waste will be disposed of by competitive bid. Land disposal rules will apply. Some soils will be treated prior to disposal. The operations at Frontier Chemicals in Niagara Falls, New York is a typical off-site hazardous waste management facility which may be used for disposal, depending on bids.

VII. ABANDONMENT/CONSTRUCTION

If soil samples reveal extensive contamination, then the Steam Jenny Building will be closed as a landfill. If the concrete is to be removed, then new concrete will be placed to achieve the existing trench functions.

The new steam cleaning operation will utilize a high pressure, high temperature water system. The rinseate water will be recycled and reused. The recycled water will be filtered to remove grease, oils and metals. The recycled water will be re-heated and re-used.

VIII. CERTIFICATION

Certification by an independent New York registered professional engineer can begin once activities listed in this closure plan are complete. The amount of contaminated soil and concrete will then be known for disposal purposes. Samples and tests required by the New York State Department of Environmental Conservation will be taken at that time.

ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

```
Closure Activity in Days              0          30          60          90           120          150          180
------------------------------------------------------------------------------------------------------------------------------

NYSDEC Approval of Closure Plan       X

Assessment
Review Historical Data                XXXXXXXXXXXX
System Contamination Assessment           XXXXXXXXXXXX


Implementation
Decontamination of Tank System                       XXXXXXXXX
Sampling and Test Analysis                                   XXXXXXXXXXXXX
Further Sampling                                                         XXXXXXXX
Disposal of Waste Residues                                                      XXXXXXXXXXXXXXXXXXX


Final Report/Certification of Closure                                                             XXXXXXXXXXXX

Closure Report Submitted to DEC                                                                              X
```

(See Reverse Side for Instructions)

48-14-1 (5/87)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Please print or type. 31123

Form Approved. OMB No. 2050-0039. Expires 2-30-88

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA No. NY0211382083 Manifest Document No. 0190
2. Page 1 of 1	Information in the shaded areas is not required by Federal Law.
3. Generator's Name and Mailing Address: Seneca Army Depot, Route 96, Romulus, NY 14541-5001	A. State Manifest Document No. NY A843904 8
4. Generator's Phone (607) 869-1450	B. Generator's ID SAME
5. Transporter 1 (Company Name) ~~Frontier Chemical Waste Process, Inc.~~ (MRP)	6. US EPA ID Number ~~NYD043815703~~
C. State Transporter's ID	D. Transporter's Phone ~~716/285-8208~~
7. Transporter 2 (Company Name) FRANK'S VACUUM TRUCK SERVICE, INC	8. US EPA ID Number NYD982792814
E. State Transporter's ID 54424DNY	F. Transporter's Phone (716) 284-2132
9. Designated Facility Name and Site Address: Frontier Cehmical Waste Process, Inc., 4626 Royal Avenue, Niagara Falls, NY 14303	10. US EPA ID Number NYD043815703
G. State Facility's ID	H. Facility's Phone (716) 285-8208/2581

GENERATOR

11. US DOT Description (including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Hazardous Waste Liquid, NOS (Steam Cleaning Waste Water) ORM-E, NA 9189 D008	01	TT	EST ~~4300~~ 2000 (MRP)	G	D008
b.					
c.					
d.					

J. Additional Descriptions for Materials listed Above
a c
b d

K. Handling Codes for Wastes Listed Above
a T c
b d

15. Special Handling Instructions and Additional Information
Contains oil, water, detergent, grease, dirt, traces of "Stoddard" solvent, paint thinner, paint chips, metal filings generated from steam washing of large equipment.
Waste Code 751-64 W/O # 31123

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Mo. Day Year
DAVID G. ADAM, D/QA/IPE/SOAD	David G Adam	01 02 90

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name	Signature	Mo. Day Year
James L. Lambert	James L Lambert	01 02 90

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name	Signature	Mo. Day Year

FACILITY

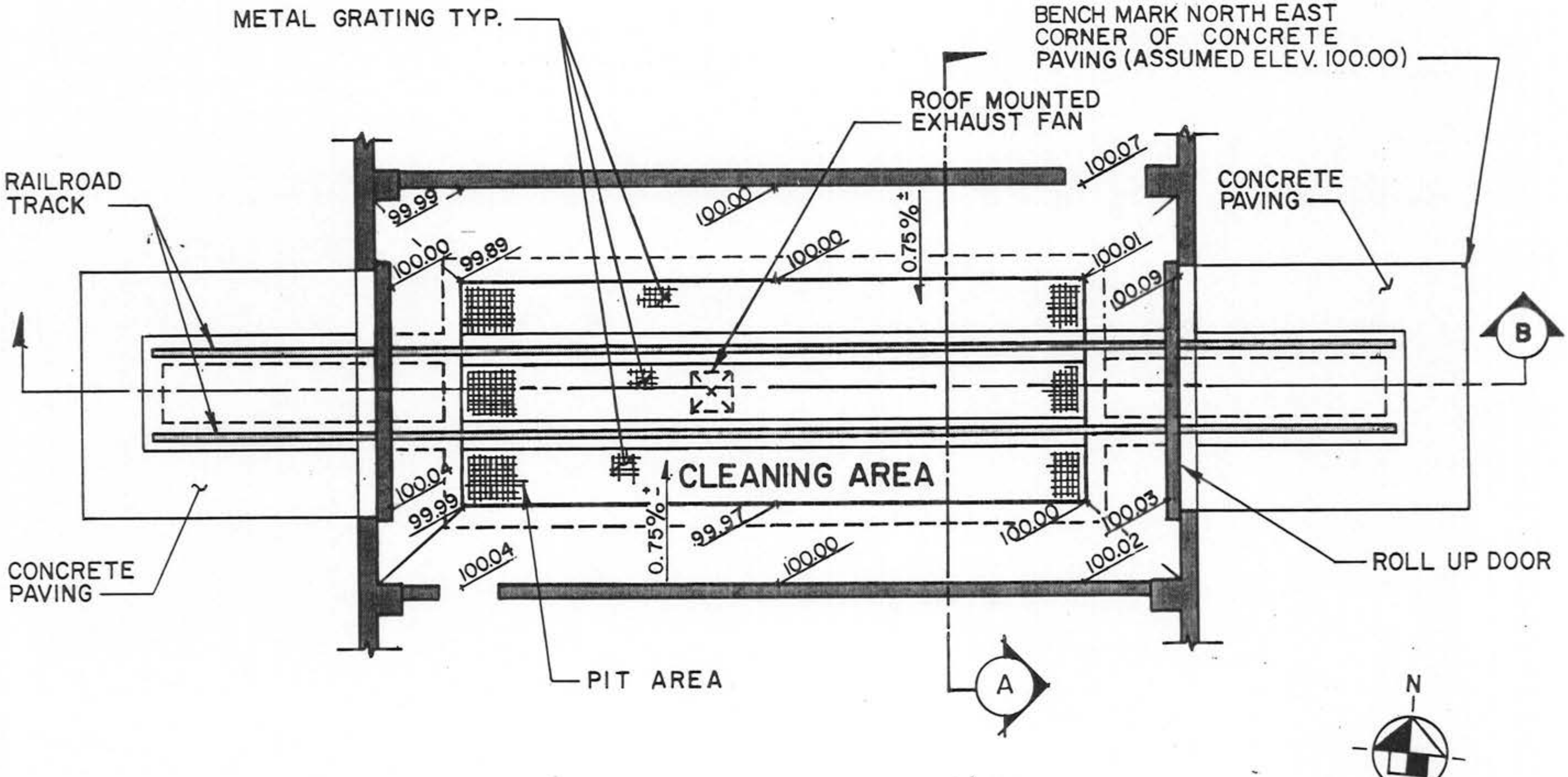
19. Discrepancy Indication Space
Section Kc Handling Code Should Be B (MC)

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

Printed/Typed Name	Signature	Mo. Day Year
Mike McCormick	[signature]	01 03 90

In case of emergency or spill immediately call the National Response Center (800)-424-8802 and the N.Y. Department of Transportation (518) 457-7362.

NY A 843904 8

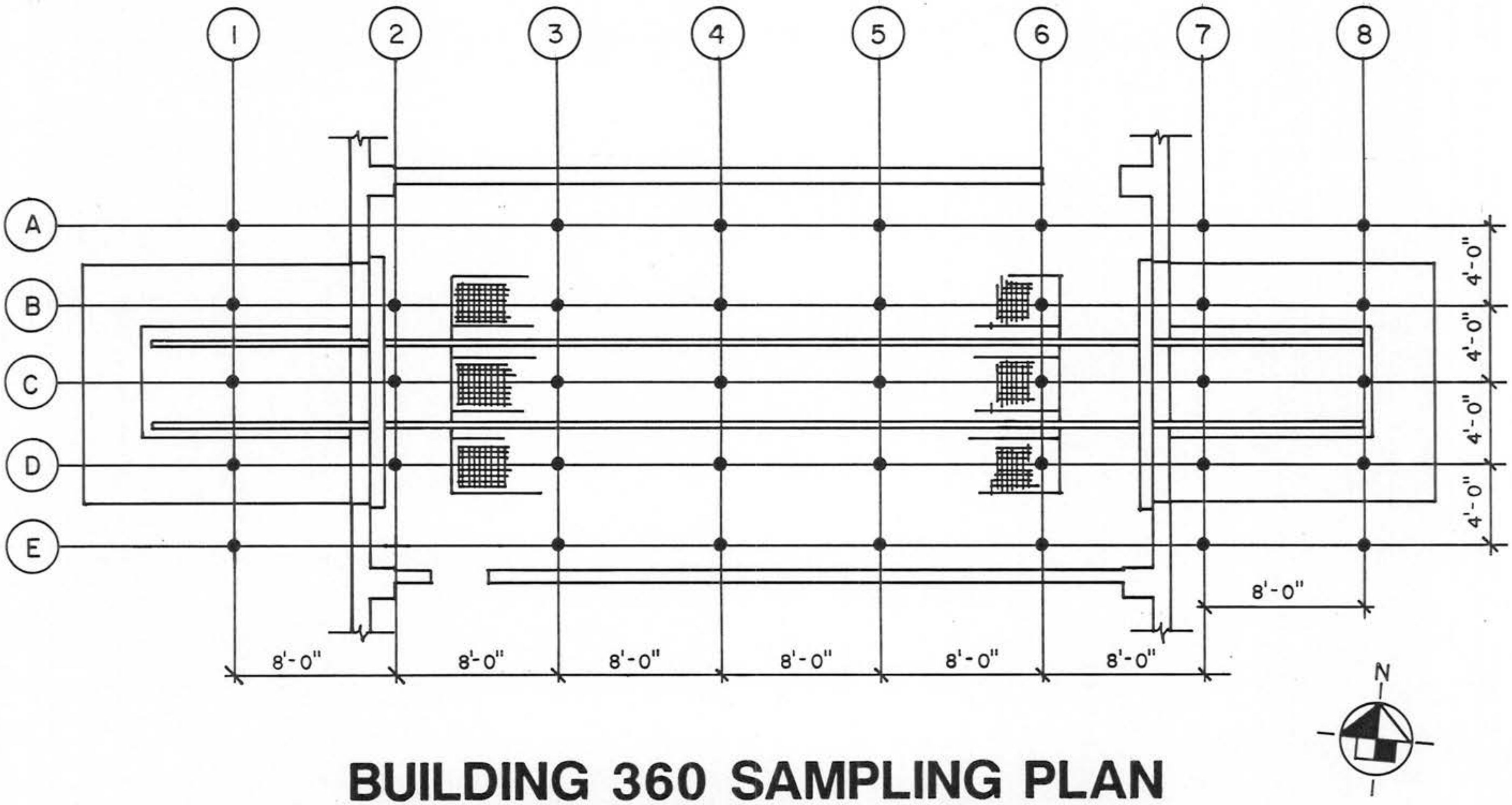


BUILDING 360 PARTIAL PLAN

SCALE: 1/8" = 1'-0"

Campbell Design Group
Engineers

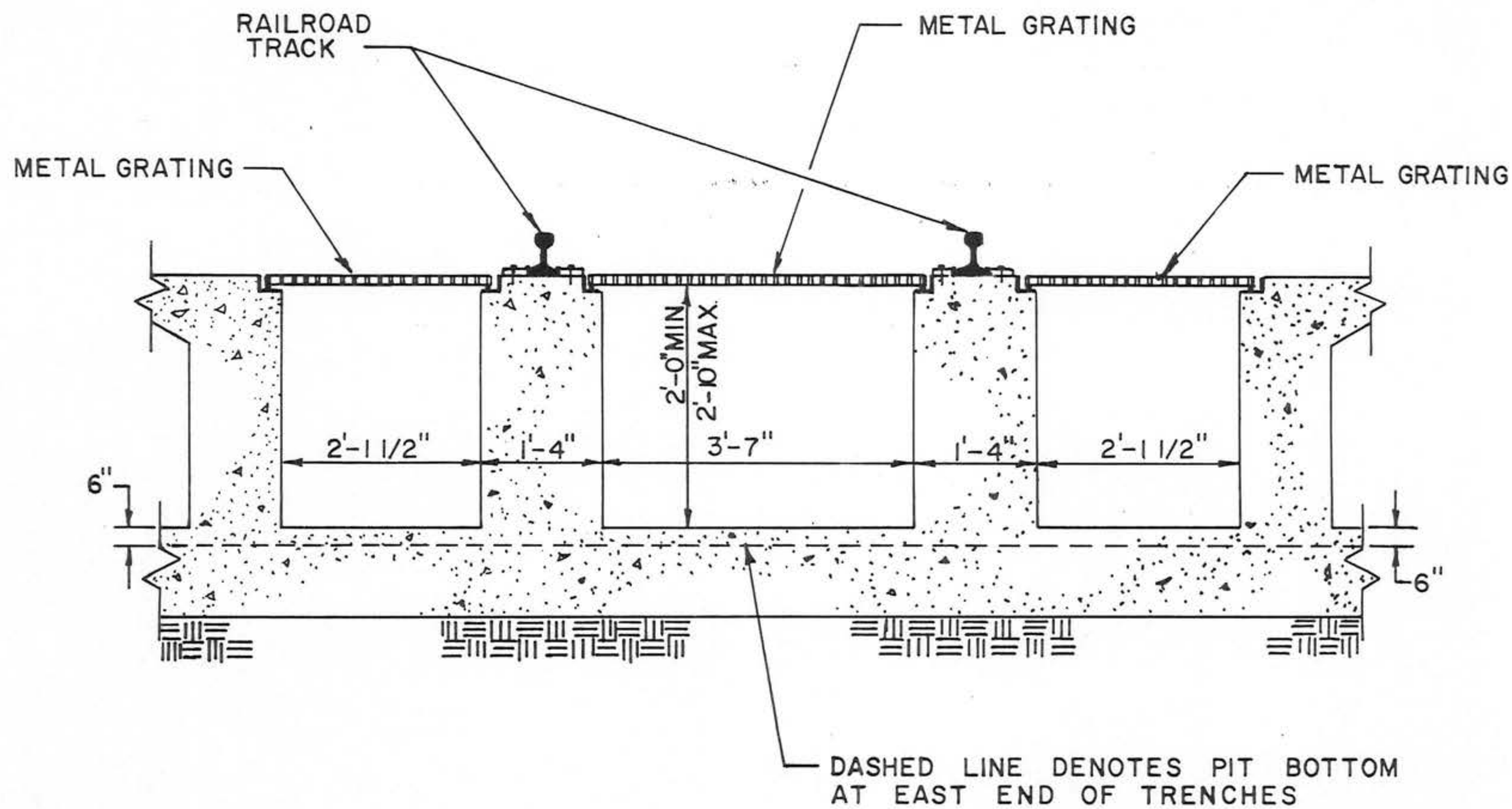
301 S. Main St. Horseheads, New York 14845 607/739-0331



BUILDING 360 SAMPLING PLAN

SCALE: 1/8"=1'-0"

Campbell Design Group
Engineers
301 S. MAIN STREET HORSEHEADS, NEW YORK 14845
(607) 739-0331



SECTION 'A'

SCALE: 1/2" = 1'-0"

Campbell Design Group
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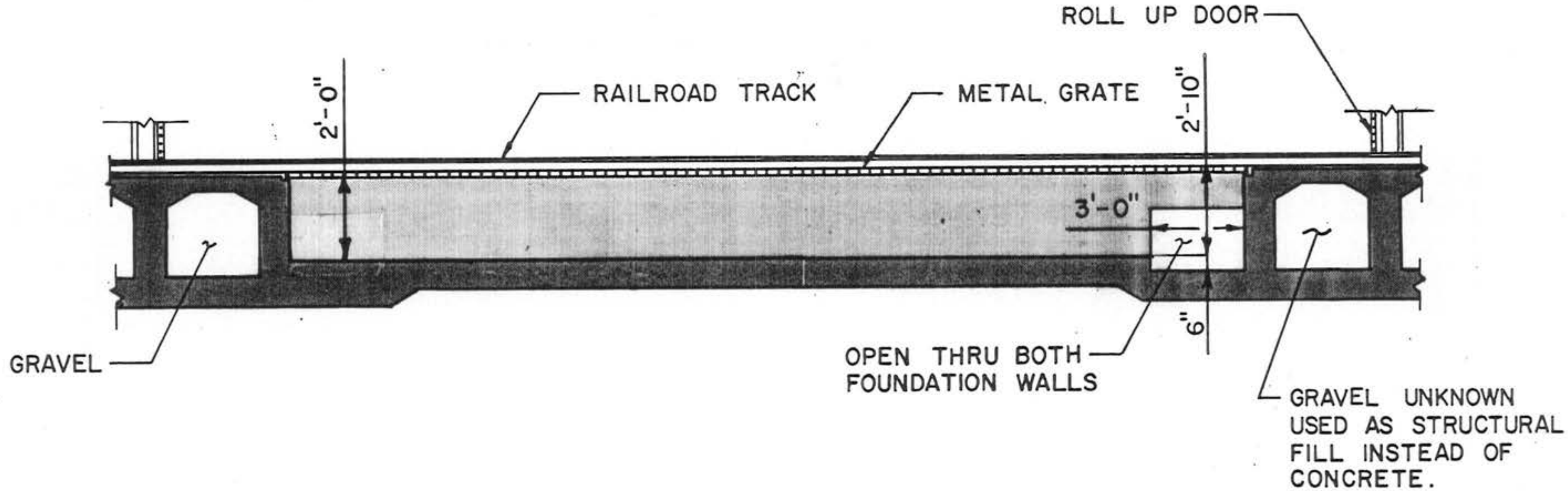
301 S. Main St. Horseheads, New York 14845 607/739-0331
St. Louis, MO Horseheads, NY Kansas City, MO Prairie Village, KS Alton, IL
Darmstadt, FRG Campbell, NY Baton Rouge, LA Wellsboro, PA Belleville, IL



SECTION 'B'

SCALE: 3/16" = 1'-0"

Campbell Design Group
Architects Engineers Planners
301 S. Main St. Horseheads, New York 14845 607/739-0331

BUILDING 360 CLOSURE PLAN

PREPARED FOR:

SENECA ARMY DEPOT
ROMULUS, NY

Prepared By:

CAMPBELL DESIGN GROUP, P.C.
301 South Main Street
Horseheads, NY 14845
CDG File No. 60-9422

September 1992

TABLE OF CONTENTS

SENECA ARMY DEPOT
BUILDING 360 CLOSURE PLAN
STEAM JENNY PIT

I. FACILITY CONDITIONS

A. General Information

The objective of closing the Steam Jenny Pit at Building 360 at the Seneca Army Depot is that the existing hazardous collection pit does not conform to current hazardous waste tank regulations. The objective is also to identify the extent of possible contaminations and to use this plan as a guide to decontaminate or remove hazardous substances. Systematic sampling, testing and quality control procedures will be implemented to assure proper decontamination and possible abandonment of the system. This objective does not include the remediation of contaminated ground water. If necessary, this will be done in the future as part of remedial work accomplished through either Seneca's Interagency Agreement (IAG) with DEC and EPA, or a post-closure permit to be issued by DEC.

Building 360 at the Seneca Army Depot is a building where old equipment is refurbished and reconstructed. Lathes, presses, metal working machines are degreased with steam, high pressure water and detergents in the cleaning area. Heavy metals, PCB's and greases are possible hazardous substances generated from the equipment. After steam cleaning the equipment is moved to other portions of Building 360 for rehabilitation.

The existing cleaning area is a 20'- 6" wide by 38'- 6" long portion of Building 360 separated from the rest of Building 360 by a high bay cinder block wall. Track mounted carts carrying the equipment to be refurbished, are rolled into the cleaning area, through a roll-up-door, on a permanently installed rail system. Metal grating has been placed adjacent to and in the middle of the rail system. The floor slopes to the metal grating. Please refer to the attached sketch titled "Building 360 Partial Plan".

Under the metal grating is a trench system which slopes from a depth of 2'- 0" on the west end to a depth of 2'- 10" toward the east end. Please refer to the attached sketch titled "Section B". Water and grease flow through the trench system to an accumulation pit at the east end. The accumulation pit is constructed with openings through both rail foundation walls. The pit depth is 3'- 4" under the metal grating. The

width of the pit is 10'- 6". The pit length is 3'- 0". Please refer to the attached sketches titled "Section A and Section B". The accumulation pit is emptied into approved waste removal vehicles and disposed of as hazardous waste at an approved storage facility.

Since cleaning operations ceased on January 2, 1990, Seneca has periodically monitored the depth of water in the accumulation pit to determine if water levels in the pit are affected by varying groundwater levels. Seneca has also periodically rinsed the pit and disposed of the rinseate as hazardous waste but has never had the pit tested after rinsing for contamination. A manifest detailing information on the removal and disposal of the final volume of waste is included at the end of this report. **(Randy, I need more information here to address DEC comments.)**

B. Equipment

The equipment used in the cleaning process is a track mounted cart. Also, equipment to be cleaned can be hand carried or dollies used for transport into the cleaning area. There is no available inventory of equipment which has been cleaned in Building 360.

C. Schedule of Closure

The cleaning of equipment in Building 360 cleaning area ceased prior to January 2, 1990. According to 6NYCRR Part 373-3.7 (d)(2), all closure activities must be completed within 180 days after approval of the closure plan. Please refer to the schedule of closure activities at the end of this report for closure schedule. Groundwater remediations are not included in the schedule.

II. WASTE REMOVAL

The volume of waste which can accumulate in the tank up to the two-foot freeboard marker is 1200 gallons. If the accumulate pit is filled to floor level, waste volume is approximately 5,000 gallons. In the past, the waste was pumped from the accumulation pit into an approved tank truck and transported to an approved hazardous waste disposal facility. Currently, the cleaning area is not being used.

The wastewater contains oil, water, detergent, grease, dirt, traces of "stoddard" solvent, paint thinner, paint chips, metal fillings and PCB's. The quantities and dates of removal are indicated as follows:

June 16, 1983	5,000 Gal.
June 23, 1983	5,000 Gal.
March 9, 1984	5,000 Gal.
June 22, 1984	5,000 Gal.
August 12, 1985	5,000 Gal.
July 9, 1986	5,000 Gal.
September 30, 1986	4,500 Gal.
January 26, 1988	4,107 Gal.
January 27, 1988	4,107 Gal.
June 17, 1988	3,700 Gal.
October 26, 1988	3,700 Gal.
October 27, 1988	1,420 Gal.
December 21, 1988	4,775 Gal.
January 2, 1990	2,000 Gal.

A copy of the manifest detailing information on the removal and disposal of the final volume of waste is included at the end of this report.

III. SAMPLING

Existing metal grating will be removed with wrenches and torches. The grating will be scrubbed with detergent and water and stored for reuse. The rinseate will be wet-vacuumed and disposed of as a hazardous waste.

Vertical soil borings will be taken at locations shown on the attached sketches. The concrete flooring of the accumulation pit will be core drilled 4 inch diameter, for the thickness of the concrete.

Sampling Scheme: The middle of each of the three trenches are approximately 4 ft. on-center. Three samples will be taken on the trench centerlines at the pit. Three samples will be taken on a line 8 ft. east of the pit and three samples will be taken 8 ft. west of the pit. The samples taken east and west of the pit will be 8 ft. apart. Please see the attached sketch titled "Building 360 Sampling Plan".

The Building 360 Sampling Plan sketch has been divided into a 4 ft. x 8 ft. grid. The 4 ft. (east-west) grid lines have been labeled A, B, C, D, and E. The 8 ft. (north-south) grid lines have been labeled 1, 2, and 3. Samples will be taken at locations A-1, C-1, E-1, B-2, C-2, D-2, A-3, C-3, and E-3 for a total of 9 samples.

The concrete will be core drilled at each sample location. The concrete core will be placed in a zip-loc bag labeled and sent to a laboratory for sampling. Undisturbed samples from discreet layers of the gravel and soil strata below the

concrete will be taken with a 2 ft. long split spoon at two foot intervals to a depth approximately 2 ft. below the water table or 4 ft. below the surface concrete elevation. The gravel and soil samples taken from each 2 ft. interval at each sample location will be sent to a laboratory for testing. One sample of groundwater will be taken, with a weighted bottle, from each sample location and sent to a laboratory for testing. Water samples will be taken with 4 ounce glass bottles with a teflon coated cap. Dedicated sampling equipment will be used and field samples will be screened using a flame ionized detector. Concrete cores will be backfilled with new crushed gravel and non-shrink grout.

The concrete will be core drilled at each sample location. The concrete core will be sent to a laboratory for testing. Samples of the gravel and soil strata below the concrete will be taken with a split spoon at two foot intervals to the water table. The gravel and soil samples taken from each 2 ft. interval will be sent to a laboratory for testing. One sample of ground water will be taken from each location and sent to a laboratory for testing.

The concrete cores will be analyzed to determine whether the accumulation pit is contaminated and the extent of contamination. The concrete core will be tested at the top edge, middle and bottom edge of each core.

If the testing of the groundwater and soil samples indicate hazardous materials concentrations in excess of the allowable limits stated in the testing section of the closure plan, monitoring wells will be installed. Two fifteen foot deep monitoring wells will be installed. One monitoring well will be placed upgrade of Building 360, and one monitoring well is to be placed downgrade of Building 360.

An existing sump pump adjacent to the cleaning area in Building 360 is used to relieve groundwater levels. This pump will be used as a monitoring location. Groundwater will be sampled and tested once a month for three months.

The remediation plan, in the event of extensive soil or groundwater contamination will be accomplished through the RCRA program should the IAG clean-up not be done in a timely manner as determined by DEC.

In the event the soil surrounding Building 360 is determined to reveal extensive contamination levels in excess of the allowable limits stated in the testing section of the closure plan, additional soil sampling and testing will be required. Additional samples will be taken on the "C" grid line, every sixteen feet from the end of the building for a distance of 48 foot. The time allowed for further sampling is indicated on the Closure Schedule.

Program management funds

SCA

You spent?

In accordance with 6NYCRR Part 373-3.10 (h)(2), if it cannot be demonstrated that all contaminated soils can be practicably removed or decontaminated, then the tank system must be closed as a landfill and 6NYCRR Part 373-3.14 (d) would apply. All the requirements for landfills specified in 6NYCRR Part 373-3.7 and 373-3.8 would have to be met.

IV. TESTING

The following table showing the media, constituent, preparatory method and EPA SW-846 method will be utilized for testing criteria of the Steam Jenny Closure.

Table 1
Steam Jenny Pit Closure
Test Method Scheme

Media	Constituent	Preparatory Method	EPA SW-846 Method
Concrete	PCB's	3510/3520	8080
	Cd	1311(TCLP)	6010
	Cr	1311(TCLP)	6010
	Pb	1311(TCLP)	6010
Soil	Volatiles	-----------	8240
	PCB's	3540/3550	8080
	Cd	3050	6010
	Cr	3050	6010
	Pb	3050	6010
Water	Volatiles	------------	8240
	Semi-volatiles	------------	8270
	PCB's	3510/3520	8080
	Cd	3010	6010
	Cr	3010	6010
	Pb	3020	7421

Note: The methods indicated above are referenced from EPA SW-846, "Test Methods for Evaluating Solid Waste".

The specific criteria that will be used to determine that the containment action levels are acceptable can be found in the following Table 2:

TABLE 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ACTION LEVELS

CONSTITUENT	GROUNDWATER/ ACTION LEVEL	SOIL/SEDIMENT ACTION LEVEL*
Cadmium	5 μg/L	8 μg/L
Chromium	5 μg/L	5 PPM
Lead	2.5 μg/L	5 PPM
PCB's	0.1 μg/L	1 PPM

* Action levels for the concrete sample will fall into the soil/sediment action level.

(Randy, do you realize how strict these action levels are?)

V. QUALITY ASSURANCE/QUALITY CONTROL

The purpose of this section is to state the minimum requirements of a quality assurance project plan for field sample collection and laboratory testing. The regulating standards can be found in the "RCRA Quality Assurance Project Plan Guidance" dated March 28, 1991 of the New York State Department of Environmental Conservation Division of Hazardous Substances Regulation.

The submittal for the Quality Assurance Project Plan Report will include the following elements:

1. Title Page
2. Table of Contents
3. Project Description
4. Project Organization and Responsibility
5. Quality Assurance Objectives for Data Measurement
6. Field Sampling Plan
7. Documentation and Chain of Custody
8. Calibration Procedures
9. Sample Preparation and Analytical Procedures
10. Data, Reduction, Validation and Reporting
11. Internal Quality Control
12. Performance and System Audits
13. Preventive Maintenance

14. Data Assessment Procedures
15. Corrective Actions
16. Quality Assurance Reports to Management

The minimum submittal requirements for each of the 16 elements can be found in the text and appendices of the "RCRA Quality Assurance Project Plan Guidance".

Components required for RCRA analytical data submitted to the NYSDEC can be found in Appendix pages I-10 and I-11 of the "RCRA Quality Assurance Project Plan Guidance".

(Randy, Jim: **I think this would be a good place to state CLP deliverables, frequencies of blanks, duplicates, spikes, surrogates, calibrations, standard reference materials. The analytical methods and the SW-846 3rd Addition Chapter 1 requirements should also be stated here. Holding times also should be stated here. Reference John Petiet's comments and Appendices pages I-10 and I-11.**

VI. DECONTAMINATION PROCEDURES FOR FINAL CLOSURE

A. General

If all contaminated soils cannot practicably be removed or decontaminated, then the tank system must be closed as a landfill.

If the concrete cores are contaminated above RCRA limits, then the concrete, (except for foundations and footings) will be removed and disposed as a hazardous waste. Background core samples will be taken. New concrete will then be placed in kind. Underpinning and shoring of foundation walls will be required.

If soil and groundwater samples reveal extensive contamination, the site will be investigated/remediated under Seneca's Interagency Agreement with DEC and EPA. Should the IAG clean-up not be done in a timely manner as determined by the Department, a plan to remediate the area will be accomplished through the RCRA program.

B. Decontamination

If contaminant is limited to the surfaces of the concrete, then the following decontamination procedures will apply:

1. All contaminated areas including walls and floors will be scrubbed with industrial detergent and water, then rinsed.
2. Water will be collected with a wet-vacuum.
3. Additional samples of the surface concrete will be taken by core drilling the concrete for a depth of one inch and chipping the concrete loose. Samples will be taken randomly but within one foot of the original samples. Concrete samples will be placed in plastic sealable bags for transport to a laboratory for testing. Concrete core holes will be filled with non-shrink grout.
4. If testing reveals the need for further decontamination, then muriatic acid will be used for decontamination and resampling will be done as noted in Item 3.

C. Equipment

An inventory of the equipment to be used during decontamination and sampling procedures may include but not be limited to the following:

1. Personnel protective equipment
2. Boring machine
3. Detergents and solvents (if necessary)
4. Muriatic acid
5. Brooms, buckets, brushes, scrapers
6. Hose and nozzles
7. Wrenches, cutting torches (for removal of grating)
8. Clean plastic sealable bags for placing concrete and soil samples
9. Labels
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A list of personnel protective equipment may include but not be limited to the following:

1. "TYVEK" brand coveralls with hoods
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5. Duct tape

6. Half face or full face respirators with HEPA filters
7. Emergency eyewash

D. Run-on, Run-off Control

Rinseate from decontamination operations will be contained using sand-bag diking and 6-mil plastic sheets connected with duct tape. The plastic will be used to facilitate collection of wastewater. Wastewater will be collected using a "wet-vac" type vacuum. The wastewater, or rinseate, will be vacuumed from the plastic or directly from concrete surfaces. Since the facility is above grade, run-on is not a concern.

VII. HAZARDOUS WASTE DISPOSAL

Wastewater, rinseate, concrete, soil, protective equipment, tools, plastic, etc. will be placed in 55 gallon DOT approved drums. Drums can be placed at Seneca's hazardous waste conforming storage building.

The accumulated hazardous waste will be disposed of by competitive bid. Land disposal rules will apply. Some soils will be treated prior to disposal. The operations at Frontier Chemicals in Niagara Falls, New York is a typical off-site hazardous waste management facility which may be used for disposal, depending on bids.

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If soil samples reveal extensive contamination, then the Steam Jenny Building will be closed as a landfill. If the concrete is to be removed, then new concrete will be placed to achieve the existing trench functions.

The new steam cleaning operation will utilize a high pressure, high temperature water system. The rinseate water will be recycled and reused. The recycled water will be filtered to remove grease, oils and metals. The recycled water will be re-heated and re-used.

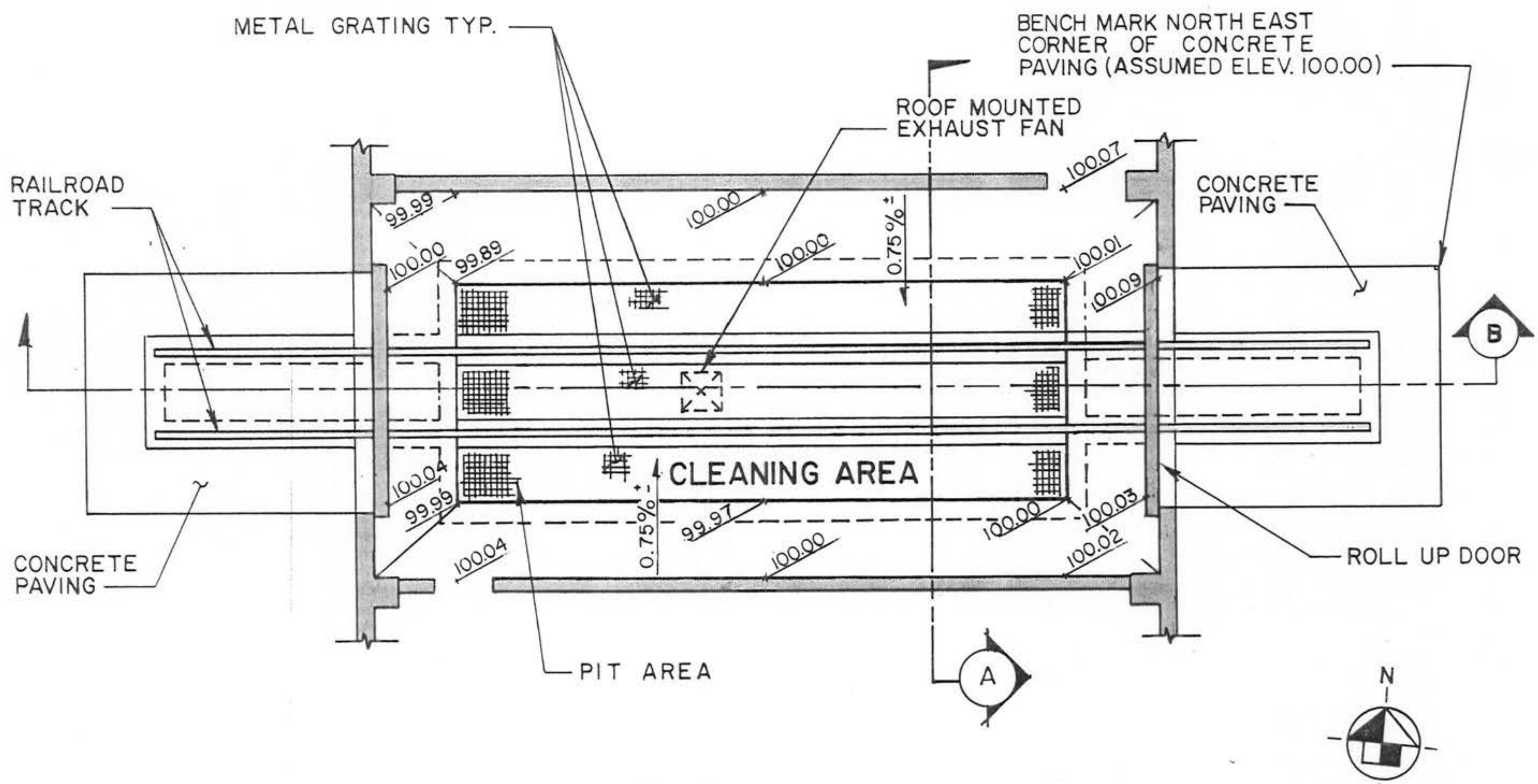
VIX. CERTIFICATION

Certification by an independent New York registered professional engineer can begin once activities listed in this closure plan are complete. The amount of contaminated soil and concrete will then be known for disposal purposes. Samples and tests required by the New York State Department of Environmental Conservation will be taken at that time.

Within 60 days of final completion of closure, a certification of closure documenting the closure activities must be made by a qualified independent engineer registered in New York State. The certification must state that closure was executed in accordance with the approved closure plan.

ENCLOSURE II
SENECA ARMY DEPOT
STEAM JENNY PIT
CLOSURE SCHEDULE

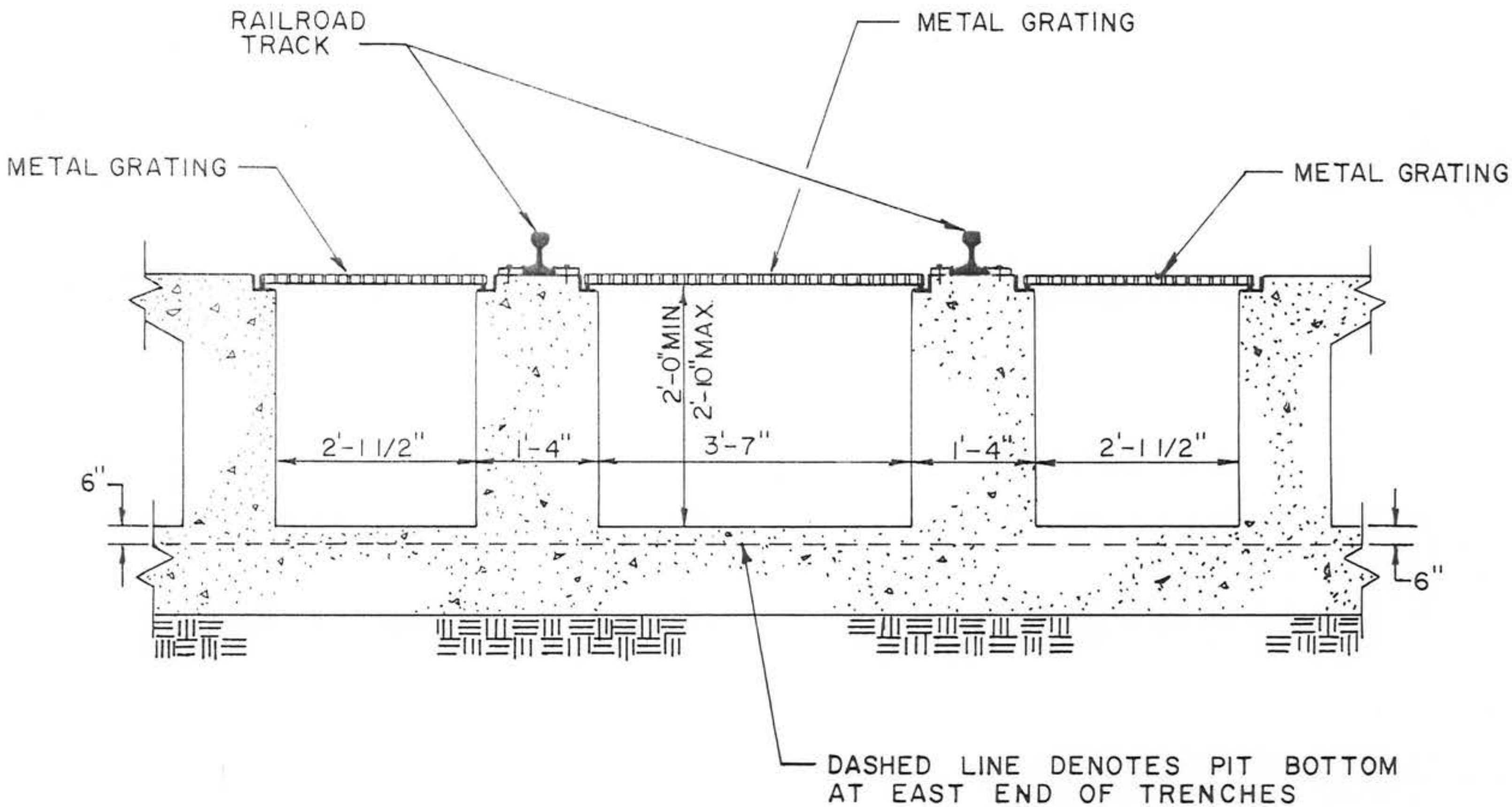
Closure Activity in Days	0	30	60	90	120	150	180
NYSDEC Approval of Closure Plan	X						
Assessment							
Review Historical Data	XXXXXXXXXXX						
System Contamination Assessment		XXXXXXXXXXXXX					
Implementation							
Decontamination of Tank System			XXXXXXXXX				
Sampling and Test Analysis				XXXXXXXXXXXX			
Further Sampling					XXXXXXXXX		
Disposal of Waste Residues					XXXXXXXXXXXXXX		
Tank Abandonment/Construction							
Final Report/Certification of Closure						XXXXXXXXXX	
Closure Report Submitted to DEC							X



BUILDING 360 PARTIAL PLAN

SCALE: 1/8" = 1'-0"

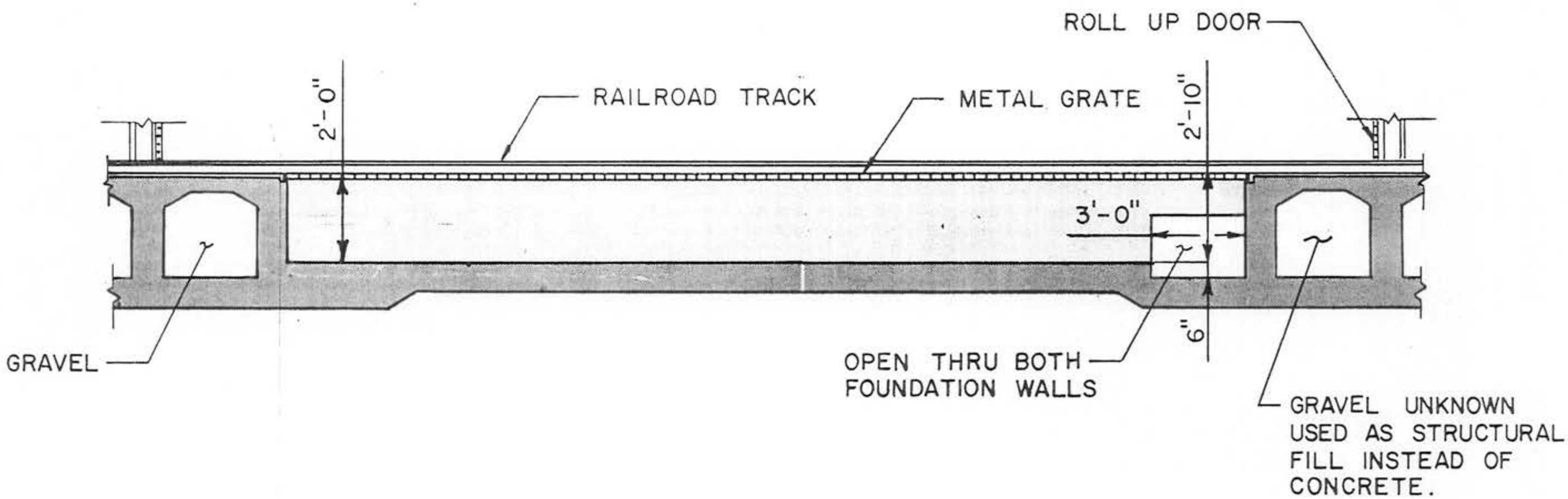
Campbell Design Group
Engineers
301 S. Main St. Horseheads, New York 14845 · 607/739-0331
St. Louis, MO Horseheads, NY Kansas City, MO Prairie Village, KS Alton, IL
Darmstadt, FRG Campbell, NY Baton Rouge, LA Wellsboro, PA Belleville, IL



SECTION 'A'

SCALE: 1/2" = 1'-0"

Campbell Design Group
Engineers
361 S. Main St. Horseheads, New York 14845 607/739-0331
St. Louis, MO Horseheads, NY Kansas City, MO Prairie Village, KS Alton, IL
Darmstadt, FRG Campbell, NY Baton Rouge, LA Wellsboro, PA Belleville, IL



SECTION 'B'

SCALE: 3/16" = 1'-0"

Campbell Design Group
Architects Engineers Planners
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BUILDING 360 CLOSURE PLAN

PREPARED FOR:

SENECA ARMY DEPOT
ROMULUS, NY

Prepared By:

CAMPBELL DESIGN GROUP, P.C.
301 South Main Street
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CDG File No. 60-9422

October 28, 1992

TABLE OF CONTENTS

SENECA ARMY DEPOT
BUILDING 360 CLOSURE PLAN
STEAM JENNY PIT

I. FACILITY CONDITIONS

A. General Information

The objective of closing the Steam Jenny Pit at Building 360 at the Seneca Army Depot is that the existing hazardous collection pit does not conform to current hazardous waste tank regulations and because it was indeterminant, based on inspections, to ensure that the pit did not leak. The objective is also to identify the extent of possible contaminations and to use this plan as a guide to decontaminate or remove hazardous substances. Systematic sampling, testing and quality control procedures will be implemented to assure proper decontamination and possible abandonment of the system. This objective does not include the remediation of contaminated ground water. If necessary, this will be done in the future as part of remedial work accomplished through either Seneca's Interagency Agreement (IAG) with DEC and EPA, or a post-closure permit to be issued by DEC.

Building 360 at the Seneca Army Depot is a building where old equipment is refurbished and reconstructed. Lathes, presses, metal working machines are degreased with steam, high pressure water and detergents in the cleaning area. Heavy metals, PCB's and greases are possible hazardous substances generated from the equipment. After steam cleaning the equipment is moved to other portions of Building 360 for rehabilitation.

The existing cleaning area is a 20'- 6" wide by 38'- 6" long portion of Building 360 separated from the rest of Building 360 by a high bay cinder block wall. Track mounted carts carrying the equipment to be refurbished, are rolled into the cleaning area, through a roll-up-door, on a permanently installed rail system. Metal grating has been placed adjacent to and in the middle of the rail system. The floor slopes to the metal grating. Please refer to the attached sketch titled "Building 360 Partial Plan".

Under the metal grating is a trench system which slopes from a depth of 2'- 0" on the west end to a depth of 2'- 10" toward the east end. Please refer to the attached sketch titled "Section B". Water and grease flow through the trench system to an accumulation pit at the east end. The accumulation pit is constructed with openings through both rail

foundation walls. The pit depth is 3'- 4" under the metal grating. The width of the pit is 10'- 6". The pit length is 3'- 0". Please refer to the attached sketches titled "Section A and Section B". The accumulation pit is emptied into approved waste removal vehicles and disposed of as hazardous waste at an approved storage facility.

Since cleaning operations ceased on January 2, 1990, Seneca has periodically monitored the depth of water in the accumulation pit to determine if water levels in the pit are affected by varying groundwater levels. Seneca has also periodically rinsed the pit and disposed of the rinseate as hazardous waste but has never had the pit tested after rinsing for contamination. A manifest detailing information on the removal and disposal of the final volume of waste is included at the end of this report. An analysis of sludge from the bottom of the pit and water in the pit was completed in 1987. A copy of the laboratory analysis results is included in Appendix 2 of this plan.

B. Equipment

The equipment used in the cleaning process is a track mounted cart. Also, equipment to be cleaned can be hand carried or dollies used for transport into the cleaning area. There is no available inventory of equipment which has been cleaned in Building 360.

C. Schedule of Closure

The cleaning of equipment in Building 360 cleaning area ceased prior to January 2, 1990. According to 6NYCRR Part 373-3.7 (d)(2), all closure activities must be completed within 180 days after approval of the closure plan. Please refer to the schedule of closure activities at the end of this report for closure schedule. Groundwater remediations are not included in the schedule.

II. WASTE REMOVAL

The volume of waste which can accumulate in the tank up to the two-foot freeboard marker is 1200 gallons. If the accumulate pit is filled to floor level, waste volume is approximately 5,000 gallons. In the past, the waste was pumped from the accumulation pit into an approved tank truck and transported to an approved hazardous waste disposal facility. Currently, the cleaning area is not being used.

The wastewater contains oil, water, detergent, grease, dirt, traces of "stoddard" solvent, paint thinner, paint chips, metal fillings and PCB's. The quantities and dates of removal are indicated as follows:

June 16, 1983	5,000 Gal.
June 23, 1983	5,000 Gal.
March 9, 1984	5,000 Gal.
June 22, 1984	5,000 Gal.
August 12, 1985	5,000 Gal.
July 9, 1986	5,000 Gal.
September 30, 1986	4,500 Gal.
January 26, 1988	4,107 Gal.
January 27, 1988	4,107 Gal.
June 17, 1988	3,700 Gal.
October 26, 1988	3,700 Gal.
October 27, 1988	1,420 Gal.
December 21, 1988	4,775 Gal.
January 2, 1990	2,000 Gal.

A copy of the manifest detailing information on the removal and disposal of the final volume of waste is included at the end of this report. An analysis of sludge in the bottom of the pit and water in the pit was completed in 1987. A copy of the laboratory analysis results and fluid level records is included in Appendix 2 of this plan.

III. SAMPLING

Existing metal grating will be removed with wrenches and torches. The grating will be scrubbed with detergent and water and stored for reuse. The rinseate will be wet-vacuumed and disposed of as a hazardous waste.

Samples will be taken at locations shown on the attached sketches. The concrete flooring of the accumulation pit will be saw cut and jackhammered for the thickness of the concrete.

Sampling Scheme: The middle of each of the three trenches are approximately 4 ft. on-center. Three samples will be taken on the centerline of the center trench. The samples will be taken 8 ft. apart. Please see the attached sketch titled "Building 360 Sampling Plan".

The Building 360 Sampling Plan sketch has been divided into a 4 ft. x 8 ft. grid. The 4 ft. (east-west) grid lines have been labeled A, B, C, D, and E. The 8 ft. (north-south) grid lines have been labeled 1, 2, and 3. Samples will be taken at locations C-1, C-2, and C-3.

The concrete will be saw cut and jackhammered at each sample location. Concrete chip samples from the upper layer, middle layer and lower layer will be placed in a "ziploc" bag, labeled and sent to the laboratory for analysis. Undisturbed samples from the soil/gravel strata below the concrete will be taken with an auger and thin wall tube sampler. Using the auger bit, begin drilling and periodically remove accumulated soils to a depth of 12 inches below the bottom of the concrete. Slowly and carefully remove the auger so that soils do not fall back into auger hole. Remove the auger tip from the drill rod and replace with a decontaminated thin wall tube sampler. Install proper cutting tip. Carefully lower sampler down borehole. Gradually force sampler into soil. Care should be taken to avoid scraping borehole sides. Hammering of the drill rods to facilitate coring should be avoided as the vibrations may cause the boring walls to collapse. Remove corer and unscrew drill rods. Remove cutting tip and remove core from device. Discard top of core (approximately 1 inch), which represents any material collected by the corer before penetration of the layer in question. Place remaining core into sample container.

The auger shall then be used to remove soil/gravel to depth two feet below the groundwater surface. The groundwater shall be pumped out to remove possible contaminations from upper soil layers. The groundwater shall be allowed to settle for 24 hours prior to sampling. It is anticipated that groundwater will be encountered within a depth of 4 feet below the accumulation pit. One sample of groundwater will be taken, with a weighted bottle, from each sample location and sent to a laboratory for analysis. Field samples will be screened using a photoionization detector. The sample locations will be backfilled with new crushed gravel and non-shrink grout.

If the testing of the groundwater and soil samples indicate hazardous materials ~~concentrations~~ in excess of the allowable limits stated in the testing section of the closure plan, monitoring wells will be installed. Two fifteen foot deep monitoring wells will be installed. One monitoring well will be placed upgrade of Building 360, and one monitoring well is to be placed downgrade of Building 360.

An existing sump pump adjacent to the cleaning area in Building 360 is used to relieve groundwater levels. This pump will be used as a monitoring location. Groundwater will be sampled and tested once a month for three months.

The remediation plan, in the event of extensive soil or groundwater contamination will be accomplished through the RCRA program should the IAG clean-up not be done in a timely manner as determined by DEC.

In the event the soil surrounding Building 360 is determined to reveal extensive contamination levels in excess of the allowable limits stated in the testing section of the closure plan, additional soil sampling and testing will be required. Additional samples will be taken on the "C" grid line, every sixteen feet from the end of the building for a distance of 48 foot. The time allowed for further sampling is indicated on the Closure Schedule. feet

In accordance with 6NYCRR Part 373-3.10 (h)(2), if it cannot be demonstrated that all contaminated soils can be practicably removed or decontaminated, then the tank system must be closed as a landfill and 6NYCRR Part 373-3.14 (d) would apply. All the requirements for landfills specified in 6NYCRR Part 373-3.7 and 373-3.8 would have to be met.

IV. TESTING

The following table showing the media, constituent, preparatory method and EPA SW-846 method will be utilized for testing criteria of the Steam Jenny Closure.

The specific criteria that will be used to determine that the containment action levels are acceptable can be found in the following Table 2:

TABLE 2 NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION ACTION LEVELS		
CONSTITUENT	GROUNDWATER/ ACTION LEVEL	SOIL/SEDIMENT ACTION LEVEL*
Cadmium	5 μg/L	8 μg/L
Chromium	5 μg/L	5 PPM
Lead	2.5 μg/L	5 PPM
PCB's	0.1 μg/L	1 PPM

* Action levels for the concrete sample will fall into the soil/sediment action level.

V. QUALITY ASSURANCE/QUALITY CONTROL

The purpose of this section is to state the minimum requirements of a quality assurance project plan for field sample collection and laboratory testing. The regulating standards can be found in the "RCRA Quality Assurance Project Plan Guidance" dated March 28, 1991 of the New York State Department of Environmental Conservation Division of Hazardous Substances Regulation.

Appendix 1 of this report describes in detail the requirements for the quality assurance project plan for the Building 360 Closure Plan.

VI. DECONTAMINATION PROCEDURES FOR FINAL CLOSURE

A. General

If all contaminated soils cannot practicably be removed or decontaminated, then the tank system must be closed as a landfill.

If the concrete cores are contaminated above RCRA limits, then the concrete, (except for foundations and footings) will be removed and disposed as a hazardous waste. Background core samples will be taken. New concrete will then be placed in kind. Underpinning and shoring of foundation walls will be required.

If soil and groundwater samples reveal extensive contamination, the site will be investigated/remediated under Seneca's Interagency Agreement with DEC and EPA. Should the IAG clean-up not be done in a timely manner as determined by the Department, a plan to remediate the area will be accomplished through the RCRA program.

B. Decontamination

If contaminant is limited to the surfaces of the concrete, then the following decontamination procedures will apply:

1. All contaminated areas including walls and floors will be scrubbed with industrial detergent and water, then rinsed;

2. Water will be collected with a wet-vacuum;

3. Additional samples of the surface concrete will be taken by core drilling the concrete for a depth of one inch and chipping the concrete loose. Samples will be taken randomly but within one foot of the original samples. Concrete samples will be placed in plastic sealable bags for transport to a laboratory for testing. Concrete core holes will be filled with non-shrink grout; and

4. If testing reveals the need for further decontamination, then muriatic acid will be used for decontamination and resampling will be done as noted in Item 3.

C. Equipment

An inventory of the equipment to be used during decontamination and sampling procedures may include but not be limited to the following:

1. Personnel protective equipment;

2. Augers, thin-wall tube samplers;

3. Weighted bottles;

4. Detergents and solvents (if necessary);

5. Muriatic acid;

6. Brooms, buckets, brushes, scrapers;

7. Hose and nozzles;

8. Wrenches, cutting torches (for removal of grating);

9. Clean plastic sealable bags for placing concrete and soil samples;

10. Labels;

11. Wet-vacuum, HEPA vacuum;

12. Six mil plastic over sandbags sealed with duct tape for contaminant dike at doorway openings;

13. Backhoe (for removal of extensive contamination if necessary);

14. 55 gallon DOT approved drums for disposal of equipment, concrete, and soils;

15. Jackhammer; and

16. Concrete saws.

A list of personnel protective equipment may include but not be limited to the following:

1. "TYVEK" brand coveralls with hoods;

2. Safety goggles;

3. Steel toed shoes;

4. Butyl or viton gloves;

5. Duct tape;

6. Half face or full face respirators with HEPA filters; and

7. Emergency eyewash.

D. <u>Run-on, Run-off Control</u>

Rinseate from decontamination operations will be contained using sand-bag diking and 6-mil plastic sheets connected with duct tape. The plastic will be used to facilitate collection of wastewater. Wastewater

will be collected using a "wet-vac" type vacuum. The wastewater, or rinseate, will be vacuumed from the plastic or directly from concrete surfaces. Since the facility is above grade, run-on is not a concern.

VII. HAZARDOUS WASTE DISPOSAL

Wastewater, rinseate, concrete, soil, protective equipment, tools, plastic, etc. will be placed in 55 gallon DOT approved drums. Drums can be placed at Seneca's hazardous waste conforming storage building #307. A sketch is included at the end of this closure plan.

The accumulated hazardous waste will be disposed of by competitive bid. Land disposal rules will apply. Some soils will be treated prior to disposal. The operations at Frontier Chemicals in Niagara Falls, New York is a typical off-site hazardous waste management facility which may be used for disposal, depending on bids.

VIII. ABANDONMENT/CONSTRUCTION

If soil samples reveal extensive contamination, then the Steam Jenny Building will be closed as a landfill. If the concrete is to be removed, then new concrete will be placed to achieve the existing trench functions.

The new steam cleaning operation will utilize a high pressure, high temperature water system. The rinseate water will be recycled and reused. The recycled water will be filtered to remove grease, oils and metals. The recycled water will be re-heated and re-used.

VIX. CERTIFICATION

Certification by an independent New York registered professional engineer can begin once activities listed in this closure plan are complete. The amount of contaminated soil and concrete will then be known for disposal purposes. Samples and tests required by the New York State Department of Environmental Conservation will be taken at that time.

Within 60 days of final completion of closure, a certification of closure documenting the closure activities must be made by a qualified independent engineer registered in New York State. The certification must state that closure was executed in accordance with the approved closure plan.

APPENDIX 1

QUALITY ASSURANCE PROJECT PLAN

FOR

BUILDING 360 CLOSURE PLAN

SENECA ARMY DEPOT
ROMULUS, NEW YORK

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CDG FILE NO. 60-9422

OCTOBER 28, 1992

TABLE OF CONTENTS

A. Project Description:

This Quality Assurance Project Plan is being submitted for the Building 360 Closure Plan at the Seneca Army Depot. The objective of the closure plan is to identify the extent of possible contamination and as a guide to decontaminate and/or remove hazardous substances. Refer to the Building 360 Closure Plan for further descriptions of the facility and plan objectives.

When the tank is dewatered, the liquid is disposed of as hazardous waste under D008 lead. From the latest hazardous waste manifest, the wastewater contains, oil, water, detergent, grease, dirt, traces of "stoddard" solvent, paint thinner, paint chips, metal filings and PCB's. Please refer to the Waste Removal section of the Building 360 Closure Plan.

The following tables quantify the goals of the data quality objective process:

ACTION LEVELS

Constituent	Groundwater	Soil/Sediment
Cadmium	5 μg/L	8 μg/L
Chromium	~~5 μg/L~~ 50 μg/L	5 PPM
Lead	~~2.5~~ μg/L 15 μg/L	5 PPM
PCB's	0.1 μg/L	1 PPM

INSTRUMENTAL DETECTION LEVELS

Constituent	Groundwater	Soil/Sediment
Cadmium	4 μg/L	8 μg/L
Chromium	7 μg/L	7 μg/L
Lead	42 μg/L	42 μg/L
PCB 1242*	.065 μg/L	.065 μg/L

* From SW846-8080

AVERAGE BACKGROUND CONCENTRATIONS FOR ROCKS, SOILS, AND SEDIMENTS (IN PPM)

	SHALE	SANDSTONE	LIMESTONE	SOILS	SEDIMENT
Cadmium	0.2	<0.1	0.1	1	2.5
Chromium	100	35	10	50	75
Lead	40	7	8	20	55

Source: Preliminary Site Characterization at the Ash Landfill
Seneca Army Depot
U.S. Army Engineer Division
Huntsville, Alabama

Subsource: Levinson, 1980

Target levels for clean closure will be those of the action level unless background level concentrations are higher than action levels. If determined that the target level cannot be achieved after decontamination or cannot be practically removed, then the tank system will be closed as a landfill.

The closure plan for Building 360 identifies a schedule that is to be employed to assess and adjust the projects activities to achieve the project goals. The closure plan also identifies equipment to be used during sampling and decontamination to protect the health and safety of workers. Clean closure and/or closing as a landfill will assist in assuring protection to public health and the environment.

Laboratory analysis to determine levels and extent of contamination will provide a basis of laboratory analysis for testing after attempts have been made at decontaminating the tank system. First of all, testing of samples prior to decontamination attempts will determine the degree of contamination, if any. Subsequent testing of samples after decontamination will determine if clean closure is achievable.

B. Project Organization and Responsibility:

Because the Seneca Army Depot is an installation operated by the Federal Government, contracts for sampling, testing and decontamination must be procured by competitive bid. Organizations soliciting to perform this task must submit, with their bids, identification of key individuals responsible for the following:

1. Sampling Operations;

2. Sampling Quality Control;

3. Laboratory Analysis;

4. Laboratory Quality Control;

5. Data Processing Activities;

6. Data Processing Quality Control;

7. Data Quality Review;

8. Performance Auditing;

9. Systems Auditing (On-Site Evaluations);

10. Overall Quality Assurance; and

11. Overall Project Coordination.

For each key individual named, a brief sentence or two explaining that individual's responsibility, title and authority should be included. Telephone numbers and addresses should be listed with the key individuals. Where there are several different sampling, testing, and monitoring institutions or subcontractors involved, complete addresses should be provided.

Quality Assurance Officer: The responsibility for data review shall be assigned to a QA Officer or QA Manager. This individual shall have broad authority to approve or disapprove project plans, specific analyses and final reports. The QA Officer is independent from the data generation activities. In general, the QA Officer shall be responsible for reviewing and advising on all aspects of QA/QC.

C. <u>Quality Assurance Objectives for Data Management:</u>

1. <u>Precision</u>

Precision is a measure of agreement among measurements performed using the same test procedure. Precision will be assessed for applicable parameters by calculating the RPD of two duplicate spike samples as follows:

2. Field Quality Control;

3. Laboratory Analysis;

4. Laboratory Quality Control;

5. Data Processing Activities;

6. Data Processing Quality Control;

7. Data Quality Review;

8. Performance Auditing;

9. Systems Auditing (On-Site Evaluations);

10. Overall Quality Assurance; and

11. Overall Project Coordination.

For each key individual named, a brief sentence or two explaining their individual's responsibility, title and authority should be included. Telephone numbers and addresses should be listed for the key individuals. Where there are several different samplers, laboratories, or data processing institutions/subcontractors involved, an organization chart should be provided.

Quality Assurance Officer. The responsibility for data review shall be assigned to a QA Officer or QA [illegible]. This individual shall have the authority to stop work on major plans, specific analyses and final reports. The QA Officer is independent from the data generation activities. In general, the QA Officer shall be responsible for reviewing and advising on all aspects of QA/QC.

Quality Assurance Objectives for Data Measurement

a. Precision

Precision is a measure of mutual agreement among measurements performed using the same test procedures. Precision will be evaluated for applicable analytes by calculating the RPD of the duplicate spike samples or matrices.

$$RPD = \frac{R_1 - R_2}{(R_1 + R_2)/2} \times 100$$

Where R_1 and R_2 = concentration of Replicate Spikes 1 and 2, respectively.

a. Analyzing Precision: Analytical precision will be determined through the use of matrix spikes and matrix spikes duplicates for the analytical work performed. The laboratory will select one sample in 20 and split the sample into three aliquots. The aliquot will be analyzed routinely for the parameters of interest, while the other two aliquots will be spiked with known quantities of the parameters of interest prior to analysis. The relative percent difference between the two results will be calculated and used as an indication of the precision of the analyses performed.

b. Sample Collection Precision: Sampling precision shall be determined by collecting and analyzing collocated and field replicate samples and then creating and analyzing laboratory replicates for one or more of the field samples. Precision will be reported as the relative percent difference for 2 measurements and as standard deviation for 3 or more measurements. Analysis results from the laboratory replicates provide data on analytical precision. Subtracting the analytical precision from the measurement precision defines the sampling precision.

2. Accuracy

Accuracy is the degree of agreement between a sample's target value (known concentration) and the actual measured value. Accuracy for this project is measured by calculating the percent recovery (R) of known levels of spike compounds into appropriate sample matrices. Percent recovery is calculated as follows:

$$R = \frac{100 \times [(\text{Spike Sample Conc.})X(\text{Sample + Spike Vol.}) - (\text{Sample Vol.})X(\text{Sample Conc.})]}{(\text{Spike Conc.})X(\text{Spike Volume})}$$

$$RPD = \frac{(R_1 - R_2)}{(R_1 + R_2)/2} \times 100$$

Where R_1 and R_2 = concentrations of Duplicate Samples 1 and 2, respectively.

a. Laboratory Precision: Analytical precision will be determined through the use of matrix spikes and matrix spike duplicates for the analytical work performed. The laboratory will select one sample in 20 and split the sample into three aliquots. The aliquots will be analyzed routinely for the parameters of interest, while the other two aliquots will be spiked with known quantities of the compounds of interest prior to analysis. The relative percent difference between the two spikes will be calculated and used as an indication of the precision of the analyses performed.

b. Sample Collection Precision: Sampling precision shall be determined by collection and analysis/collection of collocated replicate samples and then creating and analyzing laboratory replicates for one or more of the field samples. Precision will be reported as the relative percent difference for 2 measurements and as coefficient of variation for 3 or more measurements. Analysis results from the laboratory replicates provide data on analytical precision. Subtracting the analytical precision from the measurement precision isolates the sampling precision.

4. Accuracy

Accuracy is the degree of agreement between a sample's (true) value (or concentration) and the actual measured value. Accuracy for this project is measured by calculating the percent recovery (R) of known levels of spike compounds into sample matrix. Percent recovery is calculated as follows:

$$\%R = \frac{100 \times (\text{Spike Sample Conc.} - \text{Sample Conc.})}{\text{Spike Conc.}}$$

a. Analytical Accuracy: Analytical accuracy is the percent recovery of an analyte which has been added to the environmental sample at a known concentration before analysis. Analytical accuracy is assessed through the analysis of quality control samples specified in the analytical method (matrix spike, surrogate spike).

b. Sample Collection Accuracy: Sampling accuracy is assessed by evaluating the results of field, trip, and equipment blanks. Trip blanks, equipment blanks, and field blanks are used to assess any cross-contamination that may have occurred. A high level of accuracy can be maintained by frequent and thorough review of field procedures.

3. Representativeness

Representativeness is addressed by describing sampling techniques and the rationale used to select sampling locations. Representativeness factors include the following:

a. Environmental conditions at the time of sampling;

b. Fit of the modeling or other estimation techniques to the event;

c. Appropriateness of site file information versus release conditions;

d. Appropriateness of sampling and analytical methodologies;

e. Number of sampling points;

f. Distribution of the sampling points;

g. Representativeness of selected media; and

h. Representativeness of selected analytical parameters.

4. <u>Completeness</u>

Completeness is the measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions (EPA, 1980). A completeness of at least 90 percent for each parameter is the objective for this project. Following completion of the analytical testing, percent completeness will be calculated as follows:

$$\text{Complete (\%)} = \frac{\text{\# of valid true concentrations values reported}}{\text{\# of samples collected for anal. of true conc.}} \times 100$$

If completeness is less than 80 percent for any parameter(s), the principal engineer will be notified immediately. The principal engineer is responsible for determining if resampling will be necessary to meet project objectives and will inform the QA supervisor and analytical task manager of the decision.

As stated in "Data Quality Objectives for Remedial Response Activities" (EPA March 1987), almost no historical data on completeness achieved by individual methods exist. This document states that Level III analytical techniques should generate analytical data which is approximately 80% complete.

5. <u>Comparability</u>

Comparability is the confidence with which one data set can be compared to another. Only the specific methods and protocols specified will be used to collect and analyze samples. Comparability shall be applied to the following:

a. Data generated by the investigator over a specific time period;

b. Data generated by an outside laboratory over a specific time period;

c. Data generated by an outside laboratory versus data generated by the investigator; and

d. Data generated by more than one outside laboratory.

[illegible] projected to be [illegible] [illegible] [illegible] will be noted [illegible]

[illegible]

[illegible] the patient [illegible] will be [illegible] immediately. The [illegible] [illegible] resampling [illegible] [illegible] stability and to [illegible] last member [illegible]

[illegible] "Data Quality Objectives" [illegible] Agency (EPA March 1987) [illegible] [illegible] documented [illegible] generally accepted [illegible]

a. Comparability

Comparability is the confidence with which one data set can be compared to another. Only the [illegible] will be used [illegible] and [illegible] Comparability shall be attained by the following:

a. Data generated by the [illegible]

b. Data generated by an outside laboratory [illegible] methods

c. [illegible] the same [illegible]

d. [illegible]

The values for quality assurance objectives for precision and accuracy can be found in the EPA publication "Data Quality Objectives for Remedial Response Activities - Development Process". The SW846 method number, range of recovery, precision and method detection limit values for Level III analytical techniques can be found in this publication.

D. Field Sampling Plan:

The sampling section in the Building 360 Closure Plan discusses the sampling scheme (grid), the media to be sampled and a sampling scheme in case of extensive contamination. This section of this quality assurance project plan will discuss in more detail the sampling techniques, frequency of samples and sampling equipment.

Sampling Scheme: The middle of each of the three trenches are approximately 4 ft. on-center. Three samples will be taken on the centerline of the center trench. The samples will be taken 8 ft. apart. Please see the attached sketch titled "Building 360 Sampling Plan".

The Building 360 Sampling Plan sketch has been divided into a 4 ft. x 8 ft. grid. The 4 ft. (east-west) grid lines have been labeled A, B, C, D, and E. The 8 ft. (north-south) grid lines have been labeled 1, 2, and 3. Samples will be taken at locations C-1, C-2, and C-3.

At each sample location, the media to be tested is the concrete core, underlying soil, and groundwater. Each sample will be tested for PCB's, cadmium, chromium and lead. One grab sample for each of the media to be tested will be taken at each sample location.

The Steam Cleaning Area at Building 360 is heated by two fans which blow air across steam coils. Sampling should be avoided if the unit heaters are on. The moving air may contaminate samples being taken.

Concrete Media: The concrete will be sawcut and jackhammered loose at each sample location. Care should be taken to minimize the amount of concrete dust created. Care should be taken to not contaminate other open sample holes. Personnel protective equipment shall be worn at all times. Pieces of concrete from the upper layer, middle layer and lower layer from each sample location shall be placed in individual "ziploc" sample bags, labeled and shipped to the laboratory for testing.

The [illegible] for quality assurance objectives [illegible] can be found in the EPA publication "Data Quality Objectives for Remedial Response Activities - Development Process". The [illegible] involves a determination of accuracy, precision and [illegible] that relates [illegible] to level [illegible] analytical techniques [illegible] to the [illegible] substances.

Field Sampling Plan

The sampling section of the Building [illegible] Closure Plan addresses the [illegible] scheme (grid), the media to be sampled, [illegible] sampling scheme in lieu of extensive [illegible]. The [illegible] of this quality assurance project plan will discuss in more detail the sampling techniques, frequency of samples and sampling equipment.

Sampling Scheme: The [illegible] in each of the three [illegible] are approximately [illegible] ft. on-center. Three samples will be taken on the centerline of the center trough. The samples will be taken [illegible] apart. Please see the attached sketch titled "Building [illegible] Sampling Plan".

The Building [illegible] Sampling Plan sketch has been divided into [illegible] grid. The [illegible] ft. [illegible] gridlines have been labeled A, B, C, D, and E. The [illegible] north-south gridlines have been labeled [illegible] and [illegible]. Samples will be taken at locations [illegible].

At each sample location, the media to be [illegible] underlying soil, and groundwater. Each sample will be tested for [illegible] and lead. One grab sample for each of the media to be tested will be taken at each sample location.

The present [illegible] Area is [illegible] building floor [illegible] which [illegible] soils. Sampling should be [illegible] the [illegible] are cut. This [illegible] to [illegible] samples being taken.

Concrete Media: The concrete will be [illegible] and [illegible] of each sample location. Care should be taken to minimize the [illegible] of concrete dust [illegible] when sampling [illegible]. Personnel protective equipment [illegible] at all times. [illegible] of concrete from the [illegible] each [illegible] sample [illegible] placed in [illegible] sample bags, labeled and [illegible] to the laboratory for testing.

Concrete saws and jackhammer bits which come in contact with the underlying soils shall be decontaminated per the following table, (Table 1) before reuse and between sample locations.

TABLE 1

EQUIPMENT DECONTAMINATION PROCEDURES

All non-dedicated sampling equipment must be cleaned prior to being reused. The following is the accepted procedure for decontaminating sampling equipment:

1. scrub with tap water* and non-phosphate detergent;

2. rinse with tap water;*

3. rinse with 10% HNO_3, ultrapure;**

4. rinse with tap water;*

5. rinse with methanol;***

6. rinse with acetone;***

7. rinse with methanol;***

8. rinse with deionized water (demonstrated analyte-free water);****

9. air dry; and

10. wrap in aluminum foil.

* Tap water may be used from any municipal water treatment system. The use of untreated potable water supply is not an acceptable substitute unless the aquifer is known not to be contaminated.

** Omit this step if metals are not being analyzed. For carbon steel split spoon sample a 1% rather than 10% HNO_3 rinse should be performed.

*** The solvent rinse can be omitted if organics are <u>not</u> being analyzed. The series isopropanol, hexane, isopropanol may be substituted for 5., 6., & 7., if acetone is a constituent of concern.

**** Definition of demonstrated analyte - free water is as follows:

Water that will be used for the preparation of blanks, for decontaminating sampling equipment and containers, and for carrying-out analytical tests must be ASTM II deionized water demonstrated to be analyte-free. The criteria for analyte-free water are the Method Detection Limits (MDL's) for the analytes as stipulated in SW-846, third edition for the most sensitive analytical method that would be employed to detect the analyte. However, specifically for the common laboratory contaminants listed below, the allowable limits are set at three times the respective MDL's determined by the most sensitive analytical method:

1. Methylene Chloride;

2. Acetone;

3. Toluene;

4. 2 Butanone; and

5. Phthalates.

Any deviation from the aforementioned criteria must receive approval from the NYSDEC prior to implementation.

Soil Media: Samples of the underlying soil will be taken with an auger and thin wall tube sampler. One sample will be taken at each sampling location. The auger and thin wall tube sampler shall be decontaminated per Table 1 prior to sampling at each sample location.

Field samples of the soil will be screened using a photoionization detector. The soil sample must be homogenized prior to being placed into sampling containers. The sample should be removed from the split spoon, placed in a stainless steel pan and thoroughly mixed using a stainless steel spoon. The sampled media in the pan should be scraped from the sides, corners and bottom of the pan, rolled to the middle of the pan, and initially mixed. The sample should then be quartered and moved to the four corners of the pan. Each quarter of the sample should be mixed individually, and then rolled to the center of the container and the entire sample mixed again.

[illegible]

[illegible] to [illegible]

4. Delineation of the vegetated and the [illegible]

Water that will be used for the preparation of slurries, decontamination rinsing, sediment and groundwater sampling [illegible] will be analyzed. The criteria for acceptable water are the Maximum Contaminant Limits (MCLs) for the analytes as promulgated by EPA [illegible] sensitive analytical method that would be employed [illegible] to detect the analyte [illegible] the [illegible] limits are [illegible] MCLs is [illegible]:

1. Methylene Chloride;

2. Acetone;

3. Toluene;

4. Chloroform; and

5. Phthalates.

Any deviation from the [illegible] will be [illegible] in the Phase II [illegible].

The [illegible] consist of [illegible] as well as [illegible] and tube samples. One sample will be taken at each sampling location. The [illegible] at each sample location.

Field samples of the soil will be screened using a photoionization detector. The soil samples must be homogenized prior to being placed into sample containers. The sample should be [illegible] stainless steel pan and thoroughly [illegible] stainless steel spoon. The [illegible] should be removed from the sides, center and bottom of the [illegible] to the [illegible] of the pan, and thoroughly mixed. The sample should then be quartered and moved to the four corners of the pan. Each quarter of the sample should be mixed individually, and then rolled to the center of the pan and the entire sample mixed again.

[illegible]

Containers for samples to be tested for metals shall be of borosilicate glass bottles, 125 ml minimum for solids, with PFTE lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;

2. Tap water rinsed, 3 times with hot water;

3. Acid washed with 1:1 nitric (ultrapure);

4. Rinsed 3 times with deionized water (demonstrated analyte-free water);

5. Air dried; and

6. Capped when dry.

Containers for samples to be tested for PCB's and volatile organics shall be new amber glass bottles, 125 ml minimum for solids, with PFTE lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;

2. Tap water rinsed, 3 times with hot water;

3. Rinsed with acetone or methanol followed by hexane rinse (solvents must be pesticide grade or better);

4. Rinsed 3 times with deionized water (demonstrated analyte-free water);

5. Oven dry containers for one hour at 105 degrees Centigrade;

6. Air dry caps; and

7. Cap bottles when dry.

Groundwater Media: Grab samples of the groundwater will be taken with weighted bottles and or stainless steel ladles. The weighted bottles and stainless steel ladles shall be decontaminated per Table 1 prior to taking consecutive samples. The sample will then be carefully poured from the sampling equipment into the sample container. Use procedures that minimize sample agitation, cross-contamination and reduce/eliminate contact with the atmosphere during sample transfer.

While air bubbles ~~may be present in testing~~ for PCB's and metals, no air bubbles can be present when testing volatile organics

The sample container shall be filled to the point of overflow (convex meniscus). When sealing, be sure the lid is in contact with the sample. After sealing, inspect for air bubbles in the sample container by inverting the container. If air bubbles are present, remove the cap and add more sample. Reseal the container and inspect for air bubbles by inverting the container. Repeat steps for assuring no air bubbles.

Containers for samples of groundwater, to be tested for metals shall be new borosilicate glass bottles, one liter minimum, with PFTE lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;

2. Tap water rinsed, 3 times with hot water;

3. Acid washed with 1:1 nitric (ultrapure);

4. Rinsed 3 times with deionized water (demonstrated analyte free water);

5. Air dried; and

6. Capped when dry.

Containers for samples of groundwater, to be tested for PCB's shall be new amber glass bottles, one liter minimum, with PFTE lined screw caps. They shall be recleaned as follows:

1. Detergent (non-phosphate) washed with hot water;

2. Tap water rinsed, 3 times with hot water;

3. Rinsed with acetone or methanol followed by hexane rinse (solvents must be pesticide grade or better);

4. Rinsed 3 times with deionized water (demonstrated analyte free water);

5. Oven dry containers for one hour at 105 degrees Centigrade;

6. Air dry caps; and

7. Cap bottles when dry.

Containers for samples to be tested for volatile organics shall be 2 - 40 ml amber glass bottles with teflon lined septum caps. Containers for samples to be tested for semi-volatile organics shall be one liter amber glass with PFTE lined screw caps.

Field Screening: After the concrete has been removed at each sample location, the opening in the floor shall be field screened for volatile organic and semi-volatile organic gases. ~~A gas chromatography/mass spectrometry photoionization detector~~ [Insert: A gas chromatograph with a photoionization detector] shall be utilized. The results of these field screening techniques shall be documented and appropriate continual sampling procedures shall be implemented in case of potential hazardous situations.

Quality Assurance/Quality Control: Sample containers used during an investigation must be subject to quality assurance/quality control procedures that include tracking, quality control inspections, recording shipments to designees, handling, cleaning and inspecting sample containers. The following is a description of quality control check points:

1. <u>Incoming Materials Inspection:</u>

   The supplier of containers to the field shall inspect a representative item from each case/carton of containers and component materials received from a vendor, to check for conformance with specifications. Any deviation shall be considered unacceptable, and materials shall immediately be returned to the vendor for replacement. The supplier shall maintain a log of incoming shipments, in which cases/cartons shall be identified by material type, vendor purchase order number and delivery date. The supplier shall indicate on this log the date of incoming inspection and acceptance or rejection of the material.

2. <u>Quality Control Inspection of Cleaned Containers</u>

   Following container cleaning and labeling, the supplier of containers to the field shall randomly select two containers from each container lot to be used for quality control purposes. A notice shall be placed in each case from which QC containers have been removed. The two categories of QC containers are: Analysis QC Containers and Storage QC Containers.

a. Analysis QC Containers

One selected QC container per lot shall be designated as the Analysis QC Container. The Analysis QC Container(s) shall be analyzed by the supplier to check for contamination, prior to releasing the container lot for shipment. The QC analyses procedures to be used by the supplier for determination of extractable organics, pesticides, volatiles, metals, and cyanide are specified further on in this section. This series of analyses shall constitute the QC check for containers.

b. Storage QC Containers

One selected QC container per lot shall be designated as the Storage QC Container. The Storage QC Container shall be separated from the lot after cleaning and labeling and stored by the supplier in a designated contaminant-free storage area, which shall be continuously monitored for volatile contaminants. The date the storage container is placed in the storage area shall be entered into the Storage QC Container logbook.

Upon request, the supplier of containers to the field shall remove the Storage QC container from the storage area and analyze the container using the QC analysis procedures specified for that container type. Such analysis shall be completed and data reported to within ten (10) days following the analysis request. Analysis of the Storage QC Container will be indicated if contamination to the particular container lot comes into question at any time pursuant to supplier shipment. Upon removal, containers shall be logged out of the storage area.

The designated storage area for the Storage QC Containers shall be monitored continuously. A pre-cleaned, QC cleaned 40 mL vial filled with demonstrated organic-free deionized water shall be placed in the storage area. These vials shall be changed at one-week intervals. The removed vial shall be subjected to the volatile organics QC check procedure described further on in this Section. Any peaks shall indicate contamination.

[illegible] used QC [illegible] shall be [illegible] analyzed [illegible] conditioned [illegible] of the operations [illegible]. The QC [illegible] include [illegible] for the characterization of [illegible] organics, [illegible] metals, and [illegible] further [illegible]. The [illegible] of [illegible] indicate the QC checks for [illegible].

Storage QC Container

One selected QC container [illegible] shall be designated as the Storage QC Container. The Storage QC Container shall be [illegible] after cleaning and [illegible] by the [illegible] container [illegible] during the [illegible]. The date the storage container is placed in the storage area shall be entered into the Storage QC Container logbook.

Upon request, the supplier or contractor [illegible] shall remove the Storage QC container from the storage area and analyze the contents using the QC analytical procedures specified for [illegible] containers. [illegible] shall be completed and reported [illegible] within thirty (30) days following [illegible]. If the Storage QC Container [illegible] contamination [illegible] the particular container lot [illegible] shall be logged out of the storage area.

The designated storage area for the [illegible] QC Containers shall be monitored continuously. [illegible] cleaned QC [illegible] shall be stored in the storage area. [illegible] shall indicate [illegible].

3. Quality Control Procedures for Cleaned Containers

The type(s) of QC tests applied correlates with the type of container being tested and its future use in sample collection. The required QC tests are for determination of: extractable organics, pesticides, volatile organics, metals, and cyanide. Quality control tests shall be run according to the container type and related sample type utilizing the specified Method(s), as described in the following:

a. Determination of Extractable Organics/Pesticides

(1) Sample preparation should follow the NYSDEC CLP statement of work for processing extracts:

(a) Rinse the container thru (3) times with sixty (60) mL of pesticide-grade methylene chloride and shake each rinse for two minutes;

(b) Transfer the extracts from (1) to a Kuderna-Danish (KD) apparatus equipped with a three-ball Snyder column. Concentrate to less than 10 mL on a water bath. Bring the extract up to 10 mL with pesticide-grade methylene chloride;

(c) Transfer 1.0 mL of the extract to a separate concentrator tube for pesticide/herbicide/PCB analysis;

(d) Concentrate the remaining 9 mL to 1.0 mL for the Base Neutral Acid Assay;

(e) Add 9 mL of pesticide-grade hexane to the methylene chloride extract and mix. Concentrate to less than 1.0 mL using a micro KD apparatus. Bring volume up to 1.0 mL with pesticide-grade hexane and assay for pesticide/herbicide/PCB.

(f) Concentrate the solvent blank by following the preceding steps, except skip the container rinse in step (a) and add 180 mL pesticide-grade methylene chloride directly to the KD apparatus.

(2) Extractable Organics QC Check

(a) Inject 3 mL of solvent into a gas chromatograph mass spectrometer (GC/MS);

(b) Analyze for extractable organics by EPA method SW-846 8250 or 8270;

(c) Any peaks found in the container solvent that are not found in the solvent blank or with peak heights or areas not within ± 50% of the blank peak height or area shall be cause for rejection;

(d) Perform tentative identification and tentative quantification of any contaminant(s) that cause rejection of a container Lot;

(e) Appropriate calibration standards must be run as specified by the method to ensure that the required sensitivities will be achieved; and

(f) A blank shall be run with each analysis.

(3) Pesticide/Herbicides QC Check

(a) Inject 1 mL of solvent into a gas chromatograph (GC) equipped with the detector specified by the analytical method;

(b) Analyze for the pesticides by EPA Methods SW-846 8080, 8140, and 8150 as appropriate;

(c) Any peaks found in the container solvent that are not found in the solvent blank or with peak heights or areas not within ± 50% of the blank peak height or area shall be cause for rejection;

(d) Perform tentative identification and tentative quantification of any contaminant(s) that cause rejection of a container Lot;

(e) A standard mixture made-up of all pesticide/herbicide organic compounds identifiable by Method 8140, 8150, and 8080 and at concentrations expected must be analyzed to ensure that the required sensitivities will be achieved; and

(f) A blank shall be run with each analysis.

b. Determination of Volatile Organics

(1) Fill the container with deionized demonstrated organic-free water;

(2) Analyze for volatile organics by EPA Method SW846 8240 using Gas Chromatograph/Mass Spectrometer (GC/MS) with the operating conditions specified in that method;

(3) Any peaks not found in the blank, or with peak heights or areas not within ± 50% of the blank peak height or area shall be cause for rejection;

(4) Perform tentative identification and tentative quantification of any contaminant(s) that cause rejection of a container Lot;

(5) Appropriate calibration standards must be run as specified by the method to ensure that the required sensitivities will be achieved; and

(6) A blank shall be run with each analysis.

c. Determination of Metals

(1) Add 50 ml deionized water to the container and acidify with 0.5 ml metals-grade HNO_3. Cap and shake well;

(2) Treat the sample as a dissolved metals sample. Analyze the undigested water for all metals specified in SW-846 by applying the most sensitive EPA Method in SW-846 specified for the analysis of total metals (i.e. SW-846 7000 series or SW-856 6010);

(3) Concentration at or above the detection limit specified for the method for each parameter will be cause for rejection of the lot of containers; and

(4) A set of standards in the expected working range and a blank must be analyzed with each analytical run. The acid matrix of the standards and blank must match that of the samples.

d. Determination of Cyanide

(1) Cyanide is to be determined by EPA Method SW-846 9010 by placing 250 ml of deionized water in the container. Add 1.25 ml of 6N NaOH. Cap the container and shake vigorously for two minutes. Analyze an aliquot by the EPA method selected;

(2) A blank must be run by analyzing an aliquot of the deionized water used above;

(3) A set of standards in the expected working range must be analyzed with each run along with the blank; and

(4) The detection of contaminants of 20 ppb total cyanide will be cause for rejection of the lot of containers.

17

4. Sample Preservation and Storage

The containers with samples to be tested for PCB's shall be stored in an ice chest at 4° Centigrade. Their holding times are 7 days to extraction and 40 days to analysis. The containers to be tested for metals shall be preserved with concentrated HNO_3 to a pH<2, cooled to 4° Centigrade and their holding times are 6 months. Soil samples to be tested for volatile organics shall be cooled to 4° Centigrade and their holding times are 14 days. Groundwater to be tested for volatile organics shall be preserved by acidifying samples with 4 drops of concentrated hydrochloric acid; if residual chlorine is present, add sodium thiosulfate and their holding times are 14 days. Groundwater samples to be tested for semi-volatile organics shall be cooled to 4° Centigrade and their holding times are 7 days to extract and 40 days to analyze.

5. Collocated and Replicate Samples

One out of 20 investigative samples shall be collocated for groundwater and shall be replicated or collocated for soil samples. Replicated samples can be substituted for groundwater. These samples shall be spread out over the sampling event, preferably one per each day of sampling.

6. Trip and Equipment Blanks

Trip blanks shall be taken for groundwater samples only. Trip blanks shall be comprised of 40 ml VOA vials filled with demonstrated analyte free deionized water. Trip blanks shall be taken in a 1:20 ratio for each PCB sample and metals sample, one per each days sampling and one per each cooler if more than one cooler per day. The trip blanks shall be the first container placed into the cooler. Equipment blanks shall be performed once per day per each type of sampling equipment used. Equipment blanks are collected by passing demonstrated analyte free deionized water through and over cleaned sampling equipment.

7. Matrix Spikes

Spikes shall be performed by laboratory personnel only. Two additional field blanks shall be provided for laboratory spiking per day of sampling. One blank shall be laboratory spiked for PCB's, the other field blank shall be laboratory spiked for metals. The volume of the container for the field blank sample to be laboratory

An extra analytical sample for both PCB's and for metals must be collected in the field so the laboratory can perform a matrix spike/matrix spike duplicate (MS/MSD). (Blank spikes may be performed in the laboratory as described in the NJDEP ASD but these would be in addition to the MS/MSD.)

Sample [illegible]

The containers with samples to be tested for VOCs shall be placed in a cooler at 4° Celsius [illegible] preserved [illegible] [illegible] to be analyzed [illegible] for metals shall be preserved with nitric acid to a pH [illegible] Containers [illegible] and their holding times [illegible] samples [illegible] for metals [illegible] Containers and their holding times [illegible] to be tested for volatile organics shall be [illegible] [illegible] [illegible] concentrations [illegible] [illegible] and their holding times are 14 days. Groundwater samples to be tested for semi-volatile organics shall be [illegible] and their holding times are 7 days to extract and 40 days to analyze.

6. Collocated and Duplicate Samples

One out of [illegible] samples, shall be collocated groundwater and may be [illegible] or [illegible] [illegible] samples [illegible] for groundwater [illegible] samples shall be [illegible] over the sampling event, [illegible] one per each [illegible] of sampling.

Trip and Equipment Blanks

Trip blanks shall be taken for groundwater samples only. Trip blanks [illegible] 40 ml VOA vials [illegible] demonstrate [illegible] [illegible]. Trip blanks shall be [illegible] for each [illegible] samples [illegible] per [illegible] [illegible] per day. [illegible] the [illegible] [illegible] per day for each [illegible] equipment used. Equipment blanks are collected by [illegible] [illegible] water [illegible] and [illegible]

Matrix Spikes

Spike [illegible] by [illegible] [illegible] samples [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] spiked for metals shall be one liter. The exact amount of spiking material shall be recorded for future use. The spike materials shall be laboratory prepared solutions made from pure compounds.

E. Documentation and Chain-of-Custody

1. Field Log Book

All information pertinent to field sampling activity must be entered in a bound book with consecutively numbered pages. Entries in the log book must include at least the following:

a. Date and time of site entry.
b. Purpose of sampling.
c. Name and address of field investigator and sample collector.
d. Name of facility.
e. Type of process that produced contamination.
f. Date and time of sample collection and sample I.D. number.
g. Weather conditions.
h. Contaminant components and concentrations, if known.
i. Description and location of sampling point.
j. Air monitoring device readings and the significance of the readings; i.e. presence of volatile non-aqueous phase, need for respiratory protection etc.
k. Condition of monitoring wells and other environmental media sampling equipment (rusty, bent casing, etc.).
l. Field measurements such as pH, temperature, conductivity, flammability, explosiveness, etc.
m. Water level measurements and depths to bottom in monitoring wells prior to evacuation.
n. Immiscible layer detection in monitoring wells and equipment used for interface detection and sampling the layers prior to evacuation.
o. Monitoring well purging equipment, volume of water purged, and time to recharge well.
p. Soil, Sediment, sludge/groundwater, and surface water sample preparation methods and sampling equipment utilized.
q. Where and when sampling equipment refusal occurred and the corrective action taken.
r. Sampling equipment decontamination procedures and when equipment was decontaminated.
s. Number and size of samples taken.

t. Physical properties observed of samples taken; i.e. color, odor, turbidity, non-aqueous phase, stratification, etc.
u. Purge water and other sampled media disposal practices.
v. When samples were shipped to lab.
w. Any other relevant field observations.

2. Sample Labels

Sample labels are necessary to prevent misidentification of samples. Gummed paper labels or tags are adequate and should include at least the following information:

a. Sample number.
b. Name of collector.
c. Date and time of collection.
d. Place of collection.

Labels should be affixed to sample containers prior to or at the time of sampling. The labels should be filled out at the time of collection.

3. Sample Seals

Sample seals are used to detect unauthorized tampering of samples following sample collection up to the time of analysis. Gummed paper seals may be used for this purpose. The paper seal includes, at least, the following information:

a. Sample number (this number must be identical with the number on the sample label).
b. Collector's name.
c. Date and time of sampling.

The seal must be attached in such away that it is necessary to break it in order to open the sample container. Seals must be affixed to containers before the samples leave the custody of personnel.

4. Field Records

Field records shall be completed at the time the sampling is collected and shall be signed. Field records shall contain the following information:

a. Unique sampling or log number.
b. Date and time.
c. Source of sample (including name, location, and sample type).
d. Preservative used (if any).
e. Analysis required.
f. Name of collector.
g. Any pertinent field data (PID screening results, etc.).
h. Serial numbers on seals and transportation cases.

One member of the sampling team shall be appointed Field Custodian. The Field Custodian documents transactions from the sampling team and the sample remains in the custodians custody until shipping to the laboratory. The sample container shall be placed in a transportation case along with chain-of-custody records, pertinent field records, and analysis request forms. The transportation case is then sealed or locked.

5. Shipping

Samples taken shall be shipped as hazardous substances and transported according to the following requirements:

a. If the substance in the sample is known or can be identified, package, mark, label and ship according to the specific instructions for the material (if it is listed) in the DOT Hazardous Materials Table, 49 CFR 172.101.

b. For samples of hazardous materials of unknown content, Part 172.402 (h) of CFR allows the designation of hazard class based on the shipper's knowledge of the material and selection of the appropriate hazard class from Part 1763.2.

6. Chain of Custody Record

The chain of custody record must contain the following:

a. Site name and address.
b. Sample number.
c. Sample type (composite or grab) and matrix.
~~e.~~ d. Date and time of collection.
~~f.~~ e. Number of containers.
~~g.~~ f. Parameters for which analysis are required.
~~h.~~ g. Signature of collector.

i. Signatures of persons involved in chain of possession.
j. Inclusive times and dates of possession.
k. Condition of sample upon arrival at laboratory.
l. Temperature of the cooler upon receipt by the laboratory.

7. Laboratory Operations

The laboratory shall identify a responsible party to act as sample custodian. The custodian shall sign for incoming field samples, obtain documents of shipment and verify the data entered into the sample custody records. The Lab Custodian shall prepare a sample custody log consisting of serially numbered standard lab-tracking report sheets. The lab custodian shall also prepare procedures for sample handling, storage and disbursement for analysis.

F. Calibration Procedures

Analytical instrumentation shall be calibrated in accordance with requirements which are specific to the instrumentation and procedures employed. Introductory methods 7000 and 8000 in Test Methods for Evaluating Solid Wastes (EPA SW-846) and the procedures specified in the individual methods shall be consulted for criteria for initial and continuing calibration.

G. Sample Preparation and Analytical Procedures

For each measurement, the following Table (Table 2) illustrates the sample preparation and analytical procedure to be used in support of the investigation program.

TABLE 2

Parameter	Matrix	Preparation	Analysis
PCB's	Water	SW846-3510/3520	SW846-3510/3520/8080
	Solids	SW846-3540/3550	SW846-3540/3550/8080
Trace Metals	Water	SW846-3005 (GFAA)	SW846-3010/6010 for Cadmium & Chromium
		SW846-3010 (FLAA or ICP)	SW846-7421 for Lead
		SW846-3020 (GFAA)	
		SW846-7060 (GFAA)	
		SW846-7740 (GFAA)	

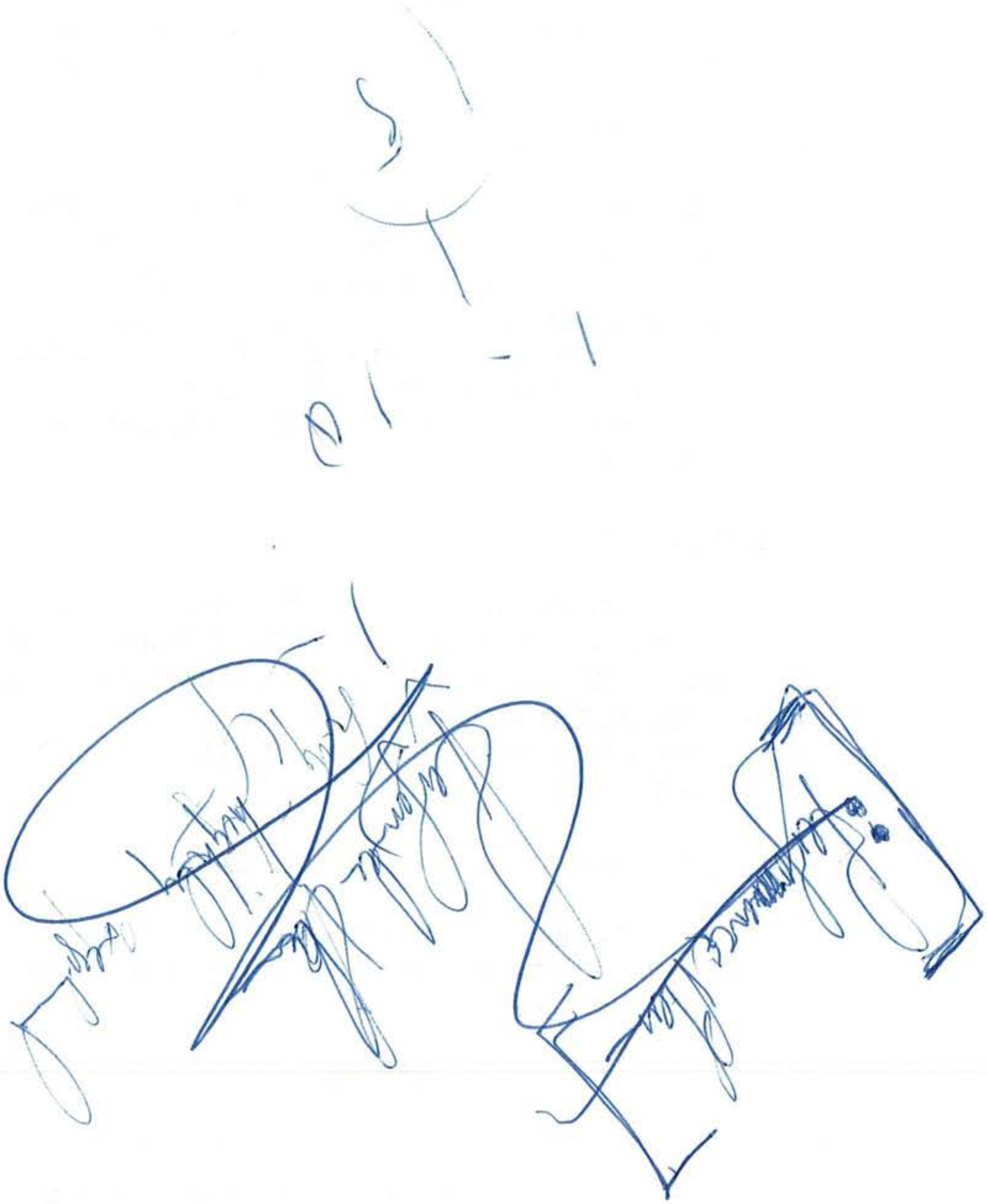

TABLE 2 (Continued)

Parameter	Matrix	Preparation	Analysis
	Solids	SW846-3050 (FLAA, GFAA, or ICP)	SW846-3050/6010
	Oily Water	SW846-3040 (FLAA, GFAA or ICP)	SW846-6010 SW846-7000 Series or 200 Series Equivalent
Semi-Volatile Organics	Water	3510/3520	SW846-8270
	Solids	3540/3550	SW846-8270
Volatile Organics	Water		SW846-8240
	Solids		W846-8240

The practical quantification limits for volatile and semi-volatile organics is identified in each respective SW846 analysis method.

Section A of this plan discusses the anticipated detection limits of the selected analytical method. Detection limits will be determined by following the procedure published in 40 CFR Part 136.

H. Date Reduction, Validation and Reporting

The principal criteria that will be used to validate the integrity of the data during collection and reporting should be modeled from Functional Guidelines for Evaluating Organics Analysis, EPA, February 1, 1988 and Functional Guidelines for Evaluating Inorganic Analysis, EPA, July 1, 1988, or their updated versions.

1. Field Data Validation

Validation of field data shall be performed on two levels. First, all data shall be validated at the time of collection by following standard procedures and QC checks. Second, data shall be validated by supervisory personnel who will review the data to ensure that the correct codes and units have been included. The supervisory personnel are responsible for ensuring that justifiable data is obtained by conforming to the following field objectives:

a. Adherence to the approved sampling plan;
b. Equipment and instruments are properly calibrated and in working order;

c. Samples are collected according to written standard operating procedures;

d. Sufficient sample volume is collected to maintain sample integrity and conduct all required analysis.;

e. Samples are properly preserved;

f. All applicable field QC samples are provided with each sample set;

g. Complete chain-of-custody documentation is maintained throughout the duration of the field effort, and copies are included with each sample shipment; and

h. Field samples will arrive at the laboratory in good condition.

   Random checks of sampling and field conditions should be made by the supervisory personnel, who should check recorded data at that time to confirm observation. Whenever possible, peer review should also be incorporated into the data validation process, in order to maximize data consistency between field personnel.

i. Checklist will be used for overseeing and monitoring the QA/QC.

2. Laboratory Data Validation

Data validation will be performed by the specific analytical task leader, the Laboratory QC Officer, and the Laboratory QA Manager. Validation will be accomplished through routine audits of the data collection and flow procedures and monitoring GC sample results. Data collection and flow audits include:

a. Review of sample documents for completeness by the analyst(s) at each step of the analysis scheme;

b. Daily review of instrument logs, performance test results, and analyst performance by the analytical task manager;

c. Unannounced audits of report forms, notebooks, and other data sheets by the Laboratory QA Manager;

d. Daily review of performance indicators such as blanks, surrogate recoveries, duplicate analyses, matrix spike analysis, etc., by the analytical task manager;

e. Checks on a random selection of calculations by the Laboratory QA Manager;

f. Review by the Laboratory QA Manager of all reports prior to, and subsequent to, computerized data entry; and

g. Review and approval of final report by the Laboratory QA Manager.

Results from the analysis of project and blind audit QC samples will be calculated and evaluated as reported. If these results indicate data quality problems, immediate corrective action will be taken, and all data collected since previous QC audits will be carefully reviewed for validity.

As discussed in Section B, Project Organization and Responsibility, the key individuals soliciting to perform sampling, testing, and decontamination procedures must provide a brief statement explaining individual's responsibility, title and authority for handling and validating data in the reporting scheme. Also, individuals soliciting for this work must identify an independent validator, and must provide a statement of how the individual is independent from the project.

The last page of this appendix section is an example of a Chain of Custody Form. The laboratory will supply reports for Quality Control results and checklists that will be used for overseeing and monitoring the Quality Assurance/Quality Control.

I. Internal Quality Control Checks

Standard analytical methods are given in the pertinent SW846 analytical method. The standards, blanks, duplicates and spiked samples are used for calibration and identification of potential matrix interferences. The laboratory shall use adequate statistical procedures to monitor and document performance and implement an effective program to resolve testing problems. Data from QC samples shall not be used to alter or correct analytical data.

The quality control data and records obtained in the following components of analytical quality control shall be submitted to the data validator and to the regulatory agency with the sample results. These procedures shall be performed at least once with each analytical batch with a minimum of once per twenty samples.

1. Matrix Spike and Matrix Spike Duplicate Samples

A matrix spike and matrix spike duplicate shall be analyzed and must be carried through all stages of the sample preparation and measurement steps. Analytes stipulated by the analytical method,

by applicable regulations, or by other specific requirements must be spiked into the sample at known concentrations.

The objective of spiking is to determine the extent of matrix bias or interference on analyte recovery and sample-to-sample precision. For soil/sediment samples, spiking is performed at approximately 3 ppm and, therefore, compounds in excess of this concentration in the sample may cause interference for the determination of the spiked analytes.

Sample blank matrix spikes must also be run periodically to assure that matrix spike results which are out of range are due to matrix effects and not due to problems with the spike solution.

2. Reagent Blank Sample

Each batch shall be accomplished by a reagent blank. The reagent blank shall be carried through the entire analytical procedure.

3. Surrogate Spike Sample

The analyst shall monitor both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking every blank, standard, and environmental sample (including matrix spike/matrix duplicate samples) with surrogate compounds prior to purging or extraction. Surrogates shall be spiked into samples according to the appropriate analytical methods.

Surrogate spike recoveries shall fall within the control limits set by the laboratory (in accordance with procedures specified in the method or within $\pm$ 20%) for samples falling within the quantification limits without dilution. Dilution of samples to bring the analyte concentration into the linear range of calibration may dilute the surrogates below the quantification limit; evaluation of analytical quality will rely on the quality control embodied in the check, spiked and duplicate spiked samples.

4. Check Sample

Each analytical batch shall contain a check sample. The analytes employed shall be a representative subset of the analytes to be determined. The concentrations of these analytes shall approach the estimated quantification limit in the matrix of the check

sample. In particular, check samples for metallic analytes shall be matched to field samples in phase and in general matrix composition.

5. Instrument Adjustments and Calibration

Instrument adjustment and calibration shall be in accordance with requirements which are specific to the instrumentation and procedures employed. Criteria for initial conditions, calibration and continuing confirmation are found in the appropriate SW846 analytical method.

6. Standards

Standard curves derived from data consisting of one reagent blank and four concentrations shall be prepared for each analyte. The response for each prepared standard shall be based upon the average of three replicate readings of each standard. The standard curve shall be used with each subsequent analysis provided that the standard curve is verified by using at least one reagent blank and one standard at a level normally encountered or expected in such samples.

The response for each standard shall be based upon the average of three replicate readings of the standard. If the results of the verification are not within $\pm$ 10% of the original curve, a new standard shall be prepared and analyzed. If the results of the second verification are not within $\pm$ 10% of the original standard curve, a reference standard should be employed to determine if the discrepancy is with the standard or with the instrument. New standards should also be prepared on a quarterly basis at a minimum. All data used in drawing or describing the curve shall be so indicated on the curve or its description. A record shall be made of the verification.

Standard deviations and relative standard deviations shall be calculated for the percent recovery of analytes from the spiked sample duplicates and from the check samples. These values shall be established for the twenty most recent determinations in each category.

[illegible]

[illegible]

[illegible] which are specific to the instrumentation and procedures [illegible] and continuing calibration [illegible] appropriate [illegible] analytical method.

Standards

[illegible] standard [illegible] of each standard. [illegible]

The response for each standard shall be based upon the average of three [illegible] readings of the standard. If the values of the [illegible] standard shall be prepared and analyzed. [illegible]

Standard deviations and relative standard deviations shall be calculated for the percent recovery of analytes from the [illegible] and from the [illegible] samples. These values shall be [illegible] most recent [illegible]

7. Detection Limit Determination

Laboratory analytical quality control for detection limit determination can be found in 40CFR Part 136.

Field quality control can be found in the following:

a. Documentation

All field activities must be properly documented including:

(1) Specific environmental sampling procedures;

(2) Procedures and justifications for any field actions taken contrary to this quality assurance project plan;

(3) Pre-field activities such as equipment check-out using standardized checklists;

(4) Post-field activities including equipment and personnel decontamination; and

(5) Chain-of-custody procedures for all samples collected in the field.

b. Blank, Field Matrix-Spiked, Collocated, and Replicate Samples

Field quality control procedures for blanks, field matrix-spiked, collocated and replicate samples can be found in Section D - Field Sampling Plan.

J. Performance and System Audits

System audits consist of the qualitative evaluation of the components of the measurement systems to determine their proper selection and use. These audits include a careful evaluation of both field and laboratory quality control procedures and shall be performed on a regular schedule during the life of the project. System audits shall be conducted by an individual who is technically knowledgeable about the operation and who is independent of any other aspect of the investigation. The primary objective of the systems audit is to ensure that the Quality Assurance/Quality Control procedures are being followed.

Laboratory [illegible] (QC) [illegible]

[illegible] 400.

Field audits [illegible] will be focused on the following:

a. Field Procedures

[illegible] field activities [illegible] the following:

(1) Sample [illegible] procedures [illegible]

(2) Procedures [illegible] for [illegible] quality assurance project [illegible]

(3) Pre-field [illegible] calibration/check [illegible] using standard [illegible] procedures

(4) Post-field activities [illegible] and decontamination [illegible]

(5) Chain-of-custody procedures for [illegible] samples collected in the field.

b. [illegible] Field [illegible]

Field quality [illegible] will be [illegible] in Section [illegible]

Performance [illegible]

System audits [illegible] the evaluation of the components of the measurement systems [illegible] These audits [illegible] quality control procedures [illegible] during the life of the project [illegible] independent of any [illegible] objectives [illegible] Assurance/Quality Control [illegible]

Performance audits are conducted periodically to determine accuracy of the total measurement system and are quantitative evaluations of the measurement systems. This requires testing the measurement systems with samples of known composition or behavior to evaluate precision and accuracy.

The following are recommended audit procedures:

1. Field Performance Audits

   Field performance audits shall be conducted during the project as field data are generated, reduced and analyzed. All numerical manipulations shall be legible and sufficiently complete to permit reconstruction by others. Analyses of blank samples is an audit of the effectiveness of measures taken in the field to ensure sample integrity. The results of field replicates are an audit of the ability of field teams to collect representative sample portions of each matrix type.

2. Field Systems Audits

   Systems audits of site activities will be accomplished by an inspection of all field site activities. During this audit, the auditor(s) will compare current field practices with standard procedures. The following elements should be evaluated during a field systems audit:

   a. Overall level of organization and professionalism;

   b. All activities conducted in accordance with the Work Plan;

   c. All procedures and analyses conducted according to procedures outlined in this Quality Assurance Project Plan;

   d. Level of activity and sample documentation;

   e. Level of QA conducted per each field team;

   f. Contingency plans in case of equipment failure or other event preventing the planned activity from proceeding;

   g. Decontamination procedures;

[illegible] audits will be conducted [illegible] and [illegible] of the [illegible] audit system. [illegible] includes tracking the measurement of [illegible] and accuracy.

The following are recommended audit procedures:

1. Field Technical Audits

Field technical audits shall be conducted to [illegible] field data are collected, reduced and analyzed. [illegible] manipulations shall be [illegible] and sufficiently complete to permit reconstruction by others. [illegible] of the [illegible] of [illegible] taken in the field to ensure [illegible]. The results of [illegible] are an [illegible] of the ability of field teams to collect representative samples of each matrix type.

2. Field Systems Audits

Systems audits of site activities will be accomplished by an inspection of all field site activities. During this audit, the auditor(s) will compare current field practices with standard procedures. The following elements should be evaluated during a field systems audit:

a. Overall level of organization and professionalism;

b. All activities conducted in accordance with the Work Plan;

c. All procedures and analyses conducted according to procedures outlined in the Quality Assurance Project Plan;

d. Level of activity and sample documentation;

e. Level of QA conducted per each field team;

f. Contingency plans in case of equipment failure or other event preventing the planned activity from proceeding;

g. Decontamination procedures.

h. Level of efficiency with which each team conducts planned activities at one site and proceeds to the next; and

i. Sample packaging and shipment.

After completion of the audit, any deficiencies should be discussed with the field staff, and corrections identified. If any of these deficiencies could affect the integrity of the samples being collected, the auditor(s) will inform the field staff immediately, so that corrections will be implemented immediately.

2. <u>Laboratory Performance Audits</u>

Laboratory performance audits shall be conducted on a routine basis and include items such as:

a. Verification of written procedures and analyst(s) understanding;

b. Verification and documentation of procedures and documents;

c. Periodic unannounced inspection of the sample handling group;

d. Periodic unannounced inspection of the analytical process record keeping; and

e. Review of a portion of all analytical data and calculations.

Corrective action will be taken for any deficiencies noted during the audit.

3. <u>Laboratory Systems Audits</u>

Laboratory system audits are qualitative audits of the measurement systems, ensuring that they are properly maintained and used. In the event that a major defect is discovered as a result of one of these audits, a follow-up inspection shall be conducted after sufficient time has passed for correction of the deficiency, or evidence of correction of the deficiency may be presented by the laboratory.

a. <u>Scheduled Audit</u>

These audits will be performed on a regularly scheduled basis, and include review of:

(1) Analytical and support instrumentation maintenance logs;

(2) Analytical and support instrumentation calibration logs;

(3) Refrigerator and freezer temperature records;

(4) Distilled/de-ionized water supply records;

(5) Sample tracking system;

(6) Standard tracking system; and

(7) Reagent chemical log-in, tracking, and disposal.

Another type of laboratory system audit is the on-site audit by the project Quality Assurance Officer. During this audit, laboratory records and procedures will be inspected for completeness, accuracy, precision, and adherence to prescribed methods. This inspection will include:

a. Following the sample chain-of-custody from time of sample receipt, through all analysis steps, to data reduction, validation, and report generation;

b. Examination of maintenance and calibration logbooks, to ensure that maintenance and calibration are performed on a scheduled basis;

c. Examination of procedures and records for data calculation, transfer and validation;

d. Spot-check of calibration, QC, and sample data from selected instruments for selected days, to ensure acceptable precision, accuracy, and completeness;

The [illegible] during [illegible] will be conducted on a regularly scheduled basis, and include [illegible]:

(1) [illegible] instrument [illegible] logs;

(2) Analytical and [illegible] instrumentation [illegible] logs;

(3) Refrigerator and freezer temperature records;

(4) Distilled/deionized water quality records;

(5) Sample tracking system;

(6) Standard tracking system; and

(7) Reagent/standard [illegible] tracking and [illegible].

Another type of laboratory system audit is the on-site audit by the project Quality Assurance Officer. During this audit, laboratory records and procedures will be inspected for completeness, accuracy, precision, and adherence to established protocols. This inspection will include:

a. Following the [illegible] chain-of-custody [illegible] of [illegible] samples through [illegible] of [illegible] cycle: storage, [illegible], validation [illegible].

b. Examination of [illegible] logbooks, to ensure that maintenance and calibration are performed at [illegible].

c. Examination of procedures and [illegible] for data calculation, [illegible] and validation.

d. Spot check of calculation, [illegible] selected [illegible] for accuracy, precision, and completeness.

e. Inspection of storage areas, glassware preparation areas, and distilled/de-ionized water system records and procedures;

f. Examination of QA procedures and records (standard and spike solution logbooks and storage areas, control charts, QA manuals).

3. Schedule

Performance and system audits shall be performed on a weekly basis during the sampling life and testing life of the project.

K. Preventive Maintenance

Preventive maintenance of field and laboratory equipment shall be performed on a regular basis in accordance with written standard operating procedures or maintenance manuals for each equipment item used for this project.

L. Data Assessment Procedures

The following describes the equations used to assess precision, accuracy and completeness of the measurement data, and to determine the measurement systems detection limits.

1. Precision

$$RPD = \frac{R_1 - R_2}{(R_1 + R_2)/2} \times 100$$

Where: R_1 and R_2 is the concentration of replicate spikes 1 and 2.

2. Accuracy

$$R = \frac{[(\text{Spiked Sample Conc.}) \times (\text{Sample + Spike Vol.}) - (\text{Sample Vol.}) \times (\text{Sample Conc.})]}{(\text{Spike Conc}) \times (\text{Spike Volume})} \times 100$$

Where R is percent recovery.

The QA Officer should ensure that these steps are taken and that the problem which led to the corrective action has been resolved.

N. Quality Assurance Reports to Management

Reports to management shall include:

1. Periodic assessment of measurement data accuracy, precision, and completeness;

2. Results of performance audits;

3. Results of system audits;

4. Significant QA/QC problems and recommended solutions; and

5. Resolutions of previously stated problems.

The individual(s) responsible for preparing the periodic reports should be identified. These reports and the final project report should contain a separate QA/QC section that summarizes data quality information contained in the periodic reports.

1. Field Quality Assurance Report

Status reports should be submitted periodically to describe the progress of the project. These should include daily field progress reports, compiled field data sets, and corrective action documentation at appropriate intervals. Situations requiring immediate corrective action measures will be brought to the attention of the Project Manager.

2. Laboratory Quality Assurance Reports

A project QA report that summarizes all QA activities and QC data for the project will be issued to the project QAO whenever analysis data are reported to the Project Manager. In addition, the Laboratory Director will provide QA update memoranda for each sampling episode to the Project Manager upon evaluation of the analytical work for that episode. The Project Manager will be notified immediately of laboratory QA situations requiring immediate corrective action.

[illegible]

B. [illegible]

Reports to management will include:

1. Periodic assessment of measurement data accuracy, precision, and completeness.

2. Results of performance audits.

3. Results of system audits.

4. Significant QA/QC problems and recommended solutions; and

5. Resolutions of previously stated problems.

The individual responsible for preparing the periodic reports should be identified. These reports and the final project report should contain a separate QA/QC section that summarizes data quality information contained in the periodic reports.

1. Field QA/QC Activities Report

Status reports should be submitted periodically to document the progress of the project. These should include daily field progress reports, completed field data sheets, and any other pertinent documentation at appropriate intervals. Should a problem requiring immediate corrective action arise, it will be brought to the attention of the Project Manager.

2. Laboratory Quality Assurance Reports

A project QA report that summarizes all QA activities and QC data for the project will be issued to the project QAO [illegible] analytical data are [illegible] to the Project Manager. In addition, the Laboratory Director will [illegible] corrective actions [illegible]

3. Completeness

$$\text{Complete} = \frac{\text{No. of valid true concentrations reported}}{\text{No. of samples collected for anal. of true conc}} \times 100$$

4. Method Detection Limits

MDL = t(n-1, 1- α = 0.99)X S

Where MDL = Method Detection Limit
S = Standard deviation of the replicate analysis
t(n-1, 1 - α = 0.99) = Students' t-value appropriate to a 99 percent confidence level and a standard deviation estimate with n - 1 degrees of freedom.
From 40 CFR Part 136.

M. Corrective Actions

If the results of the analysis are not within the anticipated limits, there are corrective actions that should be initiated by the analyst. There are, however, other checks within the measurement system that only the person assigned QA/QC responsibilities would be in a suitable position to evaluate and take action upon if required. A "blind" sample inserted in the normal sample flow would be an example of such a check.

The need for corrective action may be identified by system or performance audits or by standard QC procedures. The essential steps in the corrective action system are:

1. Identification and definition of the problem;

2. Assignment of responsibility for investigating the problem;

3. Investigation and determination of the cause of the problem;

4. Determination of a corrective action to eliminate the problem;

5. Assigning and accepting responsibility for implementing the corrective action;

6. Implementing the corrective action and evaluating its effectiveness; and

7. Verifying that the corrective action has eliminated the problem.

3. Special Notifications

All situations that indicate an imminent health risk will be brought to the immediate attention of the Project Manager and the regulatory agency. Written notification with supporting data will be forwarded within 3 days.

4. Final Report

The final report submitted to the regulatory agency must include a separate quality assurance section that summarizes the data quality information contained in the periodic reports.

APPENDIX 2

LAB ANALYSIS RESULTS AND FLUID LEVEL RECORDS

FOR

BUILDING 360 CLOSURE PLAN

SENECA ARMY DEPOT
ROMULUS, NEW YORK

PREPARED BY:

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301 SOUTH MAIN STREET
HORSEHEADS, NEW YORK 14845

CDG FILE NO. 60-9422

OCTOBER 28, 1992

BUILDING 360 CLOSURE PLAN

SENECA ARMY DEPOT ACTIVITY
ROMULUS
N.Y.

July 1, 1994

TABLE OF CONTENTS

SENECA ARMY DEPOT
BUILDING 360 CLOSURE PLAN
STEAM JENNY PIT

I. FACILITY CONDITIONS

A. General Information

The objective of closing the Steam Jenny Pit at Building 360 at the Seneca Army Depot is that the existing hazardous collection pit does not conform to current hazardous waste tank regulations and because it was indeterminate, based on inspections, to ensure that the pit did not leak. The objective is also to identify the extent of possible contaminations and to use this plan as a guide to decontaminate or remove hazardous substances. Systematic sampling, testing and quality control procedures will be implemented to assure proper decontamination and possible abandonment of the system. This objective does not include the remediation of contaminated ground water. If necessary, this will be done in the future as part of remedial work accomplished through either Seneca's Interagency Agreement (IAG) with the New York State Department of Environmental Conservation (DEC) and the Environmental Protection Agency (EPA), or a post-closure permit to be issued by DEC.

Building 360 at the Seneca Army Depot is a building where old equipment is refurbished and reconstructed. Lathes, presses, metal working machines are degreased with steam, high pressure water and detergents in the cleaning area. Heavy metals, PCB's and greases are possible hazardous substances generated from the equipment. After steam cleaning the equipment is moved to other portions of Building 360 for rehabilitation.

The existing cleaning area is a 20'- 6" wide by 38'- 6" long portion of Building 360 separated from the rest of Building 360 by a high bay cinder block wall. Track mounted carts carrying the equipment to be refurbished, are rolled into the cleaning area, through a roll-up-door, on a permanently-installed rail system. Metal grating has been placed adjacent to and in the middle of the rail system. The floor slopes to the metal grating.
(Refer to the attached sketch titled "Building 360 Partial Plan".)

Under the metal grating is a trench system which slopes from a depth of 2'- 0" on the west end to a depth of 2'- 10" toward the east end. (Refer to the attached sketch titled

"Section B".) Water and grease flow through the trench system to an accumulation pit at the east end. This pit is constructed with openings through both rail foundation walls. The pit depth is 3'- 4~ under the metal grating. The width of the pit is 0'- 6". The pit length is 3'- 0". (See attached sketches titled "Section A" and "Section B".) The accumulation pit is emptied into approved waste removal vehicles and disposed of as hazardous waste at an approved storage facility.

Since cleaning operations ceased on January 2, 1990, Seneca has periodically monitored the depth of water in the accumulation pit to determine if water levels in the pit are affected by varying groundwater levels. Seneca has also periodically rinsed the pit and disposed of the rinseate as hazardous waste but has never had the pit tested after rinsing for contamination. A manifest detailing information on the removal and disposal of the final volume of waste is included at the end of this report. An analysis of sludge from the bottom of the pit and water in the pit was completed in 1987. A copy of the results of this laboratory analysis is included in APPENDIX 2.

B. Equipment

The equipment used in the cleaning process is a track-mounted cart. Also, equipment to be cleaned can either be hand-carried or transported via dollies into the cleaning area. There is no available inventory of equipment which has been cleaned in Building 360.

C. Schedule of Closure

The cleaning of equipment in Building 360 cleaning area ceased prior to January 2, 1990. According to 6NYCRR Part 373-3.7(d)(2), all closure activities must be completed within 180 days after approval of the closure plan. A schedule of closure activities including a timetable is provided at the end of this report. Note that groundwater remediations are NOT included in this schedule.

II. WASTE REMOVAL

The volume of waste which can accumulate in the tank up to the two-foot freeboard marker is 1200 gallons. If the accumulate pit is filled to floor level, waste volume is approximately 5,000 gallons. In the past, the waste was pumped from the accumulation pit into an approved tank truck and transported to an approved hazardous waste disposal facility. Currently, the cleaning area is not being used.

"Section B".) Water and grease flow through the trench system to an accumulation pit at the east end. This pit is constructed with openings through both wall foundation walls. The pit depth is 1'- 4" under the metal grating. The width of the pit is 6'- 8". The pit length is 3'- 0". (See attached sketches titled "Section A" and "Section B".) The accumulation pit is emptied into approved waste removal vehicles and disposed of as hazardous waste at an approved storage facility.

Since cleaning operations ceased on January 2, 1990, Seneca has periodically monitored the depth of water in the accumulation pit to determine if water levels in the pit are affected by varying groundwater levels. Seneca has also periodically rinsed the pit and disposed of the rinsate as hazardous waste but has never had the pit tested after rinsing for contamination. A table detailing information on the removal and disposal of the final volume of waste is included at the end of this report. An analysis of sludge from the bottom of the pit and water in the pit was completed in 1987. A copy of the results of this laboratory analysis is included in APPENDIX 2.

B. Equipment

The equipment used in the cleaning process is a track-mounted cart. Also, equipment to be cleaned can either be hand-carried or transported via dollies into the cleaning area. There is no available inventory of equipment which has been cleaned in building 360.

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The cleaning of equipment in building 360 cleaning area ceased prior to January 2, 1990. According to 6NYCRR Part 373-3.7(d)(2), all closure activities must be completed within 180 days after approval of the closure plan. A schedule of closure activities including a timetable is provided at the end of this report. Note that groundwater [illegible] are NOT included in this schedule.

II. WASTE REMOVAL

The volume of waste which can accumulate in the tank up to the two-foot freeboard marker is 1400 gallons. If the accumulation pit is filled to floor level, [illegible] volume is approximately 3,000 gallons. In the past, the waste was pumped from the accumulation pit into an approved tank truck and transported to an approved hazardous waste disposal facility. Currently, the cleaning area is not being used.

The wastewater contains oil, water, detergent, grease, dirt, traces of "stoddard" solvent, paint thinner, paint chips, metal fillings and PCB's.

The quantities and dates of removal are indicated as follows:

June 16, 1983	5,000 Gal.
June 23, 1983	5,000 Gal.
March 9, 1984	5,000 Gal.
June 22, 1984	5,000 Gal.
August 12, 1985	5,000 Gal.
July 9, 1986	5,000 Gal.
September 30, 1986	4,500 Gal.
January 26, 1988	4,107 Gal.
January 27, 1988	4,107 Gal.
June 17, 1988	3,700 Gal.
October 26, 1988	3,700 Gal.
October 27, 1988	1,420 Gal.
December 21, 1988	4,775 Gal.
January 2, 1990	2,000 Gal.

A copy of the manifest detailing information on the removal and disposal of the final volume of waste is included at the end of this report. An analysis of sludge in the bottom of the pit and water in the pit was completed in 1987. A copy of the laboratory analysis results and fluid level records is included in Appendix 2 of this plan.

III. SAMPLING

Existing metal grating will be removed with wrenches and torches. The grating will be scrubbed with detergent and water and stored for reuse. The rinseate will be wet-vacuumed and disposed of as a hazardous waste.

Samples will be taken at locations shown on the attached sketches. The concrete flooring of the accumulation pit will be saw-cut and jackhammered for the thickness of the concrete.

Sampling Scheme: The middle of each of the three trenches are approximately 4 ft. on-center. Three samples will be taken on the centerline of the center trench. The samples will be taken 8 ft. apart. (See the attached sketch titled "Building 360 Sampling Plan".)

The Building 360 Sampling Plan sketch has been divided into a 4 ft. x 8 ft. grid. The 4 ft. (east-west) grid lines have been labeled A, B, C, D, and E. The 8 ft. (north-south) grid lines have been labeled 1, 2, and 3. Samples will be taken taken at location C-1, C-2 and C-3.

The wastewater contains oil, water, detergent, grease, dirt, traces of "safety-kleen" solvent, paint thinner, paint chips, metal fillings and PCB's.

The quantities and dates of removal are indicated as follows:

June 16, 1982	5,000 Gal.
June 17, 1982	5,000 Gal.
March [illegible], 1983	5,000 Gal.
June 22, 1984	5,000 Gal.
August 12, 1985	5,000 Gal.
July [illegible], 1986	5,000 Gal.
September 10, 1986	4,500 Gal.
January 26, 1988	4,107 Gal.
January 2[illegible], 1988	4,107 Gal.
June 1[illegible], 1988	3,700 Gal.
October 2[illegible], 1988	3,700 Gal.
October 27, 1988	3,[illegible] Gal.
December 21, 1988	3,725 Gal.
January [illegible], 1990	2,000 Gal.

A copy of the applicant detailing information on the removals and disposal of the final volume of waste is included at the end of this report. An analysis of sludge in the bottom of the pit and water in the pit was completed in 1987. A copy of the laboratory analysis results and fluid level records is included in Appendix 2 of this plan.

III. SAMPLING

Existing metal grating will be removed with [illegible] and [illegible]. The grating will be scrubbed with detergent and water and stored for reuse. The rinsate will be vacuumed and disposed of as a hazardous waste.

Samples will be taken at locations shown on the attached sketches. The concrete flooring of the accumulation pit will be cut and jackhammered for the thickness of the concrete.

Sampling Scheme: The middle of each of the three trenches are approximately 4 ft. on-center. Three samples will be taken on the centerline of the center trench. The samples will be taken 8 ft. apart. (See the attached sketch titled "Building 160 Sampling Plan".)

The Building 160 Sampling Plan sketch has been divided into a 4 ft. x 8 ft. grid. The 4 ft. (east-west) grid lines have been labeled A, B, C, D, and E. The 8 ft. (north-south) grid lines have been labeled 1, 2, and 3. Samples will be taken taken at location C-1, C-2 and C-3.

Sampling procedures are outlined on the following page. The concrete will be saw-cut and jackhammered at each sample location. <u>Concrete chip samples</u> from the upper layer, middle layer and lower layer will be placed in a "ziploc" bag, labeled and sent to the laboratory for analysis. <u>Undisturbed samples from the soil/gravel strata below the concrete</u> will be taken with an auger and thin wall tube sampler.

1. Using the auger bit, begin drilling and periodically remove accumulated soils to a depth of 12 inches below the bottom of the concrete.
2. Slowly and carefully remove the auger so that soil does not fall back into auger hole.
3. Remove the auger tip from the drill rod and replace with a decontaminated thin wall tube sampler.
4. Install proper cutting tip.
5. Carefully lower sampler into borehole.
6. Gradually force sampler into soil. (Care should be taken to avoid scraping borehole sides. Hammering the drill rods to facilitate coring should be avoided as the vibrations may cause the boring walls to collapse.)
7. Remove corer and unscrew drill rods.
8. Remove cutting tip and remove core from device.
9. Discard top of core (approximately 1 inch), which represents any material collected by the corer before penetration of the layer in question.
10. Place remaining core into sample container.

The auger shall then be used to remove soil/gravel to depth two feet below the groundwater surface. The groundwater shall be pumped out to to preclude the possibility of contamination from upper soil layers and allowed to settle for 24 hours prior to sampling. It is anticipated that groundwater will be encountered within a depth of 4 feet below the accumulation pit. One sample of groundwater will be taken, with a weighted bottle, from each sample location and sent to a laboratory for analysis. Field samples will be screened using a photo-ionization detector. The sample locations will be backfilled with new crushed gravel and non-shrink grout.

Monitoring wells will be installed, if groundwater testing or soil sampling indicate concentrations of hazardous materials' in excess of the allowable limits stated in the testing section of the closure plan. Two fifteen foot deep monitoring wells will be installed. One monitoring well will be placed upgrade of Building 360, and one monitoring well is to be placed downgrade of Building 360.

An existing sump pump adjacent to the cleaning area in Building 360 is used to relieve groundwater levels. This pump will be used as a monitoring location. Groundwater will be sampled and tested once a month for three months.

The remediation plan, in the event of extensive soil or groundwater contamination will be accomplished through the RCRA program should the IAG clean-up not be done in a timely manner as determined by DEC.

In the event the soil surrounding Building 360 is determined to reveal extensive contamination, levels in excess of the allowable limits stated in the testing section of the closure plan, additional soil sampling and testing will be required. Additional samples will be taken on the "C" grid line, every sixteen feet from the end of the building for a distance of 48 feet. The time allowed for further sampling is indicated on the Closure Schedule.

In accordance with 6NYCRR Part 373-3.10 (h)(2), if it cannot be demonstrated that all contaminated soils can be practicably removed or decontaminated, then the tank system must be closed as a landfill and 6NYCRR Part 373-3.14 (d) would apply. All the requirements for landfills specified in 6NYCRR Part 373-3.7 and 373-3.8 would have to be met.

IV. TESTING

TABLE 1, on the following page, shows the media, constituent, preparatory method and EPA SW-846 method that will be utilized for testing criteria of the Steam Jenny Closure.

TABLE 1

Steam Jenny Pit Closure
Test Method Scheme

MEDIA	CONSTITUENT	PREPARATORY METHOD	EPA SW-846 METHOD
CONCRETE	PCB's	3540/3550	3540/3550/8080
	Cd	1311 (TCLP)	3010/3020/6010
	Cr	1311 (TCLP)	3010/3020/6010
	Pb	1311 (TCLP)	3010/3020/6010
SOIL	Volatiles	-----	8240
	PCB's	3540/3550	3540/3550/8080
	Cd	3050	3050/6010
	Cr	3050	3050/6010
	Pb	3050	3050/6010
WATER	Volatiles	-----	8240
	Semi-Volatiles	-----	8240
	PCB's	3510/3520	3510/3520/8080
	Cd	3010	3010/6010
	Cr	3010	3010/6010
	Pb	3020	7421

NOTE: The methods indicated above are from EPA SW-846, "Test Methods for Evaluating Solid Waste".

The specific criteria that will be used to determine that the containment action levels are acceptable are listed below in TABLE 2.

TABLE 2

New State Department of Environmental Conservation

ACTION LEVELS

CONSTITUENT	GROUNDWATER/ ACTION LEVEL	SOIL SEDIMENT ACTION LEVEL *
Cadmium	5 ug/L	1 mg/Kg
Chromium	50 ug/L	10 mg/Kg
Lead	15 ug/L	Site Bkgnd.
PCB's	0.1 ug/L	1 PPM

* Action levels for the concrete sample will fall into the soil/sediment action level.

V. QUALITY ASSURANCE/QUALITY CONTROL

The purpose of this section is to state the minimum requirements of a quality assurance project plan for field sample collection and laboratory testing. The regulating standards can be found in the "RCRA Quality Assurance Project Plan Guidance" dated March 28, 1991 of the New York State Department of Environmental Conservation's Division of Hazardous Substances' Regulation.

APPENDIX 1 describes in detail the requirements for the quality assurance project plan for the Building 360 Closure Plan.

Vl. DECONTAMINATION PROCEDURES FOR FINAL CLOSURE

A. General

If all contaminated oils cannot practicably be removed or decontaminated, then system must be closed and treated as a landfill.

If the concrete cores are contaminated above RCRA limits, then the concrete, (except for foundations and footings) will be removed and disposed as a hazardous waste. Background core samples will be taken. New concrete will then be placed in kind. Underpinning and shoring of foundation walls will be required.

If soil and/or groundwater samples reveal extensive contamination, the site will be investigated/remediated under Seneca's Interagency Agreement with DEC and EPA. Should the IAG clean-up not be performed in a timely manner as determined by the Department, a plan to remediate the area will be accomplished through the RCRA program.

B. Decontamination

If contaminant is limited to the surfaces of the concrete, then the following decontamination procedures will apply:

1. All contaminated areas including walls and floors will be scrubbed with industrial detergent and water, then rinsed;
2. Water will be collected with a wet-vacuum;
3. Additional samples of the surface concrete will be taken by core drilling the concrete for a depth of one inch and chipping the concrete loose. Samples will be taken randomly but within one foot of the original samples. Concrete samples will be placed in plastic sealable bags for transport to a laboratory for testing. Concrete core holes will be filled with non-shrink grout; and
4. If testing reveals the need for further decontamination, then muriatic acid will be used to decontaminate and resampling will be performed as noted in Item 3.

C. Equipment

An inventory of the equipment to be used during decontamination and sampling procedures may include but NOT be limited to the following:

1. Personnel protective equipment;
2. Augers, thin-wall tube samplers;
3. Weighted bottles;
4. Detergents and solvents (if necessary);
5. Muriatic acid;
6. Brooms, buckets, brushes, scrapers;
7. Hose and nozzles;
8. Wrenches, cutting torches (for removal of grating);
9. Clean plastic sealable bags for placing concrete and soil samples;
10. Labels;
11. Wet-vacuum, HEPA vacuum;
12. Six mil plastic over sandbags sealed with duct tape for contaminant dike at doorway openings;

13. Backhoe (for removal of extensive contamination if necessary);
14. 55 gallon DOT-approved drums for disposal of equipment, concrete, and soils;
15. Jackhammer; and
16. Concrete saws.

A list of <u>personnel protective equipment</u> may include but not be limited to the following:

1. "TYVEK" brand coveralls with hoods;
2. Safety goggles;
3. Steel toed shoes;
4. Butyl or viton gloves;
5. Duct tape;
6. Half face or full face respirators with HEPA filters; and
7. Emergency eyewash.

D. <u>Run-on/Runoff Control</u>

Rinseate from decontamination operations will be contained using sandbag diking and 6-mil plastic sheets connected with duct tape. The plastic will be used to facilitate collection of wastewater. Wastewater will be collected using a "wet-vac" type vacuum. The wastewater, or rinseate, will be vacuumed from the plastic or directly from concrete surfaces. Since the facility is above grade, run-on is not a concern.

VII. <u>HAZARDOUS WASTE DISPOSAL</u>

Wastewater, rinseate, concrete, soil, protective equipment, tools, plastic, etc. will be placed in 55-gallon DOT-approved drums. Drums can be placed at Seneca's hazardous waste conforming storage, Building #307. A sketch is included at the end of this closure plan.

The accumulated hazardous waste will be disposed of by competitive bid. Land disposal rules will apply. Some soils will be treated prior to disposal. The operations at Frontier Chemicals in Niagara Falls, New York is a typical off-site hazardous waste management facility which may be used for disposal, depending on bids.

VIII. ABANDONMENT/CONSTRUCTION

If soil samples reveal extensive contamination, then the Steam Jenny Building will be closed as a landfill. If the concrete is to be removed, then new concrete will be placed to achieve the existing trench functions. The new steam cleaning operation will utilize a high pressure, high temperature water system. The rinseate water will be recycled and reused. The recycled water will be filtered to remove grease, oils and metals. The recycled water will be re-heated and re-used.

IX. CERTIFICATION

Certification by an independent New York State registered professional engineer can begin once activities listed in this closure plan are complete. The amount of contaminated soil and concrete will then be known for disposal purposes. Samples and tests required by the State Department of Environmental Conservation will be taken at that time.

Within 60 days of final completion of closure, a certification documenting the closure activities must be made by a qualified independent engineer registered in New York State. The certification must state that closure was executed in accordance with the approved closure plan.

CHAIN OF CUSTODY RECORD

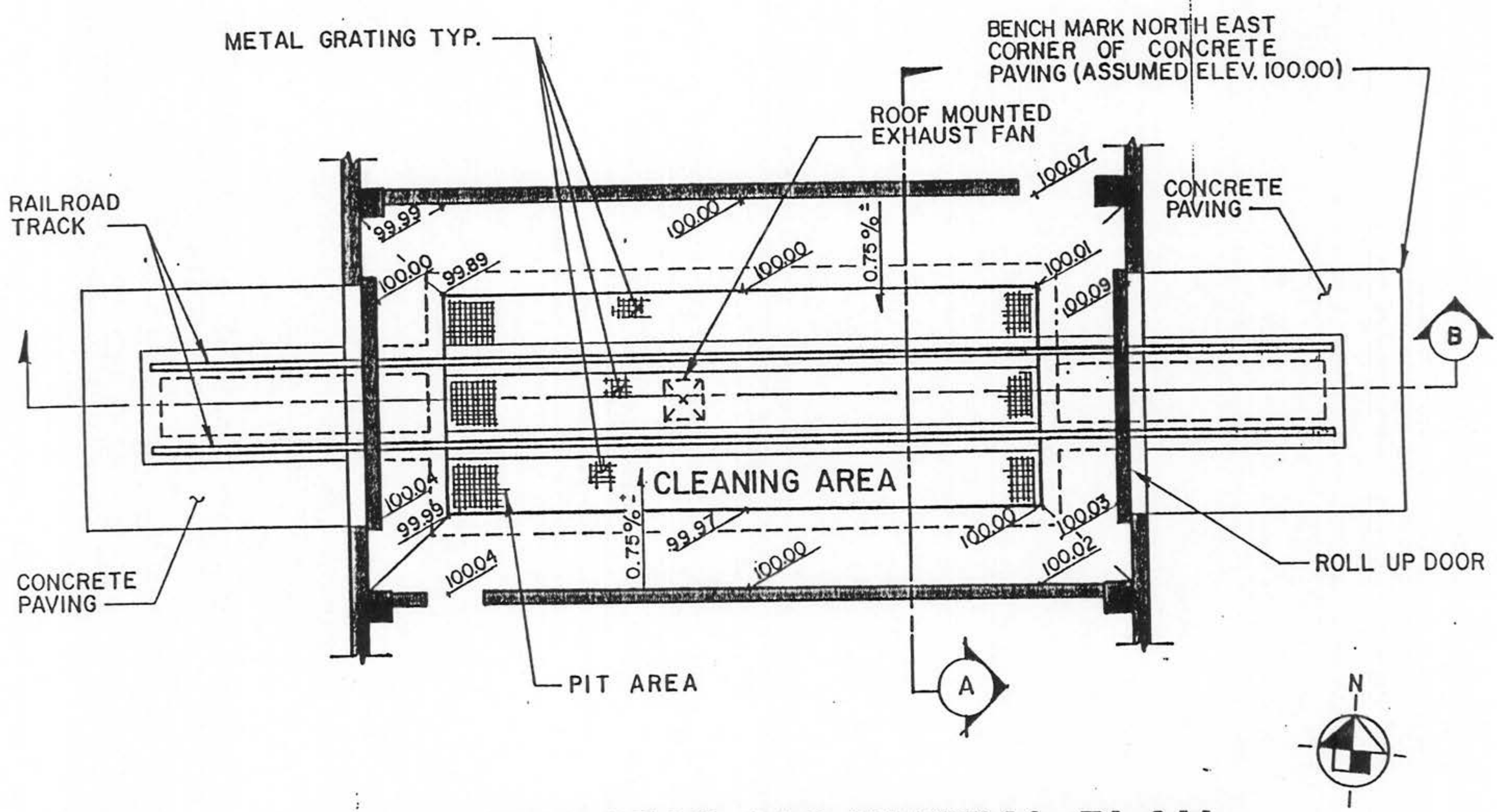
DUE DATE: ______________

CLIENT:			PROJECT NAME:		NO. OF CON-TAINERS									
SAMPLE PRES.	DATE	TIME	GRAB	STATION LOCATION										

SAMPLED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	REMARKS:	

WITNESS: ______________________ DATE: __________

WEATHER CONDITIONS: ______________________



BUILDING 360 PARTIAL PLAN

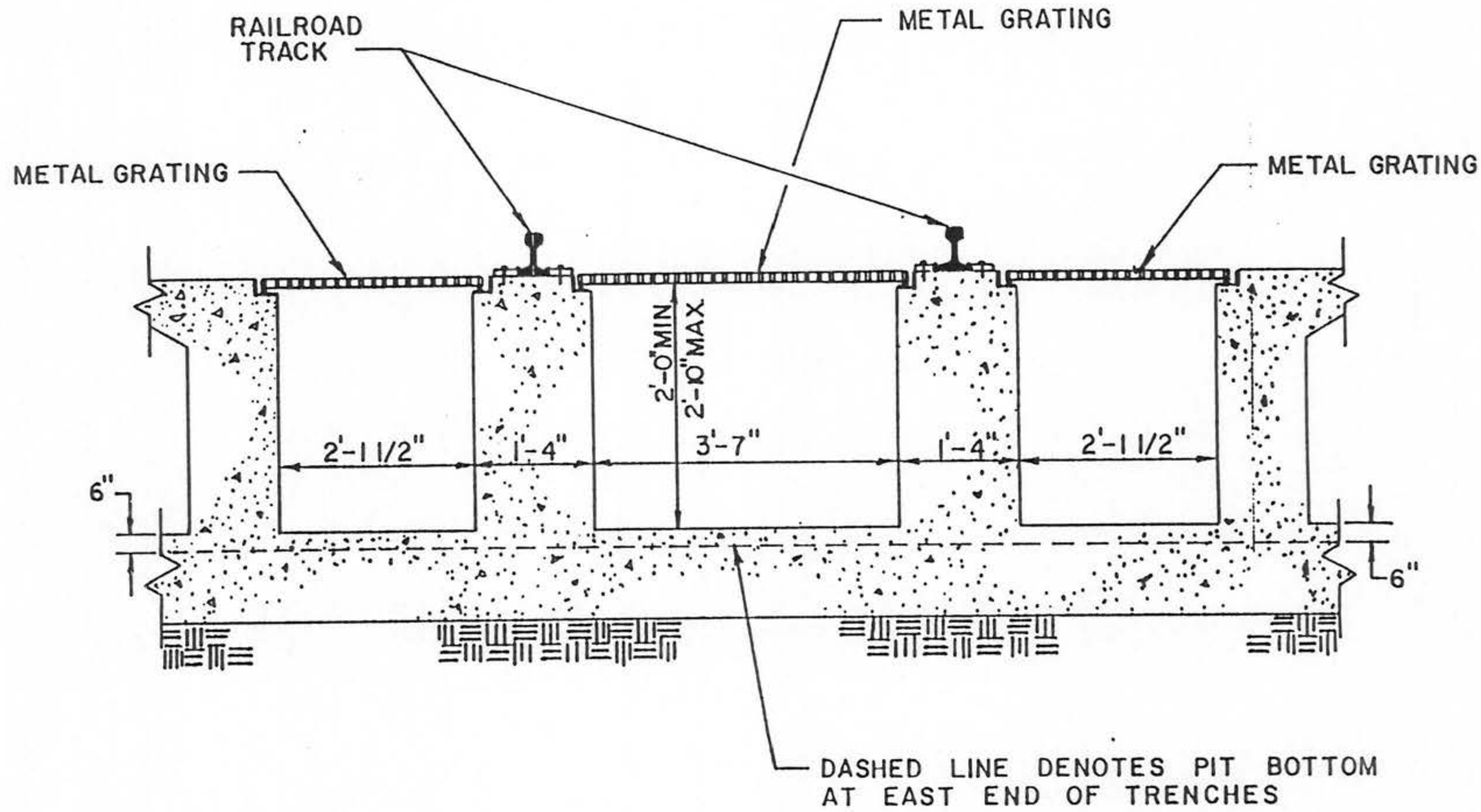
SCALE: 1/8" = 1'-0"

Campbell Design Group
Engineers

301 E. Main St. Horseheads, New York 14845

BUILDING 300 PARTIAL PLAN

SCALE: 1/8" = 1'-0"



SECTION 'A'

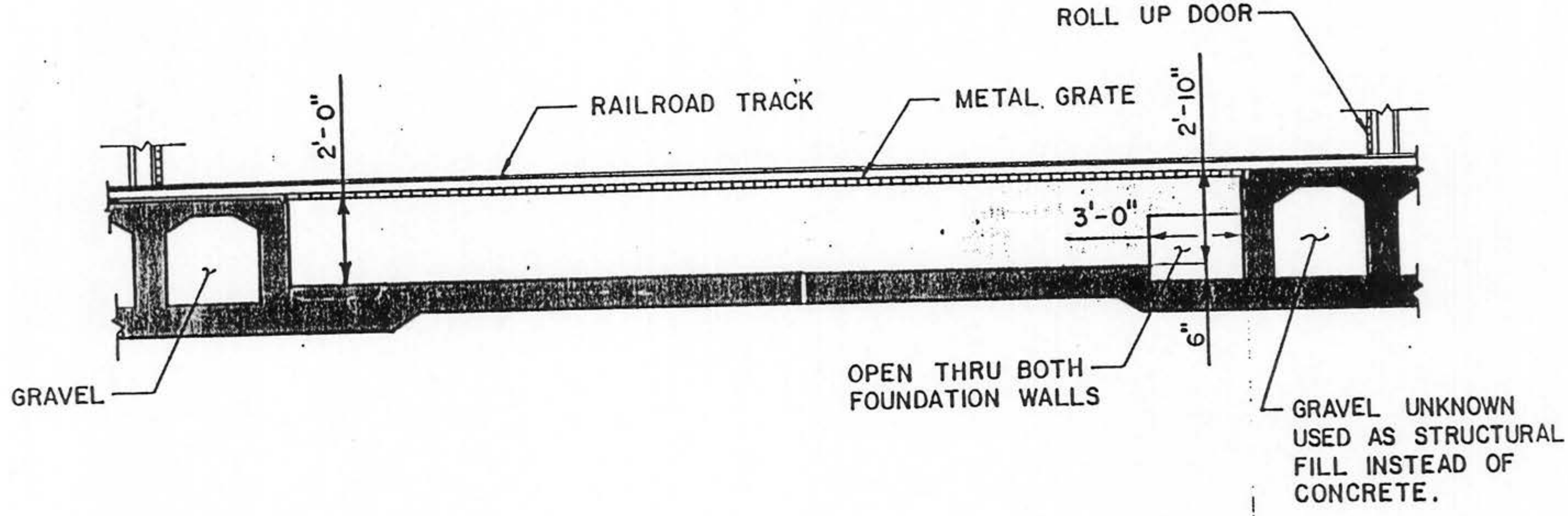
SCALE: 1/2" = 1'-0"

Campbell Design Group
Engineers
301 S. Main St. Horseheads, New York 14845 607/739-0331
St. Louis, MO [illegible], NY Kansas City, MO Prairie Village, KS [illegible]
[illegible] Campbell, NY Baton Rouge, LA Wellsboro, PA Belleville, IL

SECTION 'A'

SCALE 1/2" = 1'0"

Campbell Design Group



SECTION 'B'

SCALE: 3/16" = 1'-0"

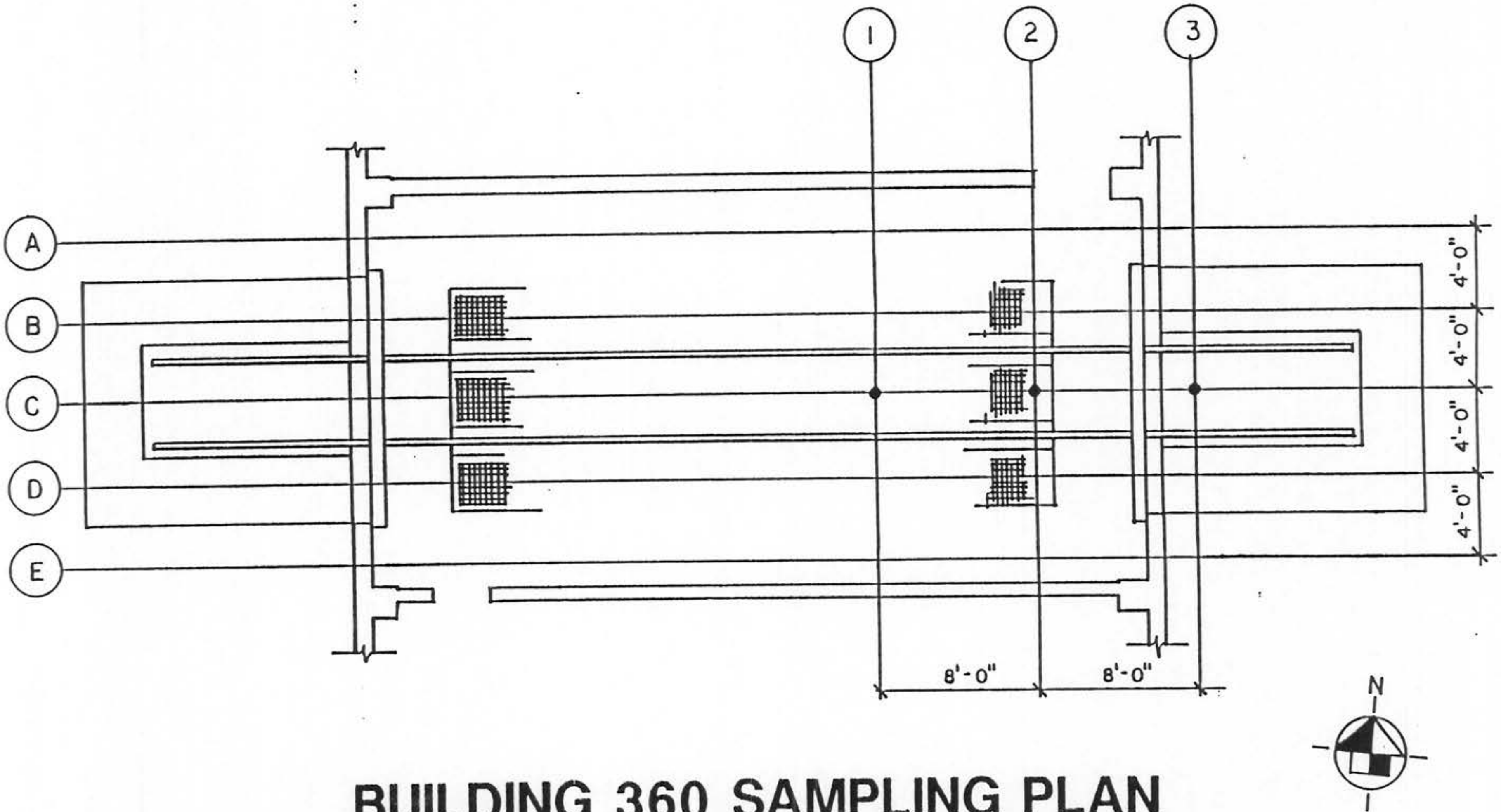
Campbell Design Group
Architects Engineers Planners

301 S. Main St. Horseheads, New York 14845 607/739-0331

SECTION "B"

SCALE 3/16" = 1'-0"

Campbell Design Group



BUILDING 360 SAMPLING PLAN

SCALE: 1/8"=1'-0"

Campbell Design Group
Engineers

301 S. MAIN STREET HORSEHEADS, NEW YORK 14845
(607) 739-0331

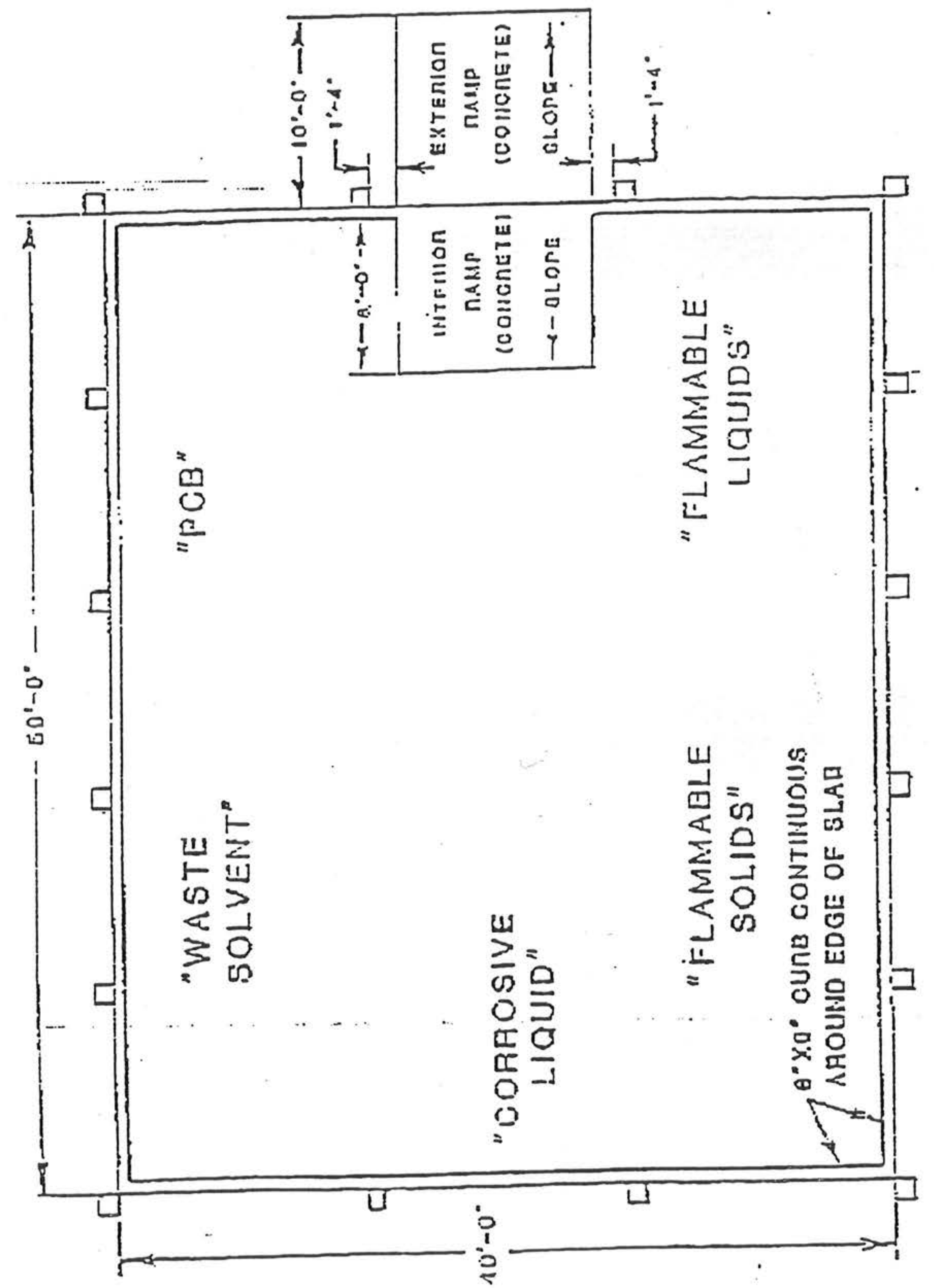


FIGURE D-1 PLAN VIEW - BUILDING 307

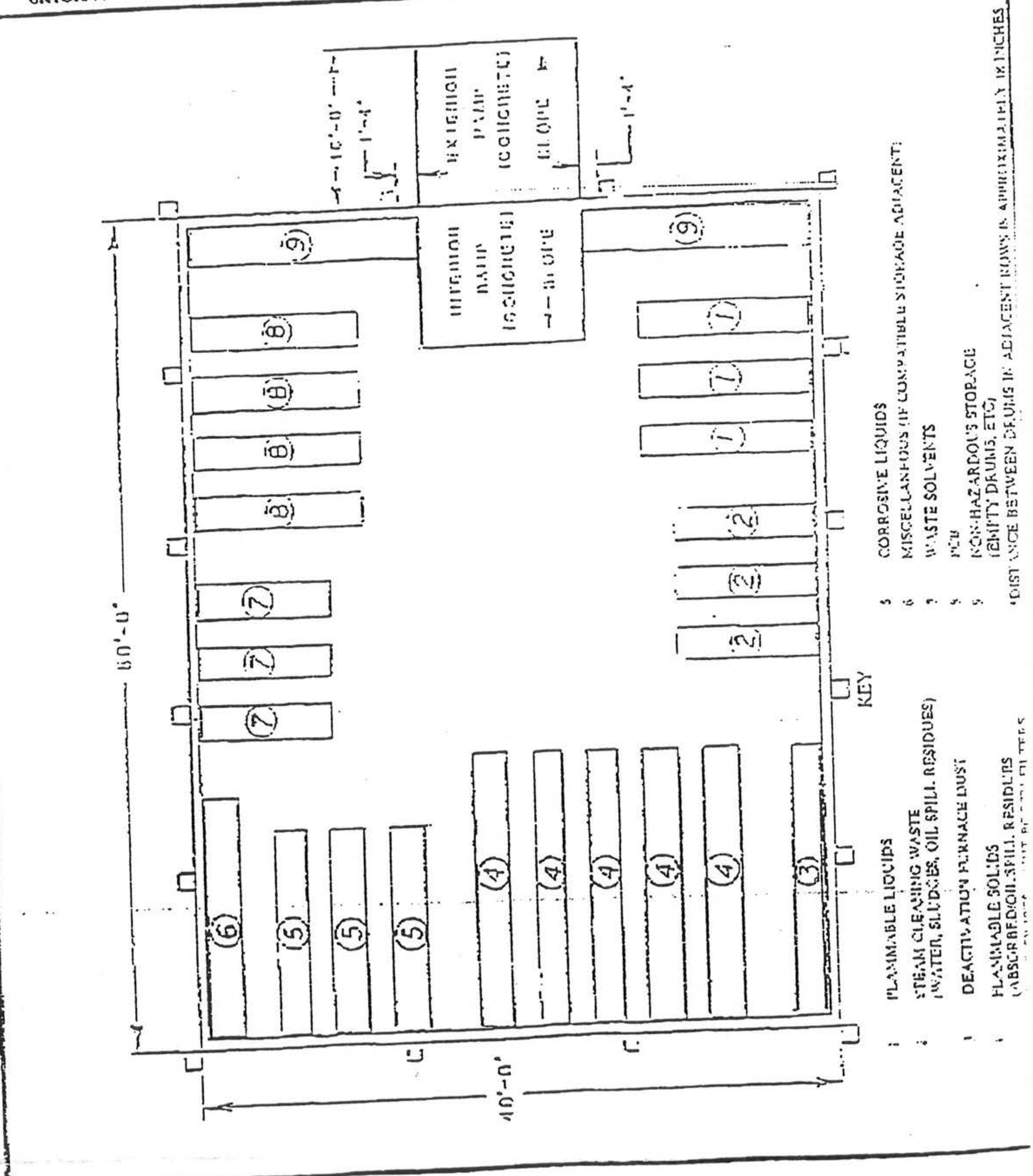


FIGURE D-2 ROW ARRANGEMENT OF HAZARDOUS WASTE - BUILDING 307

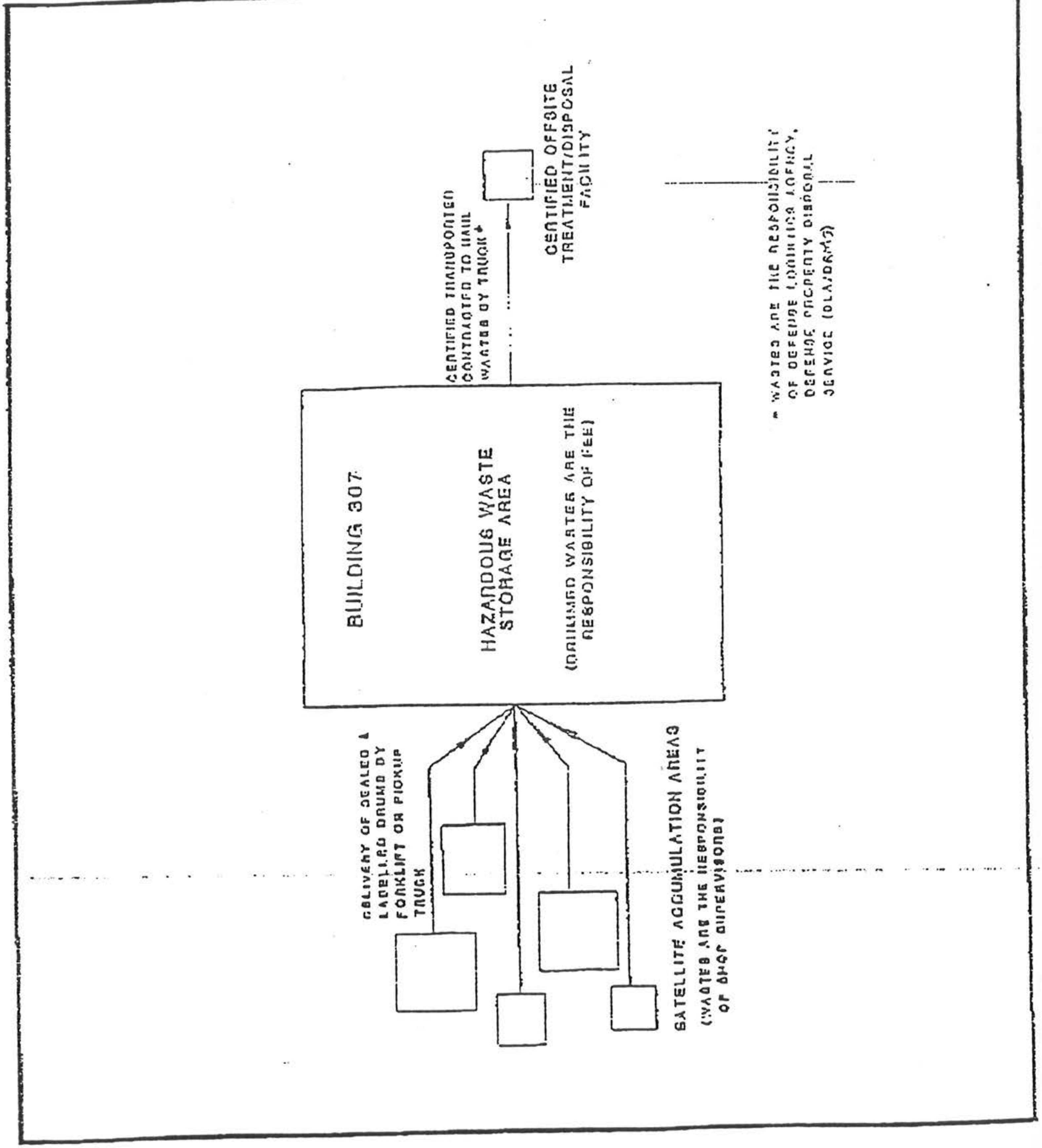


FIGURE D-3 SCHEMATIC DIAGRAM OF HAZARDOUS WASTE MANAGEMENT PRACTICES

48-14-1 (5/87)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HAZARDOUS WASTE MANIFEST

P.O. Box 12820, Albany, New York 12212

Form Approved. OMB No. 2050-0039. Expires 9-30-88

Please print or type. 31123

In case of emergency or spill immediately call the National Response Center (800)-424-8802 and the N.Y. Department of Transportation (518) 457-7362

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA No. NY0213182083	Manifest Document No. 0090	2. Page 1 of 1	Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
Seneca Army Depot
Route 96, Romulus, NY 14541-5001

4. Generator's Phone (607 869-1450

A. State Manifest Document No. NY A843904 8

B. Generator's ID SAME

5. Transporter 1 (Company Name) (MRP) ~~Frontier Chemical Waste Process, Inc.~~ 6. US EPA ID Number ~~[illegible]~~

C. State Transporter's ID

D. Transporter's Phone ~~(716) 285-8208~~

7. Transporter 2 (Company Name) FRANK'S VACUUM TRUCK SERVICE, INC 8. US EPA ID Number NY D 0 9 8 2 7 9 2 8 1 4

E. State Transporter's ID 54424DNY

F. Transporter's Phone (716) 284 2132

9. Designated Facility Name and Site Address
Frontier Cehmical Waste Process, Inc.
4626 Royal Avenue
Niagara Falls, NY 14303

10. US EPA ID Number NYD043815703

G. State Facility's ID

H. Facility's Phone (716) 285-8208/2581

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Hazardous Waste Liquid, NOS (Steam Cleaning Waste Water) ORM-E, NA 9189 D008	01	TT	EST 2000 (MRP) ~~[illegible]~~	G	D008
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above: a. c. b. d.

K. Handling Codes for Wastes Listed Above: a. T c. b. d.

15. Special Handling Instructions and Additional Information
Contains oil, water, detergent, grease, dirt, traces of "Stoddard" solvent, paint thinner, paint chips, metal filings generated from steam washing of large equipment.—
Waste Code 751-64 W/O # 31123

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and state laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: DAVID G. ADAM, D/OA/TPE/SOAD — Signature: David G Adam — Mo. Day Year: 01 02 90

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: James L. Lambert — Signature: James L Lambert — Mo. Day Year: 01 02 90

18. Transporter 2 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: — Signature: — Mo. Day Year:

FACILITY

19. Discrepancy Indication Space
Section Kc Handling Code Should Be B (MC)

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

Printed/Typed Name: M. [illegible] McCormick — Signature: M L [illegible] — Mo. Day Year:

HAZARDOUS WASTE MANIFEST

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's Name and Mailing Address

8. Transporter 1 Company Name

7. Transporter 2 Company Name

9. Designated Facility Name and Site Address

Niagara Falls, NY 14302

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)

Hazardous Waste Liquid, NOS (Parts Cleaning Waste

(Water, Oil)), NA 3082

15. Special Handling Instructions and Additional Information

Contains oil, water, detergents, grease, dirt, traces of "Stoddard" solvent, paint

thinner, paint chips, and solids generated from steam washing of large equipment.

16. GENERATOR'S CERTIFICATION

Printed/Typed Name

17. Transporter 1 Acknowledgement of Receipt of Materials

18. Transporter 2 Acknowledgement of Receipt of Materials

19. Discrepancy Indication Space

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

APPENDIX 1

QUALITY ASSURANCE PROJECT PLAN

FOR

BUILDING 360 CLOSURE PLAN

SENECA ARMY DEPOT
ROMULUS
N.Y.

PREPARED BY:

CAMPBELL DESIGN GROUP, P.C.
CIVIL, ELECTRICAL, AND MECHANICAL ENGINEERS
301 SOUTH MAIN STREET
HORSEHEADS, NEW YORK 14845
CDG FILE NO. 60-9422

OCTOBER 28, 1992

TABLE OF CONTENTS

A. Project Description

This Quality Assurance Project Plan is being submitted for the Building 360 Closure Plan at the Seneca Army Depot. The objective of the closure plan is to identify the extent of possible contamination and as a guide to decontaminate and/or remove hazardous substances. (Refer to the Building 360 Closure Plan for further descriptions of the facility and plan objectives.)

When the tank is dewatered, the liquid is disposed of as hazardous waste under D008 lead. From the latest hazardous waste manifest, the wastewater contains, oil, water, detergent, grease, dirt, traces of "stoddard" solvent, paint thinner, paint chips, metal filings and PCB's. (See the Waste Removal section of the Building 360 Closure Plan.)

The following TABLES quantify the goals of the data quality objective process:

ACTION LEVELS

Constituent	Groundwater	Soil/Sediment
Cadmium	5 ug/L	1 mg/kg
Chromium	50 ug/L	10 mg/kg
Lead	15 ug/L	5 ppm
PCB's	0.1 ug/L	0.1 ug/L

INSTRUMENT DETECTION LEVELS

Constituent	Groundwater	Soil/Sediment
Cadmium	4 ug/L	1 mg/kg
Chromium	7 ug/L	1 mg/kg
Lead (by GFAA)	3 ug/L	Soil Bkgnd.
PCB 1242 *	.065 ug/L	80 ug/kg

* From SW846-"8080"

AVERAGE BACKGROUND CONCENTRATIONS
FOR ROCKS, SOILS, AND SEDIMENTS
(IN PPM)

	SHALE	SANDSTONE	LIMESTONE	SOILS	SEDIMENT
Cadmium	0.2	<0.1	0.1	1	2.5
Chromium	100	35	10	50	75
Lead	40	7	8	20	55

Source: Preliminary Site Characterization at the Ash Landfill
Seneca Army Depot
U.S. Army Engineer Division, Huntsville, Alabama

Subsource: Levinson, 1980

Target levels for clean closure will be those of the action level unless background level concentrations are higher than action levels. If determined that the target level cannot be achieved after decontamination or cannot be practically removed, then the tank system will be closed and treated as a landfill.

The closure plan for Building 360 identifies a schedule that is to be employed to assess and adjust the projects activities to achieve the project goals. The closure plan also identifies equipment to be used during sampling and decontamination to protect the health and safety of workers. Clean closure and/or closing as a landfill will assist in assuring protection to public health and the environment.

Laboratory analysis to determine levels and extent of contamination will provide a basis of laboratory analysis for testing after attempts have been made at decontaminating the tank system. First of all, testing of samples prior to decontamination attempts will determine the degree of contamination, if any. Subsequent testing of samples after decontamination will determine if clean closure is achievable.

B. Project Organization and Responsibility:

Because the Seneca Army Depot is operated by the Federal Government, contracts for sampling, testing and decontamination can only be procured through competitive bid. Organizations soliciting to perform this task must submit, with their bids, identification of key individuals responsible for:

1. Sampling Operations;
2. Sampling Quality Control;

3. Laboratory Analysis;
4. Laboratory Quality Control;
5. Data Processing Activities;
6. Data Processing Quality Control;
7. Data Quality Review;
8. Performance Auditing;
9. Systems Auditing (On-Site Evaluations);
10. Overall Quality Assurance; and
11. Overall Project Coordination.

For each key individual named, a brief sentence or two explaining that individual's responsibility, title and authority should be included. Telephone numbers and addresses should be listed with the key individuals. Where several different sampling, testing, and monitoring institutions or subcontractors involved, complete addresses should be provided.

Quality Assurance Officer: The responsibility for data review shall be assigned to a QA Officer or QA Manager. This individual shall have broad authority to approve or disapprove project plans, specific analyses and final reports. The QA Officer is independent from the data-generating activities. In general, the QA Officer shall be responsible for reviewing and advising on all aspects of QA/QC.

C. Quality Assurance Objectives for Data Management:

1. Precision

Precision is a measure of agreement among measurements performed using the same test procedure. Precision will be assessed for applicable parameters by calculating the RPD of two duplicate spike samples as follows:

$$RPD = \frac{R_1 - R_2}{(R_1 + R_2)/2} \times 100$$

Where R1 and R2 = concentration of Replicate Spikes 1 and 2, respectively.

a. Analyzing Precision: Analytical precision will be determined through the use of matrix spikes and matrix spikes duplicates for the analytical work performed. The laboratory will select one sample in 20 and split the sample into three aliquot. The aliquot will be analyzed routinely for the parameters of interest, while the other two aliquot will be spiked with known quantities of the parameters of interest prior to

analysis. The relative percent difference between the two results will be calculated and used as an indication of the precision of the analyses performed.

b. <u>Sample Collection Precision:</u> Sampling precision shall be determined by collecting and analyzing collocated and field replicate samples and then creating and analyzing laboratory replicates for one or more of the field samples. Precision will be reported as the relative percent difference for 2 measurements and as standard deviation for 3 or more measurements. Analysis results from the laboratory replicates provide data on analytical precision. Subtracting the analytical precision from the measurement precision defines the sampling precision.

2. <u>Accuracy</u>

Accuracy is the degree of agreement between a sample's target value (known concentration) and the actual measured value. Accuracy for this project is measured by calculating the percent recovery (R) of known levels of spike compounds into appropriate sample matrices. Percent recovery is calculated as follows:

$$R = \frac{100 \times [(\text{Spike Sample Conc.}) \times (\text{Sample + Spike Vol.}) - (\text{Sample Vol.}) \times (\text{Sample Conc.})]}{(\text{Spike Conc.}) \times (\text{Spike Volume})}$$

a. <u>Analytical Accuracy:</u> Analytical accuracy is the percent recovery of an analyte which has been added to the environmental sample at a known concentration before analysis. Analytical accuracy is assessed through the analysis of quality control samples specified in the analytical method (matrix spike, surrogate spike).

b. <u>Sample Collection Accuracy:</u> Sampling accuracy is assessed by evaluating the results of field, trip, and equipment blanks. Trip blanks, equipment blanks, and field blanks are used to assess any cross-contamination that may have occurred. A high level of accuracy can be maintained by frequent and thorough review of field procedures.

3. <u>Representativeness:</u>

Representativeness is addressed by describing sampling techniques and the rationale used to select sampling locations including:

a. Environmental conditions at the time of sampling;
b. Fit of the modeling or other estimation techniques to the event;
c. Appropriateness of site file information versus release conditions;
d. Appropriateness of sampling and analytical methodologies;
e. Number of sampling points;
f. Distribution of the sampling points;
g. Representativeness of selected media; and
h. Representativeness of selected analytical parameters.

4. <u>Completeness</u>

Completeness is the measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions (EPA, 1980). A completeness of at least 90 percent for each parameter is the objective for this project. Following completion of the analytical testing, percent completeness will be calculated as follows:

$$\text{Complete (\%)} = \frac{\text{\# of valid concentrations values reported}}{\text{\# of samples collected for analysis of true conc.}} \times 100$$

If completeness is less than 80 percent for ANY parameter, the principal engineer will be notified immediately. The principal engineer is responsible for determining if resampling will be necessary to meet project objectives and will inform the QA supervisor and analytical task manager of the decision.

As stated in "Data Quality Objectives for Remedial Response Activities" (EPA, March 1987), almost no historical data on completeness achieved by individual methods exist. This document states that Level III analytical techniques should generate analytical data which is approximately 80% complete.

5. Comparability

Comparability is the confidence with which one data set can be evaluated against another. Only the specific methods and protocols specified will be used to collect and analyze samples. Comparability shall be applied to the following:

a. Data generated by the investigator over a specific time period;
b. Data generated by an outside laboratory over a specific time period;
c. Data generated by an outside laboratory versus data generated by the investigator; and
d. Data generated by more than one outside laboratory.

The values for quality assurance objectives for precision and accuracy can be found in the EPA publication "Data Quality Objectives for Remedial Response Activities - Development Process". The SW-846 method number, range of recovery, precision and method detection limit values for Level III analytical techniques can be found in this publication.

D. Field Sampling Plan:

The sampling section in the Building 360 Closure Plan discusses the sampling scheme (grid), the media to be sampled and a sampling scheme in case of extensive contamination. This section of this quality assurance project plan will discuss in more detail the sampling techniques, frequency of samples and sampling equipment.

Sampling Scheme

The middle of each of the three trenches are approximately 4 ft. on-center. Three samples will be taken on the centerline of the center trench. The samples will be taken 8 ft. apart. (See the attached sketch titled "Building 360 Sampling Plan".)

The Building 360 Sampling Plan sketch has been divided into a 4 ft. x 8 ft. grid. The 4 ft. (east-west) grid lines have been labeled A, B, C, D, and E. The 8 ft. (north-south) grid lines have been labeled 1, 2, and 3. Samples will be taken at locations C-1, C-2, and C-3.

At each sample location, samples of the concrete core, underlying soil and the groundwater are to be tested for PCB's, cadmium, chromium and lead. One grab sample for each of the media to be tested will be taken at EACH sample location. (The Steam Cleaning Area at Building 360 is heated by two fans which blow air across steam coils. Sampling should be avoided if the unit heaters are "ON" because the moving air may contaminate the samples.)

Concrete Media

The concrete will be sawcut and jackhammered loose at each sample location. Care should be taken to minimize the amount of concrete must created. Care should be taken not to contaminate other open sample holes. Personnel protective equipment shall be worn at all times. Pieces of concrete from the upper layer, middle layer and lower layer from each sample location shall be placed in individual "ziploc" sample bags, labeled and shipped to the laboratory for testing.

Procedures that must be followed to decontaminate concrete saws and jackhammer bits before reuse and between sample locations are outlined in TABLE 1 on page 1-9 of this APPENDIX.

Soil Media

Samples of the underlying soil will be taken with an auger and thin wall tube sampler. One sample will be taken at each sampling location. The auger and thin wall tube sampler shall be decontaminated per TABLE 1 prior to sampling at each sample location.

Field samples of the soil will be screened using a photo-ionization detector. The soil sample must be homogenized prior to being placed into sampling containers. The sample should be removed from the split spoon, placed in a stainless steel pan and thoroughly mixed using a stainless steel spoon. The sampled media in the pan should be scraped from the sides, corners and bottom of the pan, rolled to the middle of the pan, and initially mixed. The sample should then be quartered and moved to the four corners of the pan. Each quarter of the sample should be mixed individually, and then rolled to the center of the container and the entire sample mixed again.

Containers for samples to be tested for METALS shall be of borosilicate glass bottles, 125 ml minimum for solids, with PFTE-lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;
2. Tap water rinsed, 3 times with hot water;
3. Acid washed with 1:1 nitric (ultrapure);
4. Rinsed three (3) times with deionized water (demonstrated analyte-free water);
5. Air dried; and
6. Capped when dry.

TABLE 1

EQUIPMENT DECONTAMINATION PROCEDURES

All non-dedicated sampling equipment MUST be cleaned prior to being reused. The following is the accepted procedure for decontaminating sampling equipment:

1. scrub with tap water * and non-phosphate detergent;
2. rinse with tap water; *
3. rinse with 10% HNO3, ultrapure; **
4. rinse with tap water; *
5. rinse with methanol; ***
6. rinse with acetone; ***
7. rinse with methanol; ***
8. rinse with deionized water **** (demonstrated analyte-free water);
9. air dry; and
10. wrap in aluminum foil

* Tap water may be used from any municipal water treatment system. The use of untreated potable water supply is <u>not</u> an acceptable substitute unless the aquifer is known not to be contaminated.

** Omit this step if metals are not being analyzed. For carbon steel, perform a split spoon sample using a 1% rather than 10% HNO3 rinse.

*** The solvent rinse can be omitted if organics are <u>not</u> being analyzed. If acetone is a "constituent of concern", the series isopropanol, hexane, isopropanol may be substituted for procedures 5, 6, and 7.

**** Demonstrated analyte-free water is water that will be used for the preparation of blanks, for decontaminating sampling equipment and containers, and for carrying out analytical tests must be ASTM II deionized water demonstrated to be analyte free. The criteria for analyte-free water are the Method Detection Limits (MDL's) for the analytes as stipulated in SW-846, third edition, for the most sensitive analytical method to use to detect the analyte. However, for the common laboratory contaminants listed below, the allowable limits are set at three (3) times their respective MDL's as determined by the most sensitive analytical method:

1. Methylene Chloride
2. Acetone
3. Toluene
4. 2-Butanone
5. Phthalates.

ANY deviation from the above-mentioned criteria MUST receive approval from the NYSDEC prior to implementation.

Containers for samples to be tested for PCB's and VOLATILE ORGANICS shall be new amber glass bottles (125 ml minimum for solids) with PFTE-lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;
2. Tap water rinsed three (3) times with hot water;
3. Rinsed with acetone or methanol followed by hexane rinse; *
4. Rinsed three (3) times with deionized water (demonstrated analyte- free water);
5. Oven dry containers for one hour at 105 degrees Centigrade;
6. Air dry caps; and
7. Cap bottles when dry.

Groundwater Media: Grab samples of the groundwater will be taken with weighted bottles and or stainless steel ladles. The weighted bottles and stainless steel ladles shall be decontaminated per TABLE 1 prior to taking consecutive samples. The sample will then be carefully poured from the sampling equipment into the sample container. Use procedures that minimize sample agitation, cross-contamination and reduce/eliminate contact with the atmosphere during sample transfer.

The sample container shall be filled to the point of overflow (convex meniscus). When sealing, be sure the lid is in contact with the sample. After sealing, inspect for air bubbles in the sample container by inverting the container. While samples testing gathered to determine the presence of either PCB's or metals can have some headspace, no air bubbles can be present when testing for volatile organics. If testing requires the absence of air bubbles, remove the cap and add more sample. Reseal the container and inspect for air bubbles by inverting the container. Repeat steps as necessary to assure no air bubbles remain.

Containers for samples of groundwater to be tested for METALS shall be new borosilicate glass bottles, one liter minimum, with PFTE-lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;
2. Tap water rinsed, 3 times with hot water;
3. Acid washed with 1:1 nitric (ultrapure);
4. Rinsed 3 times with deionized water (demonstrated analyte-free water);
5. Air dried; and
6. Capped when dry.

* Solvents must be pesticide-grade or better.

Containers for samples of groundwater to be tested for PCB's shall be new amber glass bottles, one liter minimum, with PFTE-lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;
2. Tap water rinsed 3 times with hot water;
3. Rinsed with acetone or methanol followed by hexane rinse (Solvents must be pesticide grade or better);
4. Rinsed 3 times with deionized water (demonstrated analyte-free water);
5. Oven dry containers for one hour at 105 degrees Centigrade;
6. Air dry caps; and
7. Cap bottles when dry.

Containers for samples to be tested for VOLATILE ORGANICS shall be 2-40 ml amber glass bottles with teflon-lined septum caps. Containers for samples to be tested for semi-volatile organics shall be one liter amber glass with PFTE-lined screw caps.

Field Screening

After the concrete has been removed at each sample location, the opening in the floor shall be field-screened for volatile organic and semi-volatile organic gases. using a gas chromatograph with a photoionization detector shall be utilized. The results of these field screening techniques shall be documented and appropriate continual sampling procedures implemented in case of potential hazardous situations.

Quality Assurance/Quality Control

Sample containers used during an investigation must be subject to quality assurance/quality control procedures that include tracking, quality control inspections, recording shipments to designees, handling, cleaning and inspecting sample containers.

The following is a description of quality control check points:

1. Incoming Materials Inspection:

   The supplier of containers to the field shall inspect a representative item from each case/carton of containers and component materials received from a vendor, to check for conformance with specifications. Any deviation shall be considered unacceptable, and materials immediately returned to the vendor for replacement. The supplier

Containers for samples of groundwater to be tested for EP TOX shall be new amber glass bottles, one liter minimum, with PTFE-lined screw caps. They shall be precleaned as follows:

1. Detergent (non-phosphate) washed with hot water;
2. Tap water rinsed 3 times with hot water;
3. Rinsed with acetone or methanol followed by hexane rinse (solvents must be pesticide grade or better);
4. Rinsed 3 times with deionized water (demonstrated analyte-free water);
5. Oven dry containers for one hour at 105 degrees Centigrade;
6. Air dry caps; and
7. Cap bottles when dry.

Containers for samples to be tested for VOLATILE ORGANICS shall be 2-40 ml amber glass bottles with Teflon-lined septum caps. Containers for samples to be tested for semi-volatile organics shall be one liter amber glass with PTFE-lined screw caps.

Field Screening

After the concrete has been removed at each sample location, the opening in the floor shall be field-screened for volatile organic and semi-volatile organic compounds. Using a gas chromatograph with a photoionization detector shall be utilized. The results of these field screening techniques shall be documented and appropriate contingent sampling procedures implemented in case of potential hazardous situations.

Quality Assurance/Quality Control

Sample containers used during an investigation must be subject to quality assurance/quality control procedures that include tracking, quality control inspections, recording shipments to designee, handling, cleaning and inspecting sample containers.

The following is a description of quality control check points:

1. Incoming Materials Inspection:

The supplier of containers to the field shall inspect a representative item from each lot/carton of containers and component materials received from a vendor, to check for conformance with specifications. Any deviation shall be considered unacceptable, and materials immediately returned to the vendor for replacement. The supplier shall maintain a log of incoming shipments, in which cases/cartons shall be identified by material type, vendor purchase order number and delivery date. The supplier shall indicate on this log the date of incoming inspection and acceptance or rejection of the material.

2. Quality Control Inspection of Cleaned Containers:

Following container cleaning and labeling, the supplier of containers to the field shall randomly select two containers from each container lot to be used for quality control purposes. A notice shall be placed in each case from which QC containers have been removed. The two categories of QC containers are: Analysis QC and Storage QC.

a. Analysis QC Containers

One selected QC container per lot shall be designated as the Analysis QC Container. The Analysis QC Container(s) shall be analyzed by the supplier to check for contamination, prior to releasing the container lot for shipment. The QC analyses procedures the supplier must use to determine extractable organics, pesticides, volatiles, metals, and cyanide are specified further on in this section. This series of analyses shall constitute the QC check for containers.

b. Storage QC Containers

One selected QC container per lot shall be designated as the Storage QC Container. The Storage QC Container shall be separated from the lot after cleaning and labeling and stored by the supplier in a designated contaminant-free storage area, which shall be continuously monitored for volatile contaminants. The date the storage container is placed in the storage area shall be entered into the Storage QC Container logbook.

Upon request, the supplier of containers to the field shall remove the Storage QC container from the storage area and analyze the container using the QC analysis procedures specified for that container type. Such analysis shall be completed and data reported to within ten (10) days following the analysis request. Analysis of the Storage QC Container will be indicated if contamination to the particular container lot comes into question at any time pursuant to supplier shipment. Upon removal, containers shall be logged out of the storage area.

The designated storage area for the Storage QC Containers shall be monitored continuously. A pre-cleaned, QC cleaned 40 mL vial filled with demonstrated organic-free deionized water shall be placed in the storage area. These vials shall be changed at one-week intervals. The removed vial shall be subjected to the volatile organics QC check procedure described further on in this Section. Any peaks shall indicate contamination.

3. <u>Quality Control Procedures for Cleaned Containers:</u>

The type(s) of QC tests applied correlates with the type of container being tested and its future use in sample collection. The required QC tests determine extractable organics, pesticides, volatile organics, metals, and cyanide. Quality control tests shall be run according to the container type and related sample type utilizing the specified Method(s), as described in the following:

a. <u>Determination of Extractable Organics/Pesticides</u>

(1) Sample preparation should follow the NYSDEC CLP statement of work for processing extracts:

(a) Rinse the container three (3) times with sixty (60) mL of pesticide-grade methylene chloride and shake each rinse for two minutes;
(b) Transfer the extracts from (1) to a KudernaDanish (KD) apparatus equipped with a threeball Snyder column. Concentrate to less than 10 mL on a water bath. Bring the extract up to 10 mL with pesticide-grade methylene chloride;
(c) Transfer 1.0 mL of the extract to a separate concentrator tube for pesticide/herbicide/ PCB analysis;
(d) Concentrate the remaining 9 mL to 1.0 mL for the Base Neutral Acid Assay;
(e) Add 9 Ml of pesticide-grade hexane to the methylene chloride extract and mix. Concentrate to less than 1.0 mL using a micro KD apparatus. Bring volume up to 1.0 mL with pesticide-grade hexane and assay for pesticide/herbicide/PCB.
(f) Concentrate the solvent blank by following the preceding steps, except skip the container rinse in step (a) and add 180 mL pesticide-grade methylene chloride directly to the KD apparatus.

(2) Extractable Organics QC Check

(a) Inject 3 mL of solvent into a gas chromatograph mass spectrometer (GC/MS);
(b) Analyze for extractable organics by EPA method SW-846 "8250" or "8270";
(c) Any peaks found in the container solvent that are not found in the solvent blank or with peak heights or areas not within $\pm$ 50% of the blank peak height or area shall be cause for rejection;
(d) Perform tentative identification and tentative quantification of any contaminant(s) that cause rejection of a container Lot;
(e) Appropriate calibration standards must be run as specified by the method to ensure that the required sensitivities will be achieved; and
(f) A blank shall be run with each analysis.

(3) Pesticide/Herbicide QC Check

(a) Inject 1 mL of solvent into a gas chromatograph (GC) equipped with the detector specified by the analytical method;
(b) Analyze for the pesticides by EPA Methods SW-846 "8080", "8140", and "8150" as appropriate;
(c) Any peaks found in the container solvent that are not found in the solvent blank or with peak heights or areas not within $\pm$ 50% of the blank peak height or area shall be cause for rejection;
(d) Perform tentative identification and tentative quantification of any contaminant(s) that cause rejection of a container Lot;
(e) A standard mixture made-up of all pesticide/herbicide organic compounds identifiable by Method "8140","8150", and "8080" and at concentrations expected must be analyzed to ensure that the required sensitivities will be achieved; and
(f) A blank shall be run with each analysis.

b. Determination of Volatile Organics

(1) Fill the container with deionized demonstrated organic-free water;
(2) Analyze for volatile organics by EPA Method SW846 "8240" using Gas Chromatograph/Mass Spectrometer (GC/MS) with the operating conditions specified in that method;

(3) Any peaks not found in the blank, or with peak heights or areas not within ± 50% of the blank peak height or area shall be cause for rejection;
(4) Perform tentative identification and tentative quantification of any contaminant(s) that cause rejection of a container Lot;
(5) Appropriate calibration standards must be run as specified by the method to ensure that the required sensitivities will be achieved; and
(6) A blank shall be run with each analysis.

c. Determination of Metals

(1) Add 50 ml deionized water to the container and acidify with 0.5 ml metals-grade HNO3. Cap and shake well;
(2) Treat the sample as a dissolved metals sample. Analyze the undigested water for all metals specified in SW-846 by applying the most sensitive EPA Method in SW-846 specified for the analysis of total metals (i.e. SW-846 "7000" series or SW-856 "6010");
(3) Concentration at or above the detection limit specified for the method for each parameter will be cause for rejection of the lot of containers; and
(4) A set of standards in the expected working range and a blank must be analyzed with each analytical run. The acid matrix of the standards and blank must match that of the samples.

d. Determination of Cyanide

(1) Cyanide is to be determined by EPA Method SW-846 "9010" by placing 250 ml of deionized water in the container. Add 1.25 ml of 6N NaOH. Cap the container and shake vigorously for two minutes. Analyze an aliquot by the EPA method selected;
(2) A blank must be run by analyzing an aliquot of the deionized water used above;
(3) A set of standards in the expected working range must be analyzed with each run along with the blank; and
(4) The detection of contaminants of 20 ppb total cyanide will be cause for rejection of the lot of containers.

4. Sample Preservation and Storage:

The containers with samples to be tested for PCB's shall be stored in an ice chest at 4 degrees Centigrade. Their holding times are 7 days to extraction and 40 days to analysis. The containers to be tested for metals shall be preserved with concentrated HNO3 to a pH <2, cooled to 4 degrees Centigrade and their holding times are 6 months. Soil samples to be tested for volatile organics shall be cooled to 4 degrees Centigrade and their holding times are 7 days. Groundwater to be tested for volatile organics shall be preserved by acidifying samples with 4 drops of concentrated hydrochloric acid; if residual chlorine is present, add sodium thiosulfate and their holding times are 14 days. Groundwater samples to be tested for semi-volatile organics shall be cooled to 4 degrees Centigrade and their holding times are 7 days to extract and 40 days to analyze.

5. Collated and Replicate Samples:

One out of 20 investigative samples shall be collated for groundwater and shall be replicated or collated for soil samples. Replicated samples can be substituted for groundwater. These samples shall be spread out over the sampling event, preferably one per each day of sampling.

6. Trip and Equipment Blanks:

Trip blanks shall be taken for groundwater samples only. Trip blanks shall be comprised of 40 ml VOA vials filled with demonstrated analyte-free deionized water. Trip blanks shall be taken in a 1:20 ratio for each PCB sample and metals sample, one per each days sampling and one per each cooler if more than one cooler per day. The trip blanks shall be the first container placed into the cooler. Equipment blanks shall be performed once per day per each type of sampling equipment used. Equipment blanks are collected by passing demonstrated analyte-free deionized water through and over cleaned sampling equipment.

7. Matrix Spikes:

Spikes shall be performed by laboratory personnel only. Extra analytical samples for both PCB's and for metals must be collected in the field so the laboratory can perform a matrix spike/matrix spike duplicate (MS/MSD). (Blank spikes may be performed in the laboratory as described in the NYSDEC ASP but this would be in addition to the MS/MSD.) The volume of the container for the field

4. Sample Preservation and Storage:

the containers with samples to be tested for PCBs shall be stored in an ice chest at 4 degrees Centigrade. Their holding times are 7 days to extraction and 40 days to analysis. The containers to be tested for metals shall be preserved with concentrated HNO3 to a pH <2, cooled to 4 degrees Centigrade and their holding times are 6 months. Soil samples to be tested for volatile organics shall be cooled to 4 degrees Centigrade and their holding times are 7 days. Groundwater to be tested for volatile organics shall be preserved by acidifying samples with 4 drops of concentrated hydrochloric acid; if residual chlorine is present, add sodium thiosulfate and their holding times are 14 days. Groundwater samples to be tested for semi-volatile organics shall be cooled to 4 degrees Centigrade and their holding times are 7 days to extract and 40 days to analyze.

5. Collocated and Replicate Samples:

One out of 20 investigative samples shall be collocated for groundwater and shall be replicated or collocated for soil samples. Replicated samples can be substituted for groundwater. These samples shall be spread out over the sampling event, preferably one per each day of sampling.

6. Trip and Equipment Blanks:

Trip blanks shall be taken for groundwater samples only. Trip blanks shall be comprised of 40 ml VOA vials filled with demonstrated analyte-free deionized water. Trip blanks shall be taken on a 1:20 basis for each VOA sample and metals samples, one per each days sampling and one per each cooler if more than one cooler per day. The trip blanks shall be the first container placed into the cooler. Equipment blanks shall be performed once per day per each type of sampling equipment used. Equipment blanks are collected by passing demonstrated analyte-free deionized water through and over cleaned sampling equipment.

7. Matrix Spikes:

Spikes shall be performed by laboratory personnel only. Extra analytical samples for both VOA's and for metals must be collected in the field so the laboratory can perform a matrix spike/matrix spike duplicate (MS/MSD). (Blank spikes may be performed in the laboratory as described in the Method and but this would be in addition to the method.) The volume of the container for the field blank sample to be laboratory spiked for metals shall be one liter. The exact amount of spiking material shall be recorded for future use. The spike materials shall be laboratory prepared solutions made from pure compounds.

E. Documentation and Chain-of-Custody

1. Field Log Book:

All information pertinent to field sampling activity must be entered in a bound book with consecutively-numbered pages. Entries in the log book must include at least the following:

a. Date and time of site entry.
b. Purpose of sampling.
c. Name and address of field investigator and sample collector.
d. Name of facility.
e. Type of process that produced contamination.
f. Date and time of sample collection and sample l.D. number.
g. Weather conditions.
h. Contaminant components and concentrations, if known.
i. Description and location of sampling point.
j. Air monitoring device readings and the significance of the readings; i.e. presence of volatile non-aqueous phase, need for respiratory protection, etc.
k. Condition of monitoring wells and other environmental media sampling equipment (rusty, bent casing, etc.).
l. Field measurements such as pH, temperature, conductivity, flammability, explosiveness, etc.
m. Water level measurements and depths to bottom in monitoring wells prior to evacuation.
n. Immiscible layer detection in monitoring wells and equipment used for interface detection and sampling the layers prior to evacuation.
o. Monitoring well purging equipment, volume of water purged, and the time required to recharge the well.
p. Soil, Sediment, sludge/groundwater, and surface water sample preparation methods and sampling equipment utilized.
q. Where and when sampling equipment refusal occurred and the corrective action taken.
r. Sampling equipment decontamination procedures and when equipment was decontaminated.
s. Number and size of samples taken.

t. Physical properties observed of samples taken; i.e. color, odor, turbidity, non-aqueous phase, stratification, etc.
u. Purge water and other sampled media disposal practices.
v. When samples were shipped to lab.
w. Any other relevant field observations.

2. <u>Sample Labels:</u>

Sample labels are necessary to prevent misidentification of samples. Gummed paper labels or tags are adequate and should include at least the following information:

a. Sample number.
b. Name of collector.
c. Date and time of collection.
d. Place of collection.

Labels should be affixed to sample containers prior to or at the time of sampling. The labels should be filled out at the time of collection.

3. <u>Sample Seals:</u>

Sample seals are used to detect unauthorized tampering of samples following sample collection up to the time of analysis. Gummed paper seals may be used for this purpose. The paper seal includes, at least, the following information:

a. Sample number (MUST be identical to the number on the sample label.)
b. Collector's name.
c. Date and time of sampling.

The seal must be attached in such away that it is necessary to break it in order to open the sample container. Seals must be affixed to containers before the-samples leave the custody of personnel.

4. <u>Field Records:</u>

Field records shall be completed at the time the sampling is collected and shall be signed. Field records shall contain the following information:

a. Unique sampling or log number.
b. Date and time.

c. Source of sample (including name, location, and sample type).
d. Preservative used (if any).
e. Analysis required.
f. Name of collector.
g. Any pertinent field data (PID screening results, etc.).
h. Serial numbers on seals and transportation cases.

One member of the sampling team shall be appointed Field Custodian. The Field Custodian documents transactions from the sampling team and the sample remains in the custodians custody until shipping to the laboratory. The sample container shall be placed in a transportation case along with chain-of-custody records, pertinent field records, and analysis request forms. The transportation case is then sealed or locked.

5. <u>Shipping:</u>

Samples taken shall be shipped as hazardous substances and transported according to the following requirements:

a. If the substance in the sample is known or can be identified, package, mark, label and ship according to the specific instructions for the material (if it is listed) in the DOT Hazardous Materials Table, 49 CFR 172.101.
b. For samples of hazardous materials of unknown content, Part 172.402 (h) of CFR allows the designation of hazard class based on the shipper's knowledge of the material and selection of the appropriate hazard class from Part 1763.2.

6. <u>Chain-of-Custody Record:</u>

The chain-of-custody record must contain the following:

a. Site name and address.
b. Sample number.
c. Sample type (composite or grab) and matrix.
d. Date and time of collection.
e. Number of containers.
f. Parameters for which analysis are required.
g. Signature of collector.
i. Signatures of persons involved in chain of possession.
j. Inclusive times and dates of possession.
k. Condition of sample upon arrival at laboratory.
l. Temperature of the cooler upon receipt by the laboratory.

7. Laboratory Operations:

The laboratory shall identify a responsible party to act as sample custodian. The custodian shall sign for incoming field samples, obtain documents of shipments and verify the data entered into the sample custody records.

The Lab Custodian shall prepare a sample custody log consisting of serially-numbered standard lab-tracking report sheets. The lab custodian shall also prepare procedures for sample handling, storage and disbursement for analysis.

F. Calibration Procedures

Analytical instrumentation shall be calibrated in accordance with requirements which are specific to the instrumentation and procedures employed. Introductory methods "7000" and "8000" in Test Methods for Evaluating Solid Wastes (EPA SW-846) and the procedures specified in the individual methods shall be consulted for criteria for initial and continuing calibration.

G. Sample Preparation and Analytical Procedures

For each measurement, TABLE 2 below illustrates the sample preparation and analytical procedure to be used in support of the investigation program.

TABLE 2

Parameter	Matrix	Preparation	Analysis
PCB's	Water	SW846- 3510/3520 3510/3520/8080	SW-846
	Solids	SW846- 3540/3550	SW-846 3540/3550/8080
TRACE METALS	Water	SW846-3005 (GFAA) for Cadmium & Chromium	SW-846 3010/6010
		SW846-3010 (FLAA or ICP) for Lead	SW846-7421
		SW-846-3020 (GFAA) SW846-7060 (GFAA)	

TABLE 2 (continued)

Parameter	Matrix	Preparation	Analysis
TRACE METALS (cont)		SW846-7740 (GFAA)	
	Solids	SW846-3050 (FLAA,GFAA,or ICP)	SW846-3050/6010
	1-21		
	Oily Water	SW846-3040 (FLAA,GFAA,or ICP) or 200 Series Equiv.	SW846-6010 SW846-7000 Series
SEMI-VOLATILE ORGANICS	Water	3510/3520	SW846-8270
	Solids	3540/3550	SW846-8270
VOLATILE ORGANICS	Water	----	SW846-8240
	Solids	----	SW846-8240

Section A discusses the anticipated detection limits of the selected analytical method. Detection limits will be determined in accordance with the procedure published in 40 CFR Part 136.

H. Data Reduction, Validation and Reporting

The principal criteria that will be used to validate the integrity of the data during collection and reporting should be modeled from Functional Guidelines for Evaluating Organics Analysis, EPA, February 1, 1988 and Functional Guidelines for Evaluating Inorganics Analysis, EPA, July 1, 1988, or their updated versions.

1. Field Data Validation

Validation of field data shall be performed on two levels. First, all data shall be validated at the time of collection by following standard procedures and QC checks. Second, data shall be validated by supervisory personnel who will review the data to ensure that the correct codes and units have been included. The supervisory personnel are responsible for ensuring that justifiable data is obtained by conforming to the following field objectives:

a. Adherence to the approved sampling plan;
b. Equipment and instruments are properly calibrated and in working order;
c. Samples are collected according to written standard operating procedures;
d. Sufficient sample volume is collected to maintain sample integrity and conduct all required analysis;
e. Samples are properly preserved;
f. All applicable field QC samples are provided with each sample set;
g. Complete chain-of-custody documentation is maintained throughout the duration of the field effort, and copies are included with each sample shipment; and
h. Field samples will arrive at the laboratory in good condition.

   Random checks of sampling and field conditions should be made by the supervisory personnel, who should check recorded data at that time to confirm the observations. Whenever possible, peer review should also be incorporated into the data validation process, in order to maximize data consistency between field personnel.

i. Checklist will be used to oversee and monitor the QA/QC.

2. Laboratory Data Validation

Data validation will be performed by the specific analytical task leader, the Laboratory QC Officer, and the Laboratory QA Manager. Validation will be accomplished through routine audits of the data collection and flow procedures and monitoring GC sample results. Data collection and flow audits include:

a. Review of sample documents for completeness by the analyst(s) at each step of the analysis scheme;
b. Daily review of instrument logs, performance test results, and analyst performance by the analytical task manager;
c. Unannounced audits of report forms, notebooks, and other data sheets by the Laboratory QA Manager;
d. Daily review of performance indicators such as blanks, surrogate recoveries, duplicate analyses, matrix spike analysis, etc., by the analytical task manager;
e. Checks on a random selection of calculations by the Laboratory QA Manager;

f. Review by the Laboratory QA Manager of all reports prior to, and subsequent to, computerized data entry; and
g. Review and approval of final report by the Laboratory QA Manager.

Results from the analysis of project and blind audit QC samples will be calculated and evaluated as reported. If these results indicate data quality problems, immediate corrective action will be taken, and all data collected since previous QC audits will be carefully reviewed for validity.

As discussed in Section B, Project Organization and Responsibility, the key individuals soliciting to perform sampling, testing, and decontamination procedures must provide a brief statement explaining individual's responsibility, title and authority for handling and validating data in the reporting scheme. Also, individuals soliciting for this work must identify an independent validator, and must provide a statement of how the individual is independent from the project.

The last page of this APPENDIX shows an example of a Chain-of-Custody Form. The laboratory will supply reports for Quality Control results and checklists that will be used to oversee and monitor the Quality Assurance/Quality Control.

I. Internal Quality Control Checks

Standard analytical methods are given in the pertinent SW846 analytical method. The standards, blanks, duplicates and spiked samples are used for calibration and identification of potential matrix interferences. The laboratory shall use adequate statistical procedures to monitor and document performance and implement an effective program to resolve testing problems. Data from QC samples shall not be used to alter or correct analytical data.

The quality control data and records obtained in the following components of analytical quality control shall be submitted to the data validator and to the regulatory agency with the sample results. These procedures shall be performed at least once with each analytical batch with a minimum of once per twenty samples.

Review by the Laboratory QA Manager of all reports prior to, and subsequent to, computerizing data entry; and

6. Review and approval of final report by the Laboratory QA Manager.

Results from the analysis of previous certified audit QC samples will be calculated and reviewed as expected. If these results indicate data quality problems, immediate corrective action will be taken, and all data collected since previous QC audits will be carefully reviewed for validity.

As discussed in Section B, Project Organization and Responsibility, the key individuals soliciting to perform sampling, testing, and decontamination procedures must provide a brief statement explaining individual's responsibility, title and authority for handling and validating data in the reporting scheme. Also, individuals soliciting for this work must identify an independent validator, and must provide a statement of how the individual is independent from the project.

The last page of this APPENDIX shows an example of a Chain-of-Custody Form. The laboratory will supply reports for Quality Control results and checklists that will be used to oversee and monitor the Quality Assurance/Quality Control.

1. Internal Quality Control Checks

Standard analytical methods are given in the pertinent DWQ's analytical method. The standards, blanks, duplicates and spiked samples are used for calibration and identification of potential matrix interferences. The laboratory shall use adequate statistical procedures to monitor and document performance and implement an effective program to resolve testing problems. Data from QC samples shall not be used to alter or correct analytical data.

The quality control data and records obtained in the following components of analytical quality control shall be submitted to the data validator and to the regulatory agency with the sample results. These procedures shall be performed at least once with each analytical batch with a minimum of once per twenty samples.

1. Matrix Spike and Matrix Spike Duplicate Samples

A matrix spike and matrix spike duplicate shall be analyzed and must be carried through all stages of the sample preparation and measurement steps. Analytes stipulated by the analytical method, by applicable regulations, or by other specific requirements must be spiked into the sample at known concentrations.

The objective of spiking is to determine the extent of matrix bias or interference on analyte recovery and sample-to-sample precision. For soil/sediment samples, spiking is performed at approximately 3 ppm and, therefore, compounds in excess of this concentration in the sample may cause interference for the determination of spiked analytes.

Sample blank matrix spikes must also be run periodically to assure that matrix spike results which are out-of-range are due to matrix effects and not to problems with the spike solution.

2. Reagent Blank Sample

Each batch shall be accomplished by a reagent blank. The reagent blank shall be carried through the entire analytical procedure.

3. Surrogate Spike Sample

The analyst shall monitor both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking every blank, standard, and environmental sample (including matrix spike/matrix duplicate samples) with surrogate compounds prior to purging or extraction. Surrogates shall be spiked into samples according to the appropriate analytical methods.

Surrogate spike recoveries shall fall within the control limits set by the laboratory (in accordance with procedures specified in the method or within $\pm$ 20%) for samples falling within the quantification limits without dilution. Dilution of samples to bring the analyte concentration into the linear range of calibration may dilute the surrogates below the quantification limit; evaluation of analytical quality will rely on the quality control embodied in the check, spiked and duplicate spiked samples.

4. Check Sample

Each analytical batch shall contain a check sample. The analytes employed shall be a representative subset of the analytes to be determined. The concentrations of these analytes shall approach the estimated quantification limit in the matrix of the check sample. In particular, check samples for metallic analytes shall be matched to field samples in phase and in general matrix composition.

5. Instrument Adjustments and Calibration

Instrument adjustment and calibration shall be in accordance with requirements which are specific to the instrumentation and procedures employed. Criteria for initial conditions, calibration and continuing confirmation are found in the appropriate SW-846 analytical method.

6. Standards

Standard curves derived from data consisting of one reagent blank and four concentrations shall be prepared for each analyte. The response for each prepared standard shall be based upon the average of three replicate readings of each standard. The standard curve shall be used with each subsequent analysis provided that the standard curve is verified by using at least one reagent blank and one standard at a level normally encountered or expected in such samples.

The response for each standard shall be based upon the average of three replicate readings of the standard. If the results of the verification are not within ± 10% of the original curve, a new standard shall be prepared and analyzed. If the results of the second verification are not within ± 10% of the original standard curve, a reference standard should be employed to determine if the discrepancy is with the standard or with the instrument. New standards should also be prepared on a quarterly basis at a minimum. All data used in drawing or describing the curve shall be so indicated on the curve or its description. A record shall be made of the verification.

Standard deviations and relative standard deviations shall be calculated for the percent recovery of analytes from the spiked sample duplicates and from the check samples. These values shall be established for the twenty most recent determinations in each category.

Each analytical batch shall contain a check sample. The analytes employed shall be a representative subset of the analytes to be determined. The concentrations of these analytes shall approach the estimated quantitation limit in the matrix of the check sample. In particular, check samples for metallic analytes shall be matched to field samples in phase and in general matrix composition.

Instrument Adjustments and Calibration

Instrument adjustment and calibration shall be in accordance with requirements which are specific to the instrumentation and procedures employed. Criteria for initial conditions, calibration and continuing confirmation are found in the appropriate SW-846 analytical method.

Standards

Standard curves derived from data consisting of one reagent blank and four concentrations shall be prepared for each analyte. The response for each prepared standard shall be based upon the average of three replicate readings of each standard. The standard curve shall be used with each subsequent analysis provided that the standard curve is verified by using at least one reagent blank and one standard at a level normally encountered or expected in such samples.

The response for each standard shall be based upon the average of three replicate readings of the standard. If the results of the verification are not within ±10% of the original curve, a new standard shall be prepared and analyzed. If the results of the second verification are not within ±10% of the original standard curve, a reference standard should be employed to determine if the discrepancy is with the standard or with the instrument. New standards should also be prepared on a quarterly basis at a minimum. All data used in drawing or describing the curves shall be so indicated on the curve or its description. A record shall be made of the verification.

Standard deviations and relative standard deviations should be calculated for the percent recovery of analytes from the spiked sample duplicates and from the check samples. These values should be established for the twenty most recent determinations in each category.

7. Detection Limit Determination

Laboratory analytical quality control to determine detection limits can be found in 40CFR Part 136. Field quality control can be found in the following:

a. Documentation

All field activities must be properly documented including:

(1) Specific environmental sampling procedures;
(2) Procedures and justifications for any field actions taken contrary to this quality assurance project plan;
(3) Pre-field activities such as equipment check-out using standardized checklists;
(4) Post-field activities including equipment and personnel decontamination; and
(5) Chain-of-custody procedures for all samples collected in the field.

b. Blank, Field Matrix-Spiked, Collocated, and Replicate Samples

Field quality control procedures for blanks, field matrix-spiked, collocated and replicate samples can be found in Section D - Field Sampling Plan.

J. Performance and System Audits

System audits consist of the qualitative evaluation of the components of the measurement systems to determine their proper selection and use. These audits include a careful evaluation of both field and laboratory quality control procedures and shall be performed on a regular schedule during the life of the project. System audits shall be conducted by an individual who is technically knowledgeable about the operation and who is independent of any other aspect of the investigation. The primary objective of the systems audit is to ensure that the Quality Assurance/ Quality Control procedures are being followed.

Performance audits are conducted periodically to determine accuracy of the total measurement system and are quantitative evaluations of the measurement systems. This requires testing the measurement systems with samples of known composition or behavior to evaluate precision and accuracy.

Performance AND System Audits will be performed weekly basis during both the sampling and the testing life of the project.

The following are recommended audit procedures:

1. <u>Field Performance Audits</u>

   Field performance audits shall be conducted during the project as field data are generated, reduced and analyzed. All numerical manipulations shall be legible and sufficiently complete to permit reconstruction by others. Analyses of blank samples is an audit of the effectiveness of measures taken in the field to ensure sample integrity. The results of field replicates are an audit of the ability of field teams to collect representative sample portions of each matrix type.

2. <u>Field Systems' Audits</u>

   Systems audits of site activities will be accomplished by an inspection of all field site activities. During this audit, the auditor(s) will compare current field practices with standard procedures. The following elements should be evaluated during a field systems' audit:

   a. Overall level of organization and professionalism;
   b. All activities conducted in accordance with the Work Plan;
   c. All procedures and analyses conducted according to procedures outlined in this Quality Assurance Project Plan:
   d. Level of activity and sample documentation;
   e. Level of QA conducted per each field team;
   f. Contingency plans in case of equipment failure or other event preventing the planned activity from proceeding;
   g. Decontamination procedures;
   h. Level of efficiency with which each team conducts planned activities at one site and proceeds to the next; and
   i. Sample packaging and shipment.

   After completing the audit, any deficiencies should be discussed with the field staff, and corrections identified. If any of these efficiencies could affect the integrity of the samples being collected, the auditor(s) will inform the field staff immediately, so that corrections can be implemented immediately.

Performance and system audits will be performed yearly throughout the sampling and analysis life of the project.

The following are recommended audit procedures:

1. Field Performance Audits

Field performance audits shall be conducted during the project as field data are generated, reduced and analyzed. All numerical manipulations shall be legible and sufficiently complete to permit reconstruction by others. Analyses of blank samples is an audit of the effectiveness of measures taken in the field to ensure sample integrity. The results of field replicates are an audit of the ability of field teams to collect representative sample portions of each matrix type.

2. Field Systems Audits

Systems audits of site activities will be accomplished by an inspection of all field site activities. During this audit, the auditor(s) will compare current field practices with standard procedures. The following elements should be evaluated during a field systems audit:

a. Overall level of organization and professionalism;
b. All activities conducted in accordance with the Work Plan;
c. All procedures and analyses conducted according to procedures outlined in this Quality Assurance Project Plan;
d. Level of activity and sample documentation;
e. Level of QA conducted per each field team;
f. Contingency plans in case of equipment failure or other event preventing the planned activity from proceeding;
g. Decontamination procedures;
h. Level of efficiency with which each team conducts planned activities at one site and proceeds to the next; and
i. Sample packaging and shipment.

After completing the audit, any deficiencies should be discussed with the field staff, and corrections identified. If any of these deficiencies could affect the integrity of the samples being collected, the auditor will inform the field staff immediately so that corrections can be implemented immediately.

3. Laboratory Performance Audits

Laboratory performance audits shall be conducted on a routine basis and include items such as:

a. Verification of written procedures and analyst(s) understanding;
b. Verification and documentation of procedures and documents;
c. Periodic unannounced inspection of the sample handling group;
d. Periodic unannounced inspection of the analytical process record keeping; and
e. Review of a portion of all analytical data and calculations.

Corrective action will be taken for any deficiencies noted during the audit.

4. Laboratory System Audits

Laboratory system audits are qualitative audits of the measurement systems, ensuring that they are properly maintained and used. In the event that a major defect is discovered as a result of one of these audits, a follow-up inspection shall be conducted after sufficient time has passed for correction of the deficiency, or evidence of correction of the deficiency may be presented by the laboratory.

a. Scheduled Audit

These audits will be performed on a regularly scheduled basis, and include review of:

(1) Analytical and support instrumentation maintenance logs;
(2) Analytical and support instrumentation calibration logs;
(3) Refrigerator and freezer temperature records;
(4) Distilled/de-ionized water supply records;
(5) Sample tracking system;
(6) Standard tracking system; and
(7) Reagent chemical log-in, tracking, and disposal.

b. On-site Audit

During this audit, performed by the project Quality Assurance Officer (QAO), laboratory records and procedures will be inspected for completeness, accuracy, precision, and adherence to prescribed methods. This inspection will include:

(1) Following the sample chain-of-custody from time of sample receipt, through all analysis steps, to data reduction, validation, and report generation;
(2) Examination of maintenance and calibration logbooks, to ensure that maintenance and calibration are performed on a scheduled basis;
(3) Examination of procedures and records for data calculation, transfer and validation;
(4) Spot-check of calibration, QC, and sample data from selected instruments for selected days, to ensure acceptable precision, accuracy, and completeness;
(5) Inspection of storage areas, glassware preparation areas, and distilled/de-ionized water system records and procedures;
(6) Examination of QA procedures and records (standard and spike solution logbooks and storage areas, control charts, QA manuals).

K. Preventive Maintenance

Preventive maintenance of field and laboratory equipment shall be performed on a regular basis in accordance with written standard operating procedures or maintenance manuals for each equipment item used for this project.

L. Data Assessment Procedures (From 40 CFR 136)

The following describes the equations used to assess precision, accuracy and completeness of the measurement data, and to determine the measurement systems detection limits.

1. Precision

$$RPD = \frac{R_1 - R_2}{(R_1 - R_2/2} \times 100$$

Where: R_1 and R_2 represent the concentration of replicate spikes 1 and 2.

2. Accuracy

$$R = \frac{[(\text{Spiked Sample Conc.}) \times (\text{Sample + Spike Vol.}) - (\text{Sample Vol.}) \times (\text{Sample Conc.})]}{(\text{Spike Conc.}) \times (\text{Spike Volume})} \times 100$$

Where R = percent recovery.

3. Completeness

$$\text{Complete} = \frac{\text{\# of valid true concentrations reported}}{\text{\# of samples collected for anal. of true conc.}} \times 100$$

4. Method Detection Limits

$MDL = t(n-a, 1-a = 0.99) X S$

Where MDL = Method Detection Limit
S = Standard deviation of the replicate analysis
$t(n-1, 1-a = 0.99)$ = Students' t-value appropriate to a 99% confidence level and a standard deviation estimate with n-1 degrees of freedom.

M. Corrective Actions

If the results of the analysis are not within the anticipated limits, there are corrective actions that should be initiated by the analyst. There are, however, other checks within the measurement system that only the person assigned QA/QC responsibilities would be in a suitable position to evaluate and take action upon if required. A "blind" sample inserted in the normal sample flow would be an example of such a check.

The need for corrective action may be identified by either system audits, performance audits or standard QC procedures. Essential steps in the corrective action system are:

1. Identify and define the problem;
2. Assign responsibility for investigating the problem;
3. Investigate and determine the cause of the problem;
4. Determine a corrective action to eliminate the problem;
5. Assign and accept responsibility for implementing the corrective action;
6. Implement the corrective action and evaluate its effectiveness; and
7. Verify that the corrective action has eliminated the problem.

It is the responsibilty of the QAO to ensure that these steps are taken and that the problem necessitating the corrective action has been resolved.

N. Quality Assurance Reports to Management

Reports to management shall include:

1. Periodic assessment of the accuracy, precision and completeness of the measurement data;
2. Results of performance audits;
3. Results of system audits;
4. Significant QA/QC problems along with recommended solutions; and
5. Resolutions of previously-stated problems.

The individual(s) responsible for preparing the periodic reports should be identified. These reports and the final project report should include a separate QA/QC section that summarizes data quality information contained in the periodic reports.

Field Quality Assurance Report

Status reports should be submitted periodically to describe the progress of the project. These should include daily field progress reports, compiled field data sets, and corrective action documentation at appropriate intervals. Situations requiring immediate corrective action measures will be brought to the attention of the Project Manager.

Laboratory Quality Assurance Reports

A project QA report that summarizes all QA activities and QC data for the project will be issued to the project QAO whenever analysis data are reported to the Project Manager. In addition, the Laboratory Director will provide QA update memoranda for each sampling episode to the Project Manager upon evaluation of the analytical work for that episode. The Project Manager will be notified immediately of laboratory QA situations requiring immediate corrective action.

Special Notifications

All situations that indicate an imminent health risk will be brought to the immediate attention of the Project Manager and the regulatory agency. Written notification with supporting data will be forwarded within 3 days.

Final Report

The final report submitted to the regulatory agency must include a separate quality assurance section that summarizes the data quality information contained in the periodic reports.

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Hazardous Waste Management, 8th Floor
625 Broadway, Albany, New York 12233-7251
Phone: (518) 402-8612 • **FAX:** (518) 402-9025
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

August 6, 2002

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Steven M. Absolom
Commander's Representative
Department of the Army
Seneca Army Depot Activity
Romulus, New York 14541-5001

Dear Mr. Absolom:

Ref: Closure of RCRA Units
EPA. I.D. No: NYD0213820830

At various meetings and conference calls over the last few years, the Department has made several requests to the Seneca Army Depot Activity (SEAD) to submit a closure plan for each of its hazardous waste units.

On July 12, 2002, we again requested the same and SEAD agreed to submit a schedule for closure within 30 days followed by submission of updated closure plans. The schedule and closure plans have not been received by the Department. Please submit the schedule and closure plans within 30 calendar days of the date of this letter.

It is a violation for a facility to fail to amend a closure plan due to the change in the expected year of closure pursuant to 6NYCRR 373-3.7(c)(3) and it is also a violation to not submit a closure plan for each unit prior to that unit receiving its final volume of hazardous waste pursuant to 6NYCRR 373-3.7(c)(4).

Please note that for violations of the New York State Hazardous Waste Regulations an owner/operator is exposed to potential civil and criminal sanctions under the Environmental Conservation Law. Upon determination of culpability after opportunity for hearing, a civil penalty of up to $25,000 per day may be imposed for a first offense and $50,000 per day for a second offense. If SEAD fails to provide a complete updated RCRA closure plan for each of its hazardous waste units within 30 calender days of the date of this letter, the Department will consider commencement of legal proceedings against the SEAD.

[illegible]

[illegible]

[illegible]

Mr. [illegible] Monahan
Commissioner [illegible]
[illegible]
Syracuse [illegible]
[illegible]

Dear Mr. Monahan:

Re: Chemung County Landfill
NPDES No. NY0[illegible]

[illegible]

[illegible] 30 days [illegible]

[illegible]

[illegible] Commissioner [illegible]

If you need any additional information, please call Mr. Eric K. Blackwell, of my staff, at (518) 402-8610.

Sincerely,

Paul R. Counterman, P.E.
Director
Bureau of Hazardous Waste Management
Division of Solid and Hazardous Materials

cc: C. Vasudevan, DER
S. Hamilton, DEE
J. Dolen
E. Blackwell
D. Nevel
D. David, Reg. 8
M. Khalil, Reg. 8
R. Scott, Reg. 8
J. Reidy, Chief, New York Permit Section, EPA Region II

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96, P.O. BOX 9
ROMULUS, NEW YORK 14541-0009

REPLY TO
ATTENTION OF

August 22, 2002

Engineering and
Environmental Office

Mr. Eric Blackwell,
NYS Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Hazardous Waste Management,
625 Broadway, 8th Floor
Albany, New York 12233-7015

Re: Closure of RCRA facilities at Seneca Army Depot Activity (SEDA)

Dear Mr. Blackwell:

This correspondence is in response to your letter dated August 6, 2002, requesting SEDA submit a closure plan for each of its hazardous waste units within 30 days or face potential legal proceedings. SEDA was surprised to receive this letter, as SEDA does not recall agreeing to provide closure schedules and plans within 30 days of the July 12, 2002 conference call. Instead, SEDA was operating under the understanding, based on years of conversations with NYSDEC, that the current CERCLA program satisfied the RCRA closure requirements. SEDA also understood that with the need for continued use of the RCRA facilities for conforming storage and safe treatment of CERCLA waste the facilities could remain open until the waste was treated or disposed of. As a result, the NYDEC letter requesting closure plans appears to be a departure from our past understandings and has created uncertainty regarding how the RCRA Closure requirements will be integrated into the ongoing CERCLA cleanup.

It is SEDA's understanding that it should submit the requested closure plan but that the NYDEC will conduct the actual remediation under the CERCLA process. To clarify the process, SEDA will formally request a variance, as allowed for in 373-3.7(a) (4) and permitted under part 373 -1.2(e), such that a submission of a RCRA closure plan will

satisfy RCRA Closure requirements and all other RCRA requirements will be accomplished under the Seneca Army Depot Activity Federal Facility Agreement (FFA). The State is party to the FFA, which is an enforceable document. The request will address RCRA requirements such as, but not be limited to, the following:

a. All RCRA requirements and liabilities, excluding potential future small quantity generator requirements. Upon closure of the hazardous waste units SEDA will no longer have interim status but will be subject to the RCRA small generator requirements.
b. All RCRA Closure schedules, time allowed for Closure, and post-closure requirements. However, SEDA will complete the remediation of the hazardous waste units in accordance with the CERCLA process and the timelines set forth in the FFA.
c. All requirements under 6 NYCRR Part 373-3.7, Closure and Post-Closure; 373-3.8, Financial Requirements; 373-3.16, Thermal Treatment, including 373-3.16(f), Open Burning; Waste Explosives; and 373-3.17(f), Special Requirements for Ignitable or Reactive Waste. However, SEDA will include substantive RCRA requirements as relevant and appropriate requirements (ARARs).

Upon receiving confirmation that the current CERCLA program satisfies the above RCRA Closure requirements, SEAD proposes to submit a Closure Plan covering the interim permitted facilities. The closure plan will include a reference to the SEDA FFA as satisfying all RCRA requirements. The substantive RCRA requirements would be identified as ARARs and the existing schedules for investigations and remediation efforts would be continued in accordance with the FFA. Upon acceptance of this request for closure implementation under CERCLA, the facilities, by approval of the Closure Plans, would no longer be managed under interim status and this status would be terminated.

SEDA believes continuing the approach that integrates the RCRA Closure requirements into the ongoing CERCLA program will expedite cleanup efforts at SEDA while at the same time still assuring protection of human health and the environment. In addition, this approach provides the benefit of giving both the Army and the State of New York a

single, definitive line of authority within the State for the Army to respond to, avoids duplication of review efforts, provides a single contact for community involvement, and insures efficient and consistent site cleanup efforts.

SEDA also requests an extension for submission of the closure plans of 60 days from our receipt of your response to this letter.

Questions may be directed to Stephen Absolom, BRAC Environmental Coordinator, (607) 869-1309; Randall Battaglia, Alternate, NY COE, (607) 859-1523.

Sincerely,

Stephen M. Absolom
Commander's Representative

Copies Furnished:

Robert K. Scott, NYSDEC Region 8
6274 East Avon-Lima Road
Avon, NY 14414-9519

Alicia Thorne, Project Manager
NYSDEC, Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
625 Broadway, 11th Floor
Albany, NY 12233-7015

Julio Vazquez
US Environmental Protection Agency
Emergency & Remedial Response Division
209 Broadway, 18th Floor, E-3
New York, NY 10007-1866

**************** -COMM.JOURNAL- ********************* DATE SEP-11-2002 ***** TIME 10:56 *** P.01

MODE = MEMORY TRANSMISSION START=SEP-11 10:55 END=SEP-11 10:56

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-SENECA ENG/ENV -

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FAX HEADER

SENECA ARMY DEPOT ACTIVITY
CARETAKER FORCE
PO BOX 9
ROMULUS, NY 14541

TO: Hank Dalton } SMI
Joe Pearson
phone:
fax: 301 926 2488
215 699 0841

From: Nancy Williamson
Facilities Assistant
phone: (607) 869-1494
fax: (607) 869-1362
email: williamsonn@seneca-hp.army.mil

Regarding: Closure of RCRA Facilities at Seneca

4 pages including header

****************** -COMM.JOURNAL- ************************ DATE SEP-11-2002 ***** TIME 10:53 *** P.01

MODE = MEMORY TRANSMISSION START=SEP-11 10:52 END=SEP-11 10:53

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-SENECA ENG/ENV -

************************************* - - ***** - 16078691362- *********

FAX HEADER

SENECA ARMY DEPOT ACTIVITY
CARETAKER FORCE
PO BOX 9
ROMULUS, NY 14541

TO: Hank Dalton } SMI
Joe Pearson

phone: ____________

fax: 301 926 2488
215 699 0841

From: Nancy Williamson
Facilities Assistant

phone: (607) 869-1494

fax: (607) 869-1362

email: williamsonn@seneca-hp.army.mil

Regarding: Closure of RCRA Facilities at Seneca

4 pages including header

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 8
6274 East Avon-Lima Road, Avon, New York 14414-9519
Phone: (585) 226-2466 • **FAX:** (585) 226-2830
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

File ✓

February 6, 2003

Mr. Steven Absolom
Seneca Army Depot Activity (SEDA)
5786 State Route 96
Romulus, New Your 14541-5001

Dear Mr. Absolom:

Re: RCRA Closure Plans and Public Notice

As we discussed please have the enclosed public notice published in the Geneva Paper once during the week of February 10th - 14th and provide me a copy of the proof of publication.

During the comment period you may commence closure of the facility in accordance with the closure plans. However, any amendments to the closure plans made as a result of public comments approved by the Department must be addressed by you as part of the closure process prior to your certifying closure of the container storage areas.

The closures must be performed in accordance with the approved closure plans and 6NYCRR Part 373-3.7. Certification of the closures must be submitted to me at the above address and Mr. Paul Counterman at 625 Broadway, Albany, NY 12233-7251 in accordance with 373-3.7(f).

If you have any question regarding the public notification procedures or the enclosed notice, please call Mr. Robert Scott at 585-226-5395, e-mail: (rkscott@gw.dec.state.ny.us) or Mr. Eric K. Blackwell at 518-402-8610, e-mail: (ekblackw@gw.dec.state.ny.us).

Sincerely,

Robert K. Scott
Deputy Permit Administrator

enc. Public Notice

cc: J. Reidy, USEPA, 22nd Floor, 290 Broadway, New York NY 10007
P. R. Counterman, Albany
J. W. Dolen, Albany
Alicia Thorne, Albany
E. K. Blackwell, Albany
Julio Vazquez
Town of Romulus Supervisor
Town of Varick Supervisor

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7251
518-457-7264 FAX 518-485-8769

EARTH DAY 25 1995 ENVIRONMENTAL PARTNERS

Michael D. Zagata
Commissioner

November 10, 1995

Mr. Stephen M. Absolom
Chief of Engineering/Environmental Management Division
The Department of the Army
Seneca Army Depot (SEAD)
Romulus, New York 14541-5001

Dear Mr. Absolom:

The final closure report for the Building 360 Steam Jenny Pit has been reviewed and it was concluded that the pit has met the final RCRA closure performance standard as approved in the closure plan. The required sampling of the pit and the soils beneath the pit demonstrate that the closure performance standard has been met and that no further action for RCRA closure is required. Although the results of the tests showed little in the way of contamination, the results of the analytical data will be forwarded to the Division of Remediation for review to determine whether any future action under their program is warranted.

Based upon the analytical data submitted as part of the plan, none of the excavated material has been shown to be characterized as a hazardous waste. Therefore, the discarded material is a solid waste and must be disposed of in accordance with Part 360.

Please submit to the Department within 60 days a certification of final closure stating that the unit has been closed in accordance with the approved plan. The certification must be signed by an independent professional engineer registered in New York State.

If you have any questions or concerns, please contact Ms. Denise Prunier at (518) 457-7264.

Sincerely,

Sev Chetty
Section Supervisor
Div. of Solid and Hazardous Materials

cc: P. Counterman
R. Murphy
D. Prunier
M. Chen, DHWR
J. Brogard, USEPA Rg. II
D. Rollins, Rg.8
R. Huneau, SEAD

Final Report - Volume I
Building 360 Closure
Seneca Army Depot
Romulus, New York

Contract No. DACW45-94-D-0054
Delivery Order No. 02
IT Project No. 519204

Prepared by:

INTERNATIONAL TECHNOLOGY CORPORATION

140 Allens Creek Road
Rochester, New York 14618

Prepared for:

U.S. Army Corps of Engineers
Omaha District
215 North 17th Street
Omaha, Nebraska 68102-4978

July 1995

2.0 Investigation Program

The basic elements and requirements for the investigation program are presented in the Work Plan, written by IT and approved by the USACE in December, 1994. In the sections below, a summary of the methods employed to perform the investigation is presented. A tabulated summary of the samples collected during the investigation is presented in Table 2-1.

2.1 Health and Safety

All project activities were performed under the direct supervision of site health and safety personnel in accordance with the specifications outlined in the Site Safety and Health Plan (SSHP).

2.2 Pit Sampling

In order to allow for a determination of the appropriate level of personal protective equipment (PPE) necessary for field personnel during the investigation, and to allow for a determination of the disposal of the liquid contained in the pit, one representative composite pit water sample was collected on November 30, 1994, and submitted to the laboratory for analysis (Refer to Figure 2-1 - Sampling Location Plan). The pit water sample was collected by sample technicians in level "B" personal protective equipment. The sample was taken by immersing the sampling vials and bottles directly into the pit after several unsuccessful attempts had been made to use a disposable Teflon™ bailer. The sample was submitted to Eastman Kodak - Chemicals Quality Services (Kodak) laboratory for analysis of volatiles, semivolatiles, pesticides, herbicides, polychlorinated biphenyls (PCBs), metals, and various classical chemistry parameters. A summary of the analytical results for this sample is presented in Section 3.1 of this report. A recommendation for disposal of the liquid contained in the accumulation pit and the drummed rinsate generated from the building and metal grating decontamination operations is detailed in Section 6.0.

2.3 Pit Waste Removal

The existing volume of liquid waste was removed from the pit area by means of an electrically-powered submersible pump and transferred to 55-gallon drums for temporary storage at Building 360 until a final determination was made as to its disposal.

2.4.2 "C" Location Groundwater Sampling

After the soil samples were acquired the auger was then used to advance each of the three borings to an approximate depth of two feet below the groundwater surface or until competent bedrock was encountered. All three borings encountered bedrock prior to reaching a desired depth of two feet below the static water table but produced sufficient groundwater to meet sampling objectives. The groundwater was manually bailed out to preclude the possibility of contamination from upper soil layers and allowed to settle for 24 hours prior to sampling. One sample of groundwater was taken, with a weighted bottle, from each sample location and sent to an off-site laboratory for analysis. When sampling was completed, sample locations were then backfilled to grade with non-shrink grout on February 9, 1995. Analytical results are summarized in Section 3.4 of this report.

2.5 Soil Borings/Groundwater Well Installations

In order to assess the potential impact of former operation of the steam jenny pit on groundwater, two monitoring wells (MW1 and MW2) were installed within the vicinity of building 360. Samples of soil and groundwater at locations MW1 and MW2 were obtained. Soil samples were screened for the presence of volatile organic compounds (VOCs) in the field using a photoionization detector (PID) instrument. Groundwater samples were submitted for laboratory analysis.

2.5.1 Soil Borings

Monitoring well MW1 was placed in a location which was presumed to be upgradient of Building 360 and well MW2 was placed in a location which was presumed to be downgradient of Building 360 (Figure 1 - Sampling Location Plan). An existing sump pump, referred to as the "trichlor sump" (T-sump) due to its location beneath a storage tank used to store 1,1,1-trichloroethane, was also used as a groundwater monitoring location. The T-sump is situated approximately 25 feet south of the steam jenny accumulation pit.

During drilling of the borings associated with MW1 and MW2, soil sampling was performed continuously over the entire depth of the boring to allow for accurate logging of the soil lithology and a field assessment (using the PID instrument) of the chemical characteristics of the soil. Subsurface soil samples were collected during the investigation by means of a hollow stem auger drill rig equipped with a split-spoon sampler. The field sampling technician used the PID to screen soil samples in the split spoon sampler for

VOCs at the time of sample collection. Sampling was done immediately upon opening the split spoon, and was performed once the split-spoon sample was taken from the boring. After the material in the split-spoon sampler was visually described and classified, the entire contents of the split spoon was placed in a 55-gallon drum staged by the well location. Refer to Section 6.0 of this report for soil disposal recommendations.

2.5.2 Monitoring Well Location Survey

Monitoring wells MW-1 and MW-2 were surveyed in the x,y, and z coordinates on February 24, 1995 by Niagara Boundary and Mapping Services. Coordinates for both monitoring wells were measured to the closest one foot. Ground elevations to the closest 0.10 foot and top of casing (TOC) elevations to the nearest 0.010 foot were recorded for each location. All measurements were referenced to a benchmark consisting of the rim of a manhole located approximately 50 feet east of building 360.

2.5.3 Well Development and Groundwater Sampling

Upon completion of the installation of MW1 and MW2, each monitoring well was developed by bailing. Each well was developed until a minimum of three well columns of water were removed. After each well was developed, the pH, temperature, turbidity, and specific conductivity of the well water was measured and recorded to evaluate the initial performance of the well. Water generated during development was placed in Department of Transportation (DOT)-approved drums and staged at Building 360. Refer to Section 6.0 of this report for recommendations for disposal of this drummed water.

Water levels in MW1 and MW2 were measured before and after development, and before and after sampling each well. Each monitoring well was allowed to equilibrate for at least 24 hours prior to sampling. Water levels were measured to the nearest 0.01 foot using an electric well sounder relative to the top of the well riser.

Groundwater samples were obtained from MW1 and MW2 and sent to Quanterra for analysis. Prior to sampling, each well was purged using a Teflon bailer until pH, specific conductivity, and temperature stabilized to within 10 percent between any two well volumes and a minimum of three times the initial volume of water within each well was evacuated. The purged water was collected in 55-gallon drums which are staged at Building 360

VOCs in the area of sample collection. Screening was done immediately upon opening the split spoon, and was performed along the length of the core sample upon opening the sampler. After the material in the split-spoon samplers was visually described and classified, the excess volume of the split spoons was placed in a container and retained for the well borings. Refer to Section 5.0 of this report for soil disposal recommendations.

2.2.2 Monitoring Well Location Survey

Monitoring wells MW-1 and MW-2 were surveyed in the horizontal coordinates on February 24, 1995 by Morgan Boundary and Mapping Services. Coordinates for both monitoring wells were measured to the closest one foot. Ground elevations to the nearest 0.01 foot and top of casing (TOC) elevations to the nearest 0.01 foot were measured at each location. All measurements were referenced to a benchmark consisting of the rim of a manhole located approximately 50 feet east of Building 160.

2.2.3 Well Development and Groundwater Sampling

Upon completion of the installation of MW1 and MW2, each monitoring well was developed by bailing. Each well was developed until a minimum of three well volumes of water were removed. After each well was developed, the pH, temperature, turbidity, and specific conductivity of the well water was measured and recorded to evaluate the overall performance of the well. Water generated during development was placed in Department of Transportation (DOT) approved drums and staged at Building 160. Refer to Section 5.0 of this report for recommendations for disposal of this containerized water.

Water levels in MW1 and MW2 were measured before and after development, and before and after sampling each well. Each monitoring well was allowed to equilibrate for at least 24 hours prior to sampling. Water levels were measured to the nearest 0.01 foot using an electric water level meter relative to the top of the well riser.

Groundwater samples were obtained from MW1 and MW2 and sent to Laboratory for analysis. Prior to sampling, each well was purged using a Teflon bailer until pH, specific conductivity, and temperature stabilized to within 10 percent between successive well volumes and a minimum of three times the initial volume of water within each well was removed. The purged water was collected in 55-gallon drums which are staged at Building 160.

awaiting disposition (refer to Section 5.0 of this report for a recommendation for disposition of the purged water). The monitoring wells were sampled following this protocol once each month from February 1995 through May 1995. Analytical results are summarized in Section 3.4 of this report.

2.5.4 T-sump Sampling

The T-sump was also sampled once each month as an additional groundwater monitoring location from February 1995 through May 1995. Sampling was accomplished by carefully lowering a clean disposable teflon bailer into the sump, taking care not to agitate the liquid in the sump and thereby cause the sump sediments to go into suspension. The bailer was retrieved and the sample jars were filled by pouring the water from the bailer. Analytical results are summarized in Section 3.4 of this report.

2.6 Building Decontamination

During the period February 10, 1995 through March 21, 1995, several attempts were made to pressure wash the interior of the steam jenny room of Building 360. The first of these unsuccessful attempts occurred on February 10, 1995, where due to cold temperatures the pressure washer apparatus became frozen. Several subsequent attempts in the above referenced interval were also frustrated by extremely cold conditions. On March 21, 1995, IT employees successfully operated a pressure washer and cleaned the interior of the steam jenny room. Based on a determination that contamination is limited to the concrete surfaces and metal grating, all contaminated areas including walls, floors and grating were steam cleaned with detergent and water and then rinsed.

At the conclusion of the project activities all equipment was removed and, with the exception of IDW being staged at the building, the site was restored to its original condition.

2.7 Investigation Derived Wastes

Drill cuttings, excess sample materials, and water removed from borings/monitoring wells were drummed, appropriately labeled, and staged on site on wooden pallets nearby Building 360 for removal at a later date.

The following wastestreams were generated during the investigation:

- Wastewater (including accumulated steam jenny pit water and rinsate from equipment decontamination), and purged groundwater from sampling activities; and.
- Soil, concrete and PPE.

There are currently a total of 16 drums staged at Building 360 and their contents and approximate aggregate volume(s) are as follows:

- Three drums which contain a total of 95 gallons of development/purge water,
- Four drums which contain a total of 150 gallons of pit cleanout water
- One drum containing 40 gallons of drilling equipment decontamination water, and
- Eight drums which contain 2.15 tons (1.53 cubic yards) of soil/drill auger cuttings and minor concrete from coring operations.

These materials were placed into drums which were DOT- and Environmental Protection Agency (EPA)-approved for transport of hazardous materials. The drums are currently in temporary storage at Building 360 awaiting EPA and New York State Department of Environmental Conservation (NYSDEC) approval for their disposal. The Seneca Army Depot has been listed as the generator of the investigation derived waste (IDW) and an authorized representative of the Depot will sign all manifests and waste profile sheet(s) if determined necessary. IT, in coordination with SEDA, will oversee the disposal of all IDW. See Section 4.3 for IDW characterization and Section 6.0 for IDW disposal recommendations.

3.0 *Investigation Analytical Results*

The laboratory analytical results for samples from the decontamination pit wastewater, concrete cores and underlying soil and groundwater, groundwater from two newly installed monitoring wells, and groundwater from the T-sump are presented in the seven tables (Tables 3-1 through 3-7) which accompany this data summary.

All groundwater, soil and concrete samples were collected successfully and within method-specified requirements. For reference, the Certificates of Analysis and associated QA/QC from the laboratory have been included as Appendix A to this Report.

Analyses varied depending on sample matrix which included a full suite of VOCs, semivolatile organic compounds, PCBs, pesticides, herbicides, metals, and various classical chemistry parameters. All samples were analyzed following United States Environmental Protection Agency Solid Waste-846 (USEPA SW846) methodology.

Laboratory analytical results indicate the presence of trace levels of several different compounds in all three media (groundwater, soil and concrete) at the project site. These constituents were present in varying concentrations.

Direct, real-time monitoring with a PID was performed while borings were drilled and during the initial round of groundwater sampling. No quantifiable readings were recorded with the PID during these screening activities.

3.1 *Pit Water Analytical Results*

One representative, composite pit water sample (B360-Sump-1) was collected from the pit on November 30, 1994, and sent to the Kodak laboratory for analysis. The sample was analyzed for volatiles, semivolatiles, pesticides, herbicides, PCBs, metals, and various classical chemistry parameters. The analytical data was received and reviewed in order to determine the level of health and safety criteria to be utilized during project activities and to properly characterize the pit water for disposal.

Pit water analytical data revealed no detectable volatiles, herbicides, and PCBs. Total cresol was detected at 0.020 milligrams per liter (mg/l). Pesticides lindane and 4,4-DDE

3.0 Investigation Analytical Results

The laboratory analytical results for samples from the [illegible] [illegible] concrete, soil and groundwater, and the pit water, [illegible] from the [illegible] monitoring wells and groundwater from the [illegible] are presented in the seven tables (Tables 3-1 through 3-7) which accompany this text summary.

All groundwater, soil and concrete samples were analyzed successfully and within method specified requirements. For reference, the Certificates of Analysis and associated Quality [illegible] from the laboratory have been included in Appendix [illegible] of this Report.

Analyses varied depending on sample matrix, which included a full suite of VOCs, semi-volatile organic compounds (SVOCs), pesticides, herbicides, metals, and various classical chemistry parameters. All samples were analyzed following United States Environmental Protection Agency Solid Waste-846 (USEPA SW-846) methodology.

Laboratory analytical results indicate the presence of trace levels of several different compounds in all three media (groundwater, soil and concrete) at the project site. These constituents were present at varying concentrations.

Direct, real-time monitoring with a PID was performed at the boring locations during and during the initial round of groundwater sampling. No significant readings were recorded with the PID during these screening activities.

3.1 Pit Water Analytical Results

One representative, composite pit water sample ([illegible]) was collected from the pit on November 10, 1996, and sent to the Kodak laboratory for analysis. The sample was analyzed for volatiles, semi-volatiles, pesticides, herbicides, PCBs, metals, and various classical chemistry parameters. The analytical data was reviewed and evaluated in order to determine the level of health and safety controls to be utilized during project activities and to properly characterize the pit water for disposal.

Pit water analytical data revealed no detectable levels of volatiles, semi-volatiles, and PCBs. Total cyanide was detected at 0.020 milligrams per liter (mg/l). Pesticides, notably the 4,4-DDE were detected at 0.00010 mg/l and 0.000250 mg/l respectively. Arsenic, cadmium, chromium, copper, lead, nickel, selenium, and zinc were detected at 0.0403 mg/l, 0.0054 mg/l, 0.043 mg/l, 0.155 mg/l, 0.194 mg/l, 0.276 mg/l, 0.0234 mg/l, and 2.59 mg/l respectively. Barium and silver were detected above the method detection limits but below the practical quantitation limits (PQLs) at 0.056 mg/l and 0.008 mg/l respectively. In addition the following classical chemistry parameters were detected: density at 0.999 mg/l, total dissolved solids at 1500 mg/l, total suspended solids at 330 mg/l, total organic carbon at 110 mg/l, total organic nitrogen at 3.2 mg/l, phenol (above method detection limit but below practical quantitation limit) at 0.01 mg/l, sulfide at 1.4 mg/l, and pH at 8.7. Refer to Table 3-1 for a complete summary of pit water analytical results.

3.2 Concrete Sample Analytical Results

The three decontamination pit concrete cores (designated "CC1-1", "CC1-2", etc.) were analyzed for PCBs and toxicity characteristic leaching procedure (TCLP) cadmium, chromium, and lead. Analytical data from the concrete core samples revealed no detectable PCBs. Only concrete core number three (CC3) had detects for TCLP chromium within the top (CC3-1, 0in.-3in.) and middle (CC3-2, 3in.-5in.) third sections of the concrete core with concentrations at 22 micrograms per liter (ug/l) and 12 ug/l respectively. Table 3-2 contains a summary of the concrete analytical data.

3.3 Soil Sample Analytical Results

Soil samples from the interval 1 ft. to 3 ft. beneath the concrete were analyzed for VOCs, PCBs, cadmium, chromium, and lead. Samples were designated per location using descriptors such as CS1-, CS2-, CS2-dup. and CS3-. No VOCs or PCBs were detected at or above the PQLs in any of the soil samples. Chromium was detected in samples CS1 (1-3 ft), CS2 (1-3ft), CS2 (1-3ft) duplicate, and CS3 (0-1.5ft) at concentrations of 20.7 milligrams per kilogram (mg/kg), 24.7 mg/kg, 28 mg/kg, and 18.4 mg/kg respectively. Lead was also detected in the same samples at concentrations of 7.9 mg/kg, 7.8 mg/kg, 7.3 mg/kg, and 5.7 mg/kg respectively. Refer to Table 3-3 for a summary of soil analytical data.

3.4 Groundwater Analytical Results

Groundwater samples collected from within the concrete holes were analyzed for VOCs, semivolatiles, PCBs, cadmium, chromium, and lead. No constituents were detected, with the

[illegible]

[illegible] chromium, copper, lead, [illegible] selenium and zinc were detected at [illegible] mg/L, [illegible] mg/L, [illegible] mg/L, [illegible] mg/L, [illegible] mg/L and [illegible] mg/L respectively. [illegible] were detected above [illegible] the method quantitation limit (PQL) [illegible] mg/L respectively. In addition, the following chemical characterizing parameters were detected: [illegible] at [illegible] mg/L, total alkalinity at [illegible] mg/L, total suspended solids at [illegible] mg/L, total dissolved solids at [illegible] mg/L, total organic nitrogen at [illegible] mg/L [illegible] below [illegible] sulfide at [illegible] mg/L [illegible]. Refer to Table 2-1 for a complete summary of the water analytical results.

2.2 Concrete Sample Analytical Results

The three concrete [illegible] samples [illegible] were analyzed for VOCs [illegible] toxicity characteristic leaching procedure (TCLP) cadmium, chromium, and lead. Analytical data from the concrete core samples revealed no detectable VOCs. Only concrete core number three (CC-3) had detects for TCLP cadmium within the [illegible] (CC-3-1, [illegible]) and middle (CC-3-2 [illegible]) sections of the concrete core with concentrations of [illegible] micrograms per liter (µg/l) and [illegible] µg/l respectively. Table 2-2 contains a summary of the concrete analytical data.

2.3 Soil Sample Analytical Results

Soil samples from the interval 1 ft to 1.5 ft [illegible] were analyzed for VOCs, PCBs, cadmium, chromium, and lead. Samples were [illegible] such as [illegible]. No VOCs or PCBs were detected at or above the PQLs in any of the soil samples. Chromium was detected in samples [illegible], [illegible], [illegible] (duplicate) and [illegible] at concentrations of [illegible] milligrams per kilogram (mg/kg), [illegible] mg/kg, [illegible] mg/kg and [illegible] mg/kg respectively. Lead was also detected in the same samples at concentrations of [illegible] mg/kg, [illegible] mg/kg, and [illegible] mg/kg respectively. Refer to Table 2-3 for a summary of soil analytical data.

2.4 Groundwater Analytical Results

Groundwater samples collected from within the [illegible] were analyzed for VOCs, semivolatiles, PCBs, cadmium, chromium, and lead. No contaminants were detected above the [illegible] exception of lead in samples CW1 at 3.8 ug/l and CW3 at 10 ug/l, and chromium in sample CW3 at 42.7 ug/l.

As specified previously the monitoring well and T-sump groundwater samples were collected upon initial well installation and then once a month for three consecutive months following the initial sampling event. Groundwater samples collected from the first, second, and third monthly sampling events were designated using descriptors such as MW1-1, MW2-1, MW1-2, MW2-2, etc. The monitoring well and T-sump groundwater samples were analyzed for VOCs, semivolatiles, PCBs, cadmium, chromium, and lead parameters

The initial sampling event revealed no constituents detected at or above the PQLs, with the exception of chromium in samples MW1 at 20 ug/l, MW2 at 41.2 ug/l, and T-Sump 1 at 48.4 ug/l. Lead was also detected in these samples at 5.4 ug/l, 9.3 ug/l, and 197 ug/l respectively. The T-sump sample also contained 1,1,1-trichloroethane at 14 ug/l. All initial sampling event water data are summarized in Table 3-4.

The first monthly sampling event revealed no semivolatiles or PCBs detected at or above PQLs. Acetone was detected in MW1-1 at 2 mg/l. In addition lead, bromodichloromethane, bromoform, dibromochloromethane, and 1,1,1-trichloroethane were detected in T-Sump 1-1 at concentrations of 30.5 ug/l, 5.5 ug/l, 7.6 ug/l, 14 ug/l, and 18 ug/l respectively and in T-Sump 1-1 duplicate at concentrations of 38.5 ug/l, 5.9 ug/l, 7.8 ug/l, 15 ug/l, and 20 ug/l respectively. Refer to table 3-5 for the first monthly groundwater analytical data summary.

The second monthly sampling event revealed no semivolatiles or PCBs detected at or above PQLs. Acetone was detected at 1.7 mg/l in MW1-2 and MW1-2 duplicate. Chromium was detected in MW2-2 at 13.3 ug/l. In addition 1,1,1-trichloroethane and lead were detected in T-Sump 2 at 16 ug/l and 20.4 ug/l respectively. Refer to Table 3-6 for the second monthly groundwater analytical data summary.

The third and final groundwater sampling event resulted in no PCBs detected at or above PQLs. Acetone and 1,1-dichloroethane were detected at 110 ug/l and 7.0 ug/l in MW1-3 and 150 ug/l and 7.6 ug/l in MW1-3 duplicate, respectively. 1,1,2,2-Tetrachloroethane and total xylenes were detected in MW1-3 duplicate at 7.6 ug/l and 11 ug/l respectively. 2-

[illegible] of lead [illegible] (28.3 [illegible] well [illegible] MW-5 and chloroform in sample [illegible] at 48.7 ug/l.

As described previously, the monitoring well and T-sump groundwater samples were collected upon initial well installation and then once a month for three consecutive months following the initial sampling event. Groundwater samples collected from the first second and third monthly sampling events were designated using descriptive suffixes (i.e. MW-1-1, MW-1-2, MW-1-3, etc.). The monitoring well and T-sump groundwater samples were analyzed for VOCs, semivolatiles, PCBs, cadmium, chromium, and lead. [illegible]

The initial sampling event revealed no constituents detected at or above the PCLs, with the exception of chloroform in samples MW-1 at 50 ug/l, MW-2 at [illegible] ug/l, and T-Sump 1 at [illegible] ug/l. Lead was also detected in these samples at [illegible] ug/l, [illegible] ug/l and 19[illegible] ug/l, respectively. The T-sump sample also contained 1,2-Dichloroethane at [illegible] ug/l. All initial sampling event water data are summarized in Table 3A.

The first monthly sampling event revealed no semivolatiles or PCBs detected at or above PCLs. Acetone was detected in MW-1-1 at [illegible] ug/l. In addition, lead, bromodichloromethane, chloroform, dibromochloromethane, and 1,2-dichloroethane were detected in T-Sump 1-1 at concentrations of [illegible] ug/l, [illegible] ug/l, [illegible] ug/l, [illegible] ug/l, and [illegible] ug/l respectively, and in T-Sump 1-1 duplicate at concentrations of [illegible] ug/l, [illegible] ug/l, [illegible] ug/l, [illegible] ug/l, and 20 ug/l respectively. Refer to Table 3B for the first monthly groundwater analytical data summary.

The second monthly sampling event revealed no semivolatiles or PCBs detected at or above PCLs. Acetone was detected at [illegible] ug/l in MW-1-2 and MW-1-2 duplicate. Chloroform was detected in MW-2-2 at [illegible] ug/l. In addition 1,2-dichloroethane and lead were detected in T-Sump 2 at [illegible] ug/l and [illegible] ug/l respectively. Refer to Table 3C for the second monthly groundwater analytical data summary.

The third and final groundwater sampling event resulted in no PCBs detected at or above PCLs. Acetone and [illegible] were detected at [illegible] ug/l and [illegible] ug/l in MW-1-3 and [illegible] ug/l and [illegible] ug/l in MW-1-3 duplicate, respectively. 1,2-Dichloroethane and lead were detected in MW-1-3 duplicate at [illegible] ug/l and [illegible] ug/l respectively. [illegible]

Methylnapthalene, napthalene, and chromium were detected in MW2-3 at concentrations of 110 ug/l, 950 ug/l, and 38.3 ug/l respectively. In addition T-Sump 3 contained 1,1,1-trichloroethane at 18 ug/l and lead at 18 ug/l. Refer to Table 3-7 for the third monthly groundwater analytical data summary.

4.0 Analytical Data Evaluation

As per the Building 360 Closure Plan the laboratory analytical results were evaluated against NYSDEC site-specific action levels to determine if the soil, groundwater, or concrete matrices required further remedial action or if clean closure of the project site could be justified.

The data was also compared to New York State Ambient Water Quality (NYSAWQ) Standards and Guidance Values (Environmental Conservation Law and New York Code of Rules and Regulations (6NYCRR) Parts 700-705, Water Quality Regulations) in order to evaluate impact of the detected constituents on the building 360 surrounding groundwater. In addition, soil and pit wastewater analytical data were compared against Resource Conservation and Recovery Act (RCRA) solid and hazardous waste criteria as specified in 40 Code of Federal Regulations (CFR) Part 261 and 6NYCRR Part 371 in order to characterize the IDW as nonhazardous material.

4.1 Action Level Comparison

Comparison of the detected constituents to the site-specific action levels and soil background concentrations reveals no exceedances for all analyzed sample matrices (concrete, soil and groundwater) with the exception of the T-sump groundwater samples. Five exceedances (for lead) occurred in the groundwater samples obtained from the T-sump inside building 360. Lead was detected at 197 ug/l, 30.5 ug/l, 38.5 ug/l, 20.4 ug/l, and 18 ug/l in samples T-Sump 1, T-Sump 1-1, T-Sump 1-1 duplicate, T-Sump 2, and T-Sump 3 respectively, which exceeds the site-specific action level of 15 ug/l for groundwater presented in the Building 360 Closure Plan *(Page 7 - Table 2 - New York State Department of Environmental Conservation - Action Levels)*.

4.2 Groundwater Standard Comparison

Analysis of groundwater samples obtained from within the accumulation pit concrete cored intervals revealed no exceedences when compared to NYSAWQ standards.

Analysis of water samples obtained during monthly sampling of MW1, MW2 and the T-sump, performed in the period March 1995 through May 1995, revealed the presence of several constituents at concentrations which exceeded the NYSAWQ. These constituents are:

- acetone;
- 1,1-dichloroethane (1,1-DCA);
- 1,1,2,2-tetrachloroethane;
- 1,1,1-trichloroethane (1,1,1-TCA);
- total xylenes;
- napthalene; and,
- lead.

Acetone was detected in water samples obtained in March, April and May 1995 from MW1 at concentrations ranging from 110 ug/l to 2000 ug/l. The NYS AWQ guidance value for acetone in groundwater is 50 ug/l. 1,1-DCA was detected in a sample obtained in May 1995 from MW1 at a concentration of 7.6 ug/l, which is in excess of the NYS AWQ standard of 5 ug/l. 1,1,2,2-tetrachloroethane was also detected in the May 1995 sample from MW1, and the reported concentration of 7.6 ug/l exceeds the standard of 5 ug/l. 1,1,1-TCA was also detected in the sump water samples from March 1995 through May 1995, at concentrations ranging from 14 ug/l to 20 ug/l. The published NYS AWQ standard for 1,1,1-TCA in groundwater is 5 ug/l. Total xylenes were detected at 11 ug/l in the May 1995 groundwater sample from MW1 exceeding the NYS AWQ standard of 5 ug/l. Napthalene was detected in the groundwater sample obtained in May 1995, from MW2 at a concentration of 950 ug/l. The NYS AWQ guidance value for napthalene in groundwater is 10 ug/l.

4.3 *Investigation Derived Waste Characterization*

The initial step in the IDW disposal process was to determine if the IDW is a solid and/or hazardous waste according to RCRA criteria. The IDW meets the definition of a solid waste since the IDW is intended to be discarded and disposed.

The following steps were taken in order to determine if the pit water sample met the criteria of a RCRA hazardous waste:

- Based on review of the pit water sample analytical data and an evaluation of the pit historical use it appears that no known listed hazardous wastes are/were present inside the steam jenny pit area of Building 360. Therefore the pit water can not be characterized as containing a RCRA F, P, K, or U listed hazardous waste.

- Since the pit water does not fit the criteria for an ignitable, corrosive, or reactive waste based on site history, process knowledge, nature of the

generated pit water, and the debris analytical data, the pit water can not be classified as a D001 through D003 characteristic hazardous waste.

- A comparison of the detected sample constituents to the toxicity characteristic values as listed in 40 CFR 261 reveals that none of the detected constituent concentrations exceed their toxicity characteristic values. Therefore the pit water can not be characterized as a D004 through D043 toxicity characteristic waste.

The same characterization process is applicable to the IDW soil based on analytical data and historical usage of the site. Therefore the pit water IDW and the soil IDW are considered nonhazardous waste.

Because the wastewater generated from the B-360 investigation activities is classified as non-hazardous and is not recommended for transportation to an offsite facility, the RCRA classification process was not applied. The wastewater will be discharged and subsequently treated at the SEDA sanitary treatment plant pending state and federal approval.

6.0 Conclusions and Recommendations

An investigation of the impact of potential release(s) from the accumulation pit in Building 360 on concrete, soil and groundwater, has been performed in order to determine if the pit had leaked, to identify the extent of possible contamination, and to gather information to guide in decontamination or removal actions.

As per the Work Plan, closure samples of three media (concrete, soil and groundwater) were collected and analyzed during the investigation. In addition, post closure groundwater samples were collected from MW1, MW2 and from the T-sump. Sample collection occured from February 1995 to May 1995.

Data from the soil and concrete sample analyses reveal no exceedances of the site specific action levels and/or soil background concentrations. Chromium was detected in the soil samples at concentrations exceeding the soil/sediment site-specific action level of 10mg/kg. However, the average chromium soils background concentration is 50 mg/kg which is greater than the concentrations of the detected constituents. Lead also was detected in the soil samples at concentrations exceeding the soil/sediment site-specific action level of 5 mg/kg. However, the average lead soils background concentrations is 20 mg/kg which is greater than the concentrations of the detected constituents.

Groundwater samples obtained from the three cored areas within the accumulation pit detected only inorganic constituents (lead and chromium) at concentrations below both site specific action levels and NYS AWQ standards.

Constituents detected in the groundwater samples obtained from MW-1 and MW-2 were below site-specific action levels, but did reveal the presence of volatile and semivolatile compounds at concentrations exceeding NYS AWQ standards. These conditions are not evident in the concrete, soil or groundwater samples obtained from within the accumulation pit area suggesting that the constituents present in these monitoring wells may be the result of sources other than the steam jenny accumulation pit area.

Groundwater samples obtained from the T-sump contained constituent concentrations which exceeded site specific action levels for lead and NYSAWQ standards for 1,1,1- trichloroethane. Data and historical operations of the 1,1,1-trichloroethane sump and

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TABLE 3-4
WATER ANALYTICAL DATA SUMMARY
BUILDING 360 CLOSURE REPORT
SENECA ARMY DEPOT
Romulus, New York

Parameters (Method)	SAMPLE IDENTIFICATION AND CONSTITUENT CONCENTRATION (ppb)						
	Trip Blank (2/9/95)	CW1	CW2	CW3	MW-1	MW-2	T-Sump 1 (2-09-95)
Volatiles (8240) 1,1,1-Trichloroethane	ND≥5	ND≥5	ND≥5	ND≥5	ND≥5	ND≥5	14
Semivolatiles (8270) Bis (2-ethylhexyl)phthalate	NA	16U	ND≥10	ND≥10	ND≥10	ND≥10	ND≥10
PCBs (8080)	NA	ND≥0.65	ND≥0.65	ND≥0.65	ND(J)≥0.65	ND≥0.65	ND≥0.65
Metals Cadmium Chromium Lead	 NA NA NA	 ND≥5 ND≥10 3.8	 ND≥5 ND≥10 ND≥3	 ND≥5 42.7 10	 ND ≤ 5 20 5.4	 ND≥5 41.2 9.3	 ND≥5 48.4 197*

Notes:

1. (ppb) - Parts per billion
2. (ND) - Not detected at or above the stated practical quantitation limit
3. (NA) - Not analyzed.
4. (CW) - Indicates groundwater sample obtained from 'c' boring location
5. (MW) - Indicates groundwater sample obtained from monitoring well.
6. (T-Sump) - Indicates water sample from "trichloroethylene sump" within Building 360
7. (U) - Indicates sample considered undetected due to blank contamination.
8. ND(J) - Indicates sample concentration is estimated as not detected due to poor surrogate recoveries
9. (=) - Indicates parameter detected above site-specific action level
10. (*) - Lead concentration in sample T-Sump 1 (197 ppb) is in excess of action level. Refer to report text for additional information

TABLE 3-5
FIRST MONTHLY GROUNDWATER ANALYTICAL DATA SUMMARY - (MARCH 1995)
BUILDING 360 CLOSURE REPORT
SENECA ARMY DEPOT
Romulus, New York

Parameters (Method)	SAMPLE IDENTIFICATION AND CONSTITUENT CONCENTRATION (ppb)							
	Trip Blank (3/12/95)	MW1-1	Trip Blank (3/13/95)	MW2-1	Trip Blank (3/23/95)	FB-T-Sump 1 (Field Blank)	T-Sump 1 (3-23-95)	T-Sump 1 Duplicate (3-23-95)
Volatiles (8240)								
Acetone	ND≥100	2000*	ND ≥ 100	ND ≥ 100	ND ≥ 100	ND ≥ 100	ND ≥ 100	ND ≥ 100
Bromodichloromethane	ND≥5.0	ND≥50	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	5.5	5.9
Bromoform	ND≥5.0	ND ≥ 50	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	7.6	7.8
Dibromochloromethane	ND≥5.0	ND ≥ 50	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	14	15
1,1,1-Trichloroethane	ND≥5.0	ND ≥ 50	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	18*	20*
Semivolatiles (8270)	NA	ND≥10-50	NA	ND≥ 10-50	NA	NA	ND≥ 10-50	ND≥ 10-50
PCBs (8080)	NA	ND ≥ 0.65	NA	ND ≥ 0.65	NA	NA	ND ≥ 0.65	ND ≥ 0.65
Metals								
Cadmium	NA	ND ≥ 5	NA	ND ≥ 5	NA	NA	ND ≥ 5	ND ≥ 5
Chromium	NA	ND ≥ 10	NA	ND ≥ 10	NA	NA	ND ≥ 10	ND ≥ 10
Lead	NA	ND ≥ 3	NA	ND ≥ 3	NA	NA	30.5*	38.5*

Notes:

1. (ppb) - Parts per billion
2. (ND) - Not dectected at or above the stated detection limit.
3. (NA) - Not analyzed.
4. (MW) - Indicates groundwater sample obtained from monitoring well.
5. (T-Sump) - Indicates water sample from "trichloroethylene sump" within Building 360.
6. (*) - Indicates parameter detected at or above NYS Ambient Water Quality Standards and/or Guidance Values.
7. (=) - Indicates parameter detected above site-specific action level

TABLE 3-6
SECOND MONTHLY GROUNDWATER ANALYTICAL DATA SUMMARY - (APRIL 1995)
BUILDING 360 CLOSURE REPORT
SENECA ARMY DEPOT
Romulus, New York

Parameters (Method)	SAMPLE IDENTIFICATION AND CONSTITUENT CONCENTRATION (ppb)					
	Trip Blank (4/13/95)	MW1-2	MW1-2 duplicate	FB-MW1-2 (Field Blank)	MW2-2	T-Sump 2
Volatiles (8240)						
Acetone	ND ≥ 100	1700*	1700*	ND ≥ 100	ND ≥ 100	ND ≥ 100
1,1,1-Trichloroethane	ND ≥ 5.0	ND ≥ 50	ND ≥ 50	ND ≥ 5.0	ND ≥ 5.0	16*
Semivolatiles (8270)	NA	ND≥ 10-50	ND≥ 10-50	NA	ND≥ 10-50	ND≥ 10-50
PCBs (8080)	NA	ND ≥ 0.5-1.0	ND ≥ 0.5-1.0	NA	ND ≥ 0.5-1.0	ND ≥ 0.5-1.0
Metals						
Cadmium	NA	ND ≥ 5	ND ≥ 5	NA	ND ≥ 5	ND≥ 5
Chromium	NA	ND ≥ 10	ND ≥ 10	NA	13.3	ND≥ 10
Lead	NA	ND ≥ 3	ND ≥ 3	NA	ND ≥ 3	20.4

Notes:

1. (ppb) - Parts per billion
2. (ND) - Not dectected at or above the stated detection limit.
3. (NA) - Not analyzed.
4. (MW) - Indicates groundwater sample obtained from monitoring well.
5. (T-Sump) - Indicates water sample from "trichloroethylene sump" within Building 360.
6. (*) - Indicates parameter detected at or above NYS Ambient Water Quality Standards and/or Guidance Values
7. (=)- Indicates parameter detected above site-specific action level

TABLE 3-7
THIRD MONTHLY GROUNDWATER ANALYTICAL DATA SUMMARY - (MAY 1995)
BUILDING 360 CLOSURE REPORT
SENECA ARMY DEPOT
Romulus, New York

Parameters (Method)	SAMPLE IDENTIFICATION AND CONSTITUENT CONCENTRATION (ppb)					
	Trip Blank (5/17/95)	MW1-3	MW1-3 duplicate	FB-MW2-3 (Field Blank)	MW2-3	T-Sump 3
Volatiles (8240)						
Acetone	ND ≥ 100	110*	150*	ND ≥ 100	ND ≥ 100	ND ≥ 100
1,1-Dichloroethane	ND ≥ 5.0	7.0*	7.6*	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0
1,1,1-Trichloroethane	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0	18*
1,1,2,2-Tetrachloroethane	ND ≥ 5.0	ND ≥ 5.0	7.6*	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0
Total Xylenes	ND ≥ 5.0	ND ≥ 5.0	11*	ND ≥ 5.0	ND ≥ 5.0	ND ≥ 5.0
Semivolatiles (8270)						
2-Methylnapthalene	NA	ND ≥ 10	ND ≥ 10	NA	110	ND ≥ 10
Napthalene	NA	ND ≥ 10	ND ≥ 10	NA	950*	ND ≥ 10
PCBs (8080)	NA	ND ≥ 0.65	ND ≥ 0.65	NA	ND ≥ 0.65	ND ≥ 0.65
Metals						
Cadmium	NA	ND ≥ 5	ND ≥ 5	NA	ND ≥ 5	ND ≥ 5
Chromium	NA	ND ≥ 10	ND ≥ 10	NA	38.3	ND ≥ 10
Lead	NA	ND ≥ 3	ND ≥ 3	NA	ND ≥ 3	<u>18.0</u>

Notes:

1. (ppb) - Parts per billion
2. (ND) - Not detected at or above the stated detection limit.
3. (NA) - Not analyzed.
4. (MW) - Indicates groundwater sample obtained from monitoring well.
5. (T-Sump) - Indicates water sample from "trichloroethylene sump" within Building 360.
6. (*) - Indicates parameter detected at or above NYS Ambient Water Quality Standards and/or Guidance Values.
7. (=) - Indicates parameter detected above site-specific action level

TAI . 5-1
SAMPLE IDENTIFICATION TABLE
INITIAL SAMPLING EVENT
B-360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 1)

Field Sample I.D.	Laboratory Sample I.D.	Lab Code	Analytical Parameters	Matrix
CW1	C5B100043-001	Q[a]	8240, 8270, 8080, Metals	WATER
CW2	C5B100043-002	Q	8240, 8270, 8080, Metals	WATER
CW3	C5B100043-003	Q	8240, 8270, 8080, Metals	WATER
MW-1	C5B100043-004	Q	8240, 8270, 8080, Metals	WATER
MW-2	C5B100043-005	Q	8240, 8270, 8080, Metals	WATER
T-SUMP1	C5B100043-006	Q	8240, 8270, 8080, Metals	WATER
CS1-(1-3)	C5B100043-009	Q	8240, 8080, Metals	SOIL
CS2-(1-3)	C5B100043-010	Q	8240, 8080, Metals	SOIL
CS2-(1-3)DUP	C5B100043-011	Q	8240, 8080, Metals	SOIL
CS3-(0.-1.5)	C5B100043-012	Q	8240, 8080, Metals	SOIL
CC1-1	C5B100043-015	Q	8080, TCLP Metals	CONCRETE
CC1-2	C5B100043-016	Q	8080, TCLP Metals	CONCRETE
CC1-3	C5B100043-017	Q	8080, TCLP Metals	CONCRETE
CC2-1	C5B100043-018	Q	8080, TCLP Metals	CONCRETE
CC2-2	C5B100043-019	Q	8080, TCLP Metals	CONCRETE
CC2-3	C5B100043-020	Q	8080, TCLP Metals	CONCRETE
CC3-1	C5B100043-021	Q	8080, TCLP Metals	CONCRETE
CC3-2	C5B100043-022	Q	8080, TCLP Metals	CONCRETE
CC3-3	C5B100043-023	Q	8080, TCLP Metals	CONCRETE
B-360-SUMP1	193209	K[b]	8240, 8015, 8270, pH, DENSITY, METALS, 8150, 8080, BTU, FLASH POINT, VISCOSITY, TOXICITY, CN(TOTAL AND AMENABLE), SULFIDE, PHENOL, TOC, TON, TSS, TDS	WATER

[a] Quanterra
[b] Kodak

RO-7 20-95 commu\seneca\360\s360t51.wp

TABLE 5-8
SAMPLE IDENTIFICATION TABLE
MONTHLY MONITOR WELL SAMPLING
B-360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 1)

Field Sample I.D.	Laboratory Sample I.D.	Lab Code	Analytical Parameters	Matrix
MW1-1	C5C140053-002	Q	8240, 8270, 8080, Metals	WATER
MW2-1	C5C150014-002	Q	8240, 8270, 8080, Metals	WATER
T-SUMP 1-1	C5C250030-004	Q	8240, 8270, 8080, Metals	WATER
T-SUMP 1-1 DUP	C5C250030-005	Q	8240, 8270, 8080, Metals	WATER
MW1-2	C5D150006-002	Q	8240, 8270, 8080, Metals	WATER
MW1-2 DUP	C5D150006-003	Q	8240, 8270, 8080, Metals	WATER
MW2-2	C5D150006-005	Q	8240, 8270, 8080, Metals	WATER
T-SUMP 2	C5D150006-006	Q	8240, 8270, 8080, Metals	WATER
MW1-3	C5E190025-003	Q	8240, 8270, 8080, Metals	WATER
MW1-3 DUP	C5E190025-005	Q	8240, 8270, 8080, Metals	WATER
MW2-3	C5E190025-002	Q	8240, 8270, 8080, Metals	WATER
T-SUMP 3	C5E190025-004	Q	8240, 8270, 8080, Metals	WATER

Q - Quanterra

TABLE 5-9
SUMMARY OF QA/QC FOR VOLITILES (8240) ANALYSES
MONTHLY MONITOR WELL SAMPLING
BUILDING 360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 1)

Sample I.D.	Surrogate % Recovery	Corresponding Batch QA/QC Sample I.D.	Matrix Spike/Duplicate	
			Precision % RPD[a]	Accuracy % Recovery
	QC Limits[b] 76-115		QC Limits[b] 10-16	QC Limits[b] 69-133
MW1-1	99-103	5086001	0-12	95-115
MW2-1	95-100			
T-SUMP1-1	95-97	5100080	1-8	89-99
T-SUMP1-1 DUP	98-99			
MW1-2	102-110	5115059	0-9	86-103
MW1-2 DUP	103-108			
MW2-2	89-99			
T-SUMP 2	85-98			
MW2-3	104-111	5150088	8-20*	91-119
MW1-3	92-105			
T-SUMP 3	101-108			
MW1-3 DUP	96-107			

[a] "RPD" indicates relative percent difference.
[b] QC limits from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA SW-846, 3rd Revised Edition, November 1986.
* Indicates value outside QC limits.

TABLE 5-10
SUMMARY OF QA/QC FOR SEMIVOLATILES (8270) ANALYSES
MONTHLY MONITOR WELL SAMPLING
BUILDING 360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 1)

Sample I.D.	Surrogate % Recovery	Corresponding Batch QA/QC Sample I.D.	Matrix Spike/Duplicate	
			Precision % RPD[a]	Accuracy % Recovery
	QC Limits[b] 10-141		QC Limits[b] 24-76	QC Limits[b] 1-152
MW1-1	56-118	5076127	2-38*	54-199*
MW2-1	76-134*	5079121	0-20	58-122
T-SUMP1-1	51-150*	5089147	1-10	66-153*
T-SUMP1-1 DUP	78-112			
MW1-2	43-106	5110105	0-21	59-139
MW1-2 DUP	65-118			
MW2-2	42-121			
T-SUMP 2	50-103			
MW2-3	60-79	5153074	0-23	64-100
MW1-3	48-76			
T-SUMP 3	40-61			
MW1-3 DUP	31-58			

[a] "RPD" indicates relative percent difference.

[b] QC limits from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." U.S. EPA SW-846, 3rd Revised Edition, November 1986.

* Indicates value outside QC limits.

TABLE 5-11
SUMMARY OF QA/QC FOR PCB's (8080) ANALYSES
MONTHLY MONITORING WELL SAMPLING
BUILDING 360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 1)

Sample I.D.	Surrogate % Recovery	Corresponding Batch QA/QC Sample I.D.	Matrix Spike/Duplicate	
			Precision % RPD[a]	Accuracy % Recovery
	QC Limits[b] 44-155		QC Limits[b] 0-29	QC Limits[b] 62-129
MW1-1	57-92	5075002	2	71-73
MW2-1	52*-93			
T-SUMP1-1	39*-92	5093064	8	79-86
T-SUMP1-1 DUP	59-96			
MW1-2	55*-79	5109097	13	71-81
MW1-2 DUP	47*-77			
MW2-2	64-85			
T-SUMP 2	72-85			
MW2-3	76-86	5145155	2	84-86
MW1-3	52*-81			
T-SUMP 3	46*-83			
MW1-3 DUP	56*-74			

[a] "RPD" indicates relative percent difference.
[b] QC limits from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA SW-846, 3rd Revised Edition, November 1986.
* Indicates value outside QC limits.

TABLE 5-12
SUMMARY OF QA/QC FOR INORGANICS (METALS) ANALYSES
MONTHLY MONITOR WELL SAMPLING
BUILDING 360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 1)

Sample I.D.	Corresponding Batch QA/QC Sample I.D.	Matrix Spike/Duplicate	
		Precision % RPD[a]	Accuracy % Recovery
		QC Limits[b] 0-20	QC Limits[b] 80-120
MW1-1	NR[c]	NR	NR
MW2-1	5082115	1-2	89-137*
T-SUMP1-1	5087085	1	97-103
T-SUMP1-1 DUP			
MW1-2	5115073	0	95-103
MW1-2 DUP			
MW2-2			
T-SUMP 2			
MW2-3	5146091	1	86-92
MW1-3			
T-SUMP 3			
MW1-3 DUP			

[a] "RPD" indicates relative percent difference.
[b] QC limits from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods." U.S. EPA SW-846, 3rd Revised Edition, November 1986.
[c] "NR" indicates not reported by laboratory.
* Indicates value outside QC limits.

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TABLE 5-13
SUMMARY OF BLANK ANALYSES
MONTHLY MONITOR WELL SAMPLING
B-360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 2)

Blank I.D.	Parameters Detected				Corresponding Sample I.D.
	VOC's (ug/L)	SemiVOCs BNA (ug/L)	PCB's (ug/L)	Metals (ug/L)	
C5C270000-001	ND	---[a]	---	---	MW1-1, TB (3/12)
C5C170000-127	---	ND	---	---	MW1-1
C5C160000-002	---	---	ND	---	MW1-1
C5C140053	---	---	---	ND	MW1-1
C5C270000-001	ND	---	---	---	MW2-1, TB (3/13)
C5C200000-121	---	ND	---	---	MW2-1
C5C160000-002	---	---	ND	---	MW2-1
C5C150014	---	---	---	ND	MW2-1
C5D100000-080	ND	---	---	---	T-SUMP1-1, T-SUMP1-1 DUP, TB (3/23), FB-T-SUMP1-1
C5C300000-147	---	ND	---	---	T-SUMP1-1, T-SUMP1-1 DUP
C5D030000-064	---	---	ND	---	T-SUMP1-1, T-SUMP1-1 DUP
C5C250030	---	---	---	ND	T-SUMP1-1, T-SUMP1-1 DUP
C5D250000-059	ND	---	---	---	MW1-2, MW1-2 DUP, MW2-2, T-SUMP 2, TB (4/13), FB-MW1
C5D200000-105	---	ND	---	---	MW1-2, MW1-2 DUP, MW2-2, T-SUMP 2
C5D190000-097	---	---	ND	---	MW1-2, MW1-2 DUP, MW2-2, T-SUMP 2

See Notes at End of Table

TABLE 5-13
SUMMARY OF BLANK ANALYSES
MONTHLY MONITOR WELL SAMPLING
B-360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 2 of 2)

Blank I.D.	Parameters Detected				Corresponding Sample I.D.
	VOC's (ug/L)	SemiVOCs BNA (ug/L)	PCB's (ug/L)	Metals (ug/L)	
C5D150006	---	---	---	ND	MW1-2, MW1-2 DUP, MW2-2, T-SUMP 2
C5E300000-088	ND	---	---	---	MW2-3, MW1-3, T-SUMP 3, MW1-3 DUP, TB (5/17), FB-MW2
C5E250000-155	---[a]	---	ND	---	MW2-3, MW1-3, T-SUMP 3, MW1-3 DUP
C5F020000-074	---	1	---	---	MW2-3, MW1-3, T-SUMP 3, MW1-3 DUP
C5E190025	---	---	---	ND	MW2-3, MW1-3, T-SUMP 3, MW1-3 DUP
TB (3/23)	ND	---	---	---	FB-T-SUMP 1-1, T-SUMP 1, T-SUMP 1-1 DUP
FB-T-SUMP 1-1	ND	---	---	---	T-SUMP 1-1, T-SUMP 1-1 DUP
TB (3/13)	ND	---	---	---	MW2-1
TB (3/12)	ND	---	---	---	MW1-1
TB (4/13)	ND	---	---	---	MW1-2, MW1-2 DUP, FB-MW1-2, MW2-2, T-SUMP 2
FB-MW1-2	ND	---	---	---	MW1-2, MW1-2 DUP, MW2-2, T-SUMP 2
TB (5/17)	ND	---	---	---	MW2-3, MW1-3, T-SUMP 3, MW1-3 DUP, FB-MW2-3
FB-MW2-3	ND	---	---	---	MW2-3, MW1-3, T-SUMP 3, MW1-3 DUP

1- bis(2-ethylhexyl)phthalate 0.0014J ug/L
di-n-butylphthalate 0.0014J ug/L
3-methylphenol & 4-methylphenol 0.0014J mg/L
[a] "---" indicates sample not analyzed for this parameter

TABLE 5-14
HOLDING TIME VERIFICATION
MONTHLY MONITOR WELL SAMPLING
BUILDING 360 CLOSURE INVESTIGATION
SENECA ARMY DEPOT
ROMULUS, NEW YORK
(Page 1 of 1)

Sample I.D.	DATES (1995)								
	Sample Collection	Sample Receipt at Lab	VOC 8240	SVOC 8270		PCB's 8080		Metals 6010	
			Analyzed	Extracted	Analyzed	Extracted	Analyzed	Extracted	Analyzed
MW1-1	3/12	3/14	3/23	3/15	3/28	3/15	3/17	3/23	3/26
MW2-1	3/13	3/15	3/23	3/16	3/27	3/15	3/17	3/23	3/26
T-SUMP 1-1	3/23	3/25	4/4	3/28	4/7	3/29	4/3	3/28	3/30
T-SUMP 1-1 DUP	3/23	3/25	4/4	3/28	4/10	3/29	4/3	3/28	3/30
MW1-2	4/13	4/15	4/25	4/18	4/25	4/19	4/21	4/25	4/27
MW1-2 DUP	4/13	4/15	4/25	4/18	4/25	4/19	4/21	4/25	4/27
MW2-2	4/13	4/15	4/24	4/18	4/26	4/19	4/21	4/25	4/27
T-SUMP 2	4/13	4/15	4/24	4/18	4/26	4/19	4/21	4/25	4/27
MW1-3	5/17	5/19	5/30	5/24	6/6	5/24	5/30	5/26	6/1
MW1-3 DUP	5/17	5/19	5/30	5/24	6/6	5/24	5/30	5/26	6/1
MW2-3	5/17	5/19	5/29	5/24	6/7	5/24	5/30	5/26	6/1
T-SUMP 3	5/17	5/19	5/29	5/24	6/6	5/24	5/30	5/26	6/1
TB (3/23)	3/23	3/25	4/4	---*	---	---	---	---	---
FB-T-SUMP 1-1	3/23	3/25	4/4	---	---	---	---	---	---
TB (3/13)	3/13	3/15	3/23	---	---	---	---	---	---
TB (3/12)	3/13	3/14	3/22	---	---	---	---	---	---
TB (4/13)	4/13	4/15	4/24	---	---	---	---	---	---
FB-MW1-2	4/13	4/15	4/24	---	---	---	---	---	---
TB (5/17)	5/17	5/19	5/29	---	---	---	---	---	---
FB-MW2-3	5/17	5/19	5/29	---	---	---	---	---	---

* "---" indicates sample not analyzed for this parameter

Attachment 2

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7251
518-457-7264 FAX 518-485-8769

Earth Day 25 1995 Environmental Partners
Michael D. Zagata
Commissioner

November 10, 1995

Mr. Stephen M. Absolom
Chief of Engineering/Environmental Management Division
The Department of the Army
Seneca Army Depot (SEAD)
Romulus, New York 14541-5001

Dear Mr. Absolom:

The final closure report for the Building 360 Steam Jenny Pit has been reviewed and it was concluded that the pit has met the final RCRA closure performance standard as approved in the closure plan. The required sampling of the pit and the soils beneath the pit demonstrate that the closure performance standard has been met and that no further action for RCRA closure is required. Although the results of the tests showed little in the way of contamination, the results of the analytical data will be forwarded to the Division of Remediation for review to determine whether any future action under their program is warranted.

Based upon the analytical data submitted as part of the plan, none of the excavated material has been shown to be characterized as a hazardous waste. Therefore, the discarded material is a solid waste and must be disposed of in accordance with Part 360.

Please submit to the Department within 60 days a certification of final closure stating that the unit has been closed in accordance with the approved plan. The certification must be signed by an independent professional engineer registered in New York State.

If you have any questions or concerns, please contact Ms. Denise Prunier at (518) 457-7264.

Sincerely,

Sev Chetty
Section Supervisor
Div. of Solid and Hazardous Materials

cc: P. Counterman
R. Murphy
D. Prunier
M. Chen, DHWR
J. Brogard, USEPA Rg. II
D. Rollins, Rg.8
R. Huneau, SEAD

Encl 2

[illegible]

Mr. Stephen M. Absolom
Chief of Engineering/Environmental Management Division
The Department of the Army
Seneca Army Depot (SEAD)
Romulus, New York 14541-5001

Dear Mr. Absolom:

The final closure report for the Building [illegible] Pit has been reviewed and it was concluded that the pit has met the final RCRA closure performance standards as specified in the closure plan. The required sampling of the pit and the soils beneath the pit demonstrate that the closure performance standards have been met and that no further action for RCRA closure is required. Although the results of the tests showed little in the way of contamination, the results of the analytical data will be forwarded to the Division of Remediation for review to determine whether any future action under their program is warranted.

Based upon the analytical data submitted as part of the plan, none of the excavated material has been shown to be characterized as a hazardous waste. Therefore, the disturbed material is a solid waste and must be disposed of in accordance with Part 360.

Please submit to the Department within 60 days a certification of final closure stating that the unit has been closed in accordance with the approved closure plan. The certification must be signed by an independent professional engineer registered in New York State.

If you have any questions or concerns, please call Ms. Denise Jennings at (518) [illegible].

Sincerely,

[illegible]

[illegible]
Bureau of [illegible]
[illegible] of Solid and Hazardous Materials

cc: [illegible]

Mr Frank Ricotta
Environmental Engineer IV
NYS Dept Environmental Conservation
6274 E. Avon-Lima Rd.
Avon, New York 14414

By December 1, 1995

Dear Mr. Ricotta

Between January and May of this year, IT Corporation performed a decontamination of a dismantled steam jenny pit in Building 360. Samples of the installation-derived waste (cement, soil and waste water) collected during the operation were sent for laboratory analysis. (See Attachment 1 for portions of the final report which dealt with waste water and groundwater analyses). All samples tested below regulatory concern.

The NYSDEC-DSHM reviewed the July 1995 Final Report (July 1995) and, in a November 10, 1995 letter (Attachment 2), concluded that: "none of the excavated material has been shown to be characterized as a hazardous waste".

Please review and evaluate the analyses/findings against your department's water and groundwater criteria to ensure that the disposal suggestions proposed below adequately protect human health and the environment. Referenced letter (Attachment 2) requests certification of final closure within 60 days of the November 10 date of notice.

It is our proposal to dispose of the IDW within the 60-day timeframe (NLT 1/9/96) as follows:

- the soil at least 50 feet from the project site boundary (IAW 6NYCRR 380-8.6 (c)(2)(vii) among native non-hazardous soils; and
- the waste water purged through the oil water separator nearest to Building 360 where it will flow directly to the depot's waste water treatment plant.

Sincerely,

Stephen M. Absolom
Chief, Public Works

cc: Kamal Gupta, NYSDEC/DHWR
C. Struble, P.E., USEPA/E&RRD
D. Prunier, NYSDEC/DSHM
S. Tersegno, IT Corporation- Rochester
R. Battaglia- NY District USCOE