DRUM DELINEATION REPORT

Onondaga Drum Site
Nedrow, New York

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February 28, 1994

Mr. James Harkay
On-Scene Coordinator
Removal Action Branch
Emergency and Remedial Response Division
U. S. Environmental Protection Agency
2890 Woodbridge Ave., Building 209
Edison, NJ 08837-3679

Re: Drum Delineation Report
Onondaga Drum Superfund Site, Nedrow, New York
Index Number II-CERCLA-20222

Dear Mr. Harkay:

Enclosed for your review and approval are two copies of a Drum Delineation Report which has been prepared by Conestoga-Rovers Associates for the Onondaga Drum Site.

In May of 1993, a Final Phase I Operations Plan was developed in accordance with the Consent Order to address location and removal of buried drums from the Site.

A test pit program was conducted in the last quarter of 1993 to determine the presence of buried drums. All of the 92 drums identified during the investigation were located in fill material at a depth of less than four feet below the ground surface. Three areas of the Site were identified to contain significant quantities of fill material:

- the former stream channel alignment
- the southern Site perimeter bank
- the western perimeter bank north of the former stream channel

The buried drums do not appear to be adversely impacting the environment. The vast majority of these drums were empty and there is little evidence of contaminated soils in the vicinity of the drums.

Based on the findings of the test site excavation, the following program is proposed for removal of buried drums:

(1) Former stream channel

Excavate to a depth of five feet in the area of the former channel. In addition, excavate a continuous trench to the depth of native soil along the channel

(2) Perimeter Banks

Excavate the fill areas along the southern perimeter bank and western bank to native soil.

Drum removal is currently planned for mid-year 1994.

Please contact me at (302) 886-4252 if you have any questions regarding this submittal.

Sincerely,

J. L. Birkmeier
Project Coordinator

JLB/jff
1J022894.JLB

CC: Chief, New York Caribbean Superfund Branch, US EPA-1 copy
Michael O'Toole - NYSDEC - 4 copies
Council of Chiefs - Onondaga Nation - 1 copy
Henriette Hamel - NYSDOH- 1 copy

DRUM DELINEATION REPORT

Onondaga Drum Site
Nedrow, New York

FEBRUARY 1994
REF. NO. 5067 (5)
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CONESTOGA-ROVERS & ASSOCIATES

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PLANS

LIST OF APPENDICES

1.0 INTRODUCTION

The Onondaga Drum Site is situated west of the intersection of Route 11 and Quarry Road on the Onondaga Nation Territory in the Town of Nedrow, New York. The Property occupies approximately 25 acres in a sparsely populated rural area which is used for both residential and agricultural purposes. During the mid-1950s to the early 1980s, waste materials including industrial waste were disposed within an area approximately 15 acres in size. This area is defined as the Site for this investigation. The Site location is presented on Figure 1.1.

The U.S. Environmental Protection Agency (EPA) identified approximately 1,300 surficial and partially buried drums at the Site in the fall of 1991. One thousand and forty six of these drums were found to be empty. The contents of the remaining drums were consolidated in 60 55-gallon drums. The 60 drums were subsequently characterized and disposed of in accordance with the Work Plan entitled "Drum Disposal Plan" prepared by Conestoga-Rovers & Associates (CRA) for Stauffer Management Co. (Stauffer) and approved by the EPA on January 6, 1993.

The "Final Phase I Operations Plan" was prepared by CRA for Stauffer and approved by the EPA on May 27, 1993. The Final Phase I Operations Plan addresses the location of buried drums at the Site; the excavation and removal of the drums and treatment and/or disposal of the drums and their contents. The Final Phase I Operations Plan consists of the following plans:

- Site Work Plan;
- Clean-Up Plan;
- Sampling and Analysis Plan; and
- Health and Safety Plan.

The general rationale for the work program presented in the Final Phase I Operations Plan is to initially conduct investigatory activities (geophysical survey and test pitting) to define areas of the Site with buried drums. Once these areas have been defined, an estimate of the

magnitude of the drum excavation program can be made and the excavation can be conducted in a systematic fashion to optimize productivity and minimize potential releases to the environment.

The "Test Pit Investigation Work Plan" (Work Plan) was prepared by CRA in September 1993 and copies were issued to USEPA and NYSDEC. The Work Plan presents a program for investigating areas of the Site identified as potentially containing buried drums based upon non-intrusive field work, including geophysical surveys, visual Site inspection and a review of historical aerial photographs.

The test pit program was conducted during the period from October 12, 1993 to November 4, 1993. The methodology and the results of the test pit program are presented in this report. A description of the methodology used to locate drums at the Site is presented in Section 2.0. Section 3.0 presents a summary of the results of the test pit program and Section 4.0, prepared in compliance with Section 4.0 of the Phase I Operations Plan, presents the proposed methodology for removal of drums at the Site. The detailed protocols for the drum removal program are presented in Section 4.0 of the Phase I Operations Plan.

2.0 DRUM DELINEATION

2.1 TEST PIT INVESTIGATION PROGRAM

A test pit investigation was conducted during the period from October 11 to November 4, 1993 in accordance with the approved Work Plan. The results of the geophysical survey, photo imagery and other visual surface evidence was used to develop the test pitting program.

The following anomalies or areas presented in the Work Plan were investigated during the test pitting program:

- discrete Electromagnetic (EM) anomalies;
- concentrated EM anomaly areas;
- surface debris piles;
- former Creek channel;
- areas along the Site perimeter;
- areas with identified drums; and
- additional areas identified by aerial photographs.

In addition to the areas presented in the Work Plan, the Ridge Area on the east side of the Site was investigated at the request of the U.S. EPA. This area is delineated on Plan 1.

2.1.1 Methodology

2.1.1.1 General

Track-mounted backhoes (Komatsu PC120 or John Deere 590D) were used to investigate each anomaly or area. In general, at each location, the test pit was excavated until one of the following Work Plan conditions were satisfied:

- native soil was encountered;
- groundwater was encountered;

- buried metal was no longer indicated using an EM meter; or
- a maximum depth of 20 feet was reached.

Several field modifications to these protocols were made for the various test pit categories throughout the investigation with the concurrence of the U.S. EPA. These modifications are presented in the appropriate section for each test pit category.

Each test pit was scanned for organic vapors, radioactivity, hydrogen cyanide and explosive gases in accordance with the health and safety plan.

The following information was recorded for each test pit in the field log books which are retained by CRA:

- location referenced to the Site grid coordinates;
- test pit configuration and dimensions;
- characteristics of excavated material;
- drums if present, and
- air monitoring results.

A cross-section diagram was provided for each test pit. The cross-sectional diagrams illustrate the stratification and vertical extent of each test pit.

Each test pit was photographed to document its cross-sectional profile and orientation. Photographs were taken of any drums which were unearthed and accessible. Scrap metal retrieved from test pits excavated to investigate anomalies identified by the geophysical survey was also photographed. Selected photographs showing unearthed drums are presented in Appendix A.

Test pits where drums were uncovered were videotaped in addition to being photographed prior to backfilling.

All test pit logs were individually signed by the supervising field engineer.

Following documentation, each test pit was backfilled with the excavated material.

2.1.1.2 Discrete Test Pit Investigations

During the period from October 12 through October 26, 1993, 86 individual discrete electromagnetic anomalies previously identified by the geophysical survey were investigated by excavation of 73 Discrete Test Pits (DTP). Locations of all DTPs are presented on Plan 1. A discrete test pit summary log is presented in Table 2.1.

The discrete electromagnetic anomalies that were investigated consisted of either subsurface discrete anomalies or surface discrete anomalies. Subsurface discrete anomalies were anomalies identified by the EM survey in locations where no surface metal was evident. Surface discrete anomalies were identified by the EM survey at locations where metal debris was also identified on the ground surface. Subsurface and surface discrete anomalies were previously marked in the field by OBG Technical Services during the geophysical survey with orange flags and blue flags, respectively. Prior to excavation of the test pit at each discrete location, a Geonics EM-31 in-phase magnetometer was used to verify the presence of an electromagnetic anomaly.

The EM-31 magnetometer was calibrated prior to initial use and every day thereafter in accordance with the manufacturer's recommendations. Operation of the EM-31 was verified daily by screening metallic objects of various sizes placed at the ground surface prior to being used on the Site.

After verification of the discrete EM anomaly location, a backhoe was used to excavate in 6-inch increments, for the width of the backhoe bucket, across the verified location of the anomaly. Where a number

of discrete electromagnetic anomalies were located sufficiently close to be reached without significant relocation of the excavator, they were assigned the same DTP identification number. Following completion of each DTP, the EM-31 was utilized to verify that the anomaly had been removed.

In 71 of the 86 discrete electromagnetic anomalies investigated, small scrap metal pieces were recovered from 6 to 12 inches below the ground surface. The majority of the scrap metal recovered in these areas was found just beneath the surface vegetation.

Metal was not found in five of the 86 discrete electromagnetic anomalies (DTP-005, 015, 026, 057 and 058). The EM response was weak or negative for these locations prior to excavating. The test pits were completed to native soils to confirm the absence of buried drums at these locations.

The remaining 10 discrete electromagnetic anomalies investigated (DTP-018, 019, 020, 021, 022, 023, 056, 071, 072, and 073) were located in areas associated with Site Debris Pile (SDP) or Stream Channel Alignment (SCA) investigations. Test pits DTP-018, DTP-019, DTP-020, DTP-021, DTP-022 and DTP-023 were located in the area of the Site Debris Pile on the western perimeter of the Site. The fill in this area ranges in depth from 2 to 8 feet BGS. Due to the large quantity of scrap metal visible at the surface in the area of test pits DTP-018, DTP-019 and DTP-020, EM verification was not performed prior to or at the completion of these test pits. EM verification was performed for test pits DTP-022 and DTP-023. These test pits were completed to native soil to confirm the absence of buried drums at these locations.

Test pits DTP-056, DTP-071, DTP-072 and DTP-073 were located within the stream channel alignment. Due to the large amount of fill material including scrap metal at the locations of test pits DTP-071, DTP-072 and DTP-073 EM verification was not performed. EM verification was performed for test pit DTP-056. These test pits were completed to native soil to confirm the absence of buried drums at these locations.

2.1.1.3 Concentrated In-Phase Anomaly Test Pit Investigation

During the period from October 20 to October 27, 1993, test pit investigations were conducted at thirty-two (32) areas identified on Plan 3 of the Work Plan as Concentrated In-phase Anomaly (CIA) areas. These areas consist of individual discrete anomalies in close proximity to each other. Rather than excavate a test pit for each individual discrete anomaly, the protocol for investigation of CIAs involved excavating a series of test pits to cover the areal extent of the CIA. The locations of all CIA test pits are presented on Plan 1 and a summary is presented in Table 2.2.

Fill was only identified at CIA locations which coincide with other identified fill areas such as the former stream channel alignment or the perimeter fill areas. At all other CIA locations small pieces of metal debris were found immediately below the ground surface.

A total of 22 drums were identified in two of the CIA areas (CIA-003 and CIA-027). These areas are both within the former stream channel alignment. Table 2.3 presents a summary of all drums encountered.

All drums that were reasonably intact and accessible were scanned with an HNu organic vapor analyzer. Four drums located at CIA-003B registered elevated organic vapor readings of 3 ppm. One of the drums located at CIA-003B contained black residue. The balance of the drums were empty.

Each drum/drum fragment was inspected for obvious trade names and/or other identifying marks. The location of each drum/drum fragment was marked at the ground surface with a blue pin flag.

2.1.1.4 Stream Channel Alignment Test Pit Investigation

During the period from October 18 through October 27, 1993, 17 Stream Channel Alignment (SCA) test pits were excavated along the

former stream channel alignment which transects the Site. The width of the former stream alignment was also investigated as part of the test pitting activity in this area.

All SCA test pits were located along the former stream channel previously identified and plotted as part of the aerial photo imagery survey. The test pits were field located using the Site grid coordinate system. The location and orientation of each SCA test pit are plotted on Plan 1. The SCA test pit summary log is presented in Table 2.4.

The Work Plan for the SCA involved excavation of test pits on 50-foot centers and, if drums were encountered, the test pits were to be extended to determine the areal and vertical extent of the buried drums. However, after completion of test pit SCA-003, in which a number of drums were unearthed, it was concluded by CRA, Stauffer, and EPA that the depth and instability of the fill material made the definition of the vertical extent of buried drums unnecessarily time consuming and potentially hazardous. With concurrence from the EPA (October 22, 1993; Dan Harkay to David Altman) the protocol for locating and advancing SCA test pits was modified to expedite the work without jeopardizing the integrity of the investigation. It was agreed that SCA test pits would be located initially on 100-foot intervals along the stream channel alignment. Each of these test pits was excavated to native materials or until drums were encountered, whichever occurred first. Where a drum or drum cluster was unearthed, excavating activities were shifted to define the horizontal limits of such drums. The horizontal limits of the drums was investigated by advancing laterally on all four sides of the drum(s). Each horizontal interval was excavated until a drum was unearthed or to a depth of 3 feet below the top of the nearest drum.

Upon completion of the initial SCA test pits at 100-foot spacings, intermediate test pits were excavated midway between the initial test pits (i.e. 50-foot spacings). Based on the results of the initial SCA test pit investigation, it was agreed that the intermediate SCA test pits would not be excavated to native soils. This modification to the Test Pit Investigation Work Plan protocol was based on the finding that the maximum depth of any drum encountered along the stream alignment was 3 feet below the ground

surface. The intermediate test pits were generally excavated to depths of 3 to 8 feet BGS.

Each SCA test pit was scanned for organic vapors, radioactivity, hydrogen cyanide and explosive gases. Groundwater was encountered in only one SCA test pit; SCA-001.

A total of 74 drums/drum fragments were unearthed in test pits excavated within the stream channel alignment. Forty-nine drums/drum fragments were identified in SCA test pits SCA-003, SCA-004, SCA-006A, SCA-010 and SCA-017. Twenty-five drums/drum fragments were identified in test pits CIA-003B, CIA-027, CIA-027B and SDP-020 also located within the boundaries of the stream channel alignment. A listing of drums encountered is presented in Table 2.3.

All drums that were reasonably intact and accessible were scanned with an HNu organic vapor analyzer. A total of four drums, unearthed in test pits SCA-006A and associated test pit CIA-003, had organic vapor readings above background. The highest reading of 5 ppm was recorded from within a single drum located at test pit SCA-006A. No visibly contaminated soils were identified in any of the areas where drums were encountered.

Each drum/drum fragments was inspected for obvious trade names and or other identifying marks. The location of each drum/drum fragment was marked at the ground surface with a blue pin flag.

2.1.1.5 Site Perimeter Bank Test Pit Investigation

During the period of October 25 through November 2, 1993, 28 Site Perimeter Bank (SPB) investigation test pits were excavated along the perimeter of the Site plateau.

In accordance with the Work Plan, SPB test pit excavations were initially placed on 50-foot centers. Each SPB test pit was

located on the ground to within 10 feet of the desired location using the Site grid coordinate system. Where necessary, intended SPB test pit locations were shifted in order to avoid terrain obstacles. To maintain the 50-foot interval between SPB test pits, subsequent SPB test pits were also shifted to reestablish the desired interval.

The location and orientation of each SPB test pit is presented on Plan 1. The SPB test pit summary log is presented in Table 2.5.

According to the protocols presented in the Work Plan, the areas along the Site perimeter were to be investigated by digging from the top of the bank advancing towards the center of the Site until the edge of the former bank was located. However, during the excavation of SPB-006 it was determined that the depth of fill material extending off the southern edge of the Site plateau in this area was too deep to advance a continuous trench from the original base of the slope to the original crest of the plateau slope. The volume of fill material necessary to be removed in order to locate the original slope of the bank, created unstable fill piles on either side of the advancing trench. The depth of fill found in SPB-006 test pit was 22 feet deep. The horizontal distribution of the fill material, from the existing base of slope to the crest of the plateau at SPB-006 was approximately 95 feet.

In order to expedite the work and maintain a safe excavation, the protocol for excavating the SPB test pits between E 82+50 and E 85+00 and also between N 89+00 and N 87+00 was modified with concurrence from the EPA (October 26, 1993; Dan Harkay and David Altman). It was agreed that SPB test pits would be excavated, where deep fill was encountered, by the installation of multiple discrete test pits. Typically, three or less discrete test pits were required to determine the fill profile as presented on Figure 2.1. The first of the three test pits was excavated in the vicinity of the base of the slope to find the original base of the perimeter slope. The second of the three test pits was placed near the crest of the existing slope and excavated as a "step" for the excavator to enter onto. The third and final test pit was excavated in the level fill area above the second test pit. The third test pit was advanced toward the interior of the Site until the original crest of the perimeter bank was found. Where necessary to determine the profile of the

fill, one or more of the discrete test pits were interconnected by narrow continuous trenching.

This modified protocol provided a safe and expedient means of determining the extent of the fill pushed over the bank while still providing a high probability of unearthing any buried drums.

SPB test pits located in areas of deep fill were typically excavated to a width of no less than 10 feet. However, specific conditions at each SPB test pit location (e.g. trees, depth of fill and access conditions) determined the width possible for each test pit or interconnecting continuous trench.

Each SPB test pit was scanned for organic vapors, radioactivity, hydrogen cyanide and explosive gases.

Groundwater was encountered in only one SPB test pit; SPB-023. This water was encountered at the base of the fill slope in the known stream bed.

A total of 20 drums/drum fragments were unearthed in 5 of 28 SPB test pits. Table 2.3 provides a listing of all unearthed drums and the drum locations are presented on Plan 2.

Where a drum or drum cluster was unearthed, excavating activities were shifted to define the horizontal limits of the drums. Each of drums unearthed during the SPB investigation were located at the bottom of the perimeter bank. The horizontal limits of the unearthed drums was investigated, to the extent possible, given the access limitation down the slope.

All drums that were reasonably intact and accessible were scanned with an HNu organic vapor analyzer. No organic vapor readings above background were noted in any of the drums unearthed during the SPB test pit investigation.

A total of five (5) drums, found in SPB-006 and SPB-023A contained unidentified solidified material.

Each drum/drum fragment was inspected for obvious trade names and or other identifying marks. Each drum/drum fragment was marked at the ground surface with a blue pin flag.

2.1.1.6 Surface Debris Pile Investigations

During the period of October 28 through November 3, 1993, 30 Surface Debris Pile (SDP) test pits were excavated on the Site plateau.

All surface debris piles identified on Plan 3 of the Test Pit Investigation Work Plan were investigated. SDP investigations were accomplished by the excavation of multiple discrete test pits spaced over the debris area to cover the entire area.

The location and orientation of each of the multiple test pits associated with each SDP investigation are presented on Plan 1. A summary of the SDP test pits is presented in Table 2.6.

According to the protocols presented in the Work Plan, if a debris pile was relatively small the entire pile would be cleared by a bulldozer and the EM meter would be used to screen the area for buried metal objects. If buried metal was detected, test pits would be excavated to investigate the identified anomaly. At large debris piles, a bulldozer would be used to clear paths through the debris pile for the excavation of one or more test pits. An EM survey would not be conducted for the larger surface debris piles due to the significant amount of surficial metal debris.

Modifications to these protocols for the SDP test pits were made with the concurrence of the U.S. EPA (October 28, 1993, Dan Harkay and David Altman). The majority of the SDP test pits were not located in areas of the Site where fill and drums were expected to be encountered. However, due to the high potential for small pieces of metal to remain after removal of

the surface debris, screening with the EM meter was considered inefficient. Hence, it was decided to investigate the small debris piles using the same general protocols that were used for the large debris piles. EM screening was, therefore, not conducted for any of the SDP areas investigated. Test pits or trenches were excavated to native soil at an appropriate spacing and length to provide adequate coverage for the small and large debris piles.

Test pit excavations were made to the width of the excavator bucket and the length varied between 12 and 100 feet. Native soil was reached within 12 inches below ground surface in all but a few SDP investigation areas. Where native soil was not found within 12 inches below ground surface, it was due to an extension of one or more of the test pits into the boundaries of another site investigation area. For example, SDP-020 extended into the stream channel alignment area at E 84+50 and N 85+00.

Groundwater was encountered in only one SDP test pit, SDP-018.

A total of six drums/drum fragments were identified in two of the thirty SDP test pits: SDP-014 and SDP-020. Three of the six drums were partially buried. Table 2.3 provides a listing of all drums identified on the Site.

Several drums found on or in close proximity to Site debris piles were categorized as Surface Drums. The disposition of these surface drums is presented in Section 2.2.

Where drums were encountered, excavating activities were shifted to define the horizontal limits of such drums.

All drums reasonably intact and accessible were scanned with an HNu organic vapor analyzer. No organic vapor readings were noted above background in any of the drums unearthed during the SDP investigation.

Each drum/drum fragment was inspected for obvious trade names and or other identifying marks. Each drum/drum fragment was marked at the ground surface with a blue pin flag.

2.1.1.7 Aerial Photography Anomaly Investigation

During the period of November 2 to November 4, 1993 eight test pits were excavated at the Site in two areas identified as potentially containing fill based upon the aerial photography review. These test pits are referred to as the Aerial Photography Anomaly (APA) test pits. The location of all APA test pits are presented on Plan 1. The APA test pit summary log is presented in Table 2.7.

The two areas that were investigated are outside the area of the geophysical survey. According to the original protocols presented in the Work Plan, an EM survey would be conducted in these areas to identify any buried metal objects. Test pitting would then be conducted to investigate any anomalies identified by the EM survey.

Modifications to these protocols for the APA test pits were made with the concurrence of the U.S. EPA (November 2, 1993, Dan Harkay and Randy Moore). Based on the results of the DTP, CIA and SDP test pits across the Site, fill was not expected to be encountered in the area identified as '1975-A' on Plan 3 of the Work Plan. It was agreed that the area of the Site east of the support area and the area identified as '1975-A' would be investigated by excavating test pits at approximately 50-foot centers on the west side of the Site access road.

Seven test pits (APA-002 to APA-008) were excavated to a depth ranging from 6 inches to 3 feet at 50-foot centers covering the area identified as '1975-A' and the area east of the Site trailers. Fill material was not encountered at any of these test pit locations.

Test pit APA-001 was excavated in the eastern ravine area of the Site at grid coordinate N85+80 and E89+25. Due to the difficulty in

digging in this area and the lack of evidence of fill, it was agreed with the concurrence of the U.S. EPA (November 3, 1993, Dan Harkay and Randy Moore) that a limited investigation would be conducted without EM screening. Three test pits were excavated on the east bank, west bank and center of the ravine from one to four feet in depth. Fill material was not encountered at test pit APA-001.

2.1.1.8 Ridge Test Pit Investigation

During the period of November 3 to November 4, 1993, three test pits were excavated along the ridge located east of the Site. These test pits are referred to as the Ridge Test Pits (RTPs). The location of the RTP test pits are presented on Plan 1. The RTP test pit summary log is presented in Table 2.8.

The RTP test pits were requested by the EPA in the field and were not part of the scope of work as presented in the Work Plan. During field reconnaissance, a large amount of surface debris was noted on the ridge area east of the Site trailers and west of Quarry Road (grid coordinates N87+50 to N89+00, E88+50 to E90+00). A few surficial drums were also noted in this area during the field reconnaissance. It was, therefore, deemed necessary to investigate this area to determine if any buried drums were present. Test pit RTP-001 was excavated on the ridge in an area where four drums were noted at the surface. A 5 to 6 foot high debris pile covering this area was cleared prior to excavating. Test pit RTP-001 was excavated approximately two feet into native soils. Miscellaneous debris was noted in the upper two feet. No evidence of buried drums was found throughout the excavation.

Test pits RTP-002A,B were excavated on the ridge in an area where four drums were noted at the surface. Surface debris was cleared from around the surface drums prior to excavating. The test pit was excavated to a depth of four feet to native soils. Miscellaneous fill debris was noted in the upper four feet. No evidence of buried drums was found during the excavation of these test pits.

2.2 SURFACE DRUMS

A Site inspection was conducted to identify any drums visible at the ground surface. Based upon this inspection, a total of 24 drums or drum fragments were identified at the ground surface. Twenty of the 24 surface drums were empty, one surface drum contained soil, another contained concrete and the remaining two contained styrofoam cups and soda bottles. A listing of all drums identified at the Site is presented in Table 2.3 and the locations are plotted on Plan 2.

3.0 SUMMARY OF TEST PIT PROGRAM RESULTS

This section presents a summary of the results obtained during the test pitting program.

Three areas of the Site were identified to contain significant quantities of fill material. These are:

- the former stream channel alignment;
- the southern Site perimeter bank; and
- the western perimeter bank north of the former stream channel.

The fill areas are presented on Plan 3. Plan 3 also presents isopach contours for the thickness of the fill. The approximate volume of fill in these areas was calculated to be 45,000 cubic yards. The fill at the Site generally consists of construction debris, household refuse and metal.

A total of 116 drums or drum fragments were identified at the Site. Twenty-four of these drums are visible at the ground surface. All other drums were identified within 4 feet of the ground surface. The maximum number of drums identified at any one location is 15 at test pit CIA-027. There is no indication that any drums were buried deeper than 4 feet below ground surface anywhere at the Site.

The relatively shallow and consistent depth of burial of all drums unearthed in the stream channel alignment indicates that these drums were either disposed of and buried in the same short period of time or that final backfilling took place over a brief time period.

Many of the drums that were identified were partially crushed and/or ruptured. Organic vapor readings were obtained from within ruptured drums and in the immediate vicinity of all identified drums. Of these readings, only seven were recorded to be above background and all of these were less than 5 ppm. There were no visual signs or elevated organic vapor readings to suggest that any drums had contained product which may have spilled/leaked after disposal.

4.0 PROPOSED DRUM REMOVAL PLAN

This section presents the general strategy that will be utilized to remove drums present at the Site. This strategy was developed based upon the information obtained during the test pit investigation program. Detailed protocols for the drum removal, sampling, analyses, and health and safety are presented in the May 1993 final Phase I Operations Plan prepared by CRA for Stauffer and approved by the EPA on May 27, 1993.

All surface drums will be inspected and samples of the contents will be collected for compatibility analyses. These drums will then be managed in accordance with the protocols presented in the Phase I Operation Plan. All buried drums identified during the test pit investigation program will be located, excavated and staged in accordance with the protocols presented in the Phase I Operations Plan.

During the excavation of the SCA test pits, many of the test pits were excavated to the native soil which is generally located 15 to 20 feet below the ground surface. However, all drums identified during the test pitting program were located within four feet of the ground surface. Hence, it is proposed to excavate to a depth of five feet over the entire former stream channel area. In addition, a continuous trench will be excavated to the native soils along the entire length of the former stream channel. The excavated material will be visually inspected and screened with an organic vapor meter for chemical presence.

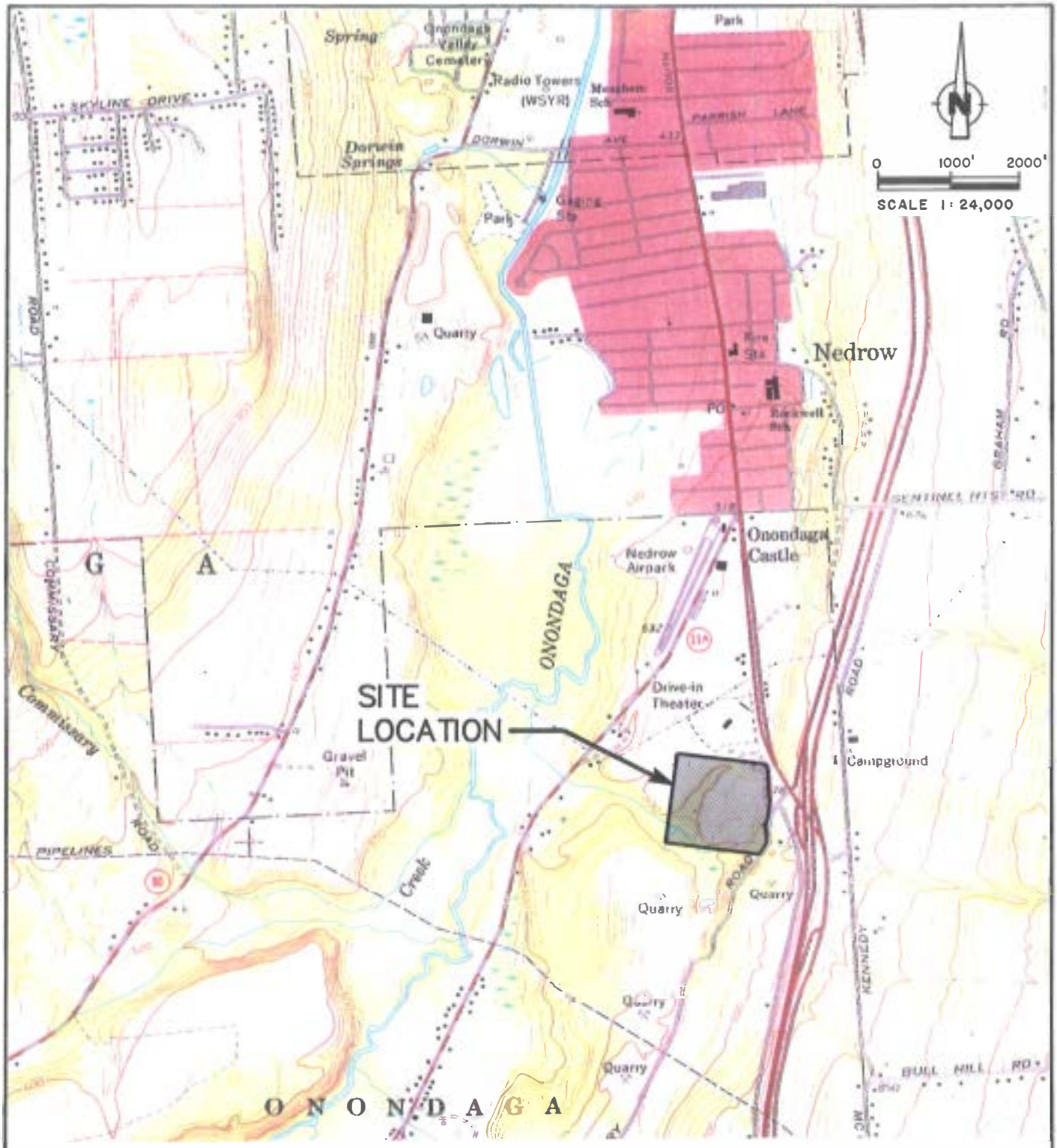
This procedure is considered to be appropriate for the following reasons:

- all drums identified in the former stream channel were within four feet of the ground surface;
- the vast majority of the drums were empty; and
- there is little evidence, as indicated by HNu readings and visual inspection, of contaminated soils in the vicinity of the drums and,

therefore, the existing drums do not appear to be adversely affecting the environment.

The proposed 5-foot excavation will uncover the majority, if not all, of the buried drums and the deep trench will have a high potential for identifying any additional drums not found during the previous work.

In addition to the stream channel excavation work described above, the deep fill areas located along the southern perimeter bank and the western perimeter bank will be excavated. These areas are identified on Plan 4 and include areas where buried drums were identified. At these locations, the excavations will proceed down to native soil.



MAP SOURCE: SOUTH ONONDAGA, N.Y.
QUADRANGLE USGS 7.5 SERIES

figure 1.1
SITE LOCATION
Onondaga Drum Site

CRA

5067 (5) DEC.17/93 (W) REV.0

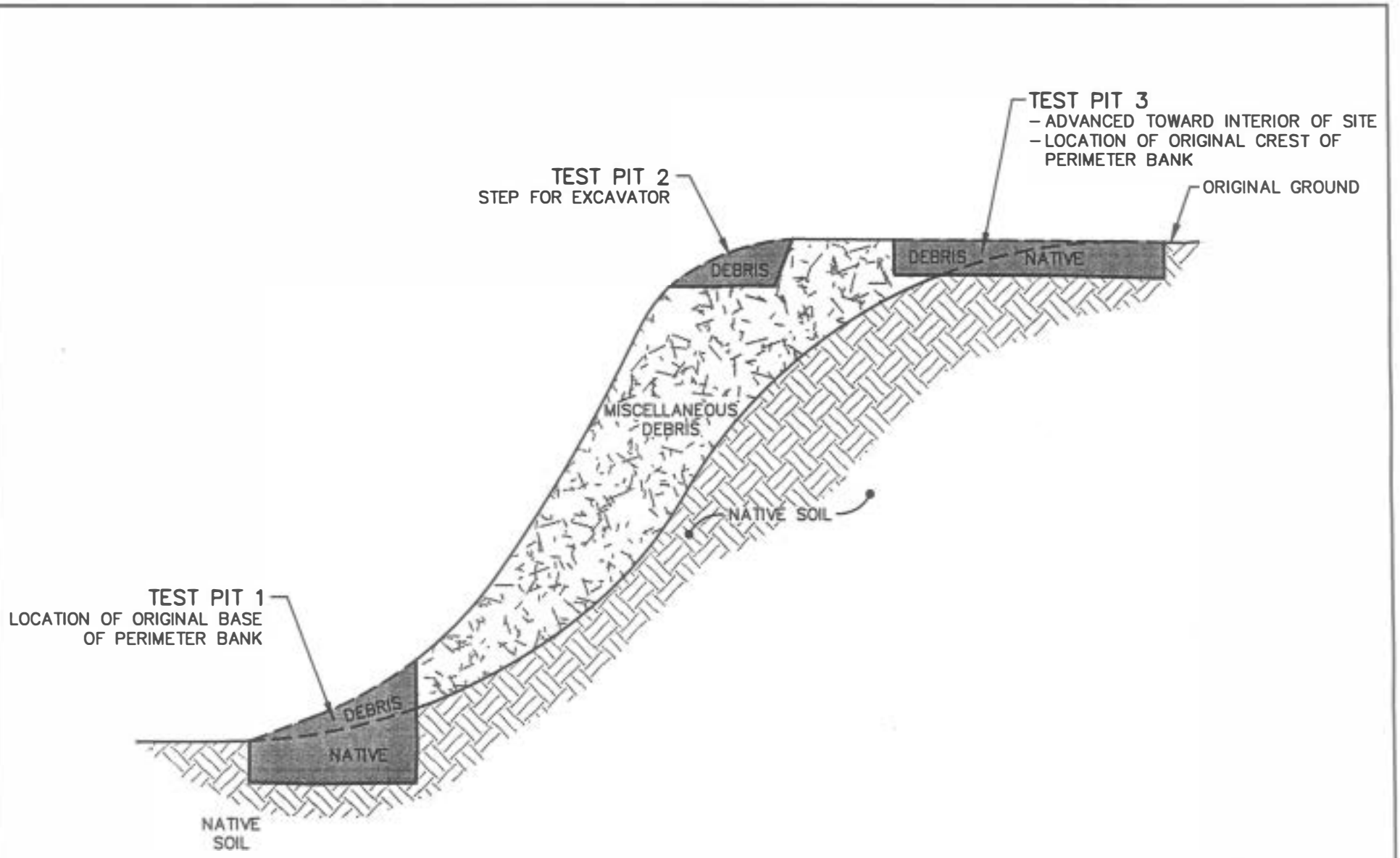


figure 2.1

TYPICAL SITE PERIMETER BANK EXCAVATION
TEST PIT INVESTIGATION
Onondaga Drum Site

CRA

5067 (5) FEB 22/94(W) REV.0 (P-09)

TABLE 2.1

TEST PIT SUMMARY LOG
DISCRETE ANOMALY TEST PITS (DTP)

Test Pit ID	Date	Grid Location (a)		Approximate Areal Dimensions (ft x ft)	Range of Excavation Depth (ft)	Range of Fill Depth (ft)	Comments
DTP-001	10/12/93	N90+00	E87+24	15 x 9	2	0	
DTP-002	10/12/93	N91+26	E85+82	12 x 4	2	0	
DTP-003	10/13/93	N91+49	E84+97	12 x 4	2	0	
DTP-004	10/13/93	N91+65	E84+50	10 x 2	0.5	0	
DTP-005	10/13/93	N91+40	E84+35	12 x 6	0.5	0	2 discrete anomalies investigated
DTP-006	10/13/93	N90+93	E83+61	10 x 6	2	0	
DTP-007	10/13/93	N90+80	E84+00	30 x 30	0.8	0	3 discrete anomalies investigated
DTP-008	10/13/93	N90+92	E84+28	6 x 20	0.8	0	
DTP-009	10/13/93	N90+94	E84+61	4 x 10	0.5	0	
DTP-010	10/13/93	N90+93	E84+87	22 x 4	0.5	0	2 discrete anomalies investigated
DTP-011	10/13/93	N90+73	E85+10	12 x 2	0.5	0	
DTP-012A	10/13/93	N90+22	E85+50	6 x 2	0.5	0	
DPT-012B	10/13/93	N90+12	E85+70	6 x 2	0.5	0	
DPT-012C	10/13/93	N89+98	E85+62	6 x 2	0.5	0	
DTP-013	10/13/93	N90+42	E85+20	6 x 2	0.2	0	
DTP-014	10/14/93	N90+35	E84+40	6 x 2	0.3	0	
DTP-015	10/14/93	N90+17	E84+00	6 x 2	0.2	0	
DTP-016	10/14/93	N90+45	E83+50	6 x 2	0.5	0	
DTP-017A	10/14/93	N89+72	E83+73	7 x 7	0.5	0	
DPT-017B	10/14/93	N90+00	E83+72	10 x 10	1.5	0	
DTP-017C	10/14/93	N89+90	E83+90	11 x 3	2	0	
DTP-018	10/14/93	N88+69	E81+77	18 x 10	11	8	in fill area at northwest end of the Site
DTP-019	10/15/93	N88+48	E81+48	3 x 20	7	3	in fill area at northwest end of the Site 2 discrete anomalies investigated
DTP-020	10/15/93	N88+48	E81+97	10 x 3	7	3	in fill area at northwest end of the Site
DTP-021	10/15/93	N88+57	E82+63	12 x 3	6	2	in fill area at northwest end of the Site 2 discrete anomalies investigated
DTP-022	10/15/93	N88+89	E82+90	3 x 6	7	3	in fill area at northwest end of the Site
DTP-023	10/15/93	N88+72	E82+90	3 x 6	2	1	in fill area at northwest end of the Site
DTP-024	10/15/93	N89+36	E86+80	6 x 2	0.5	0	
DTP-025	10/18/93	N88+89	E83+80	2 x 6	0.7	0	
DTP-026	10/18/93	N88+54	E83+66	3 x 5	1.5	0	
DTP-027	10/18/93	N87+91	E83+08	3 x 4	1	0	
DTP-028	10/18/93	N87+97	E83+19	6 x 6	2	0	
DTP-029	10/18/93	N88+15	E83+19	5 x 3	1.3	0	
DTP-030	10/18/93	N88+05	E83+99	7 x 4	1	0	
DTP-031	10/18/93	N88+20	E84+09	4 x 3	0.8	0	
DTP-032	10/18/93	N88+24	E84+00	7 x 4	1	0	
DTP-033	10/19/93	N88+10	E85+30	16 x 12	1.5	0	
DTP-034	10/19/93	N88+10	E85+20	12 x 7	1.3	0	
DTP-035	10/19/93	N88+42	E86+26	5 x 8	10	0	extended depth to confirm native
DTP-036	10/19/93	N88+55	E86+48	4 x 5	0.8	0	
DTP-037	10/19/93	N87+77	E86+84	3 x 4	1	0	
DTP-038	10/19/93	N87+58	E86+44	3 x 5	0.8	0	
DTP-039	10/19/93	N87+72	E86+50	3 x 6	1	0	
DTP-040	10/19/93	N87+59	E86+30	3 x 6	1.2	0	
DTP-041	10/19/93	N87+81	E86+39	3 x 6	0.8	0	
DTP-042	10/19/93	N87+65	E85+30	7 x 5	1.5	0	
DTP-043	10/19/93	N87+10	E85+19	5 x 7	1.3	0	
DTP-044	10/19/93	N87+10	E85+30	4 x 5	1.2	0	
DTP-045	10/20/93	N87+10	E84+99	4 x 3	0.5	0	
DTP-046	10/20/93	N87+12	E84+78	5 x 5	0.7	0	

TABLE 2.1

TEST PIT SUMMARY LOG
DISCRETE ANOMALY TEST PITS (DTP)

Test Pit ID	Date	Grid Location (a)	Approximate Areal Dimensions (ft x ft)	Range of Excavation Depth (ft)	Range of Fill Depth (ft)	Comments
DTP-047	10/20/93	N87+05 E83+59	4 x 7	1	0	
DTP-048	10/20/93	N87+38 E83+60	4 x 4	0.5	0	
DTP-049	10/20/93	N87+32 E83+50	4 x 4	0.7	0	
DTP-050	10/20/93	N87+36 E83+18	3 x 4	0.8	0	
DTP-051	10/20/93	N87+54 E83+09	3 x 5	0.5	0	
DTP-052	10/20/93	N87+10 E87+40	5 x 4	0.7	0	
DTP-053	10/20/93	N86+88 E87+29	4 x 5	0.3	0	
DTP-054	10/20/93	N86+72 E87+10	4 x 6	1	0.4	close proxi mityto channel fill area
DTP-055	10/20/93	N86+58 E87+30	4 x 5	0.5	0	
DTP-056	10/20/93	N86+24 E87+29	4 x 4	3	2.5	in channel fill area
DTP-057	10/20/93	N84+58 E85+61	4 x 5	0.5	0	
DTP-058	10/20/93	N84+60 E85+40	5 x 4	0.5	0	
DTP-059	10/20/93	N84+46 E84+51	10 x 8	1	0	
DTP-060	10/20/93	N83+80 E84+50	6 x 10	0.7	0	
DTP-061	10/20/93	N83+40 E84+50	4 x 8	0.5	0	
DTP-062	10/20/93	N83+49 E84+70	8 x 10	0.8	0	
DTP-063	10/20/93	N83+69 E84+80	10 x 10	1.2	0	
DTP-064	10/20/93	N83+10 E85+08	7 x 10	0.8	0	
DTP-065	10/20/93	N83+12 E85+20	6 x 4	0.8	0	
DTP-066	10/21/93	N84+45 E82+40	10 x 20	1.5	0.8	surficial debris present 2 discrete anomalies investigated
DTP-067	10/21/93	N85+48 E81+39	5 x 3	1	0	
DTP-068	10/21/93	N85+98 E81+39	4 x 3	2	0	
DTP-069	10/21/93	N84+77 E83+29	4 x 3	0.5	0	
DTP-070	10/21/93	N84+71 E83+40	4 x 3	0.5	0	
DTP-071	10/21/93	N85+07 E83+98	4 x 8	6	6	in channel fill area
DTP-072	10/25/93	N84+96 E86+47	30 x 6	3-9	>9	extends into channel fill area 3 discrete anomalies investigated
DTP-073	10/26/93	N85+09 E86+79	20 x 3	0-6	>6	extends into channel fill area

Note:

(a) Coordinates locate approximate center of test pit.

TABLE 2. 2

TEST PIT SUMMARY LOG
CONCENTRATED IN-PHASE ANOMALY TEST PITS (CIA)

Test Pit ID	*Date*	*Grid Location (a)*		*Approximate Areal Dimensions (ft x ft)*	*Range of Excavation Depth (ft)*	*Range of Fill Depth (ft)*	*Comments*
CIA-001A	10/20/93	N86+85	E84+78	4x5	0.8	0	
CIA-001B	10/20/93	N86+91	E84+88	5x4	0.5	0	
CIA-002	10/20/93	N86+79	E83+50	6x25	1 - 10	0	extended depth to confirm native
CIA-003A	10/21/93	N86+55	E81+93	16x5	16	16	in channel fill area
CIA-003B	10/21/93	N86+51	E81+77	20x20	4 - 5	>5	4 Drums found; in channel fill area
CIA-004				See SCA-003 in Table 2.4			
CIA-005A	10/21/93	N85+77	E82+61	17x3	14	14	in channel fill area
CIA-005B	10/21/93	N85+96	E82+60	17x3	8	8	in channel fill area
CIA-005C	10/21/93	N85+89	E82+82	15x3	6	6	in channel fill area
CIA-005D	10/21/93	N85+70	E82+80	17x3	15	15	in channel fill area
CIA-006A	10/21/93	N84+60	E83+58	10x5	0.5	0	
CIA-006B	10/21/93	N84+63	E83+70	5x5	0.5	0	
CIA-006C	10/21/93	N84+53	E83+69	5x5	0.5	0	
CIA-006D	10/21/93	N84+49	E83+64	5x5	0.5	0	
CIA-007	10/21/93	N85+09	E83+37	70x7	4	2 - 4	in channel fill area
CIA-008	10/21/93	N83+95	E85+04	60x10	1 - 10	0	extended depth to confirm native
CIA-009	10/21/93	N91+10	E85+50	55x2	0.7	0	
CIA-010A	10/21/93	N90+46	E84+80	4x2	0.5	0	
CIA-010B	10/21/93	N90+17	E84+94	12x2	0.5	0	
CIA-010C	10/21/93	N90+00	E84+85	60x2	0.7	0	
CIA-010D	10/21/93	N89+82	E84+85	20x2	0.7	0	
CIA-011A	10/21/93	N89+47	E83+75	10x5	6	4	in fill area at northwest end of Site
CIA-011B	10/21/93	N89+25	E83+74	10x5	6	4	in fill area at northwest end of Site
CIA-012A	10/25/93	N89+42	E83+43	20x5	2	1	in fill area at northwest end of Site
CIA-012B	10/25/93	N88+93	E83+44	20x5	2	2	in fill area at northwest end of Site
CIA-012C	10/25/93	N89+14	E83+08	17x7	7	7	in fill area at northwest end of Site
CIA-012D	10/25/93	N89+38	E83+05	20x5	5	5	in fill area at northwest end of Site
CIA-013A	10/25/93	N89+18	E82+60	15x4	8	8	in fill area at northwest end of Site
CIA-013B	10/25/93	N88+94	E82+60	15x4	0 - 5	1 - 5	in fill area at northwest end of Site

TABLE 2.2

TEST PIT SUMMARY LOG
CONCENTRATED IN-PHASE ANOMALY TEST PITS (CIA)

Test Pit ID	Date	Grid Location (a)		Approximate Areal Dimensions (ft x ft)	Range of Excavation Depth (ft)	Range of Fill Depth (ft)	Comments
CIA-014	10/25/93	N89+96	E84+30	17x5	0.5	0	
CIA-015	10/25/93	N89+52	E84+33	18x5	0.7	0	
CIA-016	10/25/93	N89+98	E86+83	30x2	0.5	0	
CIA-017A	10/25/93	N89+51	E86+42	12x2	0.5	0	
CIA-017B	10/25/93	N89+61	E86+24	8x2	0.5	0	
CIA-018	10/25/93	N89+68	E85+95	15x2	0.5	0	
CIA-019	10/25/93	N89+12	E86+45	18x2	0.5	0	
CIA-020A	10/25/93	N89+04	E86+20	8x2	0.5	0	
CIA-020B	10/25/93	N89+23	E86+20	8x2	0.5	0	
CIA-021A	10/25/93	N89+13	E85+99	40x2	0.5	0	
CIA-021B	10/25/93	N89+40	E85+90	25x2	0.5	0	
CIA-022	10/25/93	N86+80	E85+94	8x3	6	0	extended depth to confirm native
CIA-023	10/25/93	N86+06	E83+28	20x4	5	4.5	in channel fill area
CIA-024A	10/25/93	N87+70	E82+00	4x8	5	4	in channel fill area
CIA-024B	10/25/93	N87+95	E81+80	18x3	5	2 - 5	in channel fill area
CIA-025	10/25/93	N84+94	E85+98	10x12	3	2.5	in channel fill area
CIA-026	10/21/93	N85+70	E81+46	16x4	6	4 - 6	in channel fill area
CIA-027	10/26/93	N85+46	E87+17	55x20	1 - 7	>7	15 Drums found; in channel fill area
CIA-027B	10/26/93	N85+64	E87+33	60x10	1 - 5	>5	3 Drums found; in channel fill area
CIA-028	10/26/93	N85+40	E85+30	25x4	6	>6	in channel fill area
CIA-029	10/26/93	N85+19	E85+25	35x4	9	>9	in channel fill area
CIA-030	10/26/93	N84+88	E85+15	18x3	1.3	0.8	extends into channel fill area
CIA-031				See SCA-010 in Table 2.4			
CIA-032	10/27/93	N86+50	E81+25	20x20	6	3	in fill area at west side of Site

Note:

(a) Coordinates locate center of test pit.

TABLE 2.3

DRUM INVENTORY

Location	*Date*	*Depth (ft)*	*Quantity*	*Grid Location (a)*	*Drum Contents*	*HNu Reading (b) (ppm)*
CIA-003B	10/21/93	2	1	N86+50 E81+75	Black residue	3
	10/21/93	2	3	N86+50 E81+75	Empty	3
CIA-027	10/26/93	0 - 3	15	N85+46 E87+17	Empty	0
CIA-027B	10/26/93	0 - 2	3	N85+52 E87+55	Empty	0
SCA-003	10/19/93	2	9	N86+12 E81+80	Empty	0
SCA-004	10/21/93	3	1	N85+65 E82+72	Empty	0
SCA-006A	10/25/93	3 - 4	3	N85+15 E84+30	Could not be determined	5
		3 - 4	12	N85+15 E84+30	Could not be determined	0
SCA-010	10/26/93	2	12	N85+88 E87+85	Empty	0
SCA-017	10/27/93	0 - 1	12	N85+83 E82+25	Empty	0
SD-01	10/28/93	Surface	1	N81+75 E84+75	Empty	0
SD-02	10/28/93	Surface	1	N85+00 E86+10	Empty	0
SD-03	10/28/93	Surface	1	N85+50 E85+40	Empty	0
SD-04	10/28/93	Surface	1	N86+50 E85+50	Empty	0
SD-05	10/28/93	Surface	1	N86+70 E85+50	Empty	0
SD-06	10/28/93	Surface	2	N85+95 E86+08	Empty	0
SD-07	10/28/93	Surface	1	N85+40 E87+05	Empty	0
SD-08	10/28/93	Surface	1	N88+70 E85+10	Soil	0
SD-09	10/28/93	Surface	2	N89+53 E85+25	Styrofoam cups and soda bottles	0
SD-10	10/28/93	Surface	1	N88+64 E89+17	Empty	0
SD-11	10/28/93	Surface	1	N88+74 E89+21	Empty	0
SD-12	10/28/93	Surface	1	N88+80 E89+28	Concrete	0
SD-13	11/4/93	Surface	1	N88+73 E89+35	Empty	0
SD-14	11/4/93	Surface	1	N87+50 E89+43	Empty	0
SD-15	11/4/93	Surface	2	N88+05 E88+87	Empty	0
SD-16	11/4/93	Surface	1	N87+95 E88+83	Empty	0
SDP-014	10/29/93	Surface	3	N89+50 E82+40	Empty	0
SDP-020	11/2/93	1 - 2	3	N85+70 E84+85	Empty	0
SPB-006	10/25/93	4	1	N81+80 E84+92	Bright pink solidified material	0
SPB-006A	10/26/93	3	1	N82+88 E84+92	Empty	0
SPB-008	10/27/93	Surface	1	N82+02 E83+68	Empty	0
SPB-015	10/27/93	Surface	1	N83+10 E80+52	Empty	0
SPB-020	10/27/93	1 - 2	1	N84+27 E81+10	Empty	0
SPB-023	10/27/93	0 - 1	1	N88+75 E80+90	Empty	0
SPB-023A	10/28/93	3 - 4	4	N88+75 E80+90	Reddish-brown soldified material	0
		3 - 4	10	N88+75 E80+90	Empty	0

Notes:

(a) Coordinates locate center of test pit.
(b) Reading taken inside of drum.

TABLE 2.4

TEST PIT SUMMARY LOG
STREAM CHANNEL ALIGNMENT TEST PITS (SCA)

Test Pit ID	Date	Grid Location (a)		Approximate Areal Dimensions (ft x ft)	Range of Excavation Depth (ft)	Range of Fill Depth (ft)	Comments
SCA-001	10/18/93	N87+08	E81+13	40x4	12 - 20	20	
SCA-002	10/19/93	N86+74	E81+62	60x20	21	21	
SCA-003	10/19/93	N86+20	E82+10	92x30	0-21	0-21	9 Drums found
SCA-004	10/21/93	N85+55	E82+67	52x17	0-12	0-12	1 Drum found
SCA-005							
North Bank Trench	10/22/93	N85+95	E83+49	15x3	NR	NR	
Center Trench	10/22/93	N85+53	E83+42	20x18	18	18	
South Bank Trench	10/22/93	N85+06	E83+50	20x3	NR	NR	
SCA-006							
North Bank Trench	10/22/93	N85+88	E84+38	15x4	NR	NR	
Center Trench	10/22/93	N85+42	E84+40	20x18	18	18	
South Bank Trench	10/22/93	N85+04	E84+60	53x3	2 - 7	2 - 7	
SCA-006A	10/25/93	N85+15	E84+30	50x25	5 - 9	5 - 9	15 Drums found
SCA-007							
North Bank Trench	10/25/93	N86+11	E85+80	69x3	3 - 9	NR	
Center Trench	10/25/93	N85+49	E85+50	20x18	16	16	
South Bank Trench	10/25/93	N85+00	E85+38	25x3	6	NR	
SCA-008							
North Bank Trench	10/25/93	N86+04	E86+43	15x5	NR	NR	
Center Trench	10/25/93	N85+55	E86+33	20x20	17	17	
SCA-009	10/26/93	N85+59	E86+82	10x10	16	16	
SCA-010	10/26/93	N85+88	E87+85	80x15	2 - 5	>5	12 Drums found
SCA-011							
North Bank Trench	10/27/93	N85+37	E86+86	40x3	3	3	
Center Trench	10/27/93	N85+06	E86+82	15x3	3	3	
South Bank Trench	10/27/93	N84+91	E86+68	12x3	3	3	
SCA-012	10/27/93	N85+19	E86+04	20x20	7	5	
SCA-013	10/27/93	N85+76	E86+68	25x20	4 - 9	>9	
SCA-014	10/27/93	N85+25	E85+05	20x20	3 - 9	>9	
SCA-015	10/26/93	N85+37	E83+83	30x15	4 - 9	>9	
SCA-016	10/27/93	N85+48	E83+05	30x14	4 - 6	>6	
SCA-017	10/27/93	N85+83	E82+25	55x25	3 - 4	>4	12 Drums found

Notes:

(a) Coordinates locate approximate center of test pit.
NR - Not recorded.

TABLE 2.5

TEST PIT SUMMARY LOG
SITE PERIMETER BANK TEST PITS (SPB)

Test Pit ID	Date	Grid Location (a)		Areal Dimensions (ft x ft)	Range of Excavation Depth (ft)	Range of Fill Depth (ft)	Comments
SPB-001	10/25/93	N87+27	E88+15	15x3.5	0-12	0-12	extends into ridge with fill
SPB-002	10/25/93	N85+92	E88+53	30x3	1-2 (b)	1-2 (b)	extends into ridge with fill
SPB-003	10/25/93	N84+33	E86+46	40x3	4-6 (b)	4-6 (b)	extends into perimeter fill area
SPB-004	10/25/93	N83+34	E86+30	25x3.5	3-4 (b)	3-4 (b)	extends into perimeter fill area
SPB-005	10/25/93	N83+11	E85+91	15x3.5	3 (b)	3 (b)	extends into perimeter fill area
SPB-006	10/25-26/93	N81+93	E84+91	25x15	0-22	22	1 drum found; extends into perimeter fill area
SPB-006A	10/26/93	N82+88	E84+92	35x3	0.7	0.7	1 drum found; extends into perimeter fill area
SPB-006B	10/26/93	N82+59	E84+92	25x3	1 - 10	10	extends into perimeter fill area
SPB-007	10/26/93	N82+30	E84+34	39x15	5	>5	extends into perimeter fill area
SPB-007A	10/26/93	N82+59	E84+32	42x17	2 - 12	>12	extends into perimeter fill area
SPB-008	10/27/93	N82+31	E83+67	70x20	5	>5	1 drum found; extends into perimeter fill area
SPB-009	10/27/93	N82+35	E83+15	56x22	7	>7	extends into perimeter fill area
SPB-010	10/27/93	N82+25	E82+40	50x18	5 - 7	5 - 7	extends into perimeter fill area
SPB-011	10/27/93	N81+91	E81+96	31x3	0.5	0	
SPB-012	10/27/93	N81+58	E81+35	27x3	0.5	0	
SPB-013	10/27/93	N81+90	E80+86	40x7	0.5	0	
SPB-014	10/27/93	N82+36	E80+75	30x3	0.5	0	
SPB-015	10/27/93	N83+04	E80+20	65x8	0.5	0	1 drum found
SPB-016	10/27/93	N82+64	E81+91	57x10	2 - 4	2 - 4	extends into perimeter fill area
SPB-017	10/27/93	N82+73	E81+96	90x4	3-4 (b)	3-4 (b)	extends into perimeter fill area
SPB-018	10/27/93	N83+26	E81+40	43x11	0.5	0	
SPB-019	10/27/93	N83+56	E80+84	102x8	0.5	0	
SPB-020	10/27/93	N84+30	E80+65	102x6	0.5	0	1 drum found
SPB-021	10/27/93	N87+55	E80+63	60x7	1 - 6	>6	1 drum found; extends into perimeter fill area
SPB-021A	10/27/93	N87+62	E81+34	20x10	17	>17	extends into perimeter fill area
SPB-022	10/27/93	N88+04	E80+55	68x8	4 - 12	4 - 12	extends into perimeter fill area
SPB-022A	10/27/93	N87+91	E81+17	40x5	3 - 17	>17	extends into perimeter fill area
SPB-023	10/27/93	N88+76	E81+14	73x8	1 - 8	>8	1 drum found; extends into perimeter fill area

TABLE 2.5

TEST PIT SUMMARY LOG
SITE PERIMETER BANK TEST PITS (SPB)

Test Pit ID	*Date*	*Grid Location (a)*		*Areal Dimensions (ft x ft)*	*Range of Excavation Depth (ft)*	*Range of Fill Depth (ft)*	*Comments*
SPB-023A	10/28/93	N88+77	E80+97	33x39	3-4 (b)	>4 (b)	14 drums found; extends into perimeter fill area
SPB-024	10/28/93 11/02/93	N89+18	E81+72	42x13	5	>5	extends into perimeter fill area
SPB-024A	11/02/93	N88+07	E81+93	18x4.5	8 - 10	8 - 10	extends into perimeter fill area
SPB-025	11/02/93	N91+78	E83+80	54x10	1 (b)	0	
SPB-026	11/02/93	N89+91	E87+84	57x15	1-2 (b)	0	
SPB-027	11/02/93	N83+89	E86+17	44x9	2-3 (b)	2-3 (b)	extends into perimeter fill area
SPB-028	11/02/93	N89+53	E88+08	42x10	2-3 (b)	2-3 (b)	extends into perimeter fill area

Notes:

(a) Coordinates locate approximate center of test pit.
(b) Depth is perpendicular to slope.

TABLE 2.6

TEST PIT SUMMARY LOG
SURFACE DEBRIS PILE TEST PITS (SDP)

Test Pit ID	*Date*	*Grid Location (a)*	*Number of Test Pits*	*Total Length (ft)*	*Range of Excavation Depth (ft)*	*Range of Fill Depth (ft)*	*Comments*
SDP-001	10/28/93	E85+33 to E85+57 N90+48 to N90+77	3	90	2	0	
SDP-002	10/28/93	E84+99 to E85+34 N91+06 to N91+17	2	70	2	0	
SDP-003	10/28/93	E85+82 to E85+90 N90+64 to N90+88	2	50	1	0	
SDP-004	10/28/93	E86+06 to E86+99 N90+55 to N91+40	8	314	<1	0	
SDP-005	10/28/93	N90+00,E86+09 (a)	1	35	0.5	0	
SDP-006	10/28/93	E84+51 to E85+69 N88+99 to N89+78	11	335	0.5	0	
SDP-007	10/28/93	E84+55 to E85+76 N88+24 to N88+87	11	360	<0.5	0	
SDP-008	10/28/93	E85+18 to E86+17 N87+24 to N88+11	5	295	0.5	0	
SDP-009	10/28/93	E86+53 to E86+85 N87+30 to N87+55	4	82	0.5	0	
SDP-010	10/28/93	E83+31 to E84+77 N87+18 to N88+28	16	628	0.5	0	
SDP-011	10/28/93	E82+11 to E82+41 N88+54 to N88+96	4	160	0.5-1	0	

TABLE 2.6

TEST PIT SUMMARY LOG
SURFACE DEBRIS PILE TEST PITS (SDP)

Test Pit ID	*Date*	*Grid Location (a)*	*Number of Test Pits*	*Total Length (ft)*	*Range of Excavation Depth (ft)*	*Range of Fill Depth (ft)*	*Comments*
SDP-012	10/29/93	E87+65 to E87+93 N90+55 to N90+72	3	45	1 - 3	0	
SDP-013	10/29/93	E82+45 to E83+08 N89+72 to N90+30	4	120	0.5 - 2	0	
SDP-014	10/29/93	N89+50, E82+78 (a)	1	80	6	6	3 drums found; extends into fill area at northwest end of site
SDP-015	10/29/93	E86+51 to E86+95 N86+56 to N86+95	3	97	1	0	
SDP-016	11/02/93	E81+98 to E82+99 N86+93 to N87+68	4	174	0.5 - 11	1 - 11	extends into fill area at northwest end of site
SDP-017	11/03/63	N86+20, E82+45 (a)	1	56	7	2 - 7	extends into channel fill area
SDP-018	11/03/93	E81+99 to E82+77 N84+93 to N85+65	3	154	2.5 - 4	0.5-4	extends into channel fill area
SDP-019	10/29/93	E83+47 to E86+09 N85+37 to N86+77	10	825	0.5 - 3	0 - 1	fill found in western most trench; extends into channel fill area
SDP-020	11/02/93	N85+70*, E84+82	1	22	2 - 4	>4	3 drums found; in channel fill area
SDP-021	11/02/93	E81+50 to E82+20 N84+22 to N84+80	7	203	1 - 7	1 - 7	surface debris pile up to 7 feet high; debris above grade

TABLE 2.6

TEST PIT SUMMARY LOG
SURFACE DEBRIS PILE TEST PITS (SDP)

Test Pit ID	*Date*	*Grid Location (a)*	*Number of Test Pits*	*Total Length (ft)*	*Range of Excavation Depth (ft)*	*Range of Fill Depth (ft)*	*Comments*
SDP-022	11/02/93	E82+74 to E83+46 N83+50 to N84+35	4	240	1 - 2	0	
SDP-023	11/02/93	E81+62 to E82+22 N83+50 to N83+87	3	100	1 - 3	0	
SDP-024	11/02/93	E83+93 to E84+42 N83+60 to N84+05	3	127	1	0	
SDP-025	11/02/93	E84+00 to E84+30 N83+00 to N83+35	3	89	1	0	
SDP-026	11/02/93	E84+60 to E85+05 N84+50 to N85+02	3	103	3 - 11	3 - 11	in channel fill area
SDP-027	11/02/93	E84+10 to E84+45 N84+95 to N85+10	2	68	2 - 3	2	in channel fill area
SDP-028	11/03/93	E80+30 to E81+65 N85+24 to N86+60	4	355	1 - 8	0	extended depth to confirm native
SDP-029	11/03/93	N86+38, E80+21 (a)	1	20	1	0	
SDP-030	11/04/93	N88+05, E82+07 (a)	1	25	2	0	

Note:

(a) Coordinates locate center of test pit.

TABLE 2.7

TEST PIT SUMMARY LOG
AERIAL PHOTOGRAPHY ANOMALY TEST PITS (APA)

Test Pit ID	Date	Grid Location (a)		Approximate Areal Dimensions (ft x ft)	Range of Excavation Depth (ft)	Range of Fill Depth (ft)
APA-001A	11/03/93	N86+02	E89+26	4x4	4	0
APA-001B	11/03/93	N85+91	E89+32	15x4	2	0
APA-001C	11/03/93	N85+85	E89+15	4x4	1	0
APA-002	11/02/93	N89+79	E88+36	20x4	3	0
APA-003	11/02/93	N90+11	E88+13	27x9	3	0
APA-004	11/02/93	N90+60	E88+09	51x11	0.5	0
APA-005	11/03/93	N91+05	E87+92	49x9	2-3 (b)	0
APA-006	11/03/93	N88+93	E87+38	22x5	1	0
APA-007	11/03/93	N88+57	E87+66	26x6	0.5	0
APA-008	11/04/93	N88+10	E87+91	21x4	1	0

Notes:

(a) Coordinates locate approximate center of test pit.
(b) Depth is perpendicular to slope.

TABLE 2.8

TEST PIT SUMMARY LOG
RIDGE TEST PITS (RTP)

Test Pit ID	*Date*	*Grid Location (a)*		*Approximate Areal Dimensions (ft x ft)*	*Range of Excavation Depth (ft)*	*Range of Fill Depth (ft)*	*Comments*
RTP-001	11/03/93	N88+72	E89+28	45x20	2 - 3	2 - 3	4 surficial drums found; surficial debris present
RTP-002A	11/03/93	N87+52	E89+48	25x25	4	4	1 surficial drum found; surficial debris present
RTP-002B	11/03/93	N88+05	E88+85	42x16	4	4	3 surficial drums found; surficial debris present

Note:

(a) Coordinates locate center of test pit.

APPENDIX A

SELECTED TEST PIT PHOTOGRAPHS

Photograph 1 - Test Pit SCA-010 - Partially Uncovered Drums

Photograph 2 - Test Pit SCA-010 - Closeup of Uncovered Drum Showing Deteriorated Condition

Photograph 3 - Test Pit SCA-010 - Blue Flags Locate Individual Drums Partially Uncovered

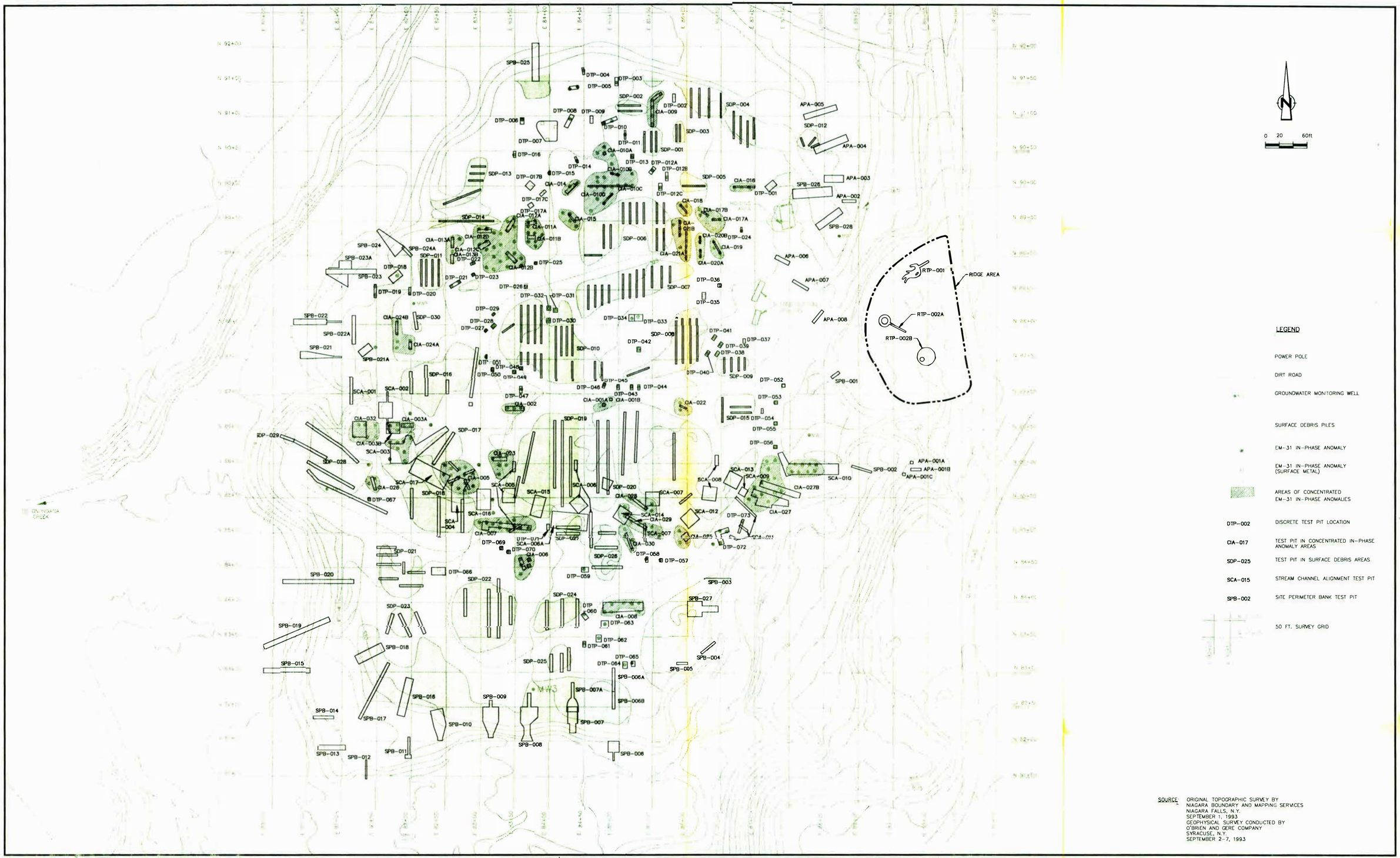
Photograph 4 - Test Pit SCA-004 - Uncovered Drum Showing Deteriorated Condition

Photograph 5 - Test Pit SCA-006 A - Partially Uncovered Drum

Photograph 6 - Test Pit SCA-017 - Blue Flags Locate Individual Drums Partially Uncovered

Photograph 7 - Test Pit CIA-003 - Partially Uncovered Drums

Photograph 8 - Test Pit CIA-027 - Blue Flags Locate Individual Drums Partially Uncovered



SOURCE: ORIGINAL TOPOGRAPHIC SURVEY BY
NIAGARA BOUNDARY AND MAPPING SERVICES
NIAGARA FALLS, N.Y.
SEPTEMBER 1, 1993
GEOPHYSICAL SURVEY CONDUCTED BY
O'BRIEN AND GERE COMPANY
SYRACUSE, N.Y.
SEPTEMBER 2-7, 1993

No	Revision	Date	Initial

Approved

ONONDAGA DRUM SITE

TEST PIT INVESTIGATION

TEST PIT LOCATIONS

CRA
CONESTOGA-ROVERS & ASSOCIATES

Drawn by:	Scale:	Date:	File No:	Rev.No:
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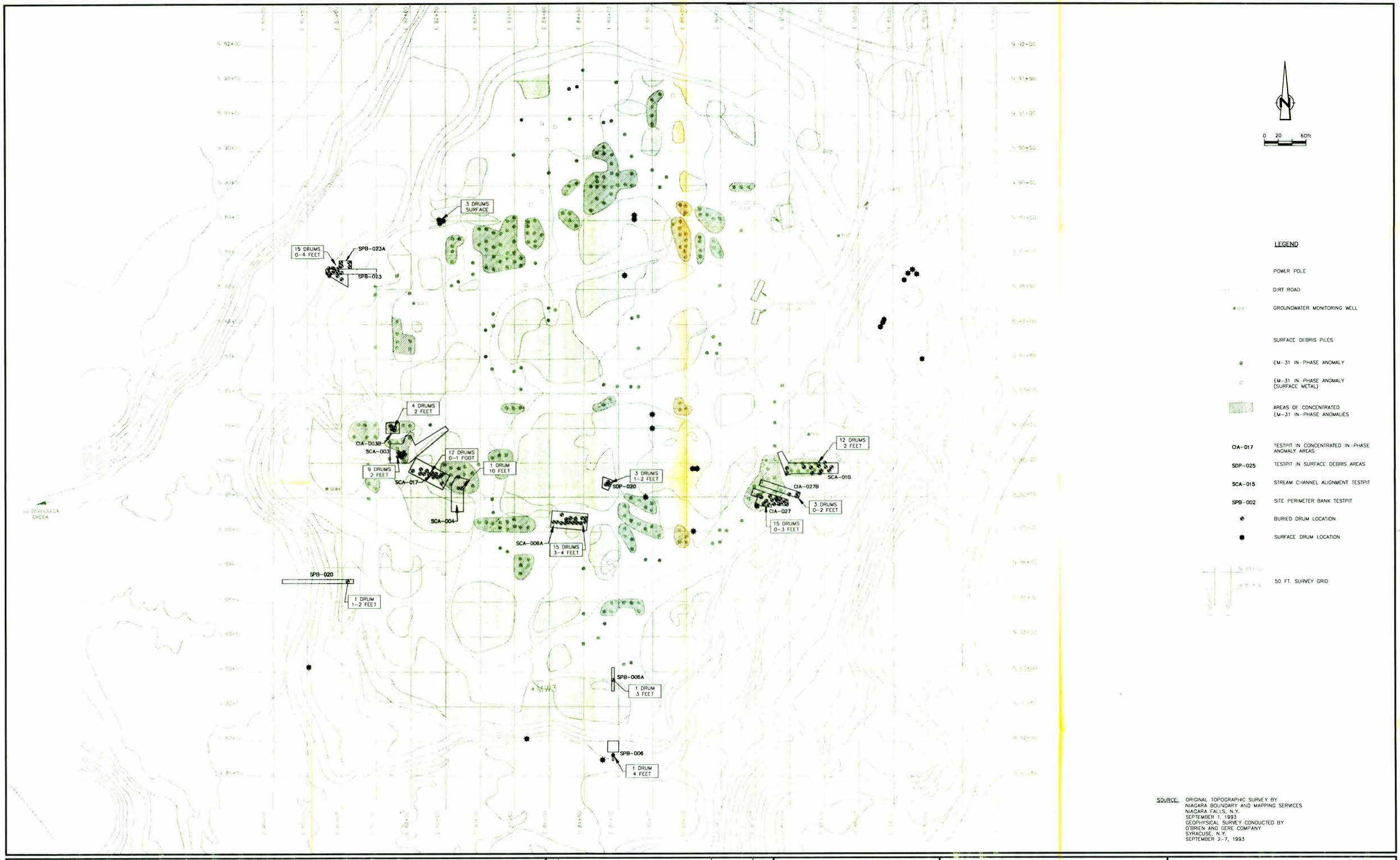
Checked by: JP				



SOURCE: ORIGINAL TOPOGRAPHIC SURVEY BY
NIAGARA BOUNDARY AND MAPPING SERVICES
NIAGARA FALLS, N.Y.
SEPTEMBER 1, 1993
GEOPHYSICAL SURVEY CONDUCTED BY
O'BRIEN AND GERE COMPANY
SYRACUSE, N.Y.
SEPTEMBER 2-7, 1993

Nº	Revision	Date	Initial

Approved

ONONDAGA DRUM SITE

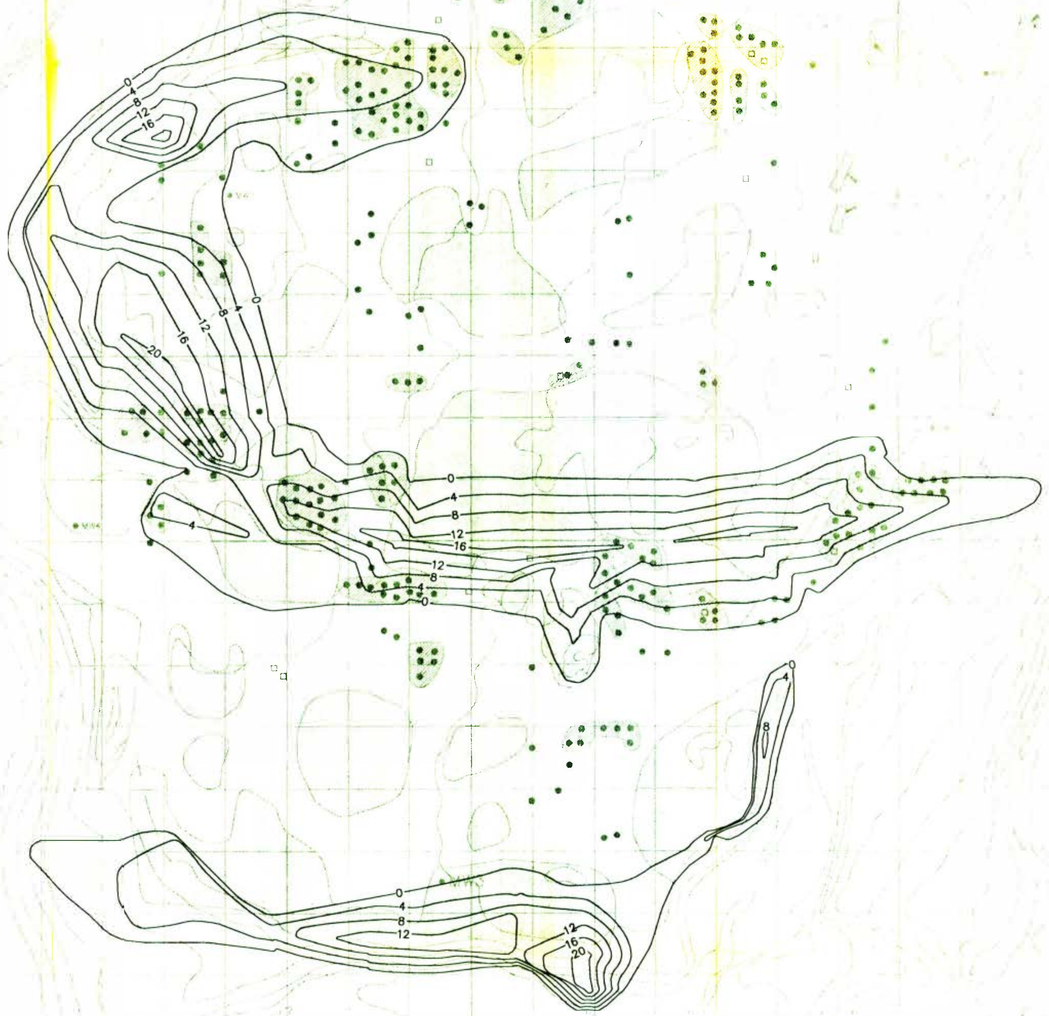
TEST PIT INVESTIGATION

DRUM LOCATIONS

CRA
CONESTOGA-ROVERS & ASSOCIATES

Drawn by: KM	Scale: 1"=60'	Date: DECEMBER 1993	File Nº: P-07	Rev.Nº: 0
Designed by: RM				
Checked by: JP	Field book:	Project Nº: 5067	Drawing Nº: PLAN 2	

FEB 22/94(W)



N

0 20 60ft

LEGEND

POWER POLE

GROUNDWATER MONITORING WELL

DIRT ROAD

SURFACE DEBRIS PILES

EM-31 IN-PHASE ANOMALY

EM-31 IN-PHASE ANOMALY (SURFACE METAL)

AREAS OF CONCENTRATED EM-31 IN-PHASE ANOMALIES

12 THICKNESS OF FILL CONTOUR (FT)

50 FT. SURVEY GRID

SOURCE: ORIGINAL TOPOGRAPHIC SURVEY BY
NIAGARA BOUNDARY AND MAPPING SERVICES
NIAGARA FALLS, N.Y.
SEPTEMBER 1, 1993
GEOPHYSICAL SURVEY CONDUCTED BY
O'BRIEN AND GERE COMPANY
SYRACUSE, N.Y.
SEPTEMBER 2-7, 1993

Nº	Revision	Date	Initial

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ONONDAGA DRUM SITE

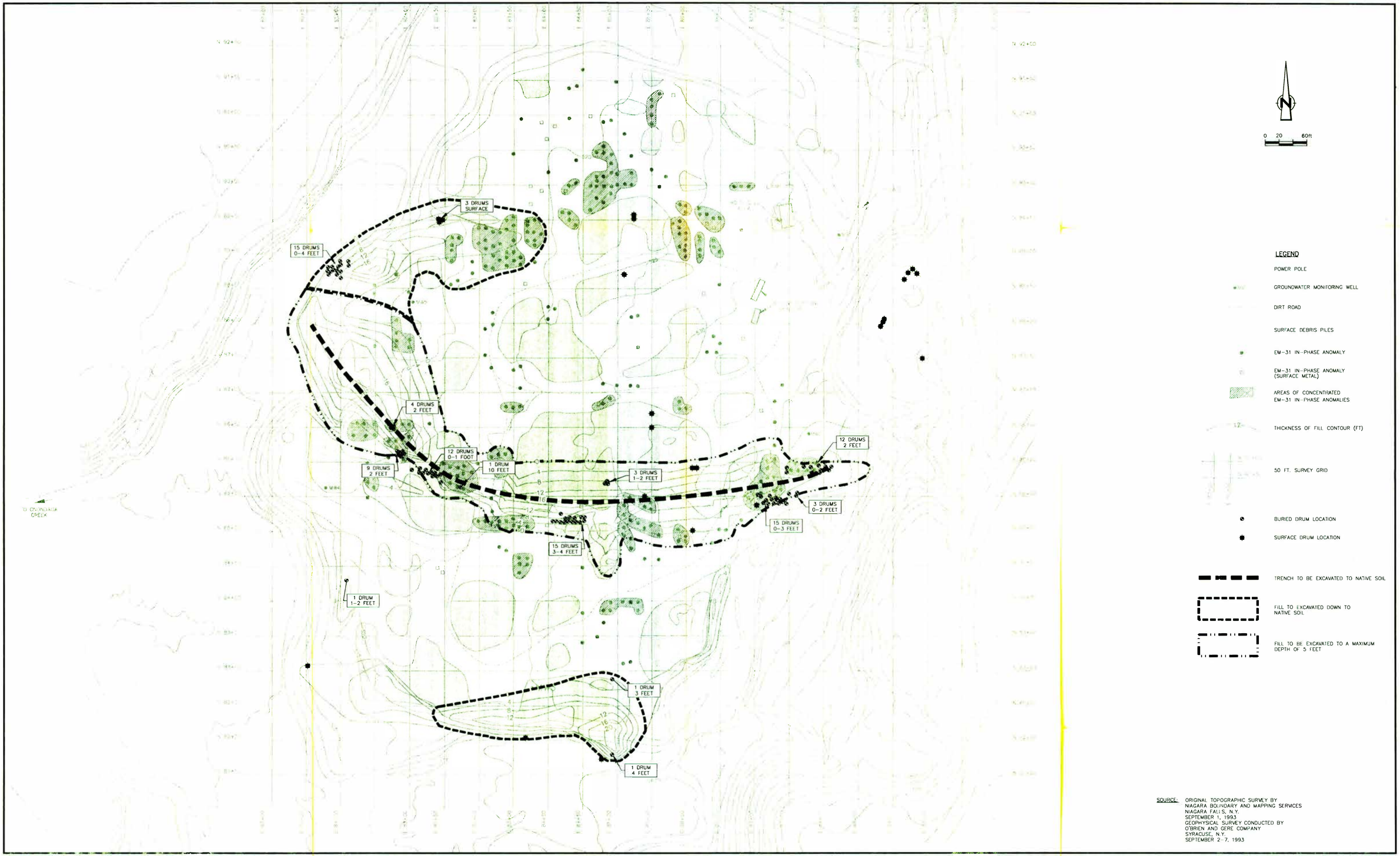
TEST PIT INVESTIGATION

AREAS OF FILL

CRA
CONESTOGA-ROVERS & ASSOCIATES

Drawn by: KM	Scale: 1"=60'	Date: DECEMBER 1993	File Nº: P-05	Rev.Nº: 0
Designed by: RM				
Checked by: JP	Field book:	Project Nº: 5067	Drawing Nº: PLAN 3	

DEC 17/93(W)



SOURCE: ORIGINAL TOPOGRAPHIC SURVEY BY
NIAGARA BOUNDARY AND MAPPING SERVICES
NIAGARA FALLS, N.Y.
SEPTEMBER 1, 1993
GEOPHYSICAL SURVEY CONDUCTED BY
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SYRACUSE, N.Y.
SEPTEMBER 2-7, 1993

Nº	Revision	Date	Initial

Approved

ONONDAGA DRUM SITE

TEST PIT INVESTIGATION

PROPOSED EXCAVATION AREAS

CRA
CONESTOGA-ROVERS & ASSOCIATES

Drawn by: KM	Scale: 1"=60'	Date: DECEMBER 1993	File Nº: P-08	Rev.Nº: 0
Designed by: RM				
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FILE 22/94(W)