The electronic version of this file/report should have the file name:

Type of document.Spill Number.Year-Month.File *Year-Year* or Report name.pdf

letter._____._____-_____.File spillfile___.pdf

report. hw907018 . 1996 - 01-01 . SOIL/SEDIMENT STABILIZATION SUMMARY .pdf

Project Site numbers will be proceeded by the following:

Municipal Brownfields - b
Superfund - hw
Spills - sp
ERP - e
VCP - v
BCP - c

non-releasable - put .nf.pdf
Example: letter.sp9875693.1998-01.Filespillfile.nf.pdf

907018

SOIL/SEDIMENT STABILIZATION SUMMARY REPORT

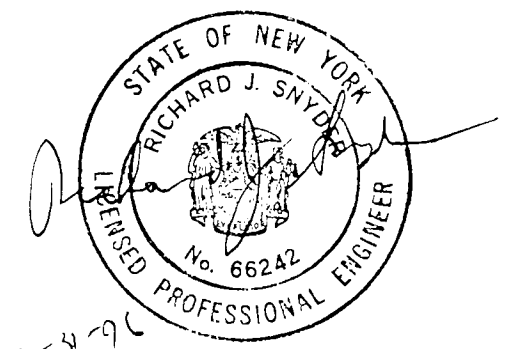
Dowcraft Corporation - Ellison Bronze Site
Falconer, New York

For Long Term Monitoring.

See C.P. Letter 2/21/96

also
Dewstultz letter
3/14/96

also
ROD 9/16 3/96



1-31-96

JANUARY 1996
REF. NO. 5020 (5)
This report is printed on recycled paper.

CONESTOGA-ROVERS & ASSOCIATES

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

This report has been prepared by Conestoga-Rovers and Associates (CRA) on behalf of Dowcraft Corporation (Dowcraft) to document the remedial activities associated with the stabilization of soil and sediment at the Ellison Bronze facility in Falconer, New York. The facility (Site) location is shown on Figure 1.1. The Site layout is presented on Figure 1.2. The Order on Consent describing the required remedial measures was signed by Ellison Bronze and the New York State Department of Environmental Conservation (NYSDEC) on June 13, 1995. All remedial activities were conducted in accordance with the work plan prepared by MARCOR of New York, Inc. (MARCOR) entitled "Work Plan For Soil Stabilization, Dowcraft Corporation, Ellison Bronze Site" which was approved in June 1995 prior to the signing of the Order on Consent. All site preparation, excavation, stockpiling, stabilization, backfilling and restoration activities were completed by MARCOR. Site oversight was performed by CRA and NYSDEC. Work activities at the Site were initiated on June 26, 1995 and completed on August 21, 1995.

2.0 BACKGROUND INFORMATION

2.1 SITE OPERATIONS HISTORY

The Site has been used for industrial purposes since the 1880's. A blacksmith shop (1880's) and a towel factory (1890 to 1912) operated at the Site before Ellison Bronze acquired the property in 1912. A foundry operated at the Site from 1912 to 1932. In 1932, Ellison Bronze revised their operations to manufacture commercial doors. Ellison Bronze became a subsidiary of Dowcraft in 1969. Ellison Bronze property and associated buildings were sold in 1973 to Robert and Jane Kope. In 1985, the Kope's sold it back to Ellison Bronze. The current owner of the property is the Chautauqua County Industrial Development Agency.

2.2 HISTORICAL INVESTIGATIVE ACTIVITIES

In June 1992, a Remedial Investigation (RI) was completed at the Site by Empire Soils Investigation (ESI) of Hamburg, New York on behalf of Dowcraft. The results of the RI were presented in the ESI document entitled "Remedial Investigation Summary Report and Interim Remedial Measure (IRM) Work Plan for the Ellison Bronze Company Site", dated June 1992. Based on the RI, two areas of the Site were identified as having potential impact on the environment; the former chemical storage shed area and the foundry waste disposal area. The area surrounding the chemical storage shed was remediated by Dowcraft in April 1993.

In July/August 1993 CRA collected discrete and composite soil samples from test trenches on Site as well as sediment samples from both Moon Brook and the Chadakoin River. The sediment data were presented to the NYSDEC in a letter on November 11, 1993.

The chemical of concern associated with the foundry waste disposal area is lead. Lead concentrations ranging from 343 mg/kg to 3,740 mg/kg were detected during the RI. Due to the mixed materials present

in the foundry waste, excavation, separation, stabilization and replacement was selected as the preferred remedial option.

In order to address concerns regarding stabilization/ solidification, Dowcraft conducted a treatability study to establish the optimal ratios of reagents. The results of the treatability study performed by TreaTek-CRA Company, were presented in the document entitled "Treatability Study Results, Stabilization/Solidification for Foundry Waste", April 1994. The selected reagent formula was 100/30/20 (i.e., soil/water/ portland cement ratio by weight). Treatability study test results for TCLP lead demonstrated that the selected formula was capable of stabilizing the soils so that leachate from TCLP testing of the treated soils were capable of achieving concentrations less than the Class GA Groundwater Standard of 0.025 mg/L for lead.

In addition to the lead contaminated soils on Site, Dowcraft agreed to remediate some of the sediments in the adjacent Moon Brook and Chadakoin River. The chemical of concern associated with the sediment was copper. Based upon the treatability study results, it was determined that sediment exhibiting elevated copper concentrations would be similarly bound up when treated using the same process and reagent formula. As a result, Dowcraft agreed to remove the surficial sediments containing the elevated copper.

3.0 REMEDIAL ACTIVITIES

The remedial activities performed at Ellison Bronze consisted of two distinct operations:

- excavation, stabilization and replacement of approximately 1,400 cubic yards (2,000 tons) of lead contaminated foundry waste; and
- excavation, stabilization and backfilling of approximately 60 cubic yards of copper contaminated stream sediment.

The following subsections detail these aspects of the Ellison Bronze remedial construction program.

3.1 SOIL STABILIZATION

3.1.1 Work Area Preparation

To minimize possible erosion of the streambanks of Moon Brook and the Chadakoin River during the foundry waste stabilization project, stream bank protection consisting of sand bags, hay bales and silt fence was installed around the perimeter of the work area adjacent to the waterways. To facilitate the excavation of foundry waste, several large trees were removed from the edge of Moon Brook. The large tree at the south end of the property was not removed. All limbs and branches were chipped and left on Site. The tree stumps were too large for chipping and due to New York State regulations could not be disposed of at a sanitary landfill. As such, they were placed into the excavation for use as backfill.

Prior to commencing excavation activities, Ellison Bronze personnel were contacted to aid in determining the nature and location of underground utilities. Three utilities existed in the vicinity of the Ellison Bronze buildings. These included a Town of Falconer sanitary sewer, a gas main and an Ellison Bronze boiler discharge line which contributes sporadic and low flow volumes to the aforementioned sewer. The sanitary sewer was identified to be located below the bottom of the excavation (i.e., greater than

ten feet below ground surface) while the other two lines were exposed during the excavation process.

3.1.2 Excavation

Excavation activities were initiated at the northernmost limit of the foundry waste material, adjacent to the Ellison Bronze building. All excavation activities were completed between June 28, 1995 and July 19, 1995. Excavation activities proceeded in a southerly direction, following the western edge of Moon Brook and then moved westward. The excavation limits are presented on Figure 3.1. During excavation activities, dust levels were monitored by MARCOR using portable dust meters. Dust was controlled using water misting procedures. Action levels, as outlined in the Site Health and Safety Plan were not exceeded. All excavated material was temporarily stockpiled prior to processing. Untreated excavated material was covered nightly with polyethylene sheeting to prevent potential runoff of untreated material to Moon Brook and the Chadakoin River. Due to work space restrictions, total daily excavation volumes were limited to approximately 150 cubic yards. The total volume excavated was approximately 1,150 cubic yards.

3.1.3 Analytical Results

To ensure that all lead contaminated foundry waste was excavated for stabilization, confirmatory soil samples were collected from within the excavation of the surrounding soils. Two point composite samples were collected from eight areas within the excavation at locations and depths as agreed upon by the CRA and NYSDEC on-Site representatives.

The composite sample locations are identified on Figure 3.2. All confirmatory soil samples were submitted under chain of custody for total lead analysis. Samples for total lead were analyzed by Ross Analytical Services, Inc. (Ross) of Strongsville, Ohio and Advanced Environmental Services (AES) of Niagara Falls, New York. If the total lead

concentration substantially exceeded 500 mg/kg, additional soil was required to be excavated and an additional confirmatory sample collected. At only one location did the initial confirmatory sample total lead concentration exceed 500 mg/kg. This occurred at "area-five" which was located immediately south of the Town of Falconer power pole. The area was re-excavated on two occasions before the third confirmatory sample result was approved by the NYSDEC. All confirmatory soil sample analytical results are provided in Table 3.1. An analytical assessment and review is provided in Appendix B.

3.1.4 Stabilization

All excavated foundry waste was stabilized on-Site by MARCOR using a large scale portable pug mill. The pug mill consisted of four major components, specifically, two screening sieves, a portland cement storage silo and the pug mill mixing unit. The first screen removed any material which was greater than five inches in diameter. The second screen removed any material which was greater than two inches in diameter. Material was transported between sieves by conveyor belts. Once the waste material had passed through the second screen, it proceeded along a third conveyor to the pug mill mixing unit. A digital scale on the conveyor measured the weight of material being processed and signaled the cement auger speed controller to ensure that the correct reagent ratio was maintained. The water ratio was adjusted via a hand dial located near the main control box. Portland cement was stored on site in a vertical silo which had a capacity of 50 tons. The pug mill typically processed at a rate of 100 tons per hour. Treated material was placed in 25 cubic yard (cy) stockpiles until approved for use as backfill. As for during excavation, dust levels were monitored by MARCOR during pug mill operation. Action levels were not exceeded.

3.1.5 Analytical Results

One stabilized soil sample was collected for every 35 tons (i.e., approximately 25 cubic yards) of foundry waste processed and submitted under chain of custody for TCLP lead analysis. Samples for TCLP lead were

analyzed by Ross and AES. The detection level strived for, as discussed in Section 2.0, was 0.025 mg/L. TCLP testing of treated soils is a very conservative approach that does not accurately represent potential field conditions. As part of the TCLP analytical process the soil sample to be analyzed is diluted in an acidic solution which is meant to simulate precipitation leaching. However, due to the acidic nature of the dilution solution, metals within the soil sample are more readily dissolved. As such, soil samples which achieve the TCLP testing criterion will never leach once backfilled and exposed to natural conditions.

In total, 65 stabilized soil samples were collected. Fifty-four samples and six duplicate samples were collected on the same day that the material was processed (i.e., original samples). The remaining five samples represent soil which was resampled. A brief recap of the stabilized soil samples collected is provided below:

- Total Samples Collected = 65;
- 65 samples are comprised of 54 'original' (i.e., sample collected same day as material processed) samples, 6 duplicate samples and 5 resamples;
- of 54 samples above, nine exhibited concentrations greater than 0.025 mg/L;
- the 9 samples with elevated lead concentrations were addressed as follows:

Sample ID	*TCLP Lead Concentration (mg/L)*	*Action Taken*
TW-070595-DS-555	0.123	Half of batch reprocessed to ensure all of adjacent batch removed. No sample required. Approved for backfill by NYSDEC.
TW-070595-DS-640	0.309	Reprocessed. No sample required.
TW-070595-DS-660	0.985	Reprocessed. Resampled. Resample result = Non Detect.
TW-071195-DS-725	0.031	Approved for backfill by NYSDEC.
TW-071195-DS-757	0.254	Resampled (not reprocessed). Resample result = 0.04 mg/L. Approved for backfill by NYSDEC.

TW-071195-DS-795	0.078	Resampled (not reprocessed). Resample result = Non Detect.
TW-071195-DS-830	0.039	Approved for backfill by NYSDEC.
TW-071195-DS-860	0.082	Approved for backfill by NYSDEC.
TW-071395-DS-1385	0.088	Approved for backfill by NYSDEC.

- three of five resamples were required due to failed 'original' samples (see chart above). The final two resamples were necessitated because the original samples were received broken at the laboratory.

Although some TCLP results exceeded the target criterion for lead of 0.025 mg/L the samples (each representing 25 cy of soil) were approved for backfill by NYSDEC. The failed samples exhibited low concentrations which were not significantly above the target criterion. Additionally, the samples were collected shortly following mixing. It can therefore be assumed that the samples had not yet fully cured and as such the lead concentrations as obtained from analysis using TCLP procedures would only decrease further over time.

All stabilized soil sample data was immediately made available to the on-Site NYSDEC representative for review upon receipt from the laboratory. No treated soil was utilized as backfill prior to NYSDEC approval of original or resample analytical data. A chronological summary of all stabilized soil analytical results is presented in Table 3.2. An analytical assessment and review is provided in Appendix B.

3.1.6 Replacement

Each 25 cy batch of stabilized material was placed within the excavation limits once NYSDEC approval of the respective stabilized soil sample was received. Material was only backfilled in areas of the excavation which had been deemed clean based upon confirmatory sample results (see Section 3.1.3). Stabilized material was placed into the excavation in 24-inch lifts and compacted with the excavator. Approximately 630 tons of treated material hardened excessively while awaiting analytical results and had to be broken up with a hoe-ram prior to backfilling. The resulting boulder size

backfill material was placed at the bottom of the excavation adjacent to the Ellison Bronze building and along Moon Brook to provide stream bank stability. Spoils material (i.e., material which was excavated but not processed due to size) was backfilled on top of the larger boulders and the remaining treated material was used for backfilling the areas closest to the existing surface. The looser surficial backfill materials were compacted with a vibratory roller.

3.2 SEDIMENT STABILIZATION

3.2.1 Work Area Preparation

Prior to commencing any sediment removal activities, MARCOR implemented stream diversion measures to decrease the volume of water flowing through the proposed excavation areas. In Moon Brook this was accomplished by relocating the silt fence and sand bags (installed as discussed in Section 3.1.1) to beyond the proposed excavation limit. The Chadakoin River was diverted by using jersey barriers, sand bags, and silt fence.

MARCOR contacted the Jamestown Board of Public Utilities who reduced the flow in the Chadakoin River to facilitate the sediment removal which occurred on July 21, 1995. The additional excavation activities were performed without flow diversions and with normal flow.

A permit was obtained from the Army Corps of Engineers to permit the sediment excavation.

3.2.2 Excavation

Sediment excavation in Moon Brook and the Chadakoin River was completed between July 19, 1995 and July 31, 1995. The areas requiring sediment removal and treatment were as follows:

- Area 1 - Sediment located along a portion of the western limit of Moon Brook;
- Area 2 - Sediment located at the convergence of Moon Brook and the Chadakoin River; and
- Area 3 - Sediment located in the Chadakoin River downstream (east) of Area 2.

Each area was initially excavated to a depth of approximately six inches as described in the approved work plan, however, due to elevated copper concentrations in the confirmatory sediment samples (as discussed in Section 3.2.3) additional excavation was necessary. Area 1 in the Moon Brook was excavated a total of four times. One half of Area 2 was excavated once, the other half twice (due to the size of Area 2, two confirmatory samples, each representing half of the Area were collected), while Area 3 was excavated on three occasions. The sediment excavation limits are presented on Figure 3.3. A summary of the sediment excavation depths is provided on Table 3.3.. Excavated sediment was stockpiled and allowed to dewater. The dewatering areas were located adjacent to the waterways so that the excess water could run off directly to either Moon Brook or the Chadakoin River. Excess water was filtered through hay bales prior to reaching the waterways so that sediment could be retained for treatment.

3.2.3 Analytical Results

To ensure that all copper contaminated stream sediment was excavated for stabilization, confirmatory sediment samples were collected. Composite samples were collected from the excavation areas at locations as agreed upon by the Ellison Bronze and NYSDEC on-Site representatives. All confirmatory sediment samples were submitted under chain-of-custody for total copper analysis. Samples for total copper were analyzed by Ross, AES and Recra Environmental, Inc. (Recra) of Amherst, New York. If the total copper concentration substantially exceeded 65 mg/kg, additional sediment was required to be excavated and an additional

confirmatory sample collected. Area 1 in the Moon Brook was excavated four times in total due to elevated copper concentrations in the confirmatory samples. The copper concentration of the fourth confirmatory sample was 1,500 mg/kg. Although this is above 65 mg/kg, the depth of excavation exceeded two feet. The only concern which exists with respect to copper is that of contact between the stream sediments and benthic macroinvertebrates. Benthic macroinvertebrates inhabit bottom substrates (sediments, debris, logs, macrophytes, filamentous algae, etc.) for at least part of their life cycle (Rosenberg and Resh, 1993). Those organisms that live in the substratum, such as oligochaetes, mostly occupy the top 4-8 inches (Brinkhurst and Jamieson 1971). Williams and Hynes (1974) found that 71-93 percent of the benthic invertebrates collected by core samples from the Speed River, Guelph, Ontario were in the top 12 inches. Since the excavation was over two feet in depth and backfilled with clean material, the majority of benthic macroinvertebrates within Moon Brook likely will not have contact with the sediment with elevated copper concentrations. As such, there would be minimal impact to health and the environment and further excavation is not required. Confirmatory sample results for Areas 2 and 3 were either less than 65 mg/kg or met the criteria of not being substantially above 65 mg/kg. All confirmatory sediment sample results are provided in Table 3.3. An analytical assessment and review is provided in Appendix B.

3.2.4 Stabilization

All sediment excavated between July 19, 1995 and July 24, 1995 was stabilized using the pug mill. The reagent ratio that was utilized for the foundry waste materials was also used for the sediment stabilization. The pug mill was dismantled for demobilization on July 25, 1995. Sediment excavated on July 28 and 30, 1995 was mixed on a paved surface using the excavator. The required reagent ratio was maintained for this component of the sediment stabilization by calculating the volume of sediment excavated and then adding the appropriate volume of portland cement and water. As copper does not pose a problem on land no stabilized sediment was required to be tested.

3.2.5 Backfilling

Stabilized sediment was backfilled on-Site with the stabilized foundry waste. To the extent possible (i.e., without moving previously backfilled material), stabilized sediment was used for backfill in locations that were within the foundry waste excavation limits but not adjacent to either Moon Brook or the Chadakoin River.

4.0 ADDITIONAL SAMPLING ACTIVITIES

During the foundry waste excavation process, the NYSDEC requested that two additional samples be collected for analysis as described below.

i) While excavating adjacent to the Ellison Bronze building a petroleum odor was noted by on-Site personnel. A soil/gravel sample was collected from the location shown on Figure 3.2. The sample was collected from a gravel interval approximately two feet below the bottom of the soil excavation, beneath the top of the groundwater table. The sample was submitted under chain of custody for semi-volatile (Method 8021) and Total Petroleum Hydrocarbon (Method 310-13) analysis. The samples was analyzed by General Testing Corporation (GTC) of Rochester, New York. All compounds analyzed were not detected. The analytical results are provided in Appendix A.

ii) During the excavation process, the NYSDEC requested that a two-point composite sample be collected from beneath the Ellison Bronze foundry foundation and submitted for total lead analysis. The purpose of collecting the sample was to identify if foundry waste materials exist beneath the building. The foundry first initiated operation in 1912. Subsequent to this date, foundry waste materials were disposed of to the rear of the foundry. Therefore, as the building itself preceded the placement of the foundry wastes, it would be expected that foundry wastes are not present beneath the building. The total lead sample result of 14.5 mg/kg confirms this hypothesis. As such, no foundry waste exists beneath the Ellison Bronze foundry building.

5.0 RESTORATION

Restoration consisted of backfilling the excavated area with stabilized material, placement of a demarcation layer consisting of filter fabric over the stabilized material and placement of granular subbase and asphalt. The gravel subbase layer was approximately 3 inches in depth. Although the original specification called for 6-inches of granular material, only 3 inches was required due to the high strength of the stabilized material which exhibited a suitable gravel-like consistency. A 2-inch layer of asphalt binder was placed over the subbase followed by a 1-inch layer of finish asphalt for top cover. Two photographs which show the completed paving activities are presented on Figure 5.1. The majority of the final restored surface sloped away from the Ellison Bronze buildings and towards Moon Brook and the Chadakoin River and provided proper surface water drainage.

The Moon Brook stream bank was restored by placing approximately six inches of topsoil on top of the stabilized soil backfill. Grass seeding was placed on top of the topsoil. The restored bank slope is steeper than the original as the backfill volume was greater than the excavated volume. This was caused from the addition of cement for stabilization purposes. Actual excavation areas in Moon Brook and the Chadakoin River were not backfilled with stabilized sediment due to relatively shallow excavation depths, but were allowed to fill in naturally with upstream sediments.

6.0 LONG-TERM MONITORING PLAN

Groundwater samples will be collected from the three on-Site monitoring wells (ESI-1, ESI-2 and ESI-3) and analyzed for lead (USEPA) Method No. SW846-7421). Monitoring well ESI-1, destroyed during the soil stabilization program and has been replaced. Samples will be collected annually for a period of five years. The first set was required to be collected within 90 days of completion of the soil stabilization program. As the excavation area was paved on August 21, 1995, the groundwater samples were collected on November 19, 1995. Analytical results from each year's sampling event will be submitted to the NYSDEC within 90 days of sampling. Samples will be collected using low rate pumping designed to collect sediment-free samples. At the end of the five-year program or upon a change in Site classification by the NYSDEC, an evaluation of the need for continued monitoring will be submitted to the NYSDEC.

In addition to the annual groundwater sampling, the following additional monitoring tasks will be performed:

i) Semi-annual inspections (to be conducted in April and October of each year) of the paved areas, grass area, stream banks and on-site monitoring wells will be conducted;
ii) Appropriate repairs will be made within 60 days of inspection (weather permitting); and
iii) Records of inspections and repairs will be kept on file at the Plant.

Table C.1, provided in Appendix C, will be used as a check list for the semi-annual inspections to be maintained at the Plant.

7.0 CONCLUSIONS

There were two distinct components to the Ellison Bronze remedial program. These included stabilization of lead contaminated foundry waste and stabilization of copper contaminated stream sediments.

All lead contaminated soils were excavated and stabilized as per the approved work plan. All confirmatory excavation samples and stabilized soil samples met the required criteria and were approved by NYSDEC.

All copper contaminated sediment was excavated and stabilized from the Chadakoin River as per the approved work plan. Additional excavation and sampling was required, however, the final Chadakoin River confirmatory excavation samples collected met the required criteria and were approved by NYSDEC. Moon Brook was excavated on four separate occasions to a total depth of roughly 2 feet. A concern regarding the Moon Brook sediments is potential contact between benthic macroinvertebrates and the sediment with elevated copper concentrations. The majority of benthic macroinvertebrates inhabit bottom substrates to an approximate maximum depth of 1 foot. The excavation, which exceeded two feet, was backfilled with clean material, thus the majority of benthic macroinvertebrates within Moon Brook likely will not have contact with the stream sediments with elevated copper concentrations. Minimal risks remain regarding the health or the environment and as such, further excavation in Moon Brook is not warranted.

Additional sampling performed during the field remedial program indicated that no foundry waste materials are present beneath the Ellison Bronze buildings and no fuel or petroleum products are present in the soil/gravel composition found at 10 feet below ground surface at the rear of the Ellison Bronze buildings.

Based on the above, the remedial program for the Ellison Bronze Site has been successfully completed.

FIGURES

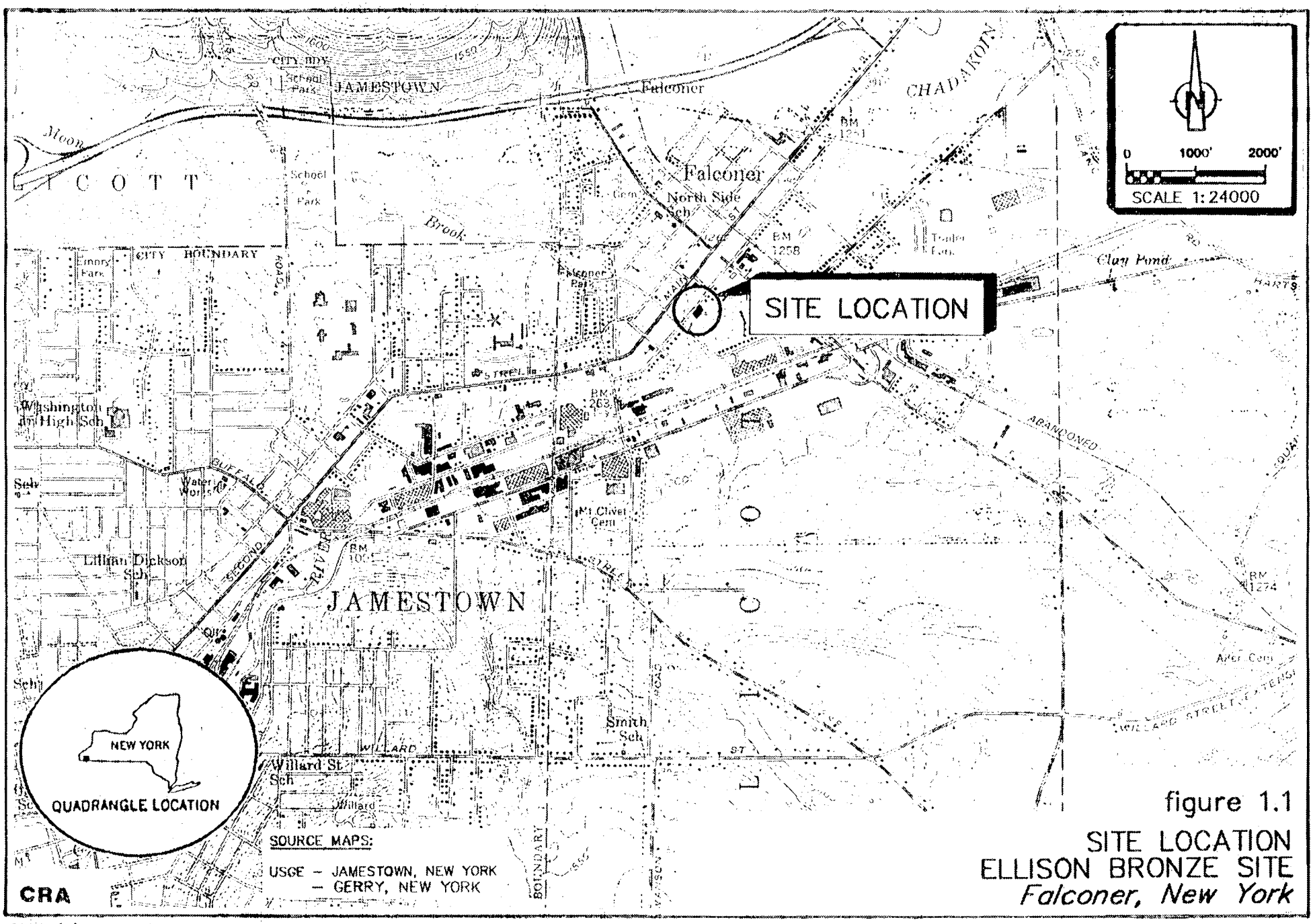


figure 1.1

SITE LOCATION
ELLISON BRONZE SITE
Falconer, New York

5020 (5) JUL.31/95(W) REV.0

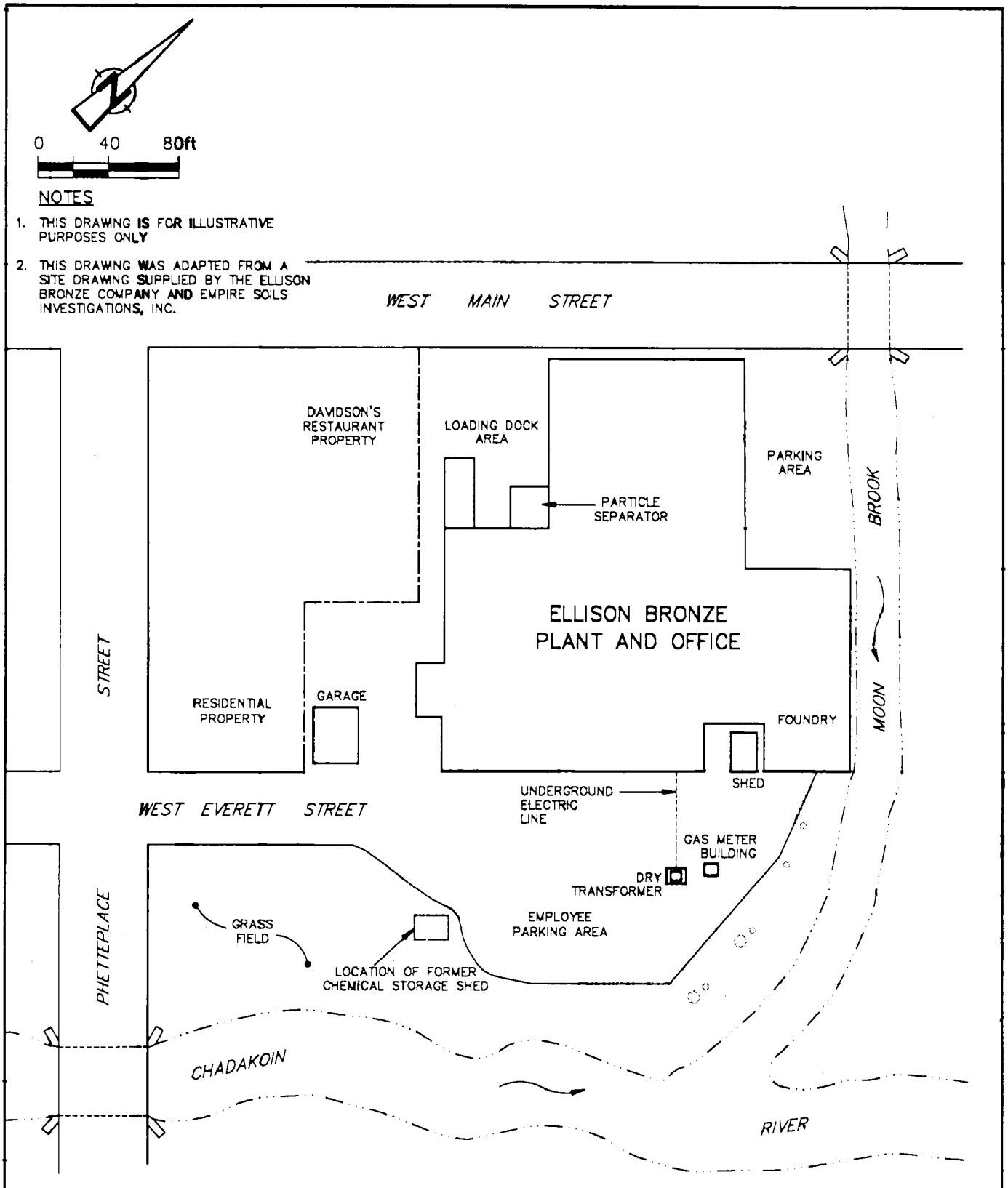


figure 1.2

SITE LAYOUT
ELLISON BRONZE SITE
Falconer, New York

CRA

5020 (5) AUG 24/95(W) REV.0 (P-06)

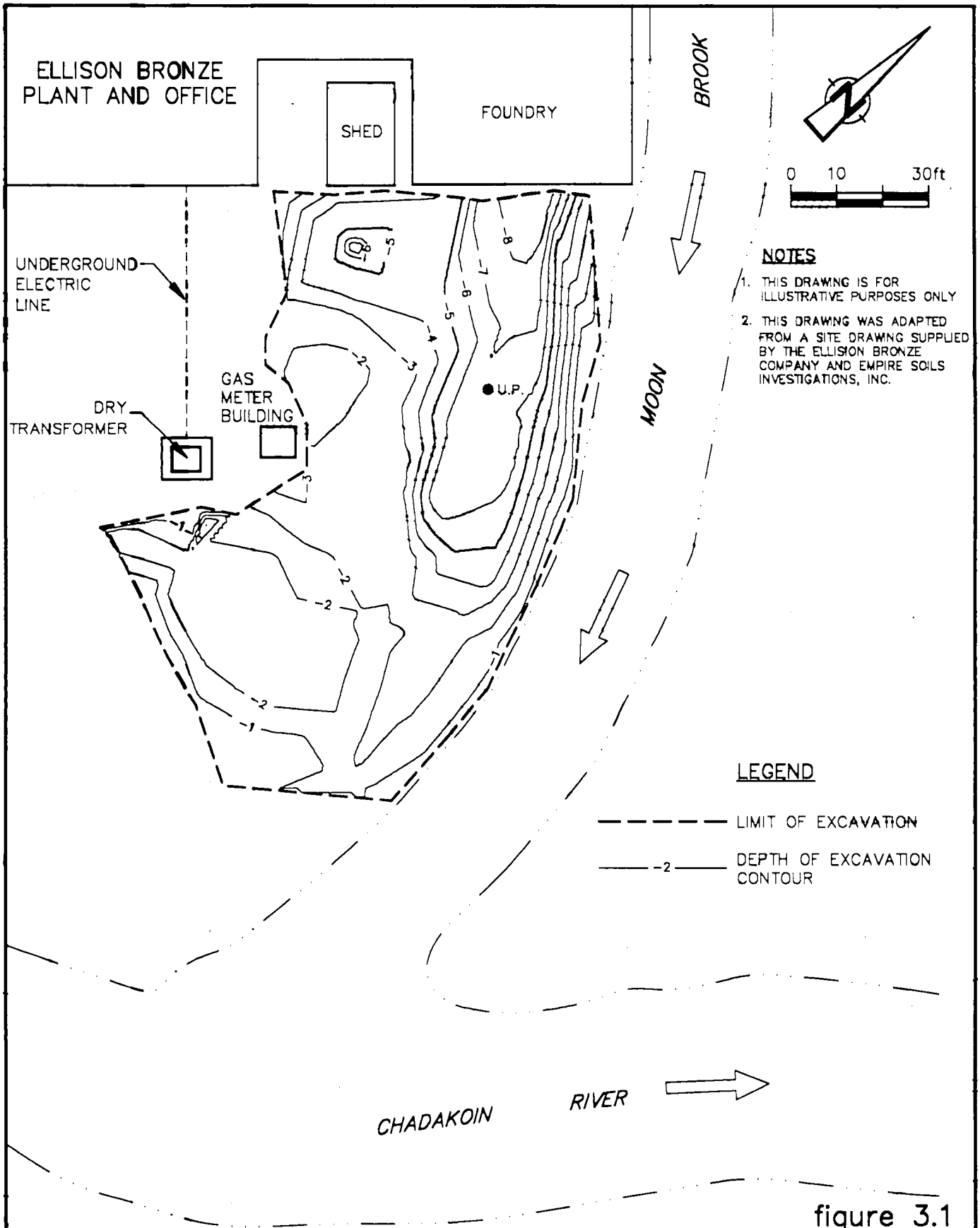


figure 3.1

LIMITS OF SOIL EXCAVATION
ELLISON BRONZE SITE
Falconer, New York

CRA

5020 (5) AUG 24/95(W) REV.0 (P-07)

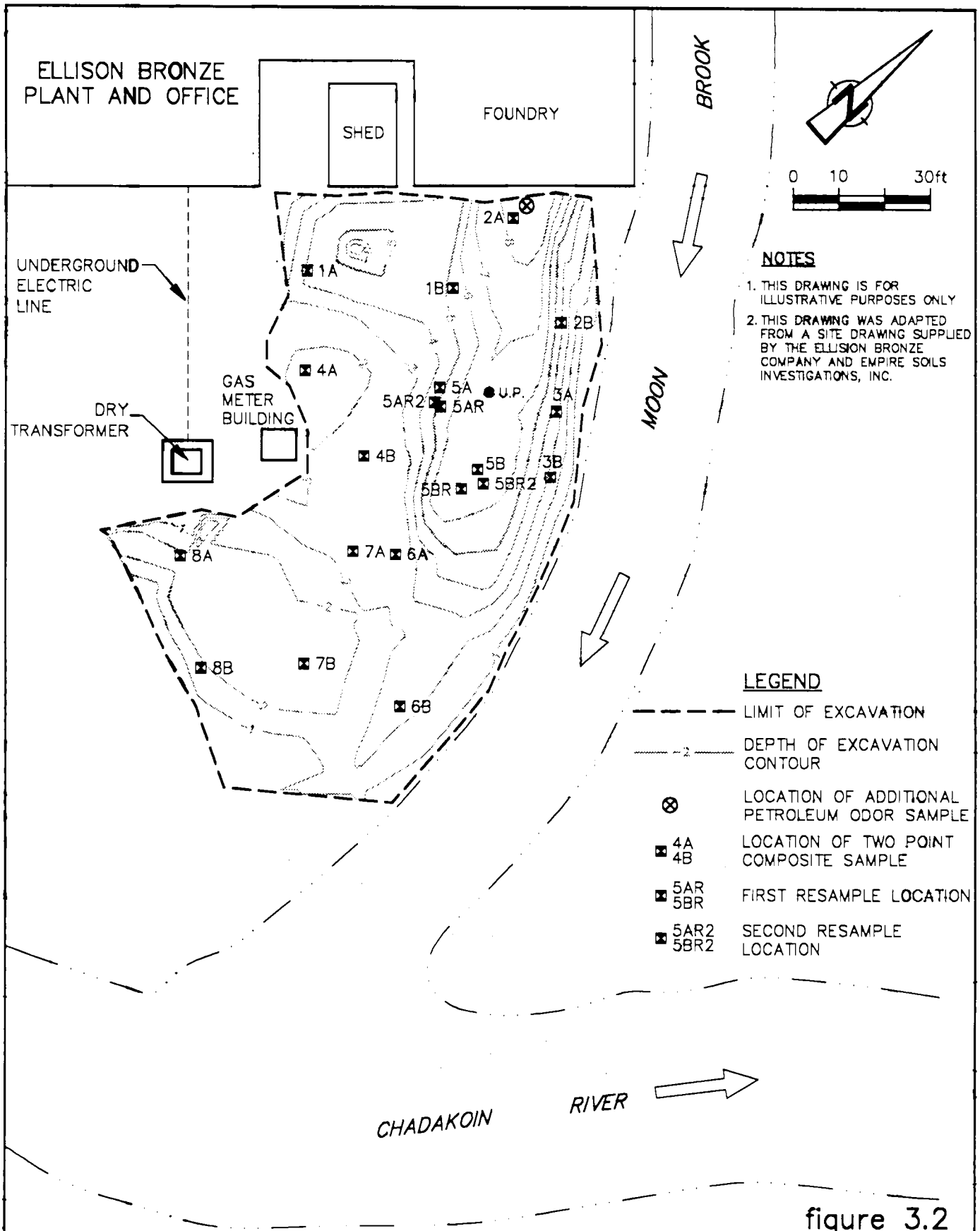


figure 3.2

CONFIRMATORY SOIL SAMPLE LOCATIONS
ELLISON BRONZE SITE
Falconer, New York

CRA

5020 (5) JAN 04/96(W) REV.0 (P-08)

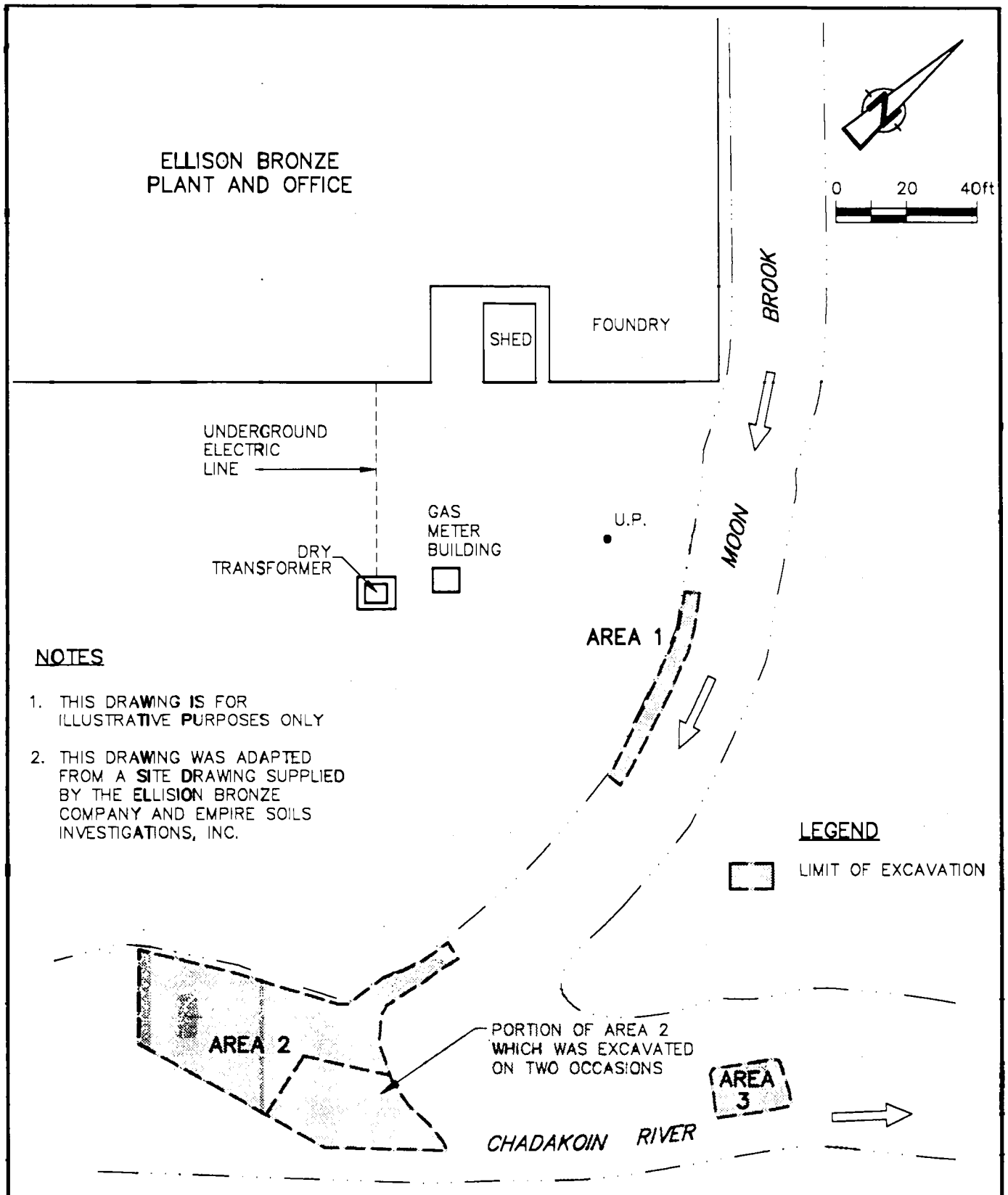
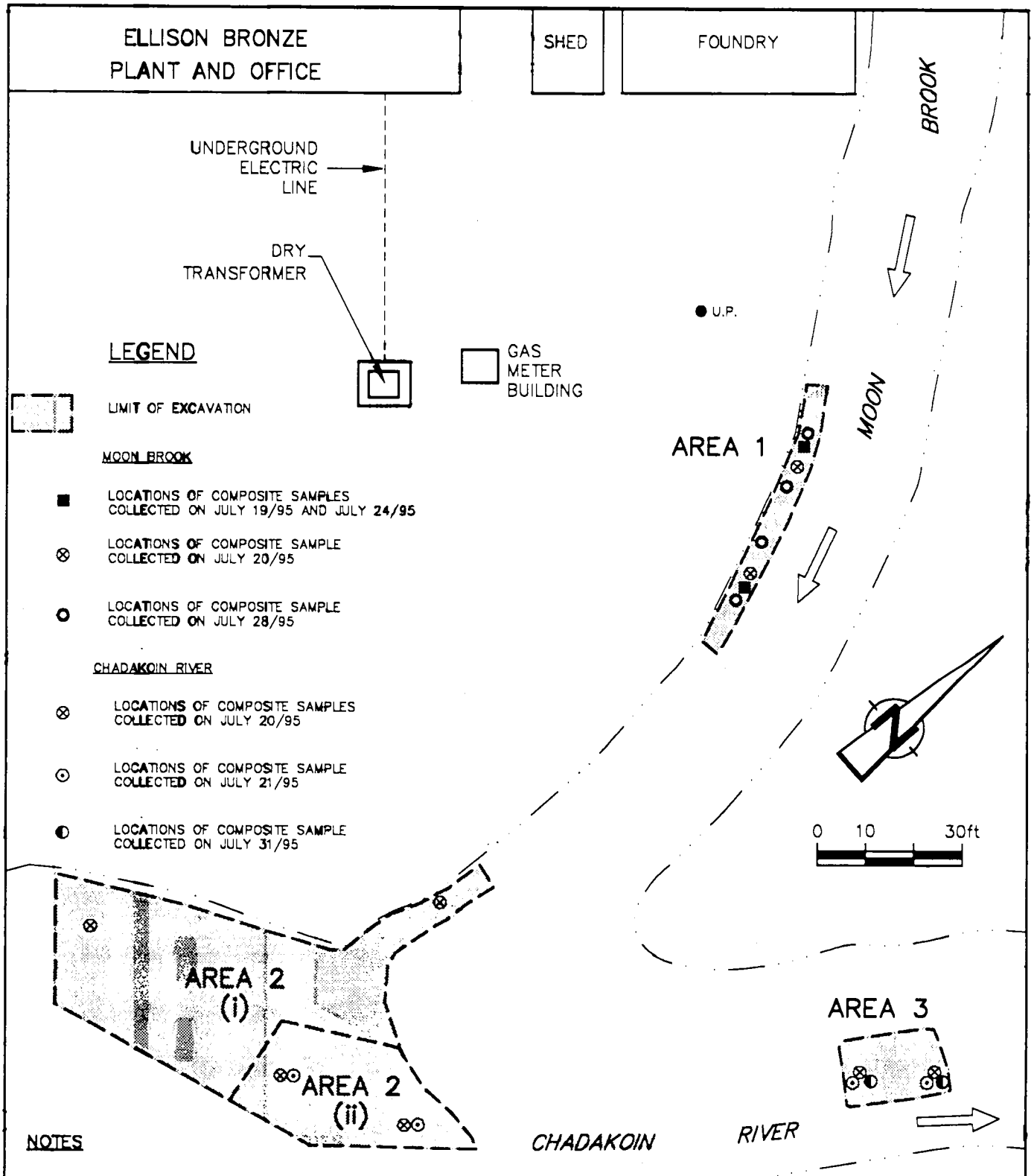


figure 3.3

LIMITS OF SEDIMENT EXCAVATION
ELLISON BRONZE SITE
Falconer, New York

CRA

5020 (5) SEPT 14/95(W) REV.0 (P-09)



NOTES

1. THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY
2. THIS DRAWING WAS ADAPTED FROM A SITE DRAWING SUPPLIED BY THE ELLISION BRONZE COMPANY AND EMPIRE SOILS INVESTIGATIONS, INC.

figure 3.4

CONFIRMATORY SEDIMENT SAMPLE LOCATIONS
ELLISON BRONZE SITE
Falconer, New York

CRA

5020 (5) JAN 04/96(W) REV.0 (P-10)

figure 5.1
EXCAVATION AREA RESTORATION
ELLISON BRONZE SITE
Falconer, New York

CRA

TABLE 3.1

SOIL STABILIZATION - CONFIRMATORY SAMPLE SUMMARY
ELLISON BRONZE SITE
FALCONER, NEW YORK

Composite Sample Location I.D.	*Sample Date*	*Sample ID*	*Total Lead Concentration (mg/kg)*	*Comment*
1	June 30, 1995	COMP-1	12.2	
2		COMP-2	241	
3	July 7, 1995	CS-070795-003	95.2	
4	July 12, 1995	CS-071295-DS-004	261	
5		CS-071295-DS-005	1230	Excavated further, resample
	July 14, 1995	5020-RJS-005R	3100	Excavated further, resample
	July 18, 1995	CS-071895-DS-005R2	660	Excavation approved by NYSDEC
6	July 13, 1995	CS-071395-DS-006	366J	
7	July 18, 1995	CS-071895-DS-007	130	
8	July 19, 1995	CS-071995-DS-008	133	

Note:

J - Associated value is estimated.

TABLE 3.2

SOIL STABILIZATION - STABILIZED SOIL SAMPLE SUMMARY
ELLISON BRONZE SITE
FALCONER, NEW YORK

Sample Date	*Sample ID*	*TCLP Lead Concentration (mg/L)*	*Comment*
June 29, 1995	TW-062995-DO-112	ND	
	TW-062995-DO-140	ND	
	TW-062995-DO-175	ND	
	TW-062995-DO-220	ND	
	TW-062995-DO-245	ND	
June 30, 1995	TW-063095-DO-280	ND	
	TW-063095-DO-01	ND	Duplicate of 385
	TW-063095-DO-315	ND	
	TW-063095-DO-350	ND	
	TW-063095-DO-385	ND	
	TW-063095-DO-420	ND	
	TW-063095-DO-455	ND	
	TW-063095-DO-480	ND	
	TW-063095-DO-515	ND	
July 5, 1995	TW-070595-DS-555	0.123	Half of batch reprocessed to ensure adjacent batch fully recovered. No sample required. Previously approved for backfill by NYSDEC
	TW-070595-DS-590	ND	
	TW-070595-DS-640	0.309	Reprocessed, No sample required
	TW-070595-DS-660	0.985	Reprocessed (660-695)
July 11, 1995	TW-071195-DS-695	ND	Reprocessed batch from July 5, 1995
	TW-071195-DS-725	0.031	Approved for backfill by NYSDEC
	TW-071195-DS-757	0.254	Resampled (see July 14, 1995)
	TW-071195-DS-795	0.078	Resampled (see July 14, 1995)
	TW-071195-DS-830	0.039	Approved for backfill by NYSDEC
	TW-071195-DS-860	0.082	Approved for backfill by NYSDEC
	TW-071195-DS-02	0.276	Duplicate of 795, resampled (see July 14, 1995)

TABLE 3.2

SOIL STABILIZATION - STABILIZED SOIL SAMPLE SUMMARY
ELLISON BRONZE SITE
FALCONER, NEW YORK

Sample Date	*Sample ID*	*TCLP Lead Concentration (mg/L)*	*Comment*
July 12, 1995	TW-071295-DS-895	ND	
	TW-071295-DS-930	ND	
	TW-071295-DS-965	ND	
	TW-071295-DS-1000	ND	
	TW-071295-DS-1035	ND	
	TW-071295-DS-1070	ND	
	TW-071295-DS-1105	ND	
	TW-071295-DS-1140	ND	
	TW-071295-DS-1175	ND	
	TW-071295-DS-1210	ND	
	TW-071295-DS-1245	ND	
	TW-071295-DS-1280	ND	
	TW-071295-DS-03	ND	Duplicate of 1280
July 13, 1995	TW-071395-DS-1315	ND	
	TW-071395-DS-1350	ND	
	TW-071395-DS-1385	0.088	Approved for backfill by NYSDEC
	TW-071395-DS-1420	ND	
	TW-071395-DS-1455	ND	
	TW-071395-DS-1490	ND	
	TW-071395-DS-1525	ND	
	TW-071395-DS-1560	NA	Resampled (see July 14, 1995)
	TW-071395-DS-1595	NA	Resampled (see July 14, 1995)
	TW-071395-DS-1630	ND	
July 14, 1995	5020-RJS-757-R	0.04	Resample of 757, approved for backfill by NYSDEC
	5020-RJS-795-R	ND	Resample of 795
	5020-RS-1560	ND	Resample of 1560
	5020-RS-1525	ND	Resample of 1595
July 18, 1995	TW-071895-DS-1665	ND	
	TW-071895-DS-1700	ND	
	TW-071895-DS-1735	ND	
	TW-071895-DS-1770	ND	
	TW-071895-DS-1805	ND	
	TW-071895-DS-1840	ND	
	TW-071895-DS-04	ND	Duplicate of 1840

TABLE 3.2

SOIL STABILIZATION - STABILIZED SOIL SAMPLE SUMMARY
ELLISON BRONZE SITE
FALCONER, NEW YORK

Sample Date	*Sample ID*	*TCLP Lead Concentration (mg/L)*	*Comment*
July 20, 1995	TW-072095-DS-1890	ND	
	TW-072095-DS-05	ND	Duplicate of 1890
	TW-072095-DS-1925	ND	
	TW-072095-DS-1960	ND	
	TW-072095-DS-2011	ND	
	TW-072095-DS-06	ND	Duplicate of 2011

Notes:

NA - Not analyzed, laboratory received sample bottles broken.

ND - Lead not detected at or above 0.025 mg/L.

TABLE 3.3

SEDIMENT STABILIZATION - CONFIRMATORY SAMPLE SUMMARY
ELLISON BRONZE SITE
FALCONER, NEW YORK

Composite Sample Location	*Location Description (2)*	*Sample Date*	*Sample ID*	*Approximate Sample Depth (inches) (1)*	*Total Copper Concentration (mg/kg)*	*Comments*
Area 1	Moon Brook	July 19, 1995	CSED-071995-DS-001	6	1,340	Excavate further, resample
		July 20, 1995	COMP-SED-4	12	1,730	Excavate further, resample
		July 24, 1995	CSED-072495-DF-001	18	93	Excavate further, resample
		July 28, 1995	MB-SED-072895	24	1,500	Excavation complete (3)
Area 2	Moon Brook/Chadakoin River Convergence					
	i) North Bank to 1/4 Distance to South Bank	July 20, 1995	COMP-SED-2	6	110	Approved by NYSDEC
	ii) 1/4 Distance to South Bank to Midpoint of Chadakoin River	July 20, 1995	COMP-SED-3	6	161	Excavate further, resample
		July 21, 1995	COMP-SED-6	12	60	Approved by NYSDEC
Area 3	Chadakoin River Downstream	July 20, 1995	COMP-SED-1	6	3,590	Excavate further, resample
		July 21, 1995	COMP-SED-5	12	1,060J - 600J (4)	Excavate further, resample
		July 31, 1995	CR-SED-073195	18	15	Approved by NYSDEC

Notes:

(1) Sample depth below existing ground surface at time of sample collection.

(2) Sample collection locations are also presented on Figure 3.4. Sample dates can also be utilized for cross references.

(3) Ellison Bronze considers the Moon Brook sediment removal program complete. The depth of excavation (24-inches) precludes potential contact between the majority of Moon Brook benthic macroinvertebrates and remaining materials with elevated copper concentrations.

(4) Duplicate sample.

(5) J - Associated value is estimated.

APPENDIX A

ADDITIONAL SAMPLING ANALYTICAL DATA

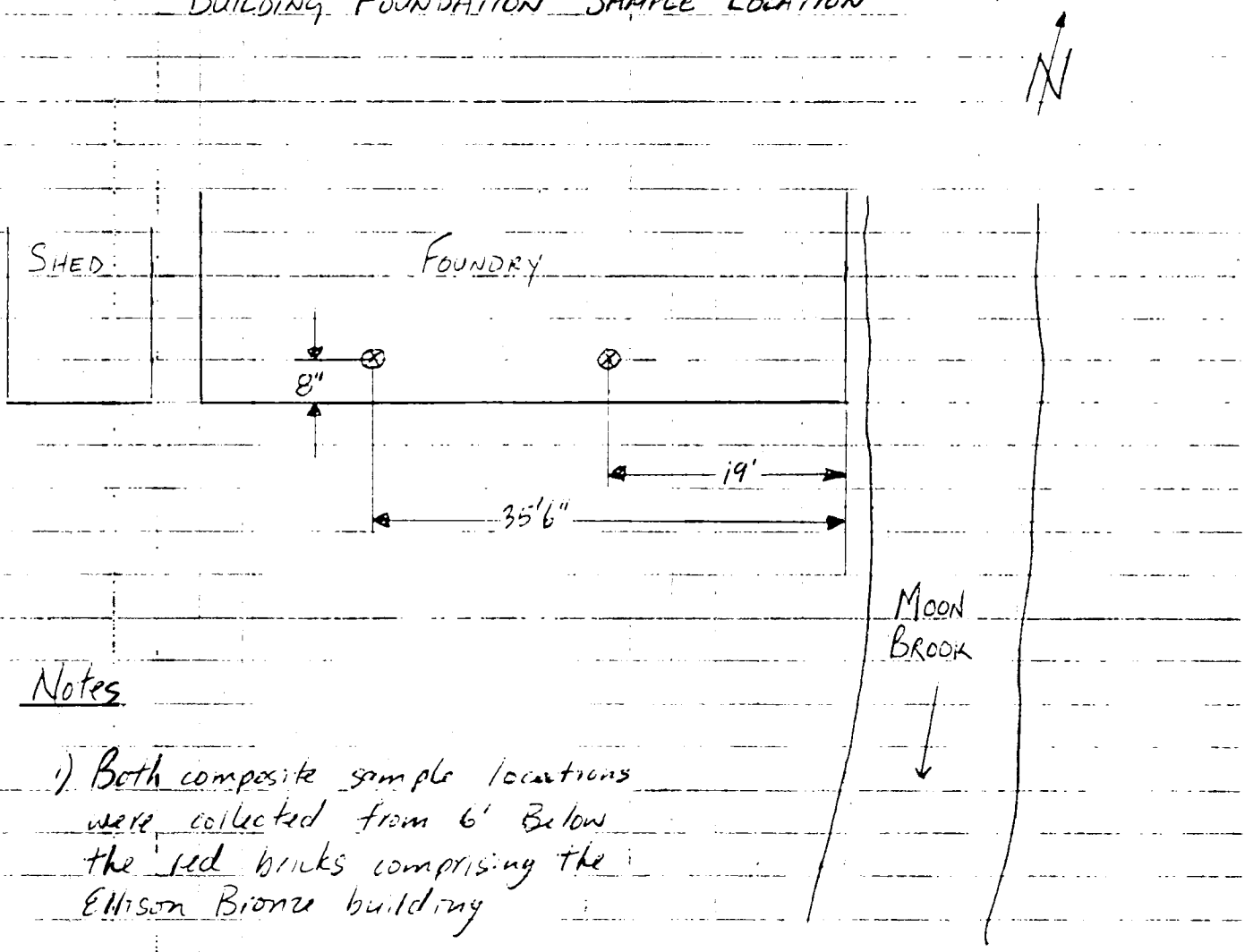
CRA
CONESTOGA-ROVERS & ASSOCIATES

PROJECT No.: 5020
PROJECT NAME: Ellison Bronze
DATE:

DESIGNED BY:
CHECKED BY:
PAGE ____ OF ____

Dowcraft Corporation - Ellison Bronze
Falconer, New York

Building Foundation Sample Location



Notes

1) Both composite sample locations were collected from 6' below the red bricks comprising the Ellison Bronze building

Work Order # 95-07-122 Ross Analytical Services, Inc Reported: 7/13/95

Tested by ICP Method(s): 200.7, 9010A

Lab No.	Sample Description	Result DRY BASIS	Units	PQL
01A	Soil BS-071195-DR-001	14.8	mg/Kg	2.50

Analyzed by EPA 160.3 Method(s): 160.3

Lab No.	Sample Description	Result	Units	PQL
01A	Soil BS-071195-DR-001	18.1	%	0.5

QC	% Recovery
LCS	98%
MS	96%
MSD	97%

BUILDING FOUNDATION SAMPLE RESULT

ENERAL TESTING CORPORATION

VOLATILE ORGANICS
METHOD 8021 PPL
Reported: 07/07/95

estoga Rovers & Associates
oject Reference: PROJECT #5020 ELLISON
Client Sample ID : S-070595-DS-001

SUSPECTED PETROLEUM SAMPLE RESULTS

Date Sampled : 07/05/95 GTC Order # : 25292 Sample Matrix: SOIL/SEDIMENT
Date Received: 07/06/95 Submission #: 9507000026 Percent Solid: 80.4

ANALYTE	PQL	RESULT	UNITS
DATE ANALYZED : 07/06/95			Dry Weight
ANALYTICAL DILUTION: 1			
BENZENE	2.0	2.5 U	UG/KG
BROMODICHLOROMETHANE	1.0	1.2 U	UG/KG
BROMOFORM	2.0	2.5 U	UG/KG
BROMOMETHANE	5.0	6.2 U	UG/KG
CARBON TETRACHLORIDE	1.0	1.2 U	UG/KG
CHLOROBENZENE	2.0	2.5 U	UG/KG
CHLOROETHANE	2.0	2.5 U	UG/KG
2-CHLOROETHYLVINYL ETHER	2.0	2.5 U	UG/KG
CHLOROFORM	1.0	1.2 U	UG/KG
CHLOROMETHANE	5.0	6.2 U	UG/KG
DIBROMOCHLOROMETHANE	2.0	2.5 U	UG/KG
1,2-DICHLOROBENZENE	2.0	2.5 U	UG/KG
1,3-DICHLOROBENZENE	2.0	2.5 U	UG/KG
1,4-DICHLOROBENZENE	2.0	2.5 U	UG/KG
1,1-DICHLOROETHANE	1.0	1.2 U	UG/KG
1,2-DICHLOROETHANE	1.0	1.2 U	UG/KG
1,1-DICHLOROETHENE	1.0	1.2 U	UG/KG
TRANS-1,2-DICHLOROETHENE	1.0	1.2 U	UG/KG
CIS-1,2-DICHLOROETHENE	1.0	1.2 U	UG/KG
1,2-DICHLOROPROPANE	1.0	1.2 U	UG/KG
CIS-1,3-DICHLOROPROPENE	1.0	1.2 U	UG/KG
TRANS-1,3-DICHLOROPROPENE	2.0	2.5 U	UG/KG
ETHYLBENZENE	2.0	2.5 U	UG/KG
METHYLENE CHLORIDE	1.0	1.2 U	UG/KG
1,1,2,2-TETRACHLOROETHANE	2.0	2.5 U	UG/KG
TETRACHLOROETHENE	1.0	1.2 U	UG/KG
TOLUENE	2.0	2.5 U	UG/KG
1,1,1-TRICHLOROETHANE	1.0	1.2 U	UG/KG
1,1,2-TRICHLOROETHANE	2.0	2.5 U	UG/KG
TRICHLOROETHENE	1.0	1.2 U	UG/KG
TRICHLOROFLUOROMETHANE	1.0	1.2 U	UG/KG
VINYL CHLORIDE	2.0	2.5 U	UG/KG
M+P-XYLENE	1.0	1.2 U	UG/KG
O-XYLENE	1.0	1.2 U	UG/KG

SURROGATE RECOVERIES	QC LIMITS		
BROMOCHLOROMETHANE	(66 - 128 %)	73	%
CHLOROFLUOROBENZENE	(60 - 108 %)	78	%
CHLOROFLUOROBENZENE (PID)	(60 - 140 %)	77	%

EXTRACTABLE ORGANICS
METHOD 310.13 TPH
Reported: 07/07/95

Jastoga Rovers & Associates
Project Reference: PROJECT #5020 ELLISON
Client Sample ID : S-070595-DS-001

Date Sampled : 07/05/95 GTC Order # : 25292 Sample Matrix: SOIL/SEDIMENT
Date Received: 07/06/95 Submission #: 9507000026 Percent Solid: 80.4

ANALYTE	PQL	RESULT	UNITS
DATE EXTRACTED : 07/06/95			
DATE ANALYZED : 07/06/95			Dry Weight
ANALYTICAL DILUTION: 1			
AS N-DODECANE	2000	2500 U	UG/KG
FUEL OIL #2/DIESEL FUEL	2000	2500 U	UG/KG
GASOLINE	2000	2500 U	UG/KG
KEROSENE	2000	2500 U	UG/KG

APPENDIX B

ANALYTICAL ASSESSMENT AND REVIEW

CRA
2055 Niagara Falls Boulevard
Suite Three
Niagara Falls, New York 14304
(716) 297-6150
(716) 297-2265 Telecopier

MEMO

TO: Jim Kay

REFERENCE NO: 5020

FROM: Lisa Reyes/ms/1

DATE: August 17, 1995

RE: Analytical Assessment and Review
Soil Stabilization and Creek Sampling
Ellison Bronze
Falconer, New York

CC: D. Oscar, D. Stoltz

During the stabilization process, soil samples were collected and submitted to a contract analytical lab holding Environmental Laboratory Approval Program (ELAP) certification. The samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) lead to monitor the stabilization process and total lead to confirm the completeness of the excavated areas. Creek sediment was also collected and submitted for total copper analysis to confirm the extent of excavation. Tables 1 and 2 present the analytical results. All total lead and total copper results are reported on a dry weight basis. The following laboratories participated in the sampling event.

Advanced Environmental Services (AES)
Niagara Falls, New York

Recra Environmental, Inc. (Recra)
Amherst, New York

General Testing Corporation (GTC)
Rochester, New York

Ross Analytical Services, Inc. (Ross)
Strongsville, Ohio

Evaluation of the data was based upon the finished data sheets, chain of custody documents, method blank and duplicate analyses, and surrogate spike, blank spike, and matrix spike recoveries. Methods of analysis are referenced from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", (SW-846), Third Edition, September 1986 with updates. The following methods were used for analysis:

Parameter	*Method of Analysis*
TCLP Lead	SW-846 1311/6010 or 7421
Total Lead	SW-846 6010 or 7421
Total Copper	SW-846 6010 or 7210
Volatile Organic Compounds (VOCs)	SW-846 8021
Total Petroleum Hydrocarbons (TPH)	Dept. of Health 310-13

All holding time criteria were met per the stated method requirements. Accuracy and precision were established via blank spike and matrix spike/matrix spike duplicate (MS/MSD) analyses. With the exception of MS recoveries for DS-006 (total lead) and DS-001 (total copper), all spike recoveries were judged to be acceptable. Due to the outlying spike recoveries for DS-006 and DS-001, respective lead and copper results should be considered as estimated. Field duplicates were collected and submitted "blind" to the laboratory. Both results are reported herein. The following samples were collected in duplicate:

Sample ID	*Duplicate ID*	*Analyte*
DO-385	DO-01	TCLP Lead
DS-795	DS-02	TCLP Lead
DS-1280	DS-03	TCLP Lead
DS-1840	DS-04	TCLP Lead
DS-1890	DS-05	TCLP Lead
DS-2011	DS-06	TCLP Lead
COMP-SED-5	COMP-SED-A	Total Copper

With the exception of COMP-SED-5 and its duplicate, all field duplicate results showed good reproducibility between final results. Total copper results were flagged as estimated due to poor precision for COMP-SED-5 and COMP-SED-A.

All data are acceptable for their intended use with the qualification noted herein.

TABLE 1

ANALTYICAL RESULTS - SOIL
ELLISON BRONZE SITE
FALCONER, NEW YORK
JULY 1995

Sample ID	*Sample Date*	*Analytical Result (mg/kg)*	*Comments*
Total Lead			
COMP-1	06/30/95	12.2	
COMP-2	06/30/95	241	
CS-070795-003	07/07/95	95.2	
CS-071295-DS-004	07/12/95	261	
CS-071295-DS-005	07/12/95	1230	
5020-RJS-005R	07/14/95	3100	
CS-071895-DS-005R2	07/18/95	660	
CS-071395-DS-006	07/13/95	366J	
CS-071895-DS-007	07/18/95	130	
CS-071995-DS-008	07/19/95	133	
BS-071195-DS-001	07/11/95	14.5	Sample from beneath building foundation

Sample ID	*Sample Date*	*Analytical Results (mg/L)*	*Comments*
TLCP Lead			
TW-062995-DO-112	06/29/95	0.025U	
TW-062995-DO-140	06/29/95	0.025U	
TW-062995-DO-175	06/29/95	0.025U	
TW-062995-DO-220	06/29/95	0.025U	
TW-062995-DO-245	06/29/95	0.025U	
TW-063095-DO-280	06/30/95	0.025U	
TW-063095-DO-01	06/30/95	0.025U	Duplicate of DO-385
TW-063095-DO-315	06/30/95	0.025U	
TW-063095-DO-350	06/30/95	0.025U	
TW-063095-DO-385	06/30/95	0.025U	
TW-063095-DO-420	06/30/95	0.025U	
TW-063095-DO-455	06/30/95	0.025U	
TW-063095-DO-480	06/30/95	0.025U	
TW-063095-DO-515	06/30/95	0.025U	
TW-070595-DS-555	07/05/95	0.123	
TW-070595-DS-590	07/05/95	0.025U	
TW-070595-DS-640	07/05/95	0.309	Reprocessed
TW-070595-DS-660	07/05/95	0.985	Reprocessed

TABLE 1

ANALTYICAL RESULTS - SOIL
ELLISON BRONZE SITE
FALCONER, NEW YORK
JULY 1995

Sample ID	*Sample Date*	*Analytical Results (mg/L)*	*Comments*
TCLP Lead Con't			
TW-071195-DS-695	07/11/95	0.025U	Sample of Reprocessed batch from 625-660 C.Y.
TW-071195-DS-725	07/11/95	0.031	
TW-071195-DS-757	07/11/95	0.254	Resampled 7/14/95
TW-071195-DS-795	07/11/95	0.078	Resampled 7/14/95
TW-071195-DS-830	07/11/95	0.039	
TW-071195-DS-860	07/11/95	0.082	
TW-071195-DS-02	07/11/95	0.276	Duplicate of DS-795, resampled 7/14/95
TW-071295-DS-895	07/12/95	0.025U	
TW-071295-DS-930	07/12/95	0.025U	
TW-071295-DS-965	07/12/95	0.025U	
TW-071295-DS-1000	07/12/95	0.025U	
TW-071295-DS-1035	07/12/95	0.025U	
TW-071295-DS-1070	07/12/95	0.025U	
TW-071295-DS-1105	07/12/95	0.025U	
TW-071295-DS-1140	07/12/95	0.025U	
TW-071295-DS-1175	07/12/95	0.025U	
TW-071295-DS-1210	07/12/95	0.025U	
TW-071295-DS-1245	07/12/95	0.025U	
TW-071295-DS-1280	07/12/95	0.025U	
TW-071295-DS-03	07/12/95	0.025U	Duplicate of DS-1280
TW-071395-DS-1315	07/13/95	0.025U	
TW-071395-DS-1350	07/13/95	0.025U	
TW-071395-DS-1385	07/13/95	0.088	
TW-071395-DS-1420	07/13/95	0.025U	
TW-071395-DS-1455	07/13/95	0.025U	
TW-071395-DS-1490	07/13/95	0.025U	
TW-071395-DS-1525	07/13/95	0.025U	
TW-071395-DS-1630	07/13/95	0.025U	
5020-RJS-757-R	07/14/95	0.04	Resample of 757
5020-RJS-795-R	07/14/95	0.025U	Resample of 795
5020-RS-1560	07/14/95	0.025U	
5020-RS-1525	07/14/95	0.025U	

TABLE 1

ANALTYICAL RESULTS - SOIL
ELLISON BRONZE SITE
FALCONER, NEW YORK
JULY 1995

Sample ID	*Sample Date*	*Analytical Results (mg/kg)*	*Comments*
TCLP Lead Con't			
TW-071895-DS-1665	07/18/95	0.025U	
TW-071895-DS-1700	07/18/95	0.025U	
TW-071895-DS-1735	07/18/95	0.025U	
TW-071895-DS-1770	07/18/95	0.025U	
TW-071895-DS-1805	07/18/95	0.025U	
TW-071895-DS-1840	07/18/95	0.025U	
TW-071895-DS-04	07/18/95	0.025U	Duplicate of DS-1840
TW-072095-DS-1890	07/20/95	0.025U	
TW-072095-DS-05	07/20/95	0.025U	Duplicate of DS-1890
TW-072095-DS-1925	07/20/95	0.025U	
TW-072095-DS-1960	07/20/95	0.025U	
TW-072095-DS-2011	07/20/95	0.025U	
TW-072095-DS-06	07/20/95	0.025U	Duplicate of DS-2011

Sample ID	*Sample Date*	*Analytical Results (µg/kg)*	*Comments*
S-070595-DS-001			
Volatiles			
Benzene	07/05/95	2.5U	
Bromodichloromethane	07/05/95	1.2U	
Bromoform	07/05/95	2.5U	
Bromomethane	07/05/95	6.2U	
Carbon tetrachloride	07/05/95	1.2U	
Chlorobenzene	07/05/95	2.5U	
Chloroethane	07/05/95	2.5U	
2-Chloroethylvinyl ether	07/05/95	2.5U	
Chloroform	07/05/95	2.5U	
Chloromethane	07/05/95	6.2U	
Dibromochloromethane	07/05/95	2.5U	
1,2-Dichlorobenzene	07/05/95	2.5U	

TABLE 1

ANALTYICAL RESULTS - SOIL
ELLISON BRONZE SITE
FALCONER, NEW YORK
JULY 1995

Sample ID	*Sample Date*	*Analytical Results (µg/kg)*	*Comments*
S-070595-DS-001			
Volatiles Con't			
1,3-Dichlorobenzne	07/05/95	2.5U	
1,4-Dichlorobenzene	07/05/95	2.5U	
1,1-Dichloroethane	07/05/95	1.2U	
1,2-Dichloroethane	07/05/95	1.2U	
1,1-Dichloroethene	07/05/95	1.2U	
trans-1,2-Dichloroethene	07/05/95	1.2U	
cis-1,2-Dichloroethene	07/05/95	1.2U	
1,2-Dichloropropane	07/05/95	1.2U	
cis-1,3-Dichloropropene	07/05/95	1.2U	
trans-1,3-Dichloropropene	07/05/95	2.5U	
Ethylbenzene	07/05/95	2.5U	
Methylene chloride	07/05/95	1.2U	
1,1,2,2-Tetrachloroethane	07/05/95	2.5U	
Tetrachloroethene	07/05/95	1.2U	
Toluene	07/05/95	2.5U	
1,1,2-Trichloroethane	07/05/95	1.2U	
1,1,2-Trichloroethane	07/05/95	2.5U	
Trichloroethene	07/05/95	1.2U	
Trichlorofluoromethane	07/05/95	1.2U	
Vinyl Chloride	07/05/95	2.5U	
m+p-Xylene	07/05/95	1.2U	
o-Xylene	07/05/95	1.2U	

Sample ID	*Sample Date*	*Analytical Results (µg/kg)*	*Comments*
S-070595-DS-001			
Total Petroleum Hydrocarbons			
N-Dodecane	07/05/95	2500U	
Fuel Oil #2/Diesel Fuel	07/05/95	2500U	
Gasoline	07/05/95	2500U	
Kerosene	07/05/95	2500U	

Notes:

U Non-detect at associated value.

J Associated value is estimated.

TABLE 2

ANALYTICAL RESULTS - SEDIMENT
ELLISON BRONZE SITE
FALCONER, NEW YORK
JULY 1995

Sample ID	Sample Date	Analytical Results (mg/kg)	Comments
Total Copper			
CSED-071995-DS-001	7/19/95	1,340	
CSED-071995-DS-001RE	7/19/95	808J	
COMP-SED-4	7/20/95	1,730	
CSED-072495-DF-001	7/24/95	93	
MB-SED-072895	7/28/95	1,500	
COMP-SED-2	7/20/95	110	
COMP-SED-3	7/20/95	161	
COMP-SED-6	7/21/95	60	
COMP-SED-1	7/20/95	3,590	
COMP-SED-5	7/21/95	1,060J	
COMP-SED-A	7/21/95	600J	Duplicate of COMP-SED-5
CR-SED-073195	7/31/95	15	

Notes:
J Associated value is estimated.
RE Re-extracted and reanalyzed by the lab.

APPENDIX C

INSPECTION CHECKLIST

TABLE C.1

SEMI-ANNUAL INSPECTION CHECKLIST
LONG-TERM MONITORING PLAN
ELLISON BRONZE SITE
FALCONER, NEW YORK

Date: _____

Inspection Personnel: _____

Inspection Item		*Condition*		
		Good	*Satisfactory*	*Poor-Repairs Required*
A.	Paved Areas	☐	☐	☐
B.	Grassed Areas	☐	☐	☐
C.	Stream Banks	☐	☐	☐
D.	Monitoring Wells	☐	☐	☐

Comments: _____

_____

_____