BALCHEM PLANT

336032

Operable Unit: 01

4.4 Post Excavation and Sampling Report, Remediation Technologies, Inc., 2/3/97

4.4

RETEC

POST EXCAVATION AND SAMPLING REPORT FOR THE BALCHEM SITE

Prepared For:

BALCHEM CORPORATION
P.O. Box 175
Routes 6 & 284
Slate Hill, New York 10973

Prepared By:

REMEDIATION TECHNOLOGIES, INC.
3040 William Pitt Way
Pittsburgh, Pennsylvania 15238

RETEC Project No. 3-2245

February 3, 1997

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Prepared For:

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P.O. Box 175
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REMEDIATION TECHNOLOGIES, INC.
3040 William Pitt Way
Pittsburgh, Pennsylvania 15238

RETEC Project No.: 3-2245

Prepared By: Ronald E. Cost

Reviewed By: [illegible]

February 3, 1997

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SECTION 1

1.0 INTRODUCTION

Excavation activities were completed at the Balchem site in Slate Hill, NY between July 31, 1996 and August 9, 1996, as part of a remedial action plan and were designed to satisfy the December 1995 Record of Decision (ROD) at the site (Site Number 3-36-032). As documented in the ROD, the purpose of the excavation activities was to remove soil containing greater than 500 ppm of lead from the former drum disposal area (around MW-06S) and along the railroad corridor, east of the tracks. The work performed was outlined in the Remedial Action Plan and Remediation Work Plan [RETEC, 1996]. The excavation was performed by Environmental Products & Services, Inc. (EP&S) under the supervision of Mr. Ron Cross, an engineer from RETEC. Mr Ed Taber of the New York State Department of Environmental Control (NYSDEC) was also present at the site during the excavation activities. The contractor used a Case 9010B trackhoe and a 10 cubic yard (CY) dump truck

SECTION 2

2.0 EXCAVATION ACTIVITIES

2.1 Railroad Corridor Excavation

Excavation activities began in the railroad corridor, starting at the drainage culvert and progressing southwest to the spur that enters Balchem property. The approximate location of this excavation is shown in Figure 2-1. A two foot wide excavation was dug to an approximate depth of six inches along this 360 foot long section of railroad corridor. Due to the slope of the terrain, the excavation was completed at an angle, and more than six inches of soil was removed from the east side of the excavation (closest to the Balchem property).

Confirmation samples in the railroad corridor that exceed the guidance value of 500 ppm of lead included RR1, RR3, RR5, RR9, RR10, RR11, RR12, and RR14. The depth of excavation in these areas was subsequently extended by an extra 6 inches. Soil removed from these areas was stockpiled in two separate piles between the ethylene oxide tanker and the supply house. The stockpiles were labeled SP-17 and SP-18. Confirmation samples from these areas were collected and submitted to ELS for lead analysis. Lead concentrations in the second round of confirmation samples were less than 100 ppm, therefore excavation activities in the railroad corridor meet the requirements of the ROD and are complete. A total of approximately 35 cubic yards (CY) of soil were removed from the railroad corridor.

2.2 Former Drum Disposal Area Excavation

Upon completion of the railroad corridor excavation, the trackhoe was relocated to the former drum disposal area where excavation activities continued. At this location, soil was excavated in an approximate 30 foot diameter around monitoring well MW-06S. Excavation activities were suspended when the depth reached the water table. At this point, the excavation measured 27 feet in diameter as measured from north to south and 30 feet in diameter as measured from east to west. The depth of the excavation ranged from 3.0 feet (to the west and south) to 6.25 feet (to the east). The excavation depth to the north was 3.15 feet. This variance in depth was due to the uneven terrain. Approximately 90 CY of soil were removed from this excavation.

Confirmation samples in the former drum disposal area excavation that exceeded the guidance value of 500 ppm included PX-1 (north), PX-3 (east), and PX-4 (west). Excavation activities continued in these directions as follows:

Figure 2-1
Approximate Excavation Areas

- **North:** An additional 30 CY of soil were removed from the North sector of the excavation. Approximately 20 CY of soil were removed from this area of the excavation before a second composite confirmation sample was collected. This confirmation sample (labeled PX-5) indicated that high lead concentrations still existed in the north sector of the excavation. Excavation in this direction continued, removing an additional 10 CY of soil. A third composite sample (PX-8) indicated that lead concentrations in the remaining soil were less than the guidance value of 500 ppm. As such, excavation activities in this sector of the former drum disposal area are complete.

- **East:** Excavation activities continued to the east based on the lead concentration in sample PX-3. Excavation activities were extended to the east, removing an additional 10 CY of soil. A second composite sample (PX-6) was collected to confirm the lead concentration in this area. Confirmation sample PX-6 indicated that lead concentrations in the remaining soil were less than the guidance value. Excavation activities in this sector are complete.

- **West:** An additional 23 to 25 CY of soil were removed from the West sector of the excavation. Continuing excavation activities in this area resulted in the removal of an additional 10 CY of soil before a second composite sample (PX-7) was collected to confirm lead concentrations in the soil remaining. Confirmation sample PX-7 indicated that the soil remaining contained lead concentrations above the guidance value. As such, excavation activities continued, removing an additional 8 to 10 CY of soil. The extended excavation was completed to the water table (approximately 3 feet). At this point the excavation in this direction extended to the stanchions supporting the ethylene oxide line. A third confirmation sample (PX-9) was collected in this sector. Confirmation sample PX-9 indicated that high lead concentrations in the soil still existed. An additional 5 CY of soil were removed from between the ethylene oxide transfer line stanchions (10'x6'x3'). This area was backfilled directly after sampling due to concerns over the stability of the stanchion which could lead to a rupture of the ethylene oxide line. Although the fourth confirmation sample (PX-10) collected from this sector indicated a lead concentration above the guidance value, the NYSDEC representative approved the stoppage of excavation activities due to potential geotechnical and subsidence issues that could result in a rupture of the ethylene oxide transfer line.

2.3 Soil Stockpiling

Soil excavated from the railroad corridor and around the former drum disposal area was stockpiled on plastic liners in ten cubic yard increments. Except for the last 10 CY volume of soil

removed from the former drum disposal area excavation (which contains soil that was removed from various locations to make the excavation neat), all soil piles contain a continuous 10 CY section of soil. The locations of the soil stockpiled on site are presented in Figure 2-2. As shown, nineteen soil stockpiles were generated, four of which (SP-10, SP-11, SP-17, and SP-18) contain soil removed from the railroad corridor. Each stockpile was covered with a plastic liner to prevent surface water runoff from contacting the impacted soil.

2.4 Decontamination

Upon completion of all excavation activities, all contaminated equipment was scraped and brushed to remove the bulk of the impacted soil. The equipment was then steam cleaned to remove any remaining potentially-impacted soil. Equipment decontamination was completed following NYSDEC approved methods.

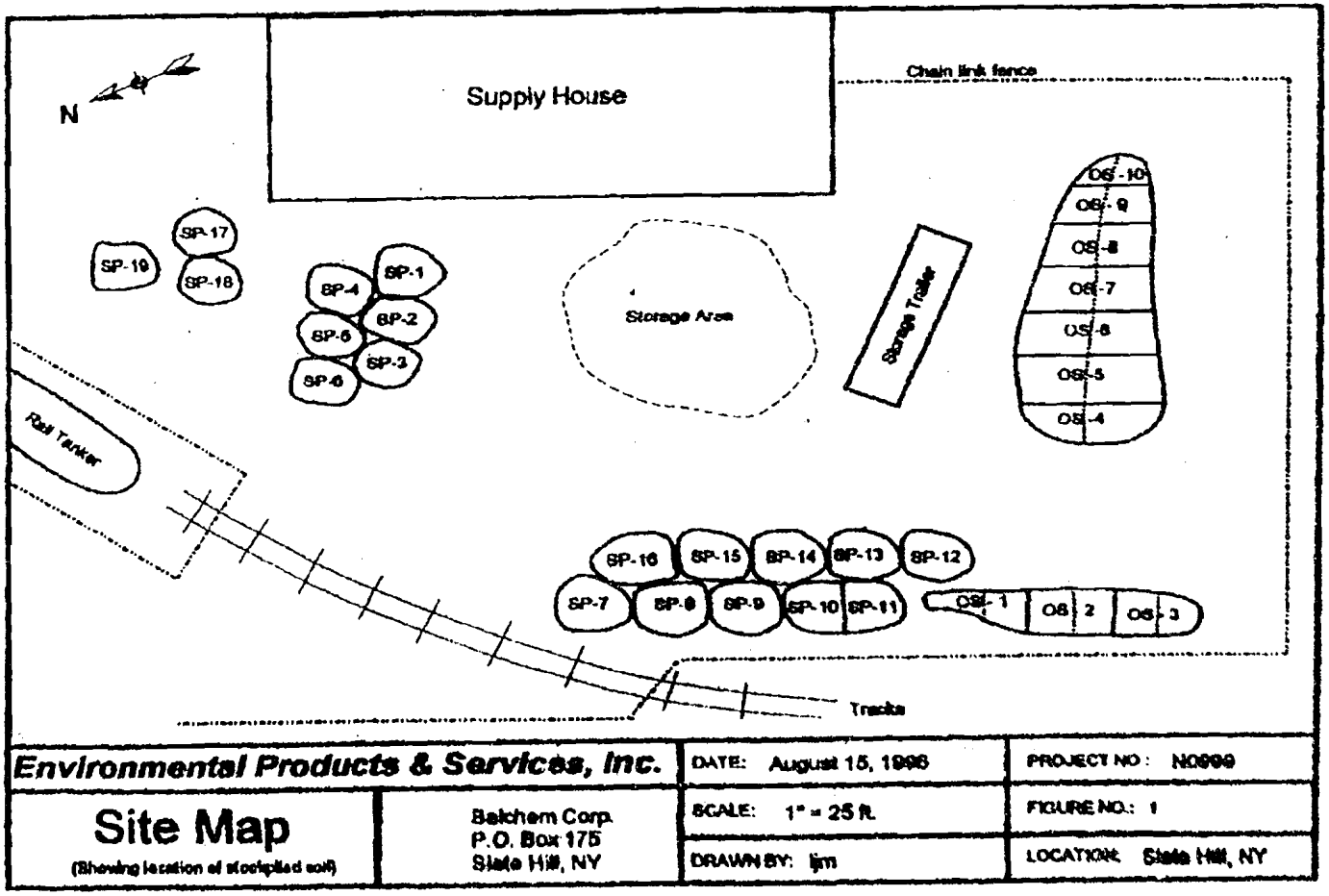
2.5 Soil Disposal

All but four of the soil stockpiles were transferred from the site to Laidlaw Environmental Service's Plainville landfill between October 9, 1996 and October 11, 1996. The remaining four stockpiles were SP-12, SP-13, SP-17, and OS-1. These stockpiles, containing lead concentrations below 450 ppm, were spread over the area of the proposed building expansion.

Environmental Products and Services, Inc. mobilized an excavator and operator to transfer the soil from the stockpiles to the trucks. Laidlaw Environmental Services, Inc. was contracted to haul the soil from the Balchem site to the Plainville landfill. A ticketed quantity of 282.4 tons of soil were loaded onto twelve trucks on October 9, 1996. Ten of the truckloads were delivered to the landfill on October 9, 1996, and the remaining two truckloads were delivered on October 10, 1996. A ticketed quantity of 239.3 tons of soil were loaded onto nine trucks and were delivered to the landfill on October 10, 1996. The remaining 56.8 tons of soil were loaded onto three trucks and were delivered to the landfill on October 11, 1996. Approximately one third of the soil removed from this site was soil which had previously been stockpiled. In all, approximately 578 tons of soil were removed from this site. A copy of the invoice, credit tickets, and material shipping record and logs are presented in Appendix A.

Figure 2-2

Site Map Depicting Excavation Stockpiles



3.0 CONFIRMATION SAMPLING

Excavation activities were suspended on August 2, 1996 while confirmation samples were being collected and analyzed for lead. Fourteen soil samples were collected from the bottom of the excavation along the railroad corridor on approximate 30 foot centers. These samples were labeled as RR-[sample #] (i.e., RR-1 through RR-14). In addition, four composite confirmation soil samples collected from the former drum disposal area excavation were analyzed for lead. These composite samples were taken from four separate 90 degree arcs. Within each arc, three grab samples were taken from the wall of the excavation. The locations of the grab samples were evenly spaced around the perimeter and around mid depth. Each set of three grab samples was then composited into a single composite sample. These samples were labeled as PX-[sample #] (i.e., PX-1 through PX-10).

In addition to the confirmation samples, each soil stockpile was sampled for lead to evaluate disposal options which include landfilling and use as fill in the proposed building expansion foundation. The sampling method for the stockpiles consisted of collecting and compositing three grab samples from each pile. The grab samples were taken at mid height and were evenly spaced 120 degrees apart around the perimeter of the soil pile. These samples were labeled SP-[soil pile #] (i.e., SP-1 through SP-19).

Soil stockpiles from previous excavations were also sampled for lead in the manner described above for soil stockpiles. This soil was stockpiled on site for future use as fill in the proposed building expansion and was considered "clean" based only on organic analyses. At the time this soil was excavated, lead was not an issue; however, due to the concern over high concentrations of lead in the soil at this site, soil samples were also collected from these stockpiles for lead analysis. These soil samples were labeled OS-[soil pile #] (i.e., OS-1 through OS-10).

All soil samples were submitted to Environmental Laboratory Services (ELS) for lead analyses. Results of the lead analyses are summarized in Tables 3-1 through 3-3 and are presented in Appendix B.

TABLE 3-1
SUMMARY OF RAILROAD CORRIDOR
POST EXCAVATION LEAD ANALYSES
BALCHEM SITE

Location	Round 1 Post Excavation Conc.[1]	Round 2 Post Excavation Conc.[2]
RR-1	1,920	156
RR-2	424	NA
RR-3	546	83.8
RR-4	380	NA
RR-5	531	25
RR-6	492	NA
RR-7	315	NA
RR-8	401	NA
RR-9	811	45
RR-10	1,540	15
RR-11	845	31
RR-12	564	21
RR-13	249	NA
RR-14	561	18

TABLE 3-2
SUMMARY OF FORMER DRUM DISPOSAL AREA
POST EXCAVATION LEAD ANALYSES
BALCHEM SITE

Location	Round 1 Post Excavation Conc.[1]	Round 2 Post Excavation Conc.[1]	Round 3 Post Excavation Conc.[1]	Round 4 Post Excavation Conc.[1]
North	2,510	1,120	126	NA
South	467	NA	NA	NA
East	529	161	NA	NA
West	729	579	2,080	1,116

TABLE 3-3
SUMMARY OF SOIL STOCKPILE LEAD ANALYSES
BALCHEM SITE

Soil Pile #	MW-6S Excavation Soil Pile (Labeled SP-#) Concentration [1]	Old Stockpile Soil Pile Conc. [1][3] (Labeled OS-#)
1	781	216
2	622	1,520
3	487	1,940
4	583	688
5	506	994
6	895	1,820
7	835	961
8	584	862
9	1,040	1,910
10	627	1,510
11	698	
12	425	
13	430	
14	535	
15	1,010	
16	835/581[2]	
17	286	
18	464	
19	1,100	

Note:
N/A = Not sampled and not analyzed.
[1]Concentration is reported in mg/Kg on a dry weight basis.
[2]A duplicate sample was collected.
[3]The former drum disposal excavation soil piles were divided into ten sections for sampling purposes.

4.0 REMAINING ACTIVITIES

Remaining work to be performed at the facility consists of groundwater monitoring and monthly maintenance of the interceptor drainage system. The groundwater monitoring program is presented in the document titled, Groundwater Monitoring Plan [RETEC, November, 1996]. This plan was submitted to the NYSDEC in November 1996. The interceptor drainage system maintenance is detailed in the Remedial Action Plan and Remediation Work Plan [RETEC, 1996].

Round one of the groundwater sample collection activities were completed directly prior to initiating excavation activities. Additional rounds of sampling are tentatively scheduled for February 1997, February 1998, and February 1999. Samples will be collected from MW-2, MW-3, MW-4S, and the IRM sump and will be analyzed for volatile organic chemicals (VOCs) and lead One duplicate sample per sampling event will be collected from one of these four locations for laboratory QC purposes. In addition to sample collection, water levels will be measured in all wells on site to determine the direction of groundwater flow.

APPENDIX A

APPENDIX A
INVOICE, CREDIT TICKETS, AND MATERIAL SHIPPING RECORD AND LOGS

IMAGEMAX

MINOLTA

The Following Documents Are Photocopies - Condition Can't Be Improved-

not 2 documents on top of each other, and / or information cut off on bottom or sides or top, and / or print blurred, and / or black smudged, and / or print too light.

LAIDLAW ENVIRONMENTAL SERVICES
"An Equal Opportunity Employer"

NORTHEAST - 590
LAIDLAW ENVIRON. SRVCS (ME), INC.
221 SUTTON STREET
NORTH ANDOVER, MA 01845
Telephone: 508-683-1002

FEDERAL ID NUMBER: 02-0335983

DATE	INVOICE NO
11/13/96	50061113038

Page 1

700745 - 3 -

ATTN: ACCOUNTS PAYABLE
[redacted] CORPORATION

[redacted]

TRANSPORTED BY	TERMS	DATE SHIPPED	P.O. NUMBER

WORK ORDER NO	QUANTITY SHIPPED	DESCRIPTION	AMOUNT
		MANIFEST # [redacted]	
		DISPOSAL SERVICES	
	1.000	NY-ORANGE COUNTY SALES TAX	
		MANIFEST # [redacted]	
	1.000	NY-STATE SALES TAX	
		MANIFEST # [redacted]	
		SALES TAX	
	[redacted].570 T	TRANS TO PLAINVILLE	
		MANIFEST # [redacted]	
	23.000 T	ADDITIONAL MINIMUM [redacted]	
		MANIFEST # [redacted]	
		TRANSPORTATION	

VOUCHER	ACCOUNT
DATE / VOUCHER	
[redacted]	

* NOTE: THIS IS FOR 24 TRUCKLOADS INTO PLAINVILLE

Please Remit To: LAIDLAW ENVIRON. SRVCS (ME), INC.
P.O. BOX 13692

NEWARK, NJ 07188-0592

PURCHASED COPY

LAIDLAW ENVIRONMENTAL SERVICES
"An Equal Opportunity Employer"

LAIDLAW ENVIRON. SRVCS (NE), INC.
221 SUTTON STREET
NORTH ANDOVER, MA 01845
Telephone: 508-683-1002

FEDERAL ID NUMBER: 02-0335983

DATE	INVOICE NO.
11/13/96	590N111403

Page 1

700745 - 3 -

ATTN: ACCOUNTS PAYABLE
RALCHEM CORPORATION

[redacted]

TRANSPORTED BY

DESCRIPTION

[redacted]

ORANGE COUNTY
MANIFEST #
STATE SALES TAX
MANIFEST #
SALES TAX
GROUP SUBTOTAL

TRANS TO PLAINVILLE
MANIFEST #
ADDITIONAL MINIMUM TRANSPORTATION CHARGE
MANIFEST #
TRANSPORTATION
GROUP SUBTOTAL

* NOTE: THIS IS FOR 24 TRUCKLOADS INTO PLAINVILLE

Please Remit To: LAIDLAW ENVIRON. SRVCS (NE), INC. [redacted] SALES TAX $.00
P.O. BOX 13592
NEWARK, NJ 07188-0592 TOTAL DUE $ 54031.62

REMITTANCE COPY

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL

C R E D I T T I C K E T

Page: 1
TIME In: 12:56
TIME Out: 13:21

D A T E : 10/09/96
TICKET NO: 120028
P.O. NO: 88462
VEHICLE NO: 75704
ACCOUNT NO: 76907
CONTAINER NO:

NAME:
NAME: LES- KAREN CLARKE

Wst Type	Description	
282	(75704)	19.99 /TN
Origin County: MA	MASSACHUSETTS	100.00%

Gross: 75240 lbs
Tare: 35260 lbs ** COMPUTED TARE **
Net: 39980 lbs
Tons: 19.99
** Note:

WEIGHMASTER: HL

Signature: _____

WE, THE UNDERSIGNED, CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS NON-HAZARDOUS SOLID WASTE MATERIALS.

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL -

C R E D I T T I C K E T

Page: 1
TIME In: 12:59
TIME Out: 13:27

D A T E : 10/09/96
TICKET NO: 120030
P.O. NO: 88462
VEHICLE NO: 75704
ACCOUNT NO: 76907
CONTAINER NO:

NAME:
NAME: LES- KAREN CLARKE

Wst Type	Description	
282	(75704)	20.92 /TN
Origin County: MA	MASSACHUSETTS	100.00%

Gross: 73080 lbs
Tare: 31240 lbs ** COMPUTED TARE **
Net: 41840 lbs
Tons: 20.92
** Note:

WEIGHMASTER: HL

Signature: _____

3

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL

C R E D I T T I C K E T

Page: 1
TIME In: 13:24
TIME Out: 13:57

D A T E : 10/09/96
TICKET NO: 120041
p.O. NO: 88462
VEHICLE NO: 75704
ACCOUNT NO: 76907
CONTAINER NO:

NAME:
NAME: LES- KAREN CLARKE

Wst Type	Description	
282	(75704) MASSACHUSETTS	30.28 /TN

100.00%

Origin County: MA
Gross: 99040 lbs
Tare: 38480 lbs ** COMPUTED TARE **
Net: 60560 lbs
Tons: 30.28
** Note:

WEIGHMASTER: HL

Signature: _____

I/WE, THE UNDERSIGNED, CERTIFY THAT THI
WASTE DELIVERED FOR DISPOSAL IS
NON-HAZARDOUS SOLID WASTE MATERIALS

4

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL

C R E D I T T I C K E T

Page: 1
TIME In: 13:49
TIME Out: 14:22

D A T E : 10/09/96
TICKET NO: 120054
p.O. NO: 88462
VEHICLE NO: 75704
ACCOUNT NO: 76907
CONTAINER NO:

NAME:
NAME: LES- KAREN CLARKE

Wst Type	Description	
282	(75704) MASSACHUSETTS	30.17 /TN

100.00%

Origin County: MA
Gross: 92180 lbs
Tare: 31840 lbs ** COMPUTED TARE **
Net: 60340 lbs
Tons: 30.17
** Note:

WEIGHMASTER: HL

Signature: _____

5

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL

C R E D I T T I C K E T

Page: 1
TIME In: 13:48
TIME Out: 14:24

D A T E : 10/09/96
TICKET NO: 120052
P.O. NO: 88462
VEHICLE NO: 75704 NAME:
ACCOUNT NO: 76907 NAME: LES- KAREN CLARKE
CONTAINER NO:

Wst Type	Description	
282	(75704)	27.24 /TN

Origin County: MA MASSACHUSETTS 100.00%
Gross: 91540 lbs
Tare: 37060 lbs ** COMPUTED TARE **
Net: 54480 lbs
Tons: 27.24
** Note:

WEIGHMASTER: HL Signature: _____

WE, THE UNDERSIGNED, CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS NON-HAZARDOUS SOLID WASTE MATERIALS.

6

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL

C R E D I T T I C K E T

Page: 1
TIME In: 14:08
TIME Out: 14:33

D A T E : 10/09/96
TICKET NO: 120068
P.O. NO: 88462
VEHICLE NO: 75704 NAME:
ACCOUNT NO: 76907 NAME: LES- KAREN CLARKE
CONTAINER NO:

Wst Type	Description	
282	(75704)	20.07 /TN

Origin County: MA MASSACHUSETTS 100.00%
Gross: 71440 lbs
Tare: 31300 lbs ** COMPUTED TARE **
Net: 40140 lbs
Tons: 20.07
** Note:

WEIGHMASTER: HL Signature: _____

NON-HAZARDOUS SOLID WASTE MATERIALS

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL

C R E D I T T I C K E T

Page: 1
TIME In: 15:05
TIME Out: 15:21

D A T E : 10/09/96
TICKET NO: 120088
P.O. NO: 88462
VEHICLE NO: 75704 NAME:
ACCOUNT NO: 76907 NAME: LES- KAREN CLARKE
CONTAINER NO:

Wst Type	Description	
282	(75704)	26.19 /TN

Origin County: MA MASSACHUSETTS 100.00%
Gross: 79020 lbs
Tare: 26640 lbs ** COMPUTED TARE **
Net: 52380 lbs
Tons: 26.19
** Note:

WEIGHMASTER: AA Signature: _____

I/WE, THE UNDERSIGNED, CERTIFY THAT THE WASTE DELIVERED FOR DISPOSAL IS NON-HAZARDOUS SOLID WASTE MATERIALS.

LAIDLAW WASTE SYSTEMS - PLAINVILLE
PLAINVILLE LANDFILL

C R E D I T T I C K E T

Page: 1
TIME In: 15:07
TIME Out: 15:37

D A T E : 10/09/96
TICKET NO: 120089
P.O. NO: 88462
VEHICLE NO: 75704 NAME:
ACCOUNT NO: 76907 NAME: LES- KAREN CLARKE
CONTAINER NO:

Wst Type	Description	
282	(75704)	19.81 /TN

Origin County: MA MASSACHUSETTS 100.00%
Gross: 75100 lbs
Tare: 35480 lbs ** COMPUTED TARE **
Net: 39620 lbs
Tons: 19.81
** Note:

WEIGHMASTER: AA Signature: _____