ACTION MEMORANDUM

BUILDING 464 MERCURY SOIL REMEDIATION

Brookhaven National Laboratory

Prepared by

Office of Environmental Restoration
Brookhaven National Laboratory
Upton, NY 11973-5000

FEBRUARY 1994

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FIGURES, TABLES & ATTACHMENTS

ACTION MEMORANDUM
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I. PURPOSE

The purpose of this Action Memorandum is to document the decision by the Department of Energy (DOE) for excavation and off-site disposal of mercury and polychlorinated biphenyl (PCB)-contaminated soil and associated piping discovered during the construction of an extension to Building 464 at Brookhaven National Laboratory (BNL), Upton, New York.

This action was undertaken as a time-critical removal action in accordance with the Interagency Agreement (IAG) among DOE, the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC).

II. SITE CONDITIONS AND BACKGROUND

1. Physical Location

BNL, formerly occupied by the U.S. Army as Camp Upton in World Wars I and II, was transferred to the Atomic Energy Commission in 1947 and used for the formation of a National Laboratory. The Laboratory is owned by DOE and is operated by Associated Universities, Inc. (AUI). BNL is located in the geographical center of Suffolk County on Long Island, New York in the Town of Brookhaven and contains 5,265 acres, of which approximately 75 percent are wooded. The remainder is developed and contains office buildings, various large research facilities, parking lots, etc. The location of the Building 464 extension, which will be used for office space for the DOE Area Office, and the associated soil contamination is shown in Figure 1.

The site is the former location of the Chemistry Department which consisted of a complex of old Army buildings from 1947 to 1966. The complex was taken down in approximately 1970 when the new Chemistry Building was built in another area of BNL. From 1970 until May 1993, the site was a grass covered field.

2. Removal Site Evaluation

The Building 464 addition required that a storm water catch basin, which was located within the construction area, be relocated. Two pipes connected to the catch basin were traced back to an area where they would intersect so that a replacement storm basin could be installed. On Friday, May 7, 1993, while excavating to install this new basin, one of the construction workers noted mercury in the soil pile excavated from the area. Further examination of the excavation revealed the presence of a former stormwater catch basin. The soil pile, approximately 15 to 20 cubic yards, and the basin area were roped off and covered with plastic sheeting. Approximately two inches of an orange material, similar to powdered bricks, was found in the bottom of the former basin. As a result, construction work on the Building 464 addition was stopped immediately. The discovery was reported to the Interagency Agreement Project Managers during the week of May 10, 1993 and to DOE as an off-normal event.

3. **Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant**

During the period from May 7, 1993 through June 23, 1993, a total of 111 soil samples were collected from the subject site and analyzed for mercury. These samples consisted of surface grab samples, two foot core samples, and soil pile composite samples. Chemical analysis of these samples showed the range of mercury concentrations to span from < 0.1 mg/kg to 17,000 mg/kg. This investigation revealed that two additional stormwater catch basins were interconnected with the contaminated basin and likewise contained mercury. Soil samples with concentrations greater than 1.0 mg/kg appeared to be concentrated within the area drains and along the piping connecting Catch Basins 1 and 3. Chemical analysis of a soil sample possessing the highest concentration of mercury was also analyzed for the metals contained in the Contract Laboratory Protocol Target Analyte List. This analysis showed the material to contain elevated concentrations of lead, copper, chromium, manganese, and zinc when compared to BNL background soil samples collected as part of the 1988 DOE survey of BNL. The concentration of these compounds may, however, be within the normal concentration fluctuations of BNL soils. The location of the soil samples collected during this investigation are depicted on Figure 2. The analytical data has been summarized on Tables 1, 2, and 3.

As a result of oily soils encountered, a total of twelve soil samples were collected from Catch Basin 2 from June 17 through July 8, 1993 and analyzed for PCBs. Chemical analysis of these samples showed the range of PCB concentrations in Catch Basin 2 to span from <1.0 mg/kg to 47.0 mg/kg.

4. **NPL Status**

BNL was added to the National Priorities List in 1989. An IAG under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended, Resource Conservation and Recovery Act (RCRA), and applicable New York State Regulations was negotiated among DOE, EPA, and NYSDEC. The IAG became effective in May 1992 and governs the environmental restoration program at BNL. The Building 464 mercury soil contamination has been included as Area of Concern (AOC) twenty-seven as a result of the discovery. The Building 464 mercury-contaminated soil cleanup has been determined by DOE as a time-critical removal action and has been designated as Removal Action VII.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Threats to Public Health or Welfare

The appropriateness to classify this soil contamination incident as a removal action was based on 40 CFR 300.415 (b)(2) criteria in which high levels of hazardous substances (mercury up to 17,000 mg/kg) in soils have been identified at or near the surface that could migrate, and the potential exposure to construction workers and office workers in the proposed Building 464 addition existed. In addition,the potential existed for contamination of the sole source aquifer drinking water supply from the mercury. DOE

has classified the action as time-critical since an immediate threat of exposure to construction workers existed.

Threats to the Environment

The major threat to the environment was the existence of unacceptable levels of soil contamination and potential for contamination of the groundwater resources.

IV. ENDANGERMENT DETERMINATION

Releases of mercury from the Building 464 soil site would have continued to present an imminent and substantial endangerment to public health, welfare, and the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

Excavation and off-site RCRA disposal of the mercury and PCB-contaminated soils and piping was the only feasible solution for mitigating threats posed by this incident. Relocation of the proposed Building 464 addition was not feasible due to limited available space in this portion of BNL. Also, potential impacts to the sole source aquifer would not be mitigated if this action was not taken.

1. Proposed Action Description

A. The removal activities were conducted in response to the public health, welfare, and environmental threats discussed in Section II of this Action Memorandum. Excavation of the contaminated soil and disposal in a RCRA-permitted landfill mitigated the public health threat posed by direct human contact and inhalation of airborne particles.

The removal action consisted of a total excavation of approximately 265 tons of soils contaminated with mercury at concentrations greater than 1.0 mg/kg. These soils were excavated from four former Catch Basins at the site.

Mercury-contaminated soils at concentrations greater than 1.0 mg/kg but less than 260 mg/kg were removed from the site in roll-off containers and transported to Chemical Waste Management's Inc. RCRA permitted landfill in Model City, New York. The soils were then stabilized with cement and disposed of at the landfill. Fourteen roll-off containers (each containing approximately 18 tons) were transported via truck from July 26, 1993 through August 16, 1993 to Model City. The hazardous waste manifests are contained in Attachment B.

Mercury-contaminated soils at concentrations in excess of 260 mg/kg were drummed (eight 55 gallon drums) and are currently stored on-site at BNL's Hazardous Waste Management Facility awaiting off-site disposal. The proposed retort facility (Bethlehem Apparatus Company, Inc. in Hellertown, Pennsylvania) is unable to accept the contaminated soils at this time due to a lack of storage space. Alternative disposal facilities are being considered for these soils.

Approximately thirteen tons of soils contaminated with greater than 10.0 mg/kg, but less than 50.0 mg/kg of PCBs, were excavated from Catch Basin 2 and placed in a roll-off container. This soil was also contaminated with mercury, but at concentrations below 260 mg/kg. The soils were transported to Chemical Waste Management Inc's. RCRA permitted landfill in Model City, New York on November 3, 1993.

Confirmatory sampling for Target Compound and Analyte Lists were conducted at the four excavated Catch Basins which indicated the site was suitable for use. The sample results are contained in Attachment A. Following excavation and disposal of the mercury-contaminated soil, the site was backfilled with clean soil. Construction of the Building 464 addition resumed the week of July 21, 1993.

B. **Contribution to Remedial Performance**

No further response action is required for the mercury-contaminated soil. However, since this project was declared an AOC, an assessment of the conditions of the groundwater beneath this site will be conducted as part of Operable Unit III. A Record of Decision will document the formal closeout for the soils removal action, and groundwater impacts, if any.

C. **Description of Alternative Technologies**

The number of practicable and suitable treatment technologies that could be applied to this removal action was limited. In-situ solidification of the soils was ruled out due to the urgency to remediate this area. Solidification would involve more lengthy mobilization period and would have been cost prohibited due to the small volume of waste to be treated.

D. **Applicable or Relevant and Appropriate Requirements (ARARs)**

There are no ARARs for this removal action. However, soil cleanup levels have been proposed for mercury: (14 mg/kg draft NJ guidance); 20 mg/kg (proposed RCRA Subpart S); and NYSDEC's Technical and Administrative Guidance Memorandum (TAGM HWR-92-4046) Determination of Soil Cleanup Objectives and Cleanup Levels (0.1 mg/kg).

Using a cleanup level of 1.0 mg/kg for mercury in the soil yielded excavation of approximately 265 tons. However the level of 0.1 mg/kg Guidance Level (NYSDEC TAGM HWR-92-4046) would have resulted in over twice the volume of soil to be excavated. As a result, a level of 1.0 mg/kg was chosen for this project. EPA and DEC were informed of this level during the cleanup and had no objections.

A National Environmental Policy Act Categorical Exclusion for the cleanup was issued on June 2, 1993.

E. **Project Schedule**

The schedule for characterization and cleanup of this removal action covered from May 7, 1993 to September 30, 1993. Eight drums remain on-site at BNL's Hazardous Waste Management Facility awaiting disposal at an off-site facility.

2. **Estimated Costs**

The cost of the removal action was approximately $200,000. A more detailed cost estimate is provided in Attachment C.

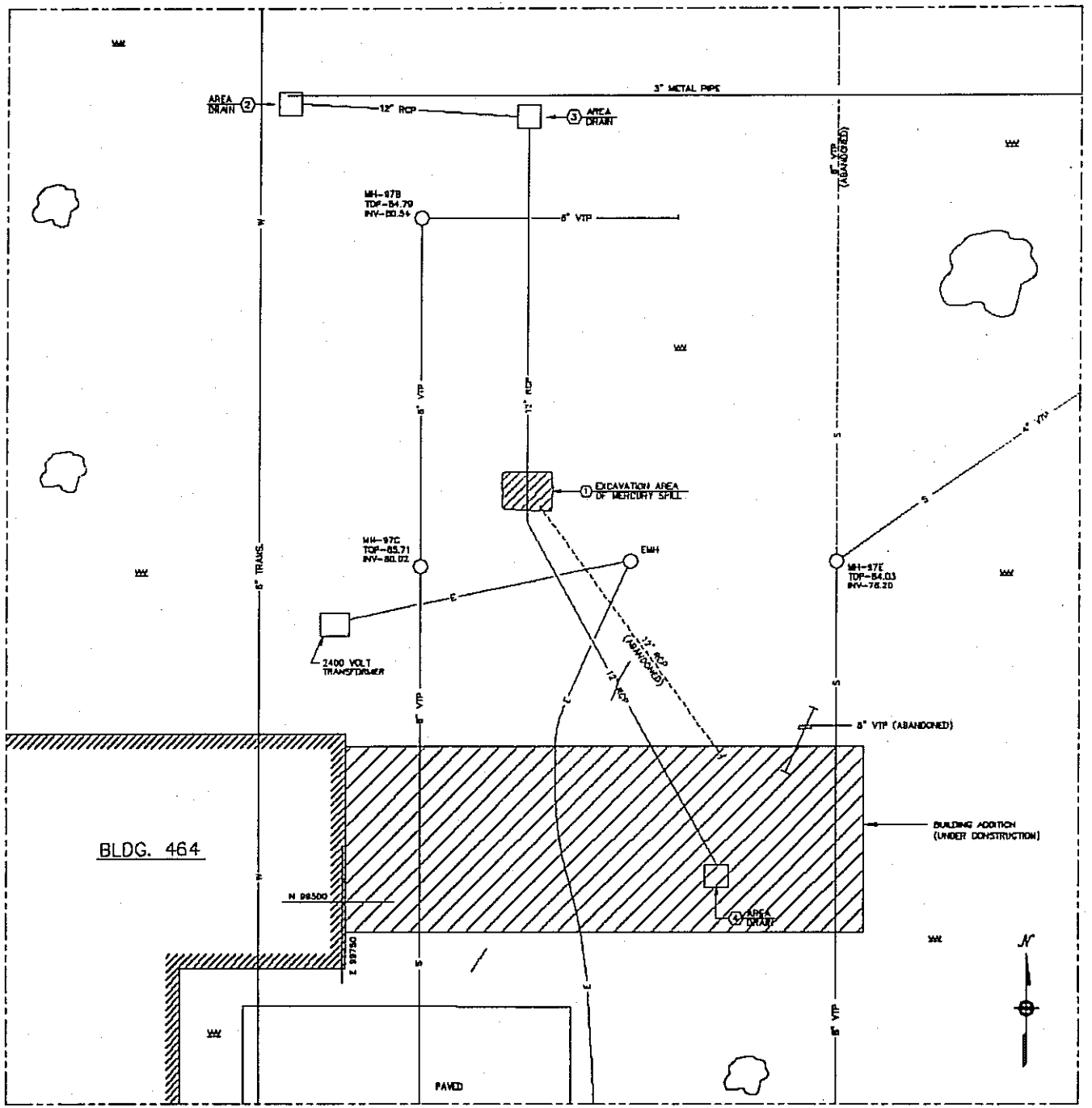
VI. RECOMMENDATION

BNL is owned by DOE and operated by AUI. Funding for this action was provided entirely by DOE and the removal action was conducted in accordance with the IAG.

This decision document represents the removal action conducted for the Building 464 site, Brookhaven National Laboratory, in Upton, New York, developed in accordance with CERCLA as amended, and consistent with the NCP.

FIGURE 1

BUILDING 464 SOIL CONTAMINATION



DETAIL 1A

SCALE : 1" = 10'

BROOKHAVEN NATIONAL LABORATORY

ASSOCIATED UNIVERSITIES, INC. UPTON, LONG ISLAND, NEW YORK 11973

UNDER CONTRACT WITH THE

UNITED STATES DEPARTMENT OF ENERGY

OFFICE ADDITION
BUILDING 464

REMOVAL OF CONTAMINATED MERCURY SOIL (DETAIL 1A)

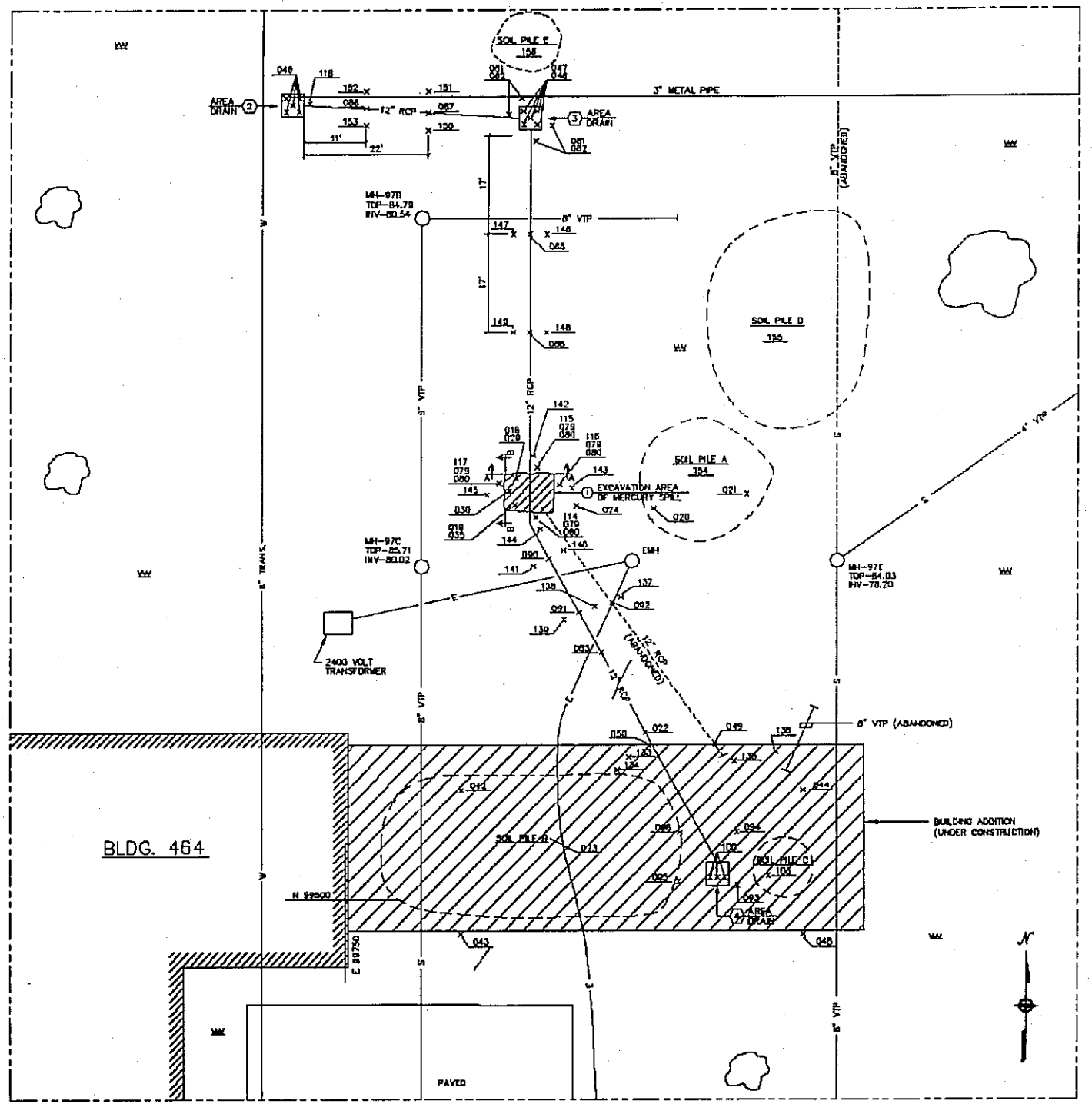
	DES. BY A-4	DWG. BY JJC	DATE 9/21/93
	SCALE AS NOTED	APPD. BY	SHEET 2 OF 3
	JOB NO. 7910A	DWG. NO. 7910A-M2	
	BLDG. NO. 464		

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

△ NOTE

FIGURE 2

BUILDING 464 SOIL SAMPLE LOCATIONS



BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC. UPTON, LONG ISLAND, NEW YORK 11973
UNDER CONTRACT WITH THE
UNITED STATES DEPARTMENT OF ENERGY

TITLE: OFFICE ADDITION BUILDING 464	SUB TITLE: REMOVAL OF CONTAMINATED MERCURY SOIL (DETAIL 1A)
PLANT ENGINEERING DG. 134C BROOKHAVEN AVE.	PROJ. DR. A-4 · DES. BY JJC · DATE 5/21/93 · RESULT AS NOTED · APPR. BY · ACCT. NO. 72324 · SHEET OF 2 3 · JOB NO. 7910A · BLDG. NO. 464 · DWG. NO. 7910A-M2

1/8"=1'-0" 1-1/2"=1'-0" 1/4"=1'-0"

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZZ9305018**	5/7/93	Northwest corner of abandoned catch basin	42 mg/Kg	Repeat analysis using 10 grams of sample shows Hg conc. to vary between 1,200 and 17,000 mg/Kg. The CLP metals scan indicates presence of other metals. The GC/MS extractables analysis of a core sample collected at this location (Sample Id. ZS9305029) indicates oil and grease (1000-5000 ppm), arochlor 1254 (7 ppm).
ZZ9305019**	5/7/93	Southwest corner of abandoned catch basin	21 mg/Kg	Analysis of a 2' core sample (Sample Id. ZS9305035) collected at this location contained Hg at a concentration of 1,070 mg/Kg.
ZZ9305020**	5/7/93	Pile A East (spoils from excavation of Basin)	12 mg/Kg	
ZZ9305021**	5/7/93	Pile A West	0.5 mg/Kg	
ZZ9305022**	5/7/93	Soil within pipe removed from footing excavation	0.6 mg/Kg	
ZZ9305023**	5/7/93	Pile B (soil from footing excavation)	< 0.1 mg/Kg	

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZZ9305024**	5/7/93	Glass Tube	2,800 mg/Kg	Laboratory glass tubing containing an orange substance removed from excavation.
ZS9305030	5/10/93	Core from inside block foundation	11 mg/Kg	
ZS9305031	5/10/93	Core, west sidewall 2' below grade	0.03 mg/Kg	
ZS9305032	5/10/93	Core, west sidewall 4' below grade	0.03 mg/Kg	
ZS9305033	5/10/93	Core, north sidewall 2' below grade	0.8 mg/Kg	
ZS9305034	5/10/93	Core, north sidewall 4' below grade	3.1 mg/Kg	

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305035	5/10/93	Southwest corner of basin (2' Core)	1,070 mg/Kg	
ZS9305042	1/29/93	Boring 1 0 - 2' core sample	0.05 mg/Kg	Soil boring was installed for structural bearing determination.
ZS9305043	1/29/93	Boring 2 0 - 2' core sample	0.07 mg/Kg	Soil boring was installed for structural bearing determination.
ZS9305044	1/29/93	Boring 3 0 - 2' core sample	0.06 mg/Kg	Soil boring was installed for structural bearing determination.
ZS9305045	1/29/93	Boring 4 0 - 2' core sample	0.09 mg/Kg	Soil boring was installed for structural bearing determination.
ZS9305046	5/11/93	Soil Composite NW catch basin 0 - 2' cores	1.6 mg/Kg	
ZS9305047	5/11/93	Soil Composite turning basin 0 - 2' cores	2.0 mg/Kg	

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305048	5/11/93	Soil composite turning basin 2 - 3' cores	4.4 mg/Kg	Coring tool encountered resistance at 3'(Bottom of basin?)
ZS9305049	5/11/93	Soil boring East pipe 18" - 24" below footing	0.04 mg/Kg	Sample contained black carbonaceous material and what appeared to be a piece of brick. The GC/MS analysis did not indicate contamination.
ZS9305050	5/11/93	Soil sample west pipe (grab sample)	0.15 mg/Kg	
ZS9305079	5/18/93	0-2' core samples collected from exterior of Basin 1	1.6 mg/Kg	Four core samples, one from each side of the basin were collected and composited.
ZS9305080	5/18/93	2-3' core samples collected from the exterior of Basin 1	3.8 mg/Kg	Four core samples, one from each side of the basin, were collected and composited.

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305081	5/18/93	2-4' core samples collected form the exterior of Basin 3	0.09 mg/Kg	Four core samples, one from each side of the basin, were collected and composited.
ZS9305082	5/18/93	4-5' core samples collected from the exterior of Basin 3	0.05 mg/Kg	Four core samples, one from each side of the basin, were collected and composited.
ZS9305083	5/18/93	Grab sample from exterior of pipe connecting Basins 1 and 4	0.01 mg/Kg	
ZS9305086	5/19/93	0 - 2' core sample 11' east of Basin 2	0.28 mg/Kg	Sample collected above pipe line connecting Basins 2 and 3
ZS9305087	5/19/93	0 - 2' core sample 22' east of Basin 2	0.33 mg/Kg	Sample collected above pipe line connecting Basins 2 and 3

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305088	5/19/93	0 - 2' core sample collected 17' south of Basin 3	2.6 mg/Kg	Sample collected above pipe line connecting Basins 1 and 3.
ZS9305089	5/19/93	0 - 2' core sample collected 34' south of Basin 3	0.78 mg/Kg	Sample collected above pipe line connecting Basins 1 and 3.
ZS9305090	5/19/93	0 - 2' core sample collected 9' south of Basin 1	0.78 mg/Kg	Sample collected above pipe line connecting Basins 1 and 4.
ZS9305091	5/19/93	0 - 2' core sample collected 20' south of Basin 1	0.22 mg/Kg	Sample collected above pipe line connecting Basins 1 and 4.
ZS9305092	5/19/93	0 - 2' core sample collected 20' south of Basin 1	0.28 mg/Kg	Sample collected above eastern most pipe line exiting Basin 1.

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305093	5/19/93	Surface sample from within construction zone	0.09 mg/Kg	
ZS9305094	5/19/93	Surface sample from within construction zone	0.05 mg/Kg	
ZS9305095	5/19/93	Surface sample from within construction zone	0.09 mg/Kg	
ZS9305096	5/19/93	Surface sample from within construction zone	0.05 mg/Kg	
ZS9305100	5/20/93	2' core samples collected from bottom of Basin 4	2.9 mg/Kg	Sample consisted of a composite of 3-2' core samples.

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305103	5/20/93	Surface grab composite sample from soil pile C	0.31 mg/Kg	Sample consists of numerous surface grab samples which were composited prior to analysis.
ZS9305114	5/25/93	0 - 2' core sample collected 1' South side of Basin 1	0.98 mg/Kg	
ZS9305115	5/25/93	0 - 2' core sample collected 1' North side of Basin 1	197 mg/Kg	
ZS9305116	5/25/93	0 - 2' core sample collected 1' East side of Basin 1	0.57 mg/Kg	
ZS9305117	5/25/93	0 - 2' core sample collected 1' West side of Basin 1	2.6 mg/Kg	

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305118	5/25/93	0 - 2' core sample collected 1' East side of Basin 2	0.68 mg/Kg	
ZS9305133	5/28/93	Surface grab in construction area	0.055 mg/Kg	
ZS9303134	5/28/93	Surface grab in construction area	0.031 mg/Kg	
ZS9305135	5/28/93	Surface grab in construction area	0.033 mg/Kg	
ZS9305136	5/28/93	Surface grab in construction area	0.027 mg/Kg	
ZS9305137	5/28/93	0 - 2' core sample 3' east of 092	0.244 mg/Kg	

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305138	5/28/93	0 - 2' core sample 3' west of 092	0.232 mg/Kg	
ZS9305139	5/28/93	0 - 2' core sample 3' west of 091	0.082 mg/Kg	
ZS9305140	5/28/93	0 - 2' core sample 3' east of 090	1.32 mg/Kg	
ZS9305141	5/28/93	0 - 2' core sample 3' west of 090	0.362 mg/Kg	
ZS9305142	5/28/93	0 - 2' core 3' North of Basin 1	9.34 mg/Kg	
ZS9305143	5/28/93	0 - 2' core 3' East of Basin 1	2.17 mg/Kg	
ZS9305144	5/28/93	0 - 2' core 3' South of Basin 1	0.842 mg/Kg	
ZS9305145	5/28/93	0 - 2' core 3' West of Basin 1	3.92 mg/Kg	

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305146	5/28/93	0 - 2' core sample 3' east of 088	0.32 mg/Kg	
ZS9305147	5/28/93	0 - 2' core sample 3' west of 088	0.154 mg/Kg	
ZS9305148	5/28/93	0 - 2' core sample 3' east of 089	3.12 mg/Kg	
ZS9305149	5/28/93	0 - 2' core sample 3' west of 089	1.66 mg/Kg	
ZS9305150	5/28/93	0 - 2' core sample 3' south of 087	0.021 mg/Kg	
ZS9305151	5/28/93	0 - 2' core sample 3' north of 087	0.281 mg/Kg	
ZS9305152	5/28/93	0 - 2' core sample 3' north of 086	0.118 mg/Kg	
ZS9305153	5/28/93	0 - 2' core sample 3' south of 086	0.198 mg/Kg	

Table 1
(Revision date 6/4/93)
Summary of Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample location	Hg Concentration	Comments
ZS9305154	5/28/93	Soil Pile A Composite sample	4.16 mg/Kg	Sample is also being analyzed for TCLP compounds. Analytical data should be available 6/7/93.
ZS9305155	5/28/93	Soil Pile D Surface composite	0.084 mg/Kg	Large pile of soils lying to the east of Pile A.
ZS9305156	5/28/93	Soil Pile E surface composite.	0.131 mg/Kg	Soil pile lying north and west of Basin 3.
ZS9305157	5/28/93	Equipment Wash	<0.0002 mg/L	Quality check on Field washing of sample collection equipment.

** Analysis was conducted using 0.2 grams of sample, all other samples were analyzed using 10 grams.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306009	6/4/93	2' core sample from North side of Basin 4	0.08 mg/Kg	
ZS9306010	6/4/93	2' core sample from South side of Basin 4	0.225 mg/Kg	
ZS9306011	6/4/93	2' core sample from West side of Basin 4	0.046 mg/Kg	
ZS9306012	6/4/93	2' core sample from East side of Basin 4	0.438 mg/Kg	
ZS9306013	6/4/93	Surface sample, South wall, 2' below grade	0.009 mg/Kg	
ZS9306014	6/4/93	Surface sample, South wall, 5' below grade	0.196 mg/kg	
ZS9306015	6/4/93	Surface sample, West wall, 2' below grade	0.012 mg/Kg	
ZS9306016	6/4/93	Surface sample, West wall, 5' below grade	0.007 mg/kg	

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306017	6/4/93	Surface sample, North wall, 2' below grade	0.288 mg/Kg	The North wall was later excavated completely as a result of pipe removal.
ZS9306018	6/4/93	Surface sample, North wall, 5' below grade	0.158 mg/Kg	The North wall was later excavated completely as a result of pipe removal.
ZS9306019	6/4/93	Surface sample, East wall, 2' below grade	0.264 mg/Kg	
ZS9306020	6/4/93	Surface sample, East wall, 5' below grade	0.101 mg/Kg	
ZS9306029	6/8/93	Drum #1 Composite	37 mg/Kg	
ZS9306030	6/8/93	Drum #2 Composite	304 mg/Kg	
ZS9306031	6/8/93	Drum #3 Composite	14 mg/Kg	
ZS9306032	6/8/93	Drum #4 Composite	62 mg/Kg	
ZS9306033	6/8/93	Drum #5 Composite	130 mg/Kg	visible contamin
ZS9306034	6/8/93	Pipe trench, approx. 12' North of Basin 4	0.11 mg/Kg	

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306035	6/8/93	Pipe trench, approx. 25' North of Basin 4	0.04 mg/Kg	
ZT9306041	6/10/93	Trip Blank	<0.0002 mg/L	The trip blank is a water matrix.
ZS9306042	6/10/93	Basin 2, 2' core composite	45 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306043	6/10/93	Basin 1, Northeast corner 2' core	0.64 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306044	6/10/93	Basin 1, Southeast corner, 2' core	0.13 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306045	6/10/93	Basin 1, Northwest corner, 2' core	1.6 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306046	6/10/93	Basin 1, South west corner, 2' core	XXXXXXXXX	Sample being reanalyzed
ZS9306047	6/10/93	Soil inside pipe connecting Basins 1 and 3	0.61 mg/Kg	Since this sample indicates Hg at < 1 mg/Kg the pipe will not be removed during this remedial action.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306048	6/10/93	Basin 1, above block wall, W. side	4.3 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306049	6/10/93	Basin 1, above block wall, N. side	26 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306050	6/10/93	Basin 1, above block wall, E. side	6.8 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306051	6/10/93	Basin 1, above block wall, S. side	7.2 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306052	6/10/93	Basin 1, 2' below grade, N. side.	1.0 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306053	6/10/93	Basin 1, 2' below grade, W. side.	16 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306054	6/10/93	Basin 1, 2' below grade, E. side.	1.6 mg/Kg	Additional soil removal to be conducted on 6/16.
ZS9306055	6/10/93	Basin 1, 2' below grade, S. side.	0.14 mg/Kg	

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306056	6/10/93	Soil Pile F	17 mg/Kg	Duplicate sample indicates slightly lower conc.which may be due to inadequate mixing of sample. Soil pile to be removed on 6/16.
ZS9306057	6/10/93	Duplicate of sample ZS9306056.	7.4 mg/Kg	Duplicate and Matrix spike concur.
ZS9306058	6/10/93	Matrix spike of sample ZS9306056	6.5 mg/Kg	
ZS9306070	6/15/93	Field Blank	<0.0002 mg/Kg	Field Blank is a water matrix.
ZS9306071	6/15/93	Area Drain 3 2' core composite of bottom sediment.	0.213 mg/Kg	
ZS9306072	6/15/93	Field duplicate of Sample ZS9306071	1.13 mg/Kg	Field dup analysis slightly higher than matrix spike, lab dup and original sample.
ZS9306073	6/15/93	Matrix Spike of Sample ZS9306071	0.094 mg/Kg	Lab dup of this sample concurs with 071 results.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306074	6/15/93	Surface grab 17' S of Basin 3.	0.066 mg/Kg	
ZS9306075	6/15/93	Surface grab 3' west of 074	XXXXXXXXXXXXXXXXXXX	Due to mislabeling this sample was discarded.
ZS9306076	6/15/93	Surface grab 3' east of 074.	XXXXXXXXXXXXXXXXXXX	Due to mislabeling this sample was discarded.
ZS9306077	6/15/93	2' core 17' S of Area Drain 3	2.23 mg/Kg	
ZS9306078	6/15/93	Surface grab 34' S of Area Drain 3.	0.598 mg/Kg	
ZS9306079	6/15/93	Surface grab 3'west of 078.	0.851 mg/Kg	
ZS9306080	6/15/93	Surface grab 3'east of 078.	0.89 mg/Kg	
ZS9306081	6/15/93	Surface grab 15' east of Area Drain 1	15.6 mg/Kg	Additional soil removal was conducted on 6/23/93.
ZS9306082	6/15/93	Surface grab 30' east of Area Drain 1	0.19 mg/Kg	

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306083	6/15/93	Composite Drum #6	9.62 mg/Kg	Soil to be added to bulk containers and disposed via landfill.
ZS9306084	6/15/93	Composite Drum #7	42.8 mg/Kg	Soil to be added to bulk containers and disposed via landfill.
ZS9306085	6/15/93	Composite Drum #8	262 mg/Kg	Soil to be disposed via retort.
ZS9306086	6/15/93	Composite Drum #9	1,097 mg/Kg	Soil to be disposed via retort.
ZS9306087	6/15/93	Composite Drum #10	121 mg/Kg	Soil to be visually inspected to determine means of disposal. Yes - visible contamin.
ZS9306088	6/15/93	Composite Drum #11	1,340 mg/Kg	Soil to be disposed via retort.
ZS9306089	6/15/93	Composite Drum #12	333 mg/Kg	Soil to be disposed via retort.
ZS9306093	6/16/93	Field Blank	<0.0002 mg/L	Field blank is a water matrix.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306094	6/16/93	Soil immediately adjacent to north side of pipe joint between Area Drains 2 and 3.	0.2 mg/Kg	
ZS9306095	6/16/93	Soil 6" north of pipe joint between Area Drains 2 and 3.	0.21 mg/Kg	
ZS9306096	6/16/93	Surface grab 17' S of Area Drain 3 and 3'west.	0.73 mg/Kg	Resample of Sample ZS9306075.
ZS9306097	6/16/93	Surface grab 17' S of Area Drain 3, 3' east.	0.73 mg/Kg	Resample of Sample ZS9306076.
ZS9306098	6/16/93	Grab sample beneath pipe joint between Area Drains 2 and 3.	0.09 mg/Kg	
ZS9306099	6/16/93	2' core sample, bottom of Area Drain 4.	XXXXXXXXXXXXXXXXXXX	Sample undergoing TCL analysis (volatile fraction)
ZS9306100	6/16/93	2' core composite, bottom of Area Drain 4.	XXXXXXXXXXXXXXXXXXX	Sample undergoing TCL and TAL analysis.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306101	6/16/93	Grab sample immediately east of pipe joint between Area Drains 1 and 3.	0.1 mg/Kg	
ZS9306102	6/16/93	Grab sample beneath pipe joint between Area Drains 1 and 3.	0.23 mg/Kg	
ZS9306103	6/16/93	Grab sample of soil inside pipe connecting Area Drains 1 and 3.	0.19 mg/Kg	Sample was collected at opening to Area Drain 3. Pipe is Ductile iron consequently sample could not be collected mid-span.
ZS9306104	6/16/93	Grab sample of soil in pipe connecting Area Drains 2 and 3	0.17 mg/Kg	Sample collected mid-span.
ZS9306105	6/16/93	Composite sample of soil removed while exposing pipes connecting Drains 1 and 3 and 2 and 3.	0.73 mg/Kg	

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306106	6/16/93	Field duplicate of sample 105.	0.78 mg/Kg	Duplicate analysis concurs with original sample.
ZS9306107	6/16/93	2' core NW corner of Area Drain 1 bottom.	0.62 mg/Kg	
ZS9306108	6/16/93	2' core SW corner of Area Drain 1 bottom.	0.28 mg/Kg	
ZS9306109	6/16/93	Grab sample, Area Drain 1, north side 2' below grade.	6.1 mg/Kg	Additional soil removed 6/23/93.
ZS9306110	6/16/93	Grab sample, Area Drain 1, north side 5' below grade.	0.87 mg/Kg	
ZS9306111	6/16/93	2' core NE corner Area Drain 1 bottom.	1.01 mg/Kg	
ZS9306112	6/16/93	2' core SE corner Area Drain 1 bottom.	0.47 mg/Kg	
ZS9306113	6/16/93	Grab sample, Area Drain 1, west side 2' below grade.	2.09 mg/Kg	Additional soil removed on 6/23/93.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306114	6/16/93	Grab sample, Area Drain 1, west side 5' below grade.	3.32 mg/Kg	Additional soil removed on 6/23/93.
ZS9306115	6/16/93	Grab sample, Area Drain 1, south side 2' below grade.	0.81 mg/Kg	
ZS9306116	6/16/93	Grab sample, Area Drain 1, south side 5' below grade.	2.51 mg/Kg	Additional soil removed on 6/23/93.
ZS9306117	6/16/93	Grab sample, Area Drain 1, east side 2' below grade.	3.5 mg/Kg	Additional soil removed on 6/23/93.
ZS9306118	6/16/93	Grab sample, Area Drain 1, east side 5' below grade.	8.45 mg/Kg	Additional soil removed on 6/23/93.
ZS9306121	6/17/93	Composite Drum #13	18 mg/Kg	Soil removed from Area Drain 2. To be disposed via landfill.
ZS9306122	6/17/93	Composite Drum #14	69 mg/Kg	Soil removed from Area Drain 2. To be disposed via landfill.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306123	6/17/93	Composite Drum #15	83 mg/Kg	Soil removed from Area Drain 2. To be disposed via landfill.
ZS9306124	6/17/93	Composite Drum #16	7.9 mg/Kg	Soil removed from Area Drain 2. To be disposed via landfill.
ZS9306125	6/17/93	Composite Drum #17	270 mg/Kg	Soil to disposed via retort.
ZS9306126	6/17/93	2' core composite, bottom Area Drain 2.	1.0 mg/Kg	
ZS9306138	6/23/93	Field Blank	< 0.0002 mg/L	Field Blank is a water matrix.
ZS9306139	6/23/93	Surface grab, Area Drain 1, 2' below grade, East side of Drain.	1.6 mg/Kg	Due to the low concentration of Hg, no further remediation is proposed.
ZS9306140	6/23/93	Surface grab, Area Drain 1, 5' below grade, East side of Drain.	1.7 mg/Kg	Due to the low concentration of Hg, no further remediation is proposed.

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306141	6/23/93	Surface grab, Area Drain 1, 5' below grade, South side of Drain.	0.02 mg/Kg	
ZS9306142	6/23/93	Surface grab, Area Drain 1, 2' below grade, West side of Drain.	0.5 mg/Kg	
ZS9306143	6/23/93	Surface grab, Area Drain 1, 5' below grade, West side of Drain.	0.5 mg/Kg	
ZS9306144	6/23/93	Surface grab, Area Drain 1, 5' below grade, West side of Drain. (Field Duplicate)	0.7 mg/Kg	Field duplicate and matrix spike analyses concur well with original sample.
ZS9306145	6/23/93	Surface grab, Area Drain 1, 5' below grade, West side of Drain. (Matrix Spike)	0.39 mg/Kg	Field duplicate and matrix spike analyses concur well with original sample.
ZS9306146	6/23/93	Surface grab, Area Drain 1, 2' below grade, North side of Drain.	0.53 mg/Kg	

Table 2
(Revision date 7/07/93)
Summary of Confirmatory Sample Analytical Data
For Investigation of Mercury at Building 464

Sample Id.	Collection Date	Sample Location	Hg Concentration	Comments
ZS9306147	6/23/93	Surface grab, 15' east of Area Drain 1.	0.74 mg/Kg	
ZS9306148	6/23/93	Surface Grab 22' East of Area Drain 1.	0.13 mg/Kg	

All samples analyzed using 10 grams of soil.
All results are tentative pending receipt of official certificate of analysis.

Table 3
(Revision date 7/21/93)
Summary of PCB Analytical Data
For Soil Samples Collected From Within Area Drain 2

Sample Id. No.	Collection Date	Sample Location	PCB Concentration	Comments
ZS9306161	6/25/93	Grab Sample from inside pipe connecting Area Drains 1 and 3.	< 1.0 mg/Kg	
ZS9307004	7/08/93	0-2' core composite sample from bottom of Area Drain 2	47 mg/Kg	Duplicate analysis conducted by SEP indicated PCB at 42 mg/Kg.
ZS9307005F	7/08/93	0-2' core composite sample from bottom of Area Drain 2	55 mg/Kg	Field Duplicate of sample ZS9307004
ZS9307006	7/08/93	Drum #15	17 mg/Kg	
ZS9307007	7/08/93	Drum #14	18 mg/Kg	
ZS9307008	7/08/93	Drum #16	23 mg/Kg	
ZS9307009	7/08/93	Drum #13	13 mg/Kg	
ZS9307011	7/08/93	Drum #18	15 mg/Kg	
ZS9307012	7/08/93	Drum #19	12 mg/Kg	
ZS9307013	7/08/93	Drum #20	29 mg/Kg	
ZS9307014	7/08/93	Drum #21	17 mg/Kg	Hg analysis indicates a concentration of 1.1 mg/kg.
ZS9307015	7/08/93	Field Blank	< 1.0 mg/Kg	

ATTACHMENT A

SUMMARY OF TARGET COMPOUND LIST/TARGET ANALYTE LIST ANALYTICAL DATA FOR CATCH BASINS 1, 2, 3, AND 4

CATCH BASIN 1

(*) this sample also analyzed for mercury. The concentration found in the sample is 1.1 ppm.

Also, B. 464 basin # 1 sample (ZS9307042 & ZS9307043) was analyzed for Target Compound List (TCL, or Organics) and Target Analyte List (TAL, or Inorganics including cyanide) parameters of EPA CLP protocol.

Result: None of the TCL compounds were detected in the sample above typical detection limits. For a list of analytes, please refer to the attached report. However, in the TAL list, the following metals were detected above the typical detection limits.

Metal	**ZS9307043**	**(mg/Kg, ppm)**
aluminum	2700	
chromium	3.5	
copper	28	
iron	3500	
lead	4.2	
magnesium	700	
manganese	70	
mercury	1.5	
vanadium	6.0	
zinc	28	

Attachments: Copies of analytical reports

Report prepared by: Geetha Chakrapani

DATA REPORTING COMMENT PAGE

QUALIFIERS:

U - Indicates compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the reported detection limit but greater than zero.

B - This flag is used when the analyte is found in the method blank as well as in the sample.

T - This flag identifies all targeted compounds that were found above the method detection limits.

A - Aldol Condensation Product (formed from Acetone reacting with Methylene Chloride solvents used in the extraction of soil samples, not associated with sample constituents)

D - Diluted out

NA - Not applicable by contract

Data on soil samples are expressed on a dry weight basis.

All non-aqueous samples are reported on soil forms. This includes samples whose matrix is listed as miscellaneous.

The Initial and Continuing Calibration dates and times for the volatile fractions are listed on the BFB summary forms.

The Initial and Continuing Calibration dates and times for the semivolatile fractions are listed on the DFTPP summary forms.

SAMPLE SUFFIXES: RE - Re-analyzed sample
DL - Sample analyzed at a secondary dilution

METHOD BLANK NOMENCLATURE - FBLK##:

F - Fraction (V for Volatiles, S for Semivolatiles)
BLK - Indicates a blank
- Arbitrarily assigned number for that blank

GC/MS STANDARD NOMENCLATURE - FSTD###:

F - Fraction (V for Volatiles, S for Semivolatiles)
STD - Indicates a standard
- Concentration in ppb of Volatile standards, or amount injected in ng for Semivolatile standards

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 7/19/93

SAMPLE ID: ZS9307042
LAB ID: 1746611
DIL FACTOR: 1.00
% MOISTURE: 3

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	3.0 JB
6	67-64-1	2-Propanone	10.0 U.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	3.0 J.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
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1C

NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: ZS9307042

OF TIC FOUND: 0

LAB ID: 1746611

MATRIX: SOIL

FRACTION: VOA

	CAS Number	Compound Name	RT	Estimated Concentration UG/KG (DRY WT)
1		NO COMPOUNDS FOUND		
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nytest environmental inc

REPORT OF ANALYSIS

Log In No.: 17466

We find as follows:

Results in mg/kg (dry wt. basis):

Sample Identification	Parameter(s)
	Total Cyanide
1746612 ZS9307043	<0.20
Method Blank	<0.20

1 B-T

NYTEST ENVIRONMENTAL INC.

TCL SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
EXTRACTION DATE: 7/17/93
ANALYSIS DATE: 7/19/93

SAMPLE ID: ZS9307043
LAB ID: 1746612
DIL FACTOR: 1.00
% MOISTURE: 3

CMPD #	CAS Number	BASE NEUTRAL COMPOUNDS	UG/KG (DRY BASIS)
1	111-44-4	bis(2-Chloroethyl)ether	340.0 U.
2	541-73-1	1,3-Dichlorobenzene	340.0 U.
3	106-46-7	1,4-Dichlorobenzene	340.0 U.
4	95-50-1	1,2-Dichlorobenzene	340.0 U.
5	108-60-1	bis(2-chloroisopropyl)ether	340.0 U.
6	621-64-7	N-Nitroso-Di-n-Propylamine	340.0 U.
7	67-72-1	Hexachloroethane	340.0 U.
8	98-95-3	Nitrobenzene	340.0 U.
9	78-59-1	Isophorone	340.0 U.
10	111-91-1	bis(2-chloroethoxy)Methane	340.0 U.
11	120-82-1	1,2,4-Trichlorobenzene	340.0 U.
12	106-47-8	4-Chloroaniline	340.0 U.
13	87-68-3	Hexachlorobutadiene	340.0 U.
14	91-57-6	2-Methylnaphthalene	340.0 U.
15	77-47-4	Hexachlorocyclopentadiene	340.0 U.
16	91-58-7	2-Chloronaphthalene	340.0 U.
17	88-74-4	2-Nitroaniline	1700.0 U.
18	131-11-3	Dimethyl Phthalate	340.0 U.
19	99-09-2	3-Nitroaniline	1700.0 U.
20	132-64-9	Dibenzofuran	340.0 U.
21	121-14-2	2,4-Dinitrotoluene	340.0 U.
22	606-20-2	2,6-Dinitrotoluene	340.0 U.
23	84-66-2	Diethylphthalate	340.0 U.
24	7005-72-3	4-Chlorophenyl-phenylether	340.0 U.
25	100-01-6	4-Nitroaniline	1700.0 U.
26	86-30-6	N-Nitrosodiphenylamine	340.0 U.
27	101-55-3	4-Bromophenyl-phenylether	340.0 U.
28	118-74-1	Hexachlorobenzene	340.0 U.
29	84-74-2	Di-n-Butylphthalate	340.0 U.
30	85-68-7	Butylbenzylphthalate	340.0 U.
31	91-94-1	3,3'-Dichlorobenzidine	680.0 U.
32	117-81-7	bis(2-Ethylhexyl)Phthalate	44.0 J.
33	117-84-0	Di-n-Octyl Phthalate	340.0 U.
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CMPD #	CAS Number	BASE NEUTRAL/PAH COMPOUNDS	UG/KG (DRY BASIS)
42	91-20-3	Naphthalene	340.0 U.
43	208-96-8	Acenaphthylene	340.0 U.
44	83-32-9	Acenaphthene	340.0 U.
45	86-73-7	Fluorene	340.0 U.
46	85-01-8	Phenanthrene	340.0 U.
47	120-12-7	Anthracene	340.0 U.
48	206-44-0	Fluoranthene	340.0 U.
49	129-00-0	Pyrene	340.0 U.
50	56-55-3	Benzo(a)Anthracene	340.0 U.
51	218-01-9	Chrysene	340.0 U.
52	205-99-2	Benzo(b)Fluoranthene	340.0 U.
53	207-08-9	Benzo(k)Fluoranthene	340.0 U.
54	50-32-8	Benzo(a)Pyrene	340.0 U.
55	193-39-5	Indeno(1,2,3-cd)Pyrene	340.0 U.
56	53-70-3	Dibenz(a,h)Anthracene	340.0 U.
57	191-24-2	Benzo(g,h,i)Perylene	340.0 U.
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		ACID COMPOUNDS	
61	108-95-2	Phenol	340.0 U.
62	95-57-8	2-Chlorophenol	340.0 U.
63	100-51-6	Benzyl Alcohol	340.0 U.
64	95-48-7	2-Methylphenol	340.0 U.
65	106-44-5	4-Methylphenol	340.0 U.
66	88-75-5	2-Nitrophenol	340.0 U.
67	105-67-9	2,4-Dimethylphenol	340.0 U.
68	65-85-0	Benzoic Acid	1700.0 U.
69	120-83-2	2,4-Dichlorophenol	340.0 U.
70	59-50-7	4-Chloro-3-Methylphenol	340.0 U.
71	88-06-2	2,4,6-Trichlorophenol	340.0 U.
72	95-95-4	2,4,5-Trichlorophenol	1700.0 U.
73	51-28-5	2,4-Dinitrophenol	1700.0 U.
74	100-02-7	4-Nitrophenol	1700.0 U.
75	534-52-1	4,6-Dinitro-2-Methylphenol	1700.0 U.
76	87-86-5	Pentachlorophenol	1700.0 U.
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1C

NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: ZS9307043

OF TIC FOUND: 5

LAB ID: 1746612

MATRIX: SOIL

FRACTION: BNA

	CAS Number	Compound Name	RT	Estimated Concentration UG/KG (DRY WT)
1		UNKNOWN	13.40	95 J
2		UNKNOWN	21.07	89 J
3		UNKNOWN ALKANE	26.31	73 J
4		HEXANEDIOIC ACID	29.61	2300 J
5		UNKNOWN	36.35	300 J
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1 D-T

NYTEST ENVIRONMENTAL INC.

TCL PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX:	SOIL	SAMPLE ID:	ZS9307043
CONC. LEVEL:	LOW	LAB SAMPLE ID:	1746612
EXTRACTION DATE:	7/17/93	DIL FACTOR:	1.00
ANALYSIS DATE:	7/21/93	% MOISTURE:	3

CMPD #	CAS Number	PESTICIDE/PCB COMPOUND	UG/KG (DRY BASIS)
1	319-84-6	alpha-BHC	8.000 U.
2	319-85-7	beta-BHC	8.000 U.
3	319-86-8	delta-BHC	8.000 U.
4	58-89-9	gamma-BHC(Lindane)	8.000 U.
5	76-44-8	Heptachlor	8.000 U.
6	309-00-2	Aldrin	8.000 U.
7	1024-57-3	Heptachlor Epoxide	8.000 U.
8	959-98-8	Endosulfan I	8.000 U.
9	60-57-1	Dieldrin	16.000 U.
10	72-55-9	4,4'-DDE	16.000 U.
11	70-20-8	Endrin	16.000 U.
12	33213-65-9	Endosulfan II	16.000 U.
13	72-54-8	4,4-DDD	16.000 U.
14	1031-07-8	Endosulfan Sulfate	16.000 U.
15	50-29-3	4,4'-DDT	16.000 U.
16	72-43-5	Methoxychlor	80.000 U.
17	53494-70-5	Endrin Ketone	16.000 U.
18	7421-36-3	Endrin Aldehyde	16.000 U.
19	57-74-9	Chlordane	80.000 U.
20	8001-35-2	Toxaphene	160.000 U.
21	12674-11-2	Aroclor-1016	NA
22	11104-28-2	Aroclor-1221	NA
23	11141-16-5	Aroclor-1232	NA
24	53469-21-9	Aroclor-1242	NA
25	12672-29-6	Aroclor-1248	NA
26	11097-69-1	Aroclor-1254	NA
27	11096-82-5	Aroclor-1260	NA

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ZS9307043

Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9319659___

Code: 10195_ Case No.: 17466_ SAS No.: _____ SDG No.: 17466_

Matrix (soil/water): SOIL_ Lab Sample ID: 746612____

Level (low/med): LOW__ Date Received: 07/15/93

% Solids: _97.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2710		*	P
7440-36-0	Antimony	3.1	U		P
7440-38-2	Arsenic	0.76	B		F
7440-39-3	Barium	11.0	B		P
7440-41-7	Beryllium	0.17	B		P
7440-43-9	Cadmium	0.41	U		P
7440-70-2	Calcium	262	B		P
7440-47-3	Chromium	3.5		*	P
7440-48-4	Cobalt	1.6	B		P
7440-50-8	Copper	28.2		N*	P
7439-89-6	Iron	3520			P
7439-92-1	Lead	4.2			F
7439-95-4	Magnesium	699			P
7439-96-5	Manganese	69.8			P
7439-97-6	Mercury	1.5			CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	279	B		P
7782-49-2	Selenium	0.52	U	S	F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	132	U		P
7440-28-0	Thallium	0.52	U		F
7440-62-2	Vanadium	6.0			P
7440-66-6	Zinc	28.1			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

ZS9307043

FORM I - IN

CATCH BASIN 2

AL8020.93

BROOKHAVEN NATIONAL LABORATORY
SAFETY & ENVIRONMENTAL PROTECTION DIVISION

ANALYTICAL SERVICES REPORT

Report No.: 93-267
Date Received: 10/7/93
Date Reported: 11/19/93
Chain-of-custody: 9301841

Analysis Requested by: R. Lee
Route Results to : R. Lee

==========

A soil sample collected from Bldg. 464 was received by the S&EP Analytical Laboratory for the analyses of Target Compound List (TCL) and Target Analyte List (TAL) of US EPA Contract Laboratory Program (CLP).

The sample was analyzed by Nytest Environmental, a NY State certified laboratory following the referenced methods. The data received from the off-site laboratory were reviewed by S. Chalasani and found to meet the expected QC of the methods used. For ready reference, the sample information and the results are summarized below.

S&EP ID	DATE	SAMPLE DESCRIPTION	RESULT
ZS9310015	10/7/93	B. 464 basin # 2 bottom soil	see below
ZS9310016	"	"	"

Results:

1) None of the target VOC or BNA compounds were detected above typical MDLs.
2) Except for PCB-1254 at 6.7 ppm, none of the other target compounds of the Pesticide/PCB fraction were detected in the sample above typical MDLs. The presence of PCBs was further confirmed by the library search of the BNA fraction for TICs.
4) The following metals were detected above typical MDLs.

Element	Concentration (ppm)	Element	Concentration (ppm)
aluminum	750	manganese	23
chromium	3.9	mercury	0.21
iron	1700	zinc	7.9

Report prepared by: Shahi Chalasani

nytest environmental inc

Project No.: 9319659
Log in No. : 18476
P.O. No. : 700033
Date : Oct. 29, 1993

ANALYTICAL DATA REPORT
PACKAGE FOR

Brookhaven National Laboratories

Bldg. 535A, N. Technology Street

Upton, NY 11973

ATTN: Seshu Chalasani
REF: Bldg 464

LABORATORY NUMBER	SAMPLE IDENTIFICATION	TYPE OF SAMPLE

SEE NEXT PAGE

WE CERTIFY THAT THIS REPORT IS A TRUE REPORT OF RESULTS OBTAINED FROM OUR TESTS OF THIS MATERIAL.

RESPECTFULLY SUBMITTED,
NYTEST ENVIRONMENTAL INC.

REMO GIGANTE
EXEC. VICE PRESIDENT

NYS Lab ID. #10195
NJ Cert. #73469
dg

NYTEST ENVIRONMENTAL Inc.

LABORATORY NUMBER	SAMPLE IDENTIFICATION	TYPE OF SAMPLE
1847601	ZS9310015	Soil
1847602	ZS9310016	Soil

BROOKHAVEN NATIONAL LABORATORY

SAFETY & ENVIRONMENTAL PROTECTION DIVISION

CHAIN OF CUSTODY RECORD

COC – 930184 1

Page 1 of 1

SHIP TO: (VENDOR LAB) NYTEST

Attn:

VENDOR
REPORT TO: Client Name ~~S. Chalasani~~ "
Address BNL SEP
Bldg 535A Upton NY 11973
Phone 282-7044
Attn: S Chalasani

1 BNL P.O. No.	2 Project Name:	3 Sampler (Signature): / Print Name: LETTIERI
700033	Bldg 464	

4 Purpose of Sampling: ☐ E.M. Routine Disposal - ☐ Compliance - ☒ Characterization - ☐ Other

5 Level of Contamination (If Known) Rad: Non-Rad:

6 Internal Routing of Analytical Results:

Name	J NAIDU	B. LEE		
Bldg No.	129	129		
Extension	4263	3148		

7 Sample ID	8 Date/Time Sampled		9 Sample Description	10 No. of Containers	11 ANALYSIS REQUESTED	Method and Deliverables
ZS9310015	10/6/93	0951	Soil bldg 464 bottom	2	VOA fraction of TCL	
—	—	—	of basin #2	—	—	
ZS9310016	10/6/93	0952	" "	2	Balance to TCL & TNL	

Relinquished by (Signature)	Date	Time	Rec'd. by (Signature)	Date	Time
Print Name LETTIERI	10/7/93	0936	Print Name	10-7-93	0930
Relinquished by (Signature) LLOYD #47	Date 10.07.93	Time 1515	Rec'd. by (Signature) LLOYD #47	Date	Time 15:15
Print Name LLOYD #47			Print Name LLOYD #47 HBT		

12 Special Instructions/Comments/Priority:

Possible Hazard Identification: Non-Hazard ____ Flammable ____ Skin Irritant ____ Toxic ____ Radioactive ____

Sample Disposal: Return to Sampler ____ Disposal by Lab ____

0000001

BNL F 2936

WHITE COPY FOR CUSTODIAN YELLOW FOR SHIPPING PINK COPY FOR SAMPLER

DATA REPORTING COMMENT PAGE

QUALIFIERS:

U - Indicates compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the reported detection limit but greater than zero.

B - This flag is used when the analyte is found in the method blank as well as in the sample.

T - This flag identifies all targeted compounds that were found above the method detection limits.

A - Aldol Condensation Product (formed from Acetone reacting with Methylene Chloride solvents used in the extraction of soil samples, not associated with sample constituents)

D - Diluted out

NA - Not applicable by contract

Data on soil samples are expressed on a dry weight basis.

All non-aqueous samples are reported on soil forms. This includes samples whose matrix is listed as miscellaneous.

The Initial and Continuing Calibration dates and times for the volatile fractions are listed on the BFB summary forms.

The Initial and Continuing Calibration dates and times for the semivolatile fractions are listed on the DFTPP summary forms.

SAMPLE SUFFIXES: RE - Re-analyzed sample
DL - Sample analyzed at a secondary dilution

METHOD BLANK NOMENCLATURE - FBLK##:

F - Fraction (V for Volatiles, S for Semivolatiles)
BLK - Indicates a blank
- Arbitrarily assigned number for that blank

GC/MS STANDARD NOMENCLATURE - FSTD###:

F - Fraction (V for Volatiles, S for Semivolatiles)
STD - Indicates a standard
- Concentration in ppb of Volatile standards, or amount injected in ng for Semivolatile standards

Method Qualifiers for Inorganics

FORM I-IN includes fields for three types of results qualifiers. These qualifiers must be completed as follows:

* C (Concentration) qualifier -- Enter "B" if the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

* Q qualifier -- Specified entries and their meanings are as follows:

  E - The reported value is estimated because of the presence of interference.

  M - Duplicate precision not met (CV > 20%).

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by Method of Standard Addition (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85 - 115%), while sample absorbance is less than 50% of spike absorbance.

  * - Duplicate analysis not within control limits.

  + - Correlation Coefficient for the MSA is less than 0.995.

  Entering "S", "W" or "+" is mutually exclusive.

* M (Method) qualifier - enter:

  - "P" for ICP
  - "A" for Flame AA
  - "F" for Furnace AA
  - "CV" for Cold Vapor AA
  - "AV" for Automated Cold Vapor AA
  - "AS" for Semi-Automated Spectrophotometric
  - "C" for Manual Spectrophotometric
  - "T" for Titrimetric
  - "NR" if the analyte is not required to be analyzed.

REPORT OF ANALYSIS

Log in No.:18476

We find as follows:

Results in mg/kg (dry wt. basis):

Sample Identification	Parameter(s)
	Total Cyanide
1847601 ZS9310016	<0.20
Method Blank	<0.20

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 10/12/93

SAMPLE ID: ZS9310015
LAB ID: 1847601
DIL FACTOR: 1.00
% MOISTURE: 3

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	2.0 J.
6	67-64-1	2-Propanone	10.0 U.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
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1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 10/12/93

SAMPLE ID: ZS9310015
LAB ID: 1847601
DIL FACTOR: 1.00
% MOISTURE: 3

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	2.0 J.
6	67-64-1	2-Propanone	10.0 U.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
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1 B-T

NYTEST ENVIRONMENTAL INC.

TCL SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
EXTRACTION DATE: 10/12/93
ANALYSIS DATE: 10/15/93

SAMPLE ID: ZS9310016
LAB ID: 1847602
DIL FACTOR: 1.00
% MOISTURE: 4

CMPD #	CAS Number	BASE NEUTRAL COMPOUNDS	UG/KG (DRY BASIS)
1	111-44-4	bis(2-Chloroethyl)ether	340.0 U.
2	541-73-1	1,3-Dichlorobenzene	340.0 U.
3	106-46-7	1,4-Dichlorobenzene	340.0 U.
4	95-50-1	1,2-Dichlorobenzene	340.0 U.
5	108-60-1	bis(2-chloroisopropyl)ether	340.0 U.
6	621-64-7	N-Nitroso-Di-n-Propylamine	340.0 U.
7	67-72-1	Hexachloroethane	340.0 U.
8	98-95-3	Nitrobenzene	340.0 U.
9	78-59-1	Isophorone	340.0 U.
10	111-91-1	bis(2-chloroethoxy)Methane	340.0 U.
11	120-82-1	1,2,4-Trichlorobenzene	340.0 U.
12	106-47-8	4-Chloroaniline	340.0 U.
13	87-68-3	Hexachlorobutadiene	340.0 U.
14	91-57-6	2-Methylnaphthalene	340.0 U.
15	77-47-4	Hexachlorocyclopentadiene	340.0 U.
16	91-58-7	2-Chloronaphthalene	340.0 U.
17	88-74-4	2-Nitroaniline	1700.0 U.
18	131-11-3	Dimethyl Phthalate	340.0 U.
19	99-09-2	3-Nitroaniline	1700.0 U.
20	132-64-9	Dibenzofuran	340.0 U.
21	121-14-2	2,4-Dinitrotoluene	340.0 U.
22	606-20-2	2,6-Dinitrotoluene	340.0 U.
23	84-66-2	Diethylphthalate	340.0 U.
24	7005-72-3	4-Chlorophenyl-phenylether	340.0 U.
25	100-01-6	4-Nitroaniline	1700.0 U.
26	86-30-6	N-Nitrosodiphenylamine	340.0 U.
27	101-55-3	4-Bromophenyl-phenylether	340.0 U.
28	118-74-1	Hexachlorobenzene	340.0 U.
29	84-74-2	Di-n-Butylphthalate	75.0 J.
30	85-68-7	Butylbenzylphthalate	340.0 U.
31	91-94-1	3,3'-Dichlorobenzidine	690.0 U.
32	117-81-7	bis(2-Ethylhexyl)Phthalate	340.0 U.
33	117-84-0	Di-n-Octyl Phthalate	340.0 U.
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CMPD #	CAS Number	BASE NEUTRAL/PAH COMPOUNDS	UG/KG (DRY BASIS)
42	91-20-3	Naphthalene	340.0 U.
43	208-96-8	Acenaphthylene	340.0 U.
44	83-32-9	Acenaphthene	340.0 U.
45	86-73-7	Fluorene	340.0 U.
46	85-01-8	Phenanthrene	340.0 U.
47	120-12-7	Anthracene	340.0 U.
48	206-44-0	Fluoranthene	340.0 U.
49	129-00-0	Pyrene	340.0 U.
50	56-55-3	Benzo(a)Anthracene	340.0 U.
51	218-01-9	Chrysene	340.0 U.
52	205-99-2	Benzo(b)Fluoranthene	340.0 U.
53	207-08-9	Benzo(k)Fluoranthene	340.0 U.
54	50-32-8	Benzo(a)Pyrene	340.0 U.
55	193-39-5	Indeno(1,2,3-cd)Pyrene	340.0 U.
56	53-70-3	Dibenz(a,h)Anthracene	340.0 U.
57	191-24-2	Benzo(g,h,i)Perylene	340.0 U.
58			
59			
60			
		ACID COMPOUNDS	
61	108-95-2	Phenol	340.0 U.
62	95-57-8	2-Chlorophenol	340.0 U.
63	100-51-6	Benzyl Alcohol	340.0 U.
64	95-48-7	2-Methylphenol	340.0 U.
65	106-44-5	4-Methylphenol	340.0 U.
66	88-75-5	2-Nitrophenol	340.0 U.
67	105-67-9	2,4-Dimethylphenol	340.0 U.
68	65-85-0	Benzoic Acid	1700.0 U.
69	120-83-2	2,4-Dichlorophenol	340.0 U.
70	59-50-7	4-Chloro-3-Methylphenol	340.0 U.
71	88-06-2	2,4,6-Trichlorophenol	340.0 U.
72	95-95-4	2,4,5-Trichlorophenol	1700.0 U.
73	51-28-5	2,4-Dinitrophenol	1700.0 U.
74	100-02-7	4-Nitrophenol	1700.0 U.
75	534-52-1	4,6-Dinitro-2-Methylphenol	1700.0 U.
76	87-86-5	Pentachlorophenol	1700.0 U.
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U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ZS9310016

ab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9319659___

ab Code: 10195_ Case No.: 18476_ SAS No.: _____ SDG No.: 18476_

atrix (soil/water): SOIL_ Lab Sample ID: 847602____

evel (low/med): LOW__ Date Received: 10/07/93

Solids: _95.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	745			P
7440-36-0	Antimony	3.2	U		P
7440-38-2	Arsenic	0.55	B		F
7440-39-3	Barium	3.2	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.41	U		P
7440-70-2	Calcium	63.5	U		P
7440-47-3	Chromium	3.9			P
7440-48-4	Cobalt	1.0	U		P
7440-50-8	Copper	2.0	B		P
7439-89-6	Iron	1660			P
7439-92-1	Lead	3.5	U		P
7439-95-4	Magnesium	227	B		P
7439-96-5	Manganese	22.5		E	P
7439-97-6	Mercury	0.21			CV
7440-02-0	Nickel	2.0	U		P
7440-09-7	Potassium	196	U		P
7782-49-2	Selenium	0.49	U	N	F
7440-22-4	Silver	0.41	U		P
7440-23-5	Sodium	26.1	B		P
7440-28-0	Thallium	0.49	U		F
7440-62-2	Vanadium	2.8	B		P
7440-66-6	Zinc	7.9			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

ZS9310016

CATCH BASIN 3

BROOKHAVEN NATIONAL LABORATORY
SAFETY AND ENVIRONMENTAL PROTECTION DIVISION

ANALYTICAL SERVICES REPORT

Report No. : 93-205
Date Received : 7/22/93
Date Reported : 8/31/93

Analysis Requested By : R. Lee
Route Results To : R. Lee

One soil sample collected on 7/22/93 from Bldg. 464 Basin # 3 was received by the S&EP Analytical Laboratory for the analyses of US EPA Contract Laboratory program (CLP) Target Compound List (TCL or Organics) and Target Analyte List (TAL or inorganics including cyanide) parameters.

The sample was analyzed by Nytest Environmental Inc., a NY State certified laboratory, following the referenced methods. The data received from the off-site laboratory were reviewed by S. Chalasani and found to be acceptable. For ready reference, the sample information and the analytical results are summarized below.

S&EP ID	Date	Sample Description	Parameter
ZS9307057	7/22/93	B.464 basin # 3, 5-2' cores composited	Balance of TCL & TAL
ZS9307059	"	B.464 Basin # 3	VOA of TCL

Results:

1) None of the TCL compounds analyzed, except for bis-(2-ethylhexyl)phthalate at 1400 ppb, were detected in the sample. For a list of analytes and their detection limits, please refer to attached analytical report.

2) Out of the target 23 metals and cyanide of TAL, the following listed elements were detected above the typical MDLs. Please refer to the attached analytical report for a complete list of analytes.

Element	Concentration mg/Kg (ppm)	Element	Concentration mg/Kg (ppm)
aluminum	1700	Manganese	49
chromium	21	mercury	0.52
copper	10	nickel	4.1
iron	3500	zinc	45
lead	10		

Report prepared by: Sasha Chalasani

nytest environmental inc.

REPORT OF ANALYSIS

Log In No.: 17578

We find as follows:

Results in mg/kg (dry wt. basis):

Sample Identification	Parameter(s)
	Total Cyanide
1757801 ZS9307057	<0.20
Method Blank	<0.20
Method Detection Limit	0.20

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ZS9307057

ab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9319659___

b Code: 10195_ Case No.: 17578_ SAS No.: _____ SDG No.: 17578_

atrix (soil/water): SOIL_ Lab Sample ID: 757801____

vel (low/med): LOW__ Date Received: 07/23/93

Solids: _95.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1740			P
7440-36-0	Antimony	3.0	U		P
7440-38-2	Arsenic	0.62	B	WN	F
7440-39-3	Barium	17.1	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	332	B		P
7440-47-3	Chromium	21.3			P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	10.2			P
7439-89-6	Iron	3510			P
7439-92-1	Lead	10.4			F
7439-95-4	Magnesium	377	B		P
7439-96-5	Manganese	48.6			P
7439-97-6	Mercury	0.52		N	CV
7440-02-0	Nickel	4.1			P
7440-09-7	Potassium	253	U		P
7782-49-2	Selenium	0.52	U		F
7440-22-4	Silver	0.67	B	N	P
7440-23-5	Sodium	129	U		P
7440-28-0	Thallium	0.52	U		F
7440-62-2	Vanadium	4.4	B		P
7440-66-6	Zinc	45.0			P

olor Before: _____ Clarity Before: _____ Texture: _____

olor After: _____ Clarity After: _____ Artifacts: _____

mments:

ZS9307057

CATCH BASIN 4

BROOKHAVEN NATIONAL LABORATORY
SAFETY AND ENVIRONMENTAL PROTECTION DIVISION

ANALYTICAL SERVICES REPORT

Report No. : 93- 178
Date Received : 6/16/93
Date Reported : 7/19/93

Analysis Requested By : R. Lee
Route Results To : R. Lee

A soil sample collected on 6/16/93 from Bldg. 464 construction area was received by the S&EP Analytical Laboratory for the analyses of parameters listed in Target Compound List (TCL or Organics) and Target Analyte List (TAL or Inorganics) of US EPA Contract Laboratory Program (CLP) protocols.

The sample was analyzed by Nytest Environmental, a NY State certified laboratory, following the prescribed protocols. The data received from the off-site laboratory were reviewed by S. Chalasani and found to be acceptable. For ready reference, the sample information and the analytical results are summarized below.

S&EP ID	Sample Description	Result
ZS9306099 & ZS9306100	B.464 Floor of area Drain # 4	See below

Result: None of the target TCL/TAL parameters, except the metals listed below, were detected in the sample above the typical detection limit. For a list of analytes and their typical method detection limits, please refer to the attached report.

Parameter	Concentration (mg/Kg, ppm)
aluminum	4400
calcium	1000
chromium	6.3
copper	8.9
iron	5700
lead	29
magnesium	860
manganese	67
mercury	0.44
nickel	5.8
vanadium	10
zinc	32

Report prepared by: Sashi Chalasani

NYTEST ENVIRONMENTAL Inc.

LABORATORY NUMBER	SAMPLE IDENTIFICATION	TYPE OF SAMPLE
1718901	ZS9306099	Soil
1718902	ZS9306100	Soil

BROOKHAVEN NATIONAL LABORATORY
SAFETY & ENVIRONMENTAL PROTECTION DIVISION
CHAIN OF CUSTODY RECORD

COC - 9730110188

Page 1 of 3

SHIP TO: (VENDOR LAB)
NY Test
Attn: Mike Brennan

VENDOR
REPORT TO: Client Name BNL
Address UPTON NY 11973
Bldg 535A SWSD
Phone 282-7044
Attn: S. Chalasani

1 BNL P.O. No.	2 Project Name:	3 Sampler (Signature): R Manitta
700033	Bldg 464	Print Name: R. Lagattolla

4 Purpose of Sampling: ☐ E.M. Routine Disposal - ☐ Compliance - ☒ Characterization - ☐ Other

5 Level of Contamination (If Known) Rad: ? Non-Rad:

6 Internal Routing of Analytical Results:

Name	T. Naidu	B. Lee		
Bldg No.	129	129		
Extension	4263	3145		

7 Sample ID	8 Date/Time Sampled		9 Sample Description	10 No. of Containers	11 ANALYSIS REQUESTED	Method and Deliverables
EF9306093	6/16/93	1350	Bldg 464 Field Blank	2	Hg	
ES9306094	6/16/93	1437	Pipe Joint Basin 2 & 3	21	Hg	
ES9306095	6/16/93	1438	N. of Joint Basin 2 & 3	1	Hg	
ES9306096	6/16/93	1443	17' S. of Basin 3-3' West	1	Hg	
ES9306097	6/16/93	1444	17' S. of Basin 3-3' East	1	Hg	
ES9306098	6/16/93	1448	Pipe Between 2 & 3 Below Joint	1	Hg	
* ES9306099	6/16/93	1501	Floor of Area Drain #4	2	VOA Fraction of TCL List	RUSH ANALYSIS
* ES9306100	6/16/93	1504	Floor of Area Drain #4	4	TAL + Balance of TCL List	RUSH
ES9306101	6/16/93	1513	E. of Pipe Basin 1 & 3	1	Hg	
ES9306102	6/16/93	1515	Joint of Pipe Basin 1 & 3	1	Hg	
ES9306103	6/16/93	1525	Basin #3 Inside Pipe	1	Hg	
ES9306104	6/16/93	1535	Basin 2 & 3 pipe inside Soil Pipe	1	Hg	

Relinquished by (Signature)	Date	Time	Rec'd. by (Signature)	Date	Time
R Manitta	6/17/93	0912	A Meier	6/17/93	0912
Print Name: R. Lagattolla			Print Name: A Meier		
Relinquished by (Signature): A Meier	6/17/93	1514	Rec'd. by (Signature)	6/17/93	1514
Print Name: A. Meier			Print Name		

12 Special Instructions/Comments/Priority: Results Need by 6/21/93 9AM 6/17/93 1725 6/17/93 1705

Possible Hazard Identification: Non-Hazard ____ Flammable ____ Skin Irritant ____ Toxic ____ Radioactive ____
Sample Disposal: Return to Sampler ____ Disposal by Lab ____ 000001

BNL F 2936

WHITE COPY FOR CUSTODIAN YELLOW FOR SHIPPING PINK COPY FOR SAMPLER

DATA REPORTING COMMENT PAGE

QUALIFIERS:

U - Indicates compound was analyzed for but not detected. The number is the detection limit for the sample.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the reported detection limit but greater than zero.

B - This flag is used when the analyte is found in the method blank as well as in the sample.

T - This flag identifies all targeted compounds that were found above the method detection limits.

A - Aldol Condensation Product (formed from Acetone reacting with Methylene Chloride solvents used in the extraction of soil samples, not associated with sample constituents)

D - Diluted out

NA - Not applicable by contract

Data on soil samples are expressed on a dry weight basis.

All non-aqueous samples are reported on soil forms. This includes samples whose matrix is listed as miscellaneous.

The Initial and Continuing Calibration dates and times for the volatile fractions are listed on the BFB summary forms.

The Initial and Continuing Calibration dates and times for the semivolatile fractions are listed on the DFTPP summary forms.

SAMPLE SUFFIXES:
RE - Re-analyzed sample
DL - Sample analyzed at a secondary dilution

METHOD BLANK NOMENCLATURE - FBLK##:

F - Fraction (V for Volatiles, S for Semivolatiles)
BLK - Indicates a blank
- Arbitrarily assigned number for that blank

GC/MS STANDARD NOMENCLATURE - FSTD###:

F - Fraction (V for Volatiles, S for Semivolatiles)
STD - Indicates a standard
- Concentration in ppb of Volatile standards, or amount injected in ng for Semivolatile standards

Method Qualifiers for Inorganics

FORM I-IN includes fields for three types of results qualifiers. These qualifiers must be completed as follows:

* C (Concentration) qualifier -- Enter "B" if the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

* Q qualifier -- Specified entries and their meanings are as follows:

  E - The reported value is estimated because of the presence of interference.

  M - Duplicate precision not met (CV > 20%).

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by Method of Standard Addition (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85 - 115%), while sample absorbance is less than 50% of spike absorbance.

  * - Duplicate analysis not within control limits.

  + - Correlation Coefficient for the MSA is less than 0.995.

  Entering "S", "W" or "+" is mutually exclusive.

* M (Method) qualifier - enter:

  - "P" for ICP
  - "A" for Flame AA
  - "F" for Furnace AA
  - "CV" for Cold Vapor AA
  - "AV" for Automated Cold Vapor AA
  - "AS" for Semi-Automated Spectrophotometric
  - "C" for Manual Spectrophotometric
  - "T" for Titrimetric
  - "NR" if the analyte is not required to be analyzed.

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 6/18/93

SAMPLE ID: ZS9306099
LAB ID: 1718901
DIL FACTOR: 1.00
% MOISTURE: 6

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	11.0 U.
2	74-83-9	Bromomethane	11.0 U.
3	75-01-4	Vinyl Chloride	11.0 U.
4	75-00-3	Chloroethane	11.0 U.
5	75-09-2	Methylene Chloride	10.0 TB
6	67-64-1	2-Propanone	14.0 T.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	11.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	11.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	11.0 U.
27	591-78-6	2-Hexanone	11.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
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1 B-T

NYTEST ENVIRONMENTAL INC.

TCL SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
EXTRACTION DATE: 06/21/93
ANALYSIS DATE: 06/23/93

SAMPLE ID: ZS9306100
LAB ID: 1718902
DIL FACTOR: 2.00
% MOISTURE: 6

CMPD #	CAS Number	BASE NEUTRAL COMPOUNDS	UG/KG (DRY BASIS)
1	111-44-4	bis(2-Chloroethyl)ether	700.0 U.
2	541-73-1	1,3-Dichlorobenzene	700.0 U.
3	106-46-7	1,4-Dichlorobenzene	700.0 U.
4	95-50-1	1,2-Dichlorobenzene	700.0 U.
5	108-60-1	bis(2-chloroisopropyl)ether	700.0 U.
6	621-64-7	N-Nitroso-Di-n-Propylamine	700.0 U.
7	67-72-1	Hexachloroethane	700.0 U.
8	98-95-3	Nitrobenzene	700.0 U.
9	78-59-1	Isophorone	700.0 U.
10	111-91-1	bis(2-chloroethoxy)Methane	700.0 U.
11	120-82-1	1,2,4-Trichlorobenzene	700.0 U.
12	106-47-8	4-Chloroaniline	700.0 U.
13	87-68-3	Hexachlorobutadiene	700.0 U.
14	91-57-6	2-Methylnaphthalene	700.0 U.
15	77-47-4	Hexachlorocyclopentadiene	700.0 U.
16	91-58-7	2-Chloronaphthalene	700.0 U.
17	88-74-4	2-Nitroaniline	3500.0 U.
18	131-11-3	Dimethyl Phthalate	700.0 U.
19	99-09-2	3-Nitroaniline	3500.0 U.
20	132-64-9	Dibenzofuran	700.0 U.
21	121-14-2	2,4-Dinitrotoluene	700.0 U.
22	606-20-2	2,6-Dinitrotoluene	700.0 U.
23	84-66-2	Diethylphthalate	700.0 U.
24	7005-72-3	4-Chlorophenyl-phenylether	700.0 U.
25	100-01-6	4-Nitroaniline	3500.0 U.
26	86-30-6	N-Nitrosodiphenylamine	700.0 U.
27	101-55-3	4-Bromophenyl-phenylether	700.0 U.
28	118-74-1	Hexachlorobenzene	700.0 U.
29	84-74-2	Di-n-Butylphthalate	700.0 U.
30	85-68-7	Butylbenzylphthalate	700.0 U.
31	91-94-1	3,3'-Dichlorobenzidine	1400.0 U.
32	117-81-7	bis(2-Ethylhexyl)Phthalate	700.0 U.
33	117-84-0	Di-n-Octyl Phthalate	700.0 U.
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CMPD #	CAS Number	BASE NEUTRAL/PAH COMPOUNDS	UG/KG (DRY BASIS)
42	91-20-3	Naphthalene	700.0 U.
43	208-96-8	Acenaphthylene	700.0 U.
44	83-32-9	Acenaphthene	700.0 U.
45	86-73-7	Fluorene	700.0 U.
46	85-01-8	Phenanthrene	71.0 J.
47	120-12-7	Anthracene	700.0 U.
48	206-44-0	Fluoranthene	130.0 J.
49	129-00-0	Pyrene	76.0 J.
50	56-55-3	Benzo(a)Anthracene	700.0 U.
51	218-01-9	Chrysene	700.0 U.
52	205-99-2	Benzo(b)Fluoranthene	700.0 U.
53	207-08-9	Benzo(k)Fluoranthene	700.0 U.
54	50-32-8	Benzo(a)Pyrene	700.0 U.
55	193-39-5	Indeno(1,2,3-cd)Pyrene	700.0 U.
56	53-70-3	Dibenz(a,h)Anthracene	700.0 U.
57	191-24-2	Benzo(g,h,i)Perylene	700.0 U.
58			
59			
60			
		ACID COMPOUNDS	
61	108-95-2	Phenol	700.0 U.
62	95-57-8	2-Chlorophenol	700.0 U.
63	100-51-6	Benzyl Alcohol	700.0 U.
64	95-48-7	2-Methylphenol	700.0 U.
65	106-44-5	4-Methylphenol	700.0 U.
66	88-75-5	2-Nitrophenol	700.0 U.
67	105-67-9	2,4-Dimethylphenol	700.0 U.
68	65-85-0	Benzoic Acid	3500.0 U.
69	120-83-2	2,4-Dichlorophenol	700.0 U.
70	59-50-7	4-Chloro-3-Methylphenol	700.0 U.
71	88-06-2	2,4,6-Trichlorophenol	700.0 U.
72	95-95-4	2,4,5-Trichlorophenol	3500.0 U.
73	51-28-5	2,4-Dinitrophenol	3500.0 U.
74	100-02-7	4-Nitrophenol	3500.0 U.
75	534-52-1	4,6-Dinitro-2-Methylphenol	3500.0 U.
76	87-86-5	Pentachlorophenol	3500.0 U.
77			
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80			

1 D-T

NYTEST ENVIRONMENTAL INC.

TCL PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX:	SOIL	SAMPLE ID:	ZS9306100
CONC. LEVEL:	LOW	LAB SAMPLE ID:	1718902
EXTRACTION DATE:	6/21/92	DIL FACTOR:	1.00
ANALYSIS DATE:	6/23/93	% MOISTURE:	6

CMPD #	CAS Number	PESTICIDE/PCB COMPOUND	UG/KG (DRY BASIS)
1	319-84-6	alpha-BHC	9.000 U.
2	319-85-7	beta-BHC	9.000 U.
3	319-86-8	delta-BHC	9.000 U.
4	58-89-9	gamma-BHC(Lindane)	9.000 U.
5	76-44-8	Heptachlor	9.000 U.
6	309-00-2	Aldrin	9.000 U.
7	1024-57-3	Heptachlor Epoxide	9.000 U.
8	959-98-8	Endosulfan I	9.000 U.
9	60-57-1	Dieldrin	17.000 U.
10	72-55-9	4,4'-DDE	17.000 U.
11	70-20-8	Endrin	17.000 U.
12	33213-65-9	Endosulfan II	17.000 U.
13	72-54-8	4,4-DDD	17.000 U.
14	1031-07-8	Endosulfan Sulfate	17.000 U.
15	50-29-3	4,4'-DDT	17.000 U.
16	72-43-5	Methoxychlor	85.000 U.
17	53494-70-5	Endrin Ketone	17.000 U.
18	7421-36-3	Endrin Aldehyde	17.000 U.
19	57-74-9	Chlordane	85.000 U.
20	8001-35-2	Toxaphene	170.000 U.
21	12674-11-2	Aroclor-1016	85.000 U.
22	11104-28-2	Aroclor-1221	85.000 U.
23	11141-16-5	Aroclor-1232	85.000 U.
24	53469-21-9	Aroclor-1242	85.000 U.
25	12672-29-6	Aroclor-1248	85.000 U.
26	11097-69-1	Aroclor-1254	170.000 U.
27	11096-82-5	Aroclor-1260	170.000 U.

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

ZS9306100

b Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9319659___

_ Code: 10195_ Case No.: 17189_ SAS No.: _____ SDG No.: 17189_

rix (soil/water): SOIL_ Lab Sample ID: 718902____

vel (low/med): LOW__ Date Received: 06/17/93

olids: _93.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4430			P
7440-36-0	Antimony	6.4	U		P
7440-38-2	Arsenic	0.98	B		F
7440-39-3	Barium	12.1	B		P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	0.53	U	*	P
7440-70-2	Calcium	1040			P
7440-47-3	Chromium	6.3			P
7440-48-4	Cobalt	4.0	B		P
7440-50-8	Copper	8.9		*	P
7439-89-6	Iron	5710			P
7439-92-1	Lead	29.3		*	P
7439-95-4	Magnesium	858			P
7439-96-5	Manganese	66.8			P
7439-97-6	Mercury	0.44			CV
7440-02-0	Nickel	5.8			P
7440-09-7	Potassium	389	B		P
7782-49-2	Selenium	0.53	U		F
7440-22-4	Silver	0.64	U	N	P
7440-23-5	Sodium	104	U		P
7440-28-0	Thallium	0.53	U	+N	F
7440-62-2	Vanadium	10.3			P
7440-66-6	Zinc	32.4			P

lor Before: _____ Clarity Before: _____ Texture: _____

lor After: _____ Clarity After: _____ Artifacts: _____

mments:

ZS9306100

nytest environmental inc

REPORT OF ANALYSIS

Log In No.: 17189

We find as follows:

Results in mg/kg (dry wt. basis):

Sample Identification	Parameter(s)
	Total Cyanide
1718902 ZS9306100	<0.20
METHOD BLANK	<0.20
METHOD DETECTION LIMIT	0.20

ATTACHMENT B

HAZARDOUS WASTE MANIFESTS

48-14-1 (3/89)—71

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

NOV 04 1993

Please print or type. Do not Staple.

Form Approved, OMB No. 2050-0039, Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. NY7890008975 — Manifest Document No. 1193

2. Page 1 of 1 — Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
Brookhaven National Laboratory
Bldg 535A Upton, NY 11973

4. Generator's Phone (516) 282-7651

A. State Manifest Document No. NYB 463272 3

B. Generator's ID SAME

5. Transporter 1 (Company Name) HORWITH TRUCKS INC.

6. US EPA ID Number DAD064035819

C. State Transporter's ID TV-2134 PA

D. Transporter's Phone (215) 261-2220

7. Transporter 2 (Company Name)

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone ( )

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

10. US EPA ID Number NYD049836679

G. State Facility's ID SAME

H. Facility's Phone (716) 754-8231

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, ~~Hazardous Wa~~ (c2) ENVIRONMENTALLY Hazardous Substances, Solid, NOS, 9, UN3077, III, (D009)	x x 1	CM	30980 (est.)	P	EPA D009 STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above
a. 100% soil & PPE & Plastic with Mercury AB8318
b.
c.
d.

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

15. Special Handling Instructions and Additional Information 24 hour Emergency Phone (800) 765-8713
a.) BNL Code H16
W.O.# 35129-1
CD REQUIRED
AC #393-085
Job #65179
TASK ORDER

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

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

GENERATOR

Printed/Typed Name: Karl M. Shurberg — Signature — Mo. 01 Day 03 Year 93

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: E. Solderitz JR. — Signature — Mo. 11 Day 03 Year 93

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

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Mo. Day Year

EPA Form 8700-22 (Rev. 3-88) Previous editions are obsolete.

48-14-1 (3/89)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

SEP 2 1993

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No.: NY7890008975 — Manifest Document No.: 08493
2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

A. State Manifest Document No.: NY B [illegible]

3. Generator's Name and Mailing Address: Brookhaven National Laboratory, Bldg. 534A, Upton, NY 11973
4. Generator's Phone (516) 282-3466

B. Generator's ID: SAME

5. Transporter 1 (Company Name): Chemical Waste Management, Inc.
6. US EPA ID Number: ILD095202681

C. State Transporter's ID: [illegible]
D. Transporter's Phone ([illegible]) [illegible]

7. Transporter 2 (Company Name):
8. US EPA ID Number:

E. State Transporter's ID:
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: CWM Chemical Services, Inc., 1550 Balmer Road, Model City, NY 14107
10. US EPA ID Number: NYD049836679

G. State Facility's ID: SAME
H. Facility's Phone: (716) 754-8231

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Environmentally Hazardous Substances, Solids, N.O.S. 9, UN3077, III, (D009)	001	DT? CM	35500	P	EPA D009; STATE
b.					EPA; STATE
c.					EPA; STATE
d.					EPA; STATE

J. Additional Descriptions for Materials Listed Above
a. [illegible], BNL soil & debris contaminated with mercury.
b.
c.
d.

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

15. Special Handling Instructions and Additional Information: 24 Hour Emergency Phone (800)[illegible] CD REQUIRED
Dept. of Agriculture permit # 382854 81402653
PC # [illegible]
JN # [illegible]
Work Order#12
Work Order # ____ SR#18280 - ERG #31

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

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

Printed/Typed Name: Michael F Clancy Jr — Signature: [signature] — Mo. Day Year: 09 16 93

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: Jack Fentry — Signature: [signature] — Mo. Day Year: 09 16 93

18. Transporter 2 (Acknowledgement or Receipt of Materials)
Printed/Typed Name: PHIL SMITH — Signature: [signature] — Mo. Day Year: 09 1? 93

19. Discrepancy Indication Space: Item K - L
DRIVER CHANGE ACTUAL READ 35100P

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Lynn Piechowski — Signature: [signature] — Mo. Day Year: 08 20 93

EPA Form 8700-22 (Rev. [illegible]) Previous editions are obsolete.

48-14-1 (3/89)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. [redacted] Manifest Document No. [redacted]

2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
[redacted]

4. Generator's Phone ([redacted]

A. State Manifest Document No. NY B [redacted]

B. Generator's ID [redacted]

5. Transporter 1 (Company Name)
Chemical Waste Management, Inc.

6. US EPA ID Number [redacted]

C. State Transporter's ID [redacted]

D. Transporter's Phone ([redacted]

7. Transporter 2 (Company Name)

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone ( )

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

10. US EPA ID Number [redacted]

G. State Facility's ID [redacted]

H. Facility's Phone (716 [redacted]

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. NA, Environmentally Hazardous Substances, Solids, N.O.S. 9, NA3077, III, (B001)	[redacted]	CM	39400 Est	P	EPA [redacted] STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials listed Above
[redacted] contaminated with mercury.

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

15. Special Handling Instructions and Additional Information
24 Hour Emergency Phone (800)765-0713 ID [redacted]
Dept. of Agriculture permit # 382851 9140113
Work Order # 17100-2 PROFILE # 108318 ERG# 31

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

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

Printed/Typed Name	Signature	Mo.	Day	Year
[illegible]	[signature]	07	26	93

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year
WILLIAM HUNT	[signature]	07	26	93

18. Transporter 2 (Acknowledgement or Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year

19. Discrepancy Indication Space
ITEM K-[illegible]
actual heat 32980 +

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

Printed/Typed Name	Signature	Mo.	Day	Year
EILEEN CARTER	[signature]	07	27	93

EPA Form 3700-22 (Rev. 3-88) Previous editions are obsolete.

48-14-1 (3/89)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No.: NY7890008975 — Manifest Document No.: 07173
2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address: Brookhaven National Laboratory, Bldg. 535A, Upton, NY 11973
4. Generator's Phone (516) 282-3466

A. State Manifest Document No.: NY B 463275 9

B. Generator's ID: SAME

5. Transporter 1 (Company Name): Chemical Waste Management, Inc.
6. US EPA ID Number: ILD099202681

C. State Transporter's ID: [illegible]

D. Transporter's Phone ([illegible]) [illegible]

7. Transporter 2 (Company Name):
8. US EPA ID Number:

E. State Transporter's ID

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: CWM Chemical Services, Inc., 1550 Balmer Road, Model City, NY 14107
10. US EPA ID Number: NYD049836679

G. State Facility's ID: SAME

H. Facility's Phone (716) 754-8231

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Environmentally Hazardous Substances, Solid, N.O.S. 9, UN3077, III, (D009)	001	T.H CM	EST. 39200	P	EPA D009 STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above
a [illegible], [illegible] soil & debris contaminated with mercury.
b
c
d

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

15. Special Handling Instructions and Additional Information: 24 Hour Emergency Phone (800)765-0713 [illegible]
Dept. of Agriculture permit # 372452 ERG#31 [illegible]
Work Order # 17100-1 8140111C Profile # AD9319 [illegible]

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

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

Printed/Typed Name: Michael F Chery Jr. — Signature: [signature] — Mo. Day Year: 07 26 93

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name: Patrick H. Hurley — Signature: [signature] — Mo. Day Year: 07 26 93

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

19. Discrepancy Indication Space
actual rec'd 30920 P

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: EILEEN CARTER — Signature: Eileen Carter — Mo. Day Year: 07 27 93

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION
HAZARDOUS WASTE MANIFEST
P.O. Box 12820, Albany, New York 12212

Please print or type. Do not Staple.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: NY7890008975 | Manifest Document No.: 07513 | 2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
Brookhaven National Laboratory
Bldg. 535A
Upton, NY 11973

4. Generator's Phone: 516 282-3466

A. State Manifest Document Number: NY B 463276 8

B. State Generator's ID: SAME

5. Transporter 1 (Company Name): Chemical-Waste-Management, Inc.
6. US EPA ID Number: ILD000672121
C. State Transporter's ID
D. Transporter's Phone: 201-445-2121

7. Transporter 2 (Company Name): [illegible]
8. US EPA ID Number: [illegible]
E. State Transporter's ID: [illegible]
F. Transporter's Phone: [illegible]

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

10. US EPA ID Number: NYD049836679
G. State Facility's ID: SAME
H. Facility's Phone: 716 754-8231

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

a. RQ, Environmentally Hazardous Substances, Solids, N.O.S.
9, UN3077, III, (D009)
[illegible] P
EPA: D009
STATE

b.
EPA
STATE

c.
EPA
STATE

d.
EPA
STATE

J. Additional Descriptions for Materials Listed Above
AB831B, 100% soil & debris contaminated with mercury.

K. Handling Codes for Wastes Listed Above: T

15. Special Handling Instructions and Additional Information
24 Hour Emergency Phone (800)765-4713
Dept. of Agriculture permit # [illegible]
Work Order # [illegible]

CO REQUIRED
PC # 393-005
Job # 65179
Task Order#12

16. GENERATOR'S CERTIFICATION: [illegible]

Printed/Typed Name: Robert Casteen [signature] Date: 02 27 [illegible]

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12020, Albany, New York 12212

UNIFORM HAZARDOUS WASTE MANIFEST

Generator's ID EPA No. NY7890008975 | Manifest No. 771 | 1 | Information in the shaded areas is required by Federal Law.

1. Generator's Name and Mailing Address
Brookhaven National Laboratory
Bldg. 535A
Upton, NY 11973
Generator's Phone: **516 282-3466**

NY B 463277 7

3. Generator's ID
S A M E

5. Transporter 1 (Company Name)
Chemical Waste Management, Inc.

6. US EPA ID Number
I L D 0 0 9 2 0 3 6 8 1

7. Transporter's Phone: **201 465-2121**

8. Transporter 2 (Company Name)

9. US EPA ID Number

10. Transporter's Phone

AB0000129

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

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

13. Facility's Phone: **716 754-8231**

14. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

15. Description of Hazardous Materials
NA, Environmentally Hazardous Substances, Solids, N.O.S.
9, NA3077, III, (D009)

16. Containers: **X X 1 D T** 17. Total Quantity: **P** 18. Unit Wt./Vol.: **D 0 0 9**

AE8318, 100% soil & debris contaminated with mercury.

T

18a. Special Handling Instructions and Additional Information

24 Hour Emergency Phone (800)763-8713

CD REQUIRED
PC # 323-865
Job # 6517B
Task Order#12

Dept. of Agriculture permit #

Work Order #

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

L Sautter

20. Transporter 1 Acknowledgement of Receipt of Materials

21. Transporter 2 Acknowledgement of Receipt of Materials

22. Discrepancy Indication Space

23. Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 22

24. Date

48-14-1 (3/89)

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

Form Approved, OMB No. 2050-0039, Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. / Manifest Document No.: [redacted] 07773

2. Page 1 of 1 — Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address: [redacted]

4. Generator's Phone ([redacted]

5. Transporter 1 (Company Name): [redacted]

6. US EPA ID Number: [redacted]

7. Transporter 2 (Company Name):

8. US EPA ID Number:

9. Designated Facility Name and Site Address: [redacted]

10. US EPA ID Number: [redacted]

NY B [redacted]

E. State Generator's ID: [redacted]

F. State Transporter's ID: [redacted]

G. Transporter's Phone:

H. State Transporter's ID:

I. Transporter's Phone:

J. State Facility's ID: [redacted]

K. Facility's Phone: [redacted]

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. [redacted]	[redacted]	CM	32960	LB	EPA [redacted] STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials listed Above

a. [redacted] c.

b. d.

K. Handling Codes for Wastes Listed Above

a. [redacted] c.

b. d.

15. Special Handling Instructions and Additional Information

[redacted] Dept. of Agriculture permit # 222662

Work Order # 17476-3 81401392

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

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Printed/Typed Name: Michael F Carey Jr. Signature: [signature] Mo. 07 Day 29 Year 93

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name: MANUEL PEREIRA Signature: [signature] Mo. 07 Day 29 Year 93

18. Transporter 2 (Acknowledgement or Receipt of Materials)

Printed/Typed Name: Signature: Mo. Day Year

FACILITY

19. Discrepancy Indication Space: actual recd 33300# ITEM K-E

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

Printed/Typed Name: EILEEN CARTER Signature: [signature] Mo. 07 Day 30 Year 93

A Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

NY B [redacted]

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No.: NY7890008975
Manifest Document No.: 07/37
2. Page 1 of 1
Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address:
Brookhaven National Laboratory
Bldg. 535A
Upton, NY 11973

4. Generator's Phone: 516 282-3446

A. State Manifest Document Number: NY B 463280 4

B. Generator's ID: SAME

5. Transporter 1 Company Name: Chemical Waste Management, Inc.

6. US EPA ID Number: ILD099202681

C. State Transporter's ID:

D. Transporter's Phone: 201 465-2121

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID

F. Transporter's Phone

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

10. US EPA ID Number: NYD049836679

G. State Facility's ID: SAME

H. Facility's Phone: 716 754-8231

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Environmentally Hazardous Substances, Solids, N.O.S. 9, UN3077, III, (D009)	001	DM	32540	P	D009
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above:
a. ANK318, 100% soil & debris contaminated with mercury.

K. Handling Codes for Wastes Listed Above: T

15. Special Handling Instructions and Additional Information:
24 Hour Emergency Phone (800)765-4713
CD REQUIRED
PC # 393-085
Job # 45179
Task Order#12

Dept. of Agriculture permit # 393063

Work Order # 0047476

16. GENERATOR'S CERTIFICATION:

Printed/Typed Name / Signature / Date: [signature] 07 29 93

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Davis K. Kamm
Signature: [signature]
Date: 07 29 93

18. Transporter 2 Acknowledgement of Receipt of Materials

19. Discrepancy Indication Space

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

NY B 4632804

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

P.O. Box 12220, Albany, New York 12212

Please print or type. Do not staple.

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA No. / Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal Law.
	NYT890008975 07574	1	

3. Generator's Name and Mailing Address
Brookhaven National Laboratory
Bldg. 535A
Upton, NY 11973

4. Generator's Phone: **516 282-3466**

A. State Manifest Document Number: NY B 463281 3

B. Generator's ID: **S A M E**

5. Transporter 1 Company Name: **Chemical Waste Management, Inc.**

6. US EPA ID Number: **I L D 0 9 9 2 0 2 6 8 1**

C. State Transporter's ID: **SAME**

D. Transporter's Phone: **201 443-1121**

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

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

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

G. State Facility's ID: **S A M E**

H. Facility's Phone: **716 754-8231**

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

	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.	K. Waste Codes
a. **RQ, Environmentally Hazardous Substances, Solids, N.O.S. 9, NA3077, III, (D009)**	**X X 1**	**DM**	**36450 P**		**D 0 0 9** STATE
b.					EPA / STATE
c.					EPA / STATE
d.					EPA / STATE

GENERATOR

15. Additional Descriptions for Materials Listed Above
ASBESTOS, 100% soil & debris contaminated with mercury.

T

24 Hour Emergency Phone **(800)765-8713**

Dept. of Agriculture permit # 382953

Work Order # 17476

CD REQUIRED
PC # 393-485
Job # 65179
Task Order 12

Mike Chu 07/29/93

For Del Duca for Del Duca 072993

DIVISION OF HAZARDOUS WASTE REMEDIATION

HAZARDOUS WASTE MANIFEST

P.O. Box 2999, Albany, NY 12212

Please print or type. Do not staple.

Form Approved OMB No. 2050-0039 Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal Law.

N Y 7 8 9 0 0 6 8 9 7 3 | 07612 | 1

3. Generator's Name and Mailing Address
Brookhaven National Laboratory
Bldg. 535A
Upton, NY 11973

4. Generator's Phone (516 282-3466

A. State Manifest Document Number
NY B 463282 2

B. State Generator's ID
S A M E

5. Transporter 1 Company Name
Chemical Waste Management, Inc.

6. US EPA ID Number
I L D 9 9 2 0 2 6 8 1

C. State Transporter's ID
TRUCK

D. Transporter's Phone 201 460-2121

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

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

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

G. State Facility's ID
S A M E

H. Facility's Phone
716 734-8231

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

12. Containers: No. | Type | 13. Total Quantity | 14. Unit Wt./Vol. | I. Waste No.

GENERATOR

a. RQ, Environmentally Hazardous Substances, Solids, N.O.S. 9, UN3077, III, (D009) | XXIBT37310P | 0009 | STATE

b. | EPA | STATE

c. | EPA | STATE

d. | EPA | STATE

J. Additional Descriptions for Materials Listed Above
ASBESTOS, 100% soil & debris contaminated with mercury.

K. Handling Codes for Wastes Listed Above
T

15. Special Handling Instructions and Additional Information
24 Hour Emergency Phone (800)765-8713
Dept. of Agriculture permit # [illegible]
Work Order # [illegible]

CE REQUIRED
PC # 393-085
Job # 63171
Task Order#12

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

Printed/Typed Name [illegible]

Signature [illegible]

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name [illegible]

Signature [illegible]

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

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

Printed/Typed Name

Signature

Month Day Year

48-14-1 (3/89)—7I

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. / Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
[redacted]
4. Generator's Phone ([redacted]

A. State Manifest Document No. NY B [redacted]

B. Generator's ID [redacted]

5. Transporter 1 (Company Name) Chemical Waste Management, Inc.

6. US EPA ID Number [redacted]

C. State Transporter's ID [redacted]

D. Transporter's Phone ([redacted]

7. Transporter 2 (Company Name)

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone (

9. Designated Facility Name and Site Address
[redacted]

10. US EPA ID Number [redacted]

G. State Facility's ID [redacted]

H. Facility's Phone ([redacted]

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. [redacted]	[redacted]	CM	[redacted]	P	EPA [redacted] STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above

a. [redacted] contaminated with mercury.

c

b

d

K. Handling Codes for Wastes Listed Above

a. [redacted] c.

b. d.

15. Special Handling Instructions and Additional Information

[redacted] 24 Hour Emergency Phone [redacted]

Dept. of Agriculture permit # [redacted]

Truck Order # [redacted]

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

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

Printed/Typed Name	Signature	Mo.	Day	Year

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year
Vernon Battle	Vernon Battle	05	10	95

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year

FACILITY

19. Discrepancy Indication Space

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

Printed/Typed Name	Signature	Mo.	Day	Year

EPA Form 8700-22 (Rev. 3-88) Previous editions are obsolete.

48-14-1 (2/89)—7f

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. [illegible] Manifest Document No. 06273
2. Page 1 of 1

Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
[illegible] National Laboratory
[illegible]
[illegible]

4. Generator's Phone ([illegible]) [illegible]

A. State Manifest Document No. NY B [illegible]

B. Generator's ID [illegible]

5. Transporter 1 (Company Name)
Chemical Waste Management, Inc.

6. US EPA ID Number [illegible]

C. State Transporter's ID [illegible]

D. Transporter's Phone ([illegible]) [illegible]

7. Transporter 2 (Company Name)

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
[illegible] Chemical Services, Inc.
[illegible]
[illegible] City, NY [illegible]

10. US EPA ID Number [illegible]

G. State Facility's ID [illegible]

H. Facility's Phone ([illegible]) [illegible]

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Environmentally Hazardous Substances, Solids, N.O.S. 9, UN3077, III, [illegible]	[illegible]	CM [illegible]	31,640	P	EPA [illegible] STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above
a [illegible] contaminated with mercury.
b
c
d

K. Handling Codes for Wastes Listed Above
a [illegible]
b
c
d

15. Special Handling Instructions and Additional Information [illegible] ([illegible]) [illegible]
Dept. of Agriculture permit # 383557
Work Order # 001739
[illegible]

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

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Printed/Typed Name [illegible] | Signature [illegible] | Mo. Day Year 05 10 93

17. Transporter 1 (Acknowledgement of Receipt of Materials)
Printed/Typed Name Vernon Thomas | Signature Vernon Thomas | Mo. Day Year 05 10 93

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

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Mo. Day Year

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA No. / Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal Law.
3. Generator's Name and Mailing Address Brookhaven National Laboratory Bldg. 197 Upton, NY 11973			A. State Manifest Document Number NYB
4. Generator's Phone (516) 282-3466			B. Generator's ID
5. Transporter 1 (Company Name) CWM Chemical Services, Inc.	PAD042035819		C. State Transporter's ID
6. Transporter 2 (Company Name)	8. US EPA ID Number		D. Transporter's Phone (716) 215-0220 E. State Transporter's ID F. Transporter's Phone ( )
9. Designated Facility Name and Site Address CWM Chemical Services, Inc. 1550 Balmer Road Model City, NY 14107	10. US EPA ID Number		G. State Facility's ID H. Facility's Phone (716) 754-8231

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	S. State Waste No. / EPA / STATE
a. NA, Environmentally Hazardous Substances, Solids, N.O.S., 9, NA9277, III, (D007)	001	CM	36000	P	EPA STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above
a. contaminated with mercury.
b.
c.
d.

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

15. Special Handling Instructions and Additional Information
24 hour Emergency Phone (800)765-4713
Dept. of Agriculture permit # 392360
Work Order # 18280-4
81402578

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

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Printed/Typed Name	Signature	Mo.	Day	Year
M. Mac F Clancy Jr		09	16	93

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year
E. Solecitz Jr. B.	E. Solecitz Jr. B.	09	16	93

18. Transporter 2 (Acknowledgement or Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year

19. Discrepancy Indication Space
actual recvd 36800P ITEM K-LL

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

Printed/Typed Name	Signature	Mo.	Day	Year
EILEEN CARTER	Eileen Carter	09	19	93

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

Please print or type. Do not Staple.

Form Approved. OMB No. 2050-0039. Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. | Manifest Document No. 08373 | 2. Page 1 of | Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address
[redacted]
Generator's Phone ([redacted]

4. State Manifest Document No. NY B[redacted]
5. Generator's ID [redacted]
6. State Transporter's ID [redacted]
7. Transporter's Phone ([redacted]
8. State Transporter's ID
9. Transporter's Phone (
10. State Facility's ID [redacted]
11. Facility's Phone [redacted]

5. Transporter 1 (Company Name): Chemical Waste Management, Inc.
6. US EPA ID Number: I L D 9 9 2 6 4 8 2 5

7. Transporter 2 (Company Name)
8. US EPA ID Number

9. Designated Facility Name and Site Address: CH Chemical Services, Inc. [redacted]
10. US EPA ID Number: [redacted]

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. [redacted]	[redacted]	[redacted]	34270	P	EPA [redacted] STATE
b.					EPA STATE
c.					EPA STATE
d.					EPA STATE

J. Additional Descriptions for Materials Listed Above
a. [redacted]
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. [redacted] b. c. d.

15. Special Handling Instructions and Additional Information [redacted]
Dept. of Agriculture permit # 382855
Work Order # 18280-2
81402654

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

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Printed/Typed Name	Signature	Mo.	Day	Year
M. L. F Clancy	[signature]	08	16	93

TRANSPORTER

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year
William Hunt	[signature]	08	16	93

18. Transporter 2 (Acknowledgement or Receipt of Materials)

Printed/Typed Name	Signature	Mo.	Day	Year

FACILITY

19. Discrepancy Indication Space
Actual Qty Rec'd 36700 P

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

Printed/Typed Name	Signature	Mo.	Day	Year
Lynn Piechowski	[signature]	08	20	93

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

[illegible] Generator-mailed by TSD facility

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS SUBSTANCES REGULATION

HAZARDOUS WASTE MANIFEST

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

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Form Approved. OMB No. 2050-0039, Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal Law.

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

5. Transporter 1 (Company Name) | 6. US EPA ID Number

7. Transporter 2 (Company Name) | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

A. State Manifest Document No.

B. Generator's ID

C. State Transporter's ID

D. Transporter's Phone ( )

E. State Transporter's ID

F. Transporter's Phone ( )

G. State Facility's ID

H. Facility's Phone ( )

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a.					EPA / STATE
b.					EPA / STATE
c.					EPA / STATE
d.					EPA / STATE

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

a. c.

b. d.

15. Special Handling Instructions and Additional Information

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

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Printed/Typed Name | Signature | Mo. Day Year

17. Transporter 1 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year

18. Transporter 2 (Acknowledgement of Receipt of Materials)

Printed/Typed Name | Signature | Mo. Day Year

19. Discrepancy Indication Space

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

Printed/Typed Name | Signature | Mo. Day Year

GENERATOR | TRANSPORTER | FACILITY

ATTACHMENT C

DETAILED COST ESTIMATE

COST ESTIMATE
BROOKHAVEN NATIONAL LABORTORY
OFFICE OF ENVIRONMENTAL RESTORATION
BUILDING 464 MERCURY CONTAMINATED SOIL REMOVAL

DESCRIPTION	QTY	UNITS	(MTL) UNIT PRICE	TOTAL	(LABOR) UNIT PRICE	TOTAL	COST TOTAL
I. DISPOSAL OF MATERIALS (soil and piping)						$95,000.00	$95,000.00
Less than 260 ppm Hg	250	Tons			300	$75,000.00	$75,000.00
More than 260 ppm Hg	10	Drums			2,000	$20,000.00	$20,000.00
II. TRANSPORTATION OF MATERIALS						$51,000.00	$51,000.00
Transport	17	Loads			3,000	$51,000.00	$51,000.00
III. EQUIPMENT				$2,900.00		$9,300.00	$12,200.00
Backhoe	17	Days			350	$5,950.00	$5,950.00
Truck	17	Days			150	$2,550.00	$2,550.00
Tools	LS			$2,000.00			$2,000.00
Plastic	LS			$300.00			$300.00
Decon	LS			$600.00			$600.00
Swipe Samples	2				400	$800.00	$800.00
IV. LABOR						$19,120.00	$19,120.00

COST ESTIMATE
BROOKHAVEN NATIONAL LABORTORY
OFFICE OF ENVIRONMENTAL RESTORATION
BUILDING 464 MERCURY CONTAMINATED SOIL REMOVAL

DESCRIPTION	QTY	UNITS	(MTL) UNIT PRICE	TOTAL	(LABOR) UNIT PRICE	TOTAL	COST TOTAL
Operator	17	Days			400	$6,800.00	$6,800.00
H & S Officer	5	Days			560	$2,800.00	$2,800.00
Field Analyst	17	Days			560	$9,520.00	$9,520.00
V. ANALYTICAL						$19,510.00	$19,510.00
Mercury (soil)	150	Sample			60	$9,000.00	$9,000.00
TCLP (soil)	1	Sample			2,000	$2,000.00	$2,000.00
TAL (metals)	1	Sample			558	$558.00	$558.00
Full Scan	4	Sample			1,988	$7,952.00	$7,952.00
REMOVAL TOTAL				$2,900.00		$193,930.00	$196,830.00