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Knoxville, TN 37923
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May 9, 1991

VIA OVERNIGHT COURIER

Ms. Carol Manning
Enforcement On-Scene Coordinator
United States Environmental Protection Agency (3HW33)
Region III
841 Chestnut Building
Philadelphia, PA 19107

Reference: METCOA Restart Site
Pulaski, Pennsylvania

Dear Ms. Manning:

On behalf of the Respondents in the above matter, this letter transmits four copies, one of which is unbound, of the report covering completion of the work elements defined in Work Plan No. 1 for removal response activities at the METCOA Restart Site in Pulaski, Pennsylvania.

If you or your staff have any questions concerning the enclosed report or any other aspect of the referenced project, please do not hesitate to contact me.

Sincerely,

de maximis, inc.

Mark A. Travers
Project Coordinator

MAT/hg

cc: METCOA Removal Response Group

File:manning.11/dsk:3/3021

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Except as provided below, I certify that the information contained in or accompanying this report of Work Plan No. 1 activities is true, accurate, and complete. As to those portion(s) of this report for which I cannot personally verify their accuracy, I certify under the penalty of law that this report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Mark Travers

Name: Mark Travers
de maximis, inc.

Title: Project Coordinator
METCOA Restart Site

File:metcert/dsk:3/3021

WORK PLAN 1

FINAL REPORT

METCOA Restart Site

Pulaski, Pennsylvania

PREPARED AT THE DIRECTION OF:

METCOA Removal Response Group

PREPARED BY:

de maximis, Inc.
P.O. Box 90348
Knoxville, Tennessee 37990

and

GSX Services, Inc./Laidlaw Environmental Services (TS), Inc.
1415 Woodside Drive
Greensboro, North Carolina 27405

May 9, 1991

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experienced industrial activity. The site is bounded to the south and west by Buchanan Run, a tributary of the Shenango River, to the east by Route 551, and to the north by an area where a public flea market is held one (1) day a week on a seasonal basis.

EPA has reported that materials handled by METCOA during its years of operation included materials containing lead, chromium, cobalt, copper, cadmium, magnesium, nickel, molybdenum, zinc, selenium, thorium and thoriated compounds.

1.3 SUMMARY OF COMPLETED RESPONSE ACTIVITIES

On January 22, 1986, the Nuclear Regulatory Commission ("NRC") issued an order to the owners of the site which modified the facility's license. The order requested preparation and implementation of a decontamination plan to address the owner's alleged failure to "control" the presence of licensed radioactive material at the site following the shut-down of plant operations. The NRC commissioned the Radiological Site Assessment Program of the Oak Ridge Associated Universities ("ORAU") to conduct a radiological and extent of contamination survey of the site. This work was performed in April, 1986 and provided a baseline assessment of the facility property.

After issuance of the NRC/ORAU assessment report, the Pennsylvania Department of Environmental Resources ("PADER") conducted their own site assessment confirming the results of the ORAU report. PADER requested EPA to investigate potential threats to the public health and environment. As a result of this request, EPA performed a site assessment including site material sampling between June and September 1986. This work was performed using EPA's Technical Assistance Team ("TAT") and the Environmental Response Team ("ERT"). Geophysical surveys including a magnetometer survey and ground penetrating radar ("GPR") were performed as part of this assessment. Following the EPA site assessment, the EPA On-Scene Coordinator ("OSC") requested that a CERCLA Removal Action be performed to secure and stabilize the site. In March of 1987, EPA and their subcontractors again

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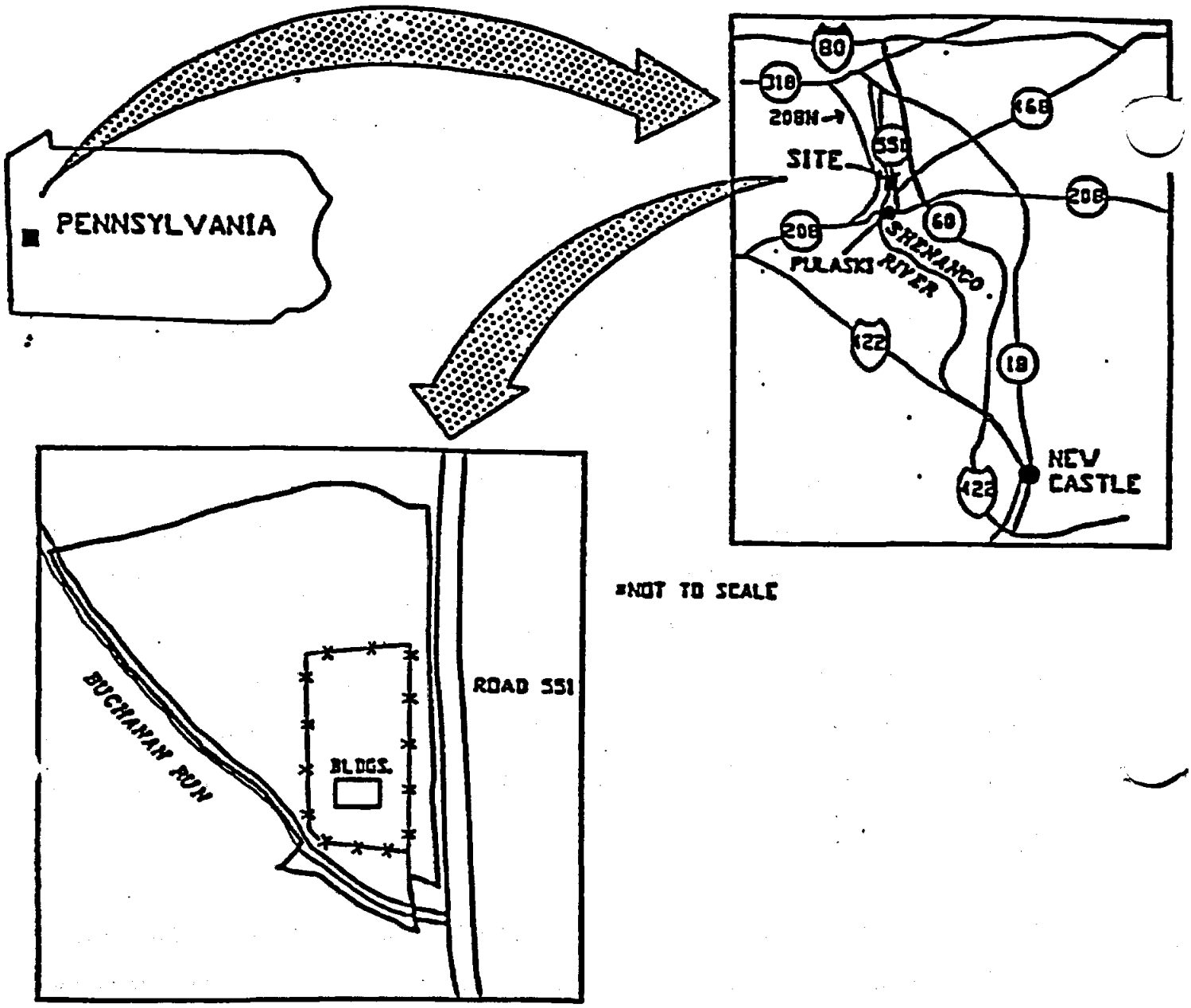
FIGURE 1



Map of Pennsylvania and Pulaski are showing location and plan view of the METCOA site.

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1.0 INTRODUCTION

1.1 AUTHORITY FOR WORK

The United States Environmental Protection Agency ("EPA") issued an Administrative Order ("Order") dated 17 August 1990 pursuant to Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, to a list of Respondents. A small number of the Respondents have chosen to respond collectively and have formed the Metallurgical Corporation of America ("METCOA") Restart Site Removal Response Group ("Group") to perform the work set forth in the above-referenced Order. The Group, subject to EPA approval, selected de maximis, inc. ("de maximis") as its Project Coordinator and GSX Services, Inc./Laidlaw Environmental ("GSX/Laidlaw") as its contractor. The Group authorized GSX/Laidlaw to prepare Work Plan No. 1 ("Work Plan") as outlined in Section 8.4 of the Order. Subsequent to EPA's approval of Work Plan No. 1 on October 23, 1990, the Group authorized GSX/Laidlaw and their subcontractors to mobilize to the Metcoa Restart Site (the "site") for work plan implementation. This report documents the completion and performance of work outlined in Work Plan No. 1 and is submitted in compliance with Section 8.13 of the Order.

1.2 PROJECT LOCATION AND DESCRIPTION

The site is located on Route 551 and Metallurgical Way, (Figure 1) approximately one-half mile north of the village center and Route 208 in Pulaski, Lawrence County, Pennsylvania. METCOA, now bankrupt, was in the business of trading, recycling, and reclaiming metals and producing alloys at the site from the mid 1970's until 1983.

The area surrounding the site is primarily rural and agricultural in nature, however a galvanizing facility occupies an industrial development lot adjacent to the south side of the site. The METCOA property is approximately 22.5 acres, of which 6 acres, containing a building, is enclosed by a chain link fence. From all appearances these six (6) acres appear to be the only portion of the 22.5 acre site that has

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mobilized to the site in an effort to secure and stabilize the site. As part of this effort, EPA consolidated and sampled drummed material and bulked and staged other material into piles. These piles were staged outside and covered with plastic to protect them from the elements. Fencing to the immediate south and west of the originally fenced-off area was installed to secure areas where drums had formerly been staged and where debris and slag were evident in fill areas.

In October of 1989, ENSR Constructors, acting pursuant to an Administrative Consent Order between EPA and the ad hoc METCOA Steering Committee, performed additional site stabilization activities. This work included the movement of the drummed material located outside of the building to the building interior. The drums were placed on plywood covered with polyethylene sheeting. ENSR also installed sediment control silt fencing to prevent surface runoff from certain areas and re-covered piles of debris with geotextile fabric over double polyethylene layers.

On 13 August, 1990, EPA and their contractors again re-mobilized to the site to conduct further removal response activities. Work performed at EPA's direction during this period included: screening of drums for radioactivity based upon the 20 ur/hr above background criteria; performing exterior magnetometer and radiological surveys over the six (6) acres formerly utilized; and removal of the miscellaneous debris and wooden pallet pile. EPA's activities were discontinued on September 1, 1990 after the Group informed EPA that it would undertake the activities required by the Order.

On October 23, 1990 GSX/Laidlaw and their subcontractors mobilized to the site to implement Work Plan No. I on behalf of the Group. Material classification, segregation and container sampling proceeded through December 22, 1990 when this phase of the work was completed and GSX/Laidlaw and their subcontractors demobilized. After receipt of laboratory analytical results, site materials were classified into basic categories for determining the appropriate off-site management facilities. Following submittal of off-site management material profiles, GSX/Laidlaw again re-mobilized to the site along with their

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subcontractors on February 25, 1991 to prepare for executing the removal activities. All aspects of the removal response effort outlined in Work Plan No. I were completed by GSX/Laidlaw and their subcontractors by April 30, 1991.

1.4 OVERVIEW OF REPORT

The purpose of this Report is to notify EPA of the completion and describe the performance of the removal response activities as outlined in the approved Work Plan No. 1. These activities were to:

- Prepare and implement a site specific Health and Safety Plan ("Safety Plan") to protect the health of workers, other personnel and the public from the hazardous substances at the site and work-related health and safety hazards during performance of the work.
- Prepare and implement a sampling and analysis plan ("Sampling Plan") to characterize all containerized and bulk hazardous substances on-site and any hazardous substances in and about the building where the containers were previously staged.
- Prepare and implement a plan addressing the segregation of similar materials after their characterization and the preparation of disposal profiles for hazardous substances found.
- Prepare and implement a plan to overpack or repack containers, as necessary, before leaving the site.
- Prepare and implement a plan to address any non-vegetated exposed areas or areas with accumulated debris which contain hazardous substances in any concentration greater than RCRA (TCLP) limits.
- Prepare and implement a plan for the proper transportation, management and/or disposal of all drummed/bulked hazardous substances other than mixed wastes to an approved facility transported by licensed carriers. All applicable identification numbers and approvals were obtained prior to transport of materials. All removal, management, transport, and/or disposal activities were performed in accordance with all applicable local, State, and Federal protocols (including the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq.), and approved

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in advance by EPA.

- Prepare and implement a plan to remove and properly dispose of, or treat, water containing hazardous substances existing or collected within or outside the building, and/or process water generated during the implementation of Work Plan No. 1, as necessary.
- Prepare and implement a plan for air sampling and/or monitoring during the work in all areas at the site which were previously excavated or are excavated pursuant to this Order as well as the site perimeter (including at or near the flea market) to measure the levels of airborne contaminants.
- Prepare and implement a plan to investigate the source of and to evaluate the contents of the drainage outfall from the site to Buchanan Run.

An overview of the Report outlining the removed response activities performed at the site is as follows:

1.0 Introduction - This section sets forth the background of this project and provides a brief description of the site location and history.

2.0 Activities Completed - The methods and procedures used for the segregating and characterizing site materials in accordance with the approved Work Plan are outlined in this section.

3.0 Material Classification, Selection of Off-site Management Outlets, and Quantities Removed - This section describes how the characterization data was interpreted to classify materials into basic categories for selection of the appropriate off-site management outlets. Also outlined by basic categories are the quantities of materials removed off-site to the specific management facilities selected.

4.0 Appendices - The appendices include data documenting compliance with the site-Specific Health and Safety Plan. Results of the site air monitoring program are included. Medical surveillance program results will be submitted as an addendum to this report after receipt of TLD badge and urinalysis data. In addition to the above laboratory data, radiological testing data, drum logs, and a list of correspondence pertinent to the removal action are included in the appendices to support

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the text of the Report Sections 2.0 and 3.0.

Appendices are included in this document for the purpose of presenting certain items of information in more detail than is appropriate for the body of the text. This arrangement is intended for the convenience of the readers and users of the document.

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2.0 ACTIVITIES COMPLETED

2.1 CONTAINERIZED MATERIAL RADIOACTIVE CHARACTERIZATION

The first major activity at the site focused on determining the radioactive level of all containerized materials located inside the building structure. This was an important first step in segregating like materials into groups for sampling and off-site chemical analyses prior to selection of an appropriate management option.

The radioactive characterization was conducted as proposed in the approved Work Plan No. 1 and also the approved Addendum No. 1 to the Work Plan. This process was a two-step procedure designed by the project radiological subcontractor to GSX/Laidlaw, NSSI Sources and Services, Inc. The first step involved screening the drum contents using a "portal monitoring device" to measure the external radiation levels from each container. This device consisted of a stationary wooden-framed opening resembling a children's swing-set. Over the top member were suspended two (2) sensing instruments, spaced at an interval suitable for the container size (e.g., drums), and to enable detection of activity from opposite sides of the container. The detection instrumentation consisted of an Eberline RM-23 radiation monitor with two (2) SPA6 gamma scintillation probes. This instrumentation was set to alarm at an activity level 6 to 8 ur/hr above background levels. The containers (drums or totes) were introduced by forklift into the portal opening. If the container exhibited a radioactive reading in excess of 6 to 8 ur/hr above background, an audible (buzzer) and visual (red light) alarm would be triggered and the container would then be segregated into a "radioactive" grouping. Containers not triggering the alarm would be placed in the "non-radioactive" grouping.

After this initial segregation a core sample of any contents was extracted from the full depth of all drums and totes. This sample was then analyzed on-site as the second step of the classification process using an EG & G ORTEC 4000 Multi-Channel Analyzer, Model 7450 coupled to a 3 inch by 3 inch Harshaw Sodium Iodide Gamma Scintillator. The analytical equipment was pre-calibrated using two (2) prepared

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standards exhibiting nearly the same energy levels as Thorium (Nat), a radioactive constituent of concern at the site. The two (2) standards were prepared by: one (1) adding a measured quantity of natural Thorium 232 monazite ore (traceable to National Bureau of Standards) to metal turnings to produce a sample that represented 14.3 pico Curies per gram; and two (2) adding a measured quantity of natural Thorium 232 monazite ore (traceable to National Bureau of Standards) to off-site soil to produce a sample that represented 15.0 pico Curies per gram above background. The core samples from the containers were then introduced into a lead brick enclosure with the 3 inch by 3 inch NaI gamma scintillator located at the bottom of the enclosure. The gamma scintillator and multi-channel analyzer counted both the number and level of gamma energies emitted by Thorium 232 and its daughter radiations. Knowing the weight of the sample and the rate and intensity of radiation enabled a determination of the level of activity to be reported in picocuries/gram (pci/gm). This value was then compared to the 10 pci/gm value established in Addendum No. 1 to this Work Plan as the lower limit below which the materials would not be classified as radioactive materials. Following the results of the on-site analysis and comparison to the 10 pci/gm level, it was necessary to move some of the non-radioactive containers previously categorized by the portal monitoring device as non-radioactive into the radioactive grouping.

These individual sample readings, taken with the multi-channel analyzer, were used as a quality control check for the portal monitoring device and also for another important reason. For example, should a piece of radioactive material be situated near the center of a drum or container, the surrounding contents could potentially shield the emitted radiation from the portal monitors and thereby not set off the alarms. Since the drum and tote samples were cored from the center of the container, it is likely this procedure would pick up radioactive material that would otherwise have gone undetected using just the portal monitors. The opposite situation is possible where radioactive material located near the side of the container would set off the portal monitoring alarm but not be detected in the sample cored from the center of the container. The combination of the two steps in the classification procedure provided a high degree of confidence that containerized radioactive material was properly detected and classified for

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further segregation and chemical testing. As a final verification of on-site procedures, two (2) samples from non-radioactive containers were sent off-site to Controls for Environmental Pollution (CEP) Laboratories in Santa Fe, New Mexico for radiological content analysis using the dissolution/platting technique with analysis by alpha spectroscopy. These samples were collected from containers that read less than 10 pci/gm using the multi-channel analyzer. The initial report indicated that the Thorium 232 content of the samples was approximately twenty times less than the on-site analysis. The confusion was due to the fact that the alpha spectroscopy technique only looked at the emissions from Thorium 232 and not the complete Thorium decay series. Subsequently gamma analysis was conducted by CEP and those results compared very favorably with the on-site analysis (within 7%). It should be noted that although CEP laboratory sheets report values by gamma analysis for Thorium 232, the value reported is actually representative of Thorium 232 and all daughter products. Please refer to the information in Appendix A for comparison of on-site and off-site laboratory results and also information concerning CEP's reporting of Thorium 232 values and their radiological QA/QC data.

As a result of the radioactive classification of materials it was initially found that 523 drums and 20 totes would require segregation and handling as radioactive materials and would also be subject to further sampling for chemical analyses to determine if the materials were considered RCRA hazardous. The remaining 450 drums and 26 totes were classified as non-radioactive materials and were also subjected to subsequent segregation and sampling efforts prior to analyzing management options.

Supporting information for the radioactive classification procedures for containerized material including numerical values for the on-site gamma analysis can be found in Appendix B "Radiological Testing Data" and Appendix C "Container Logs".

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2.2 SEGREGATION OF LIKE MATERIALS IN CONTAINERS

Following the radioactive determination of containerized materials, the containers were segregated into non-radioactive and radioactive material groupings. Each of these individual groupings were further broken down into three (3) sub-groups. The sub-groups were developed from visual observations of the drum and tote contents. The three (3) sub-groups used to further categorize and segregate both radioactive and non-radioactive drums were; cuttings, slag, and debris. These categories were also used for totes with other additional designations including plastic battery casings and bricks.

The "cuttings" were named as such because the materials resembled cuttings, turnings and/or chips that could result from metal machining or fabricating operations. Nearly all of the materials that were present in containers in this category exhibited activity levels over site criteria and were therefore classified as radioactive.

Containers placed into the sub-grouping called "slag" contained materials that resembled pieces of metallic rock of varying sizes and dimensions. It is presumed that these materials were a result of smelting and reclaiming activities previously carried out at the site and possibly off-site prior to shipment to METCOA. Slightly less than 50% of the drums categorized in this sub-grouping were radioactive and a little more than 50% were determined to be non-radioactive.

The third sub-grouping, "debris", consisted of containers containing miscellaneous materials such as rags, plastic, metallic objects, powdery substances, etc. These materials were possibly from site housekeeping performed during past response activities and/or from operations at the facility prior to shutdown. They may have also originated from off-site sources prior to shipment to METCOA. Approximately 75% of these materials were non-radioactive with the remaining 25% exhibiting activity levels high enough to classify them as radioactive.

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Containerized material in totes was initially segregated only into radioactive and non-radioactive categories. This was primarily due to the much smaller number of totes than drums and the fact that two (2) groupings of totes were manageable from a physical handling and logistics standpoint. Notations were made, however, concerning the material content of the totes on the drum and container logs. These notes were subsequently used for additional sampling and chemical analysis prior to packaging and preparation for shipment off-site. Notations made generally fell into the same sub-grouping categories described for the drummed materials, but also included other descriptions such as plastic, rocks, bricks, sand, etc.

Reference should be made to the container logs located in Appendix C for specific details on which containers were placed into the sub-groupings and which were classified as radioactive or non-radioactive.

2.3 CONTAINER SAMPLING AND CHEMICAL CHARACTERIZATION PROCEDURES

Following the radioactive classification and segregation into sub-groupings by visual observation as described in Sections 2.1 and 2.2 each container was sampled for off-site chemical analyses. The samples were collected by a gas-powered augering device which collected a core sample from the approximate center of each container. The core sample extracted was representative of the full depth of the container. The sample from each container was collected into 400/500 ml wide mouth sample bottles for compositing into samples representative of the groups and sub-groupings described previously.

The parameters selected for analysis by the off-site laboratory were based upon the requirements for determining whether or not the material exhibited RCRA hazardous characteristics. In addition, parameters were selected based upon knowledge of site materials and the requirements for information necessary to obtain approvals from off-site management facilities. The analyses were performed by Controls for Environmental Pollution (CEP) Inc. located in Santa Fe, New Mexico. This lab is one of the

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few in this country licensed to receive radioactive materials and also is fully capable of providing Contract Laboratory Protocol (CLP) deliverables, although none exist for radioactive parameters. The parameters analyzed and subsequent results for each sample category are summarized on the Tables at the beginning of Appendix D. Copies of actual lab reporting sheets are also included in Appendix D.

2.4 BULK MATERIAL SAMPLING AND CHARACTERIZATION PROCEDURES

The preceding sections described the characterization, segregation and sampling procedures utilized for containerized materials. Some, but not all, of these procedures were utilized for the bulk debris pile materials located exterior to the building.

Since these materials were already located in four (4) distinct debris piles there was no need to perform segregation procedures based upon visual observations or on-site radioactive analyses. In order to characterize the four (4) debris piles it was therefore only necessary to implement a representative sampling program with off-site laboratory analysis.

The sampling program was conducted in accordance with approved Work Plan No. 1. Each of the bulk debris piles was sampled in five (5) separate locations around the pile perimeter and at the center. At each location, a vertical composite sample was developed from three (3) grab samples collected at regularly spaced depth intervals. Each vertical composite was then gently homogenized in a clean stainless steel bowl. In this manner all five vertical composite samples were composited to form one (1) single composite sample representative of the whole debris pile.

Samples were collected using a hand-held bucket augering device. Extensions to the shaft of the augering device were made to collect the samples at depth from the piles. Samples collected were sent off-site to CEP Labs, Inc. for chemical and radiological analysis. Parameters analyzed were selected based upon the requirements for determining whether or not the material exhibited RCRA hazardous

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characteristics. In addition, parameters were selected based upon the knowledge of site materials and the requirements for information necessary to obtain approvals from off-site management facilities. The parameters analyzed and subsequent results for each sample category are summarized on the Tables at the beginning of Appendix D. Copies of actual lab reporting sheets are also included in Appendix D.

In addition to the above described chemical characterization procedures for the bulk debris piles, on-site radiological analyses were performed using a gamma scintillator and multi-channel analyzer. Each of the individual samples comprising the debris pile composite were analyzed using this method. A total of fifteen (15) individual samples were therefore analyzed for each debris pile. The results of these analyses are shown in the radiological testing data in Appendix B. It is quickly evident upon examining this data that only one (1) sample out of a total of forty-five (45) exhibited a level above 10 pci/gm. This sample, however, was also significantly low enough (22.2 pci/gm), that when averaged in with the results of the other individual samples for Pile # 3, the resulting average concentration of activity per unit weight would result in a level below the 10 pci/gm site criteria. This is evidenced by the results of the off-site radiological analyses performed in the laboratory on the composite sample for each bulk debris pile. For these lab results see Appendix D.

2.5 NON-VEGETATED AREAS OR AREAS WITH ACCUMULATED DEBRIS - SAMPLING AND CHARACTERIZATION PROCEDURES

Activities related to the sampling and analysis that were conducted of "non-vegetated exposed areas and areas of accumulated debris" at the site were conducted in accordance with Work Plan No. 1. The Administrative Order specified that the Respondents were to prepare "a plan to define non-vegetated exposed areas and areas of accumulated debris which contain hazardous substances in concentrations greater than RCRA (EP-Toxic) limits, "within the fenced portion of the site". It is important to emphasize that this sampling and analysis effort as envisioned by the Order and as part of Work Plan No. 1 was not intended to be an extent of contamination survey of the entire site, but rather intended only to assess

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surface conditions of non-vegetated exposed areas and areas of accumulated debris.

Work Plan No. 1 and its Addendum, as approved by EPA, provided that the specific non-vegetated exposed areas and areas of accumulated debris ("sampling areas") would be determined through visual inspection after the site access was granted to the Group's representative. The specific areas to be included in this sampling and analyses effort were determined during the visual inspection conducted on December 5, 1990.

In accordance with Section 3.7.4 of the approved Work Plan and Comment 8 of its Addendum, each of the sampling areas identified during the visual site inspection were divided into grids having a spacing of 50 feet. Discrete grab samples were collected for composition at each of the grid nodes from a depth of 0 to 6 inches. TCLP analyses were then conducted on each of the composited samples to define areas "which contain hazardous substances in concentrations greater that RCRA...(TCLP) limits." Grid spacing was employed and sample collection designed so that a maximum of nine individual discrete grab samples were collected from each area of interest. Figure 2, located at the end of this section is developed from a base map provided by the EPA and shows the entire site and also each area from which discrete grab samples were collected and composited for analyses.

The results of analyses for the composite samples collected indicate that all the areas except area 10, contain cadmium in surface materials at concentrations greater than RCRA (TCLP) limits. Based on analysis of information available at the present it appears that the existing site controls (i.e., silt fencing and ground cover) will be sufficient to stabilize areas containing cadmium at elevated levels through implementation of Work Plan No. 2. Once Work Plan No. 2 has been completed, a better understanding of the vertical and horizontal extent of cadmium levels will be established. See Appendix D for a summary of the grid area sample results and also for lab reporting sheets for each grid area. The correspondence list in Appendix F contains a reference to additional documentation concerning the sampling and

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characterization procedures for non-vegetated areas and areas with accumulated debris.

2.6 INVESTIGATION AND SAMPLING OF DRAINAGE OUTFALL TO BUCHANAN RUN

During previous EPA response activities at the site, a drainage pipe and outfall were noted with discharge to the adjacent creek bounding the southwest side of the METCOA property. This creek is noted as Buchanan Run, a tributary to the Shenango River. The outfall pipe is located almost directly west of the southwest corner of the building structure. The order specifically mentions that there must be "a plan to investigate the source of and to evaluate the contents of the drainage outfall..." and further that "the plan shall require the immediate elimination of the discharge if the effluent indicates the presence of hazardous substances." Accordingly, Work Plan No. 1 was prepared with the appropriate provisions to accomplish this task.

The investigation commenced at the site with successfully locating the drainage pipe. From the location and depth of the pipe, it was suspected that the pipe was connected to area or roof drainage collection piping. Inside the building there were no floor drainage openings readily apparent and exterior to the building there were no catch basins for collecting surface runoff or drainage. There were, however, roof downspouts visible inside the building and along the west exterior side of the building. These exterior roof downspouts discharged into "hubs" at the ground surface which were in turn connected to a below ground piping system. Due to the proximity of these roof downspouts to the drainage outfall at Buchanan Run, it was believed that there was a direct connection between the two.

This was verified by pouring a five (5) gallon bucket of water into the ground hub around the roof downspout connection and placing observers at the drainage outfall to Buchanan Run. Prior to pouring the water into the drainage piping, the outfall was observed to be discharging only an occasional drip. The test was performed after several dry days therefore eliminating the possibility of any stormwater run-off from the roof of the building. After pouring the water into the ground hub and waiting approximately

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three (3) to five (5) minutes, the discharge from the outfall increased markedly verifying the direct connection. This procedure was visually observed by members of the EPA Technical Assistance Team. The source of this outfall was therefore determined to be roof drainage from the existing buildings at the METCOA site.

The discharge from the outfall was sampled during a significant rainfall event when there was a well defined effluent from the pipe. The sample was sent to CEP Labs, Inc., in Sante Fe, New Mexico for analysis. The list of analyses included; inorganic metals, total cyanide, Thorium - 232, Method 8080 - pesticides and PCB's, Method 8240 - volatile organics, and method 8270 semi-volatile organics. The results of these analyses are presented in Appendix D. After examination of the laboratory results, it was evident that there were no hazardous or toxic pollutants detected at concentrations of concern. The discharge from the outfall was therefore left intact and not terminated. Disconnecting roof drainage from the outfall pipe would have created problems on the site with ponding of rainwater and subsequent movement of heavy equipment. Potential run-off and erosion of surficial soils on the site would also have been enhanced by disconnecting roof drainage piping from the outfall pipe.

2.7 DECONTAMINATION AND DRUM DECANT WATER COLLECTION, SAMPLING AND CHARACTERIZATION PROCEDURES

During the implementation of Work Plan No. 1, certain decontamination rinse water and miscellaneous liquids decanted from drums and overpacks were generated. The decontamination rinse waters generated during the site material characterization process were a result of personnel footwear scrub down located at the decontamination shed prior to leaving the exclusion zone. Section 8.4 (f) required that a plan be developed to properly dispose of, or treat water containing hazardous substances existing or collected within or outside the building, and/or process water generated during implementation of Work Plan No. 1.

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The decontamination rinsewaters were transferred from the tub baths to steel drums. Also placed in steel drums were free liquids and waters decanted from overpacks and 55 gallon drums located inside the building. A single composite sample representing the eleven (11) individual drum samples of decontamination and decant water was developed and sent off-site for laboratory analysis. This sample is designated as WDC 1 in the laboratory analysis reports. Please refer to Appendix D for the laboratory results representing this sample analysis.

In addition to those liquids described above that were generated during the material characterization process, there were decontamination rinsewaters and drum decant waters generated during implementation of removal response actions. The rinsewaters were primarily generated from the decontamination of trucks moving off-site and of heavy equipment and forklifts at the end of this phase of the project.

The decontamination rinsewaters were collected on the polyethylene-lined decontamination pad constructed by GSX/Laidlaw. Trucks and heavy equipment were parked on the decontamination pad prior to leaving the exclusion zone. The exterior surfaces of the equipment that were visibly dirty or that came into contact with the ground surface were washed down using a steam washer. The rinsewaters were collected on the polyethylene-liner and either ran by gravity or were mopped to the collection sump located to the rear of the decontamination pad. The collection sump was outfitted with a sump pump which pumped the rinsewaters to a large frac tank located on-site. The frac tank is a 21,000 gallon capacity portable tank used for the temporary storage of liquids. The frac tank is not suitable for transportation of these liquids and can only be transported empty.

Additional drum decant water was also collected during this phase of the project when preparing drums for off-site shipment and/or for bulk staging. This decant water was collected in steel drums and transferred to the frac tank. The drum decant water was analyzed for radioactivity and determined to be

AR101644

non-radioactive prior to transfer.

At the conclusion of all site activities generating decontamination rinsewaters and drum decant water, a representative sample was collected from the frac tank and sent to Clean Harbors, Inc. in Baltimore, Maryland. A copy of laboratory results for the sample designated as WDC 1 also accompanied the frac tank sample. Clean Harbors, Inc. profiled the waste, after analyzing the representative frac tank sample, as a non-hazardous/non-regulated material. The frac tank contents were determined to be non-radioactive through site testing prior to shipment. A vacuum tanker was mobilized to the site to remove the frac tank contents and transport them to Clean Harbors, Inc. for management.

AR101645

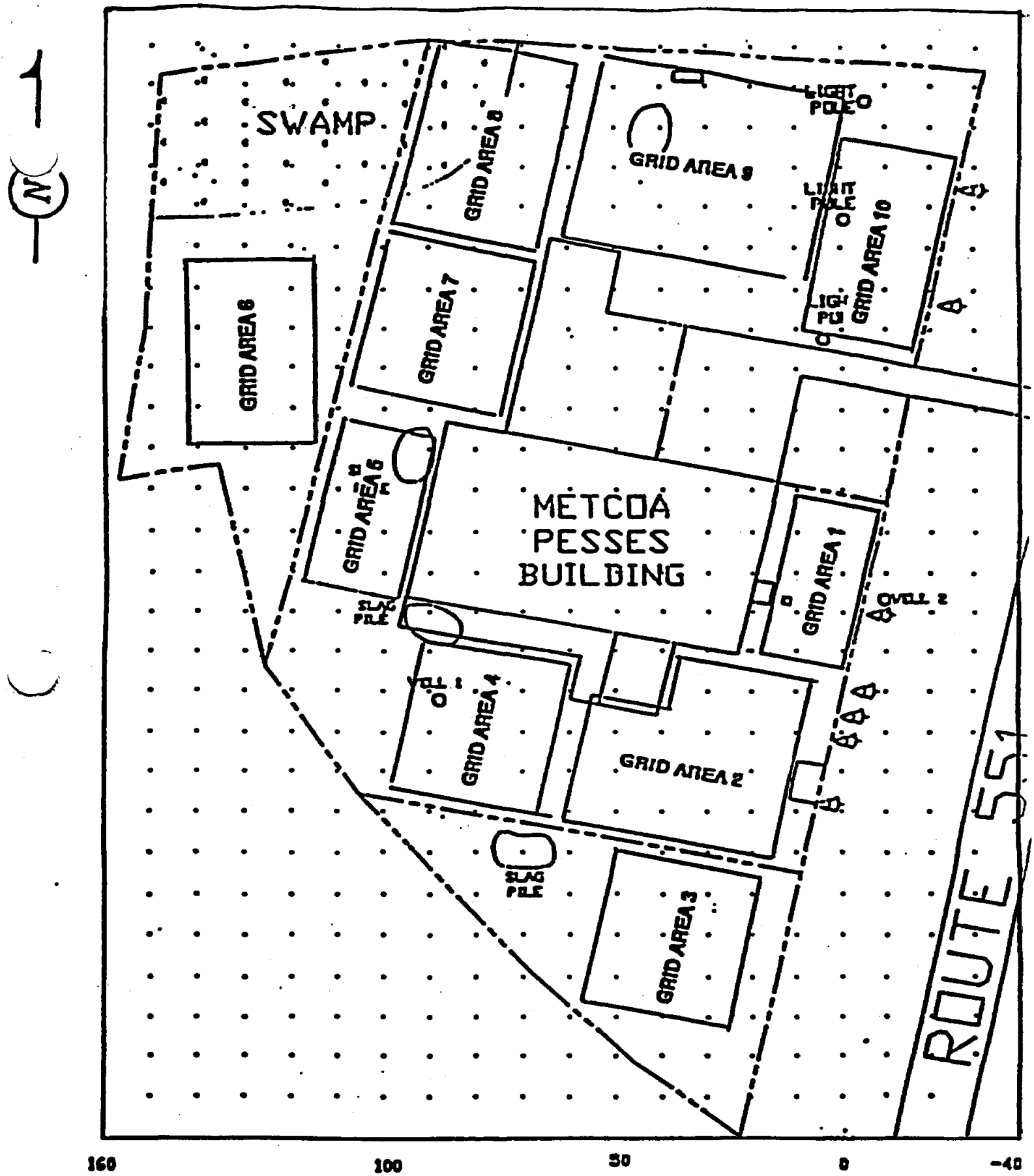

FIGURE 2

LOCATION OF SAMPLING AREAS FOR
NON-VEGETATED EXPOSED AREAS AND AREAS OF ACCUMULATED DEBRIS
METCOA RESTART SITE
PULASKI, PENNSYLVANIA

APPENDIX A

Comparison of Results from On-Site Radiological Testing to Off-Site Laboratory Testing

and

QA/QC Material from CEP Labs, Inc.

Comparison of On-Site Radiological Testing

to

Off-Site Laboratory Radiological Testing

Sample	*On-Site Result (pci/gm)	**Laboratory Result (pci/gm)
Drum #2	9.1	8.47
Drum #40	7.6	7.17

Notes:

* - See On-Site Radiologic Testing Logs in Appendix B
** - See Off-Site Radiological Laboratory Reporting Sheets following

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-[illegible]89

Received: 11/06/90

CEP, Inc. REPORT
Results by Sample

Work Order # 90-11-090

SAMPLE ID #2 FRACTION 01B TEST CODE GAMMS5 NAME Gamma Spectral Analysis
Date & Time Collected 11/04/90 12:03:00 Category DUST

Gamma Spectral Analysis

NUCLIDE	RESULT	UNITS
Thorium-232	8.47+/-0.46	pCi/gram
Actinium-228	7.34+/-2.21	pCi/gram
Lead-212	10.2+/-0.2	pCi/gram
Thallium-208	8.47+/-0.50	pCi/gram

SAMPLE ID #2 FRACTION 01A TEST CODE TH2325 NAME Thorium-232
Date & Time Collected 11/04/90 12:03:00 Category DUST

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.53+/-0.07*

All results reported in:

UNITS pCi/gram

AR101649

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX • 505-982-9

Nuclear Sources & Services
P. O. Box 34042
Houston, TX 77234

Attn: Charles Gallagher

Work ID: Environmental
P O # :

Date Received: 11/06/90
Date Reported: 11/12/90
Work Order: 90-11-093
Category: EMERGENCY

* Analysis by Alpha Spec.

Certified By: _____

AR101650

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico
OUT OF STATE 800/545-2188 • FAX - 505-9
89

 CEP, Inc. REPORT Work Order # 90-11-091

Received: 11/06/90 Results by Sample

SAMPLE ID #40 FRACTION 01B TEST CODE GAMM55 NAME Gamma Spectral Analysis

Date & Time Collected 11/04/90 19:00:00 Category METAL SHAVI

Gamma Spectral Analysis

NUCLIDE	RESULT	UNITS
Thorium-232	7.17+/-0.91	pCi/gram
Actinium-228	7.53+/-0.49	pCi/gram
Lead-212	8.81+/-0.45	pCi/gram
Thallium-208	7.10+/-1.00	pCi/gram

SAMPLE ID #40 FRACTION 01A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 11/04/90 19:00:00 Category METAL SHAVI

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.34+/-0.06*

All results reported in:

UNITS pCi/gram

AR101651

Controls for Environmental Pollution, Inc.
P.O. BOX [illegible] • Santa Fe, New Mexico 87[illegible]
OUT OF STATE 800/545-2188 • FAX - 505-982-9[illegible]

NOV 14 1990

Nuclear Sources & Services
P.O. Box 34042
Houston, TX 77234

Attn: Charles Gallagher

Work ID: Environmental
P O # :

Date Received: 11/06/90
Date Reported: 11/12/90
Work Order: 90-11-091
Category: EMERGENCY

* Analysis by Alpha Spec

Certified By

AR101652

Controls for Environmental Pollution, Inc.

1825 Rosina • P. O. Box 5351 • Santa Fe, New Mexico 87502 • Telephone 505/982-9841

May 8, 1991

VIA FAX: 713/641-6153

NSSI/Sources & Services, Inc.
P.O. Box 34042
Houston, Texas 77234

Attention: Mr. Charles Gallagher

Dear Charlie:

As per your telephone request on May 7, 1991 and your FAX dated May 6th, the following is an explanation on the Thorium-232 by Gamma Spec and Alpha Spec. The natural abundance of the isotope Th^{232}, an alpha emitter with a half-life of 1.41 x E^{10} years, parent of the radium isotope 228, is considered to be 100% since the other five natural Thorium isotopes (Th^{227}, Th^{228}, Th^{230}, Th^{231}, and Th^{234}) occur in minute traces only.

Thorium-232 By Alpha Spec Method

The Thorium is separated from the other actinide elements by ion exchange method, electroplated onto stainless steel discs and alpha counted by utilization of the following instrumentation:

Alpha Spectrometry Systems. Canberra Series 35 Plus Multichannel Analyzer System with 16 detector capability allows for stand-alone data manipulation and analysis, computer interface capability along with battery backup failsafe memory to maintain data in the event of a power failure. Features like peak search, energy calibration and automatic analytical sequences are also incorporated. Unique features of the Canberra Model 7404 Quad Alpha Spectrometer include a digital panel to monitor bias voltage, leakage current, vacuum and a test pulser for setup and calibration. It also incorporates four micrometers for accurate and repetitive positioning of the samples to maintain proper geometry.

CEP determines the Th^{232} activity from the 4.011 Mev alpha photopeak.

Thorium-232 By Gamma Spec Method

A known aliquot of the sample is placed in a plastic Marinelli. The sample is then counted for a specified time on an Intrinsic Detector and data analyzed for various isotopes from the resulting spectrum. Thorium-232 is analyzed from the resulting spectrum.

Instrumentation

CEP used the following system for Gamma Spectral Analysis:

Nuclear Data Genie Model ND 9900 Gamma Spectrometer: The Nuclear Data Gamma Spectrometer Model 9900 is a fully integrated multiple user, data acquisition, display and processing system equipped with a DEC Micro VAX II computer, along with an auxiliary power battery pack to ensure no loss of data. This system has complete spectral display manipulation, including ROI selection and applications interface. Other features include linear and logarithmic spectral data display, display of two spectra for comparison, intensified regions of interest and display of experiment status parameters. This system is expandable to 32 ADC's with a live time resolution of 0.01 sec. CEP currently has eight Intrinsic Detectors having 2.0 KeV, 1.8 KeV, 1.9 KeV, 2.0 KeV, 2.07 KeV, 1.85 KeV, 1.80 KeV, and 1.85 KeV resolutions, and respective efficiencies of 16.9%, 18.2%, 19.9%, 23.7%, 22.6%, 25.1%, 30.6%, and 32.2%.

CEP resolves by utilizing several of the photopeaks to determine Thorium-232 by Gamma Spec.

Energy	Abundance
238.59 KeV (Pb^{212})	43.00%
583.14 KeV (Tl^{208})	31.10%
911.20 KeV (Ac^{228})	27.00%
964.40 KeV (Ac^{228} + Bi^{214})	4.70%
968.80 KeV (Ac^{228})	16.30%

CEP determines Thorium-232 assuming the Thorium-232 is in equilibrium with daughters.

Therefore, all of the above energies must be seen by the sample before it is determined as Thorium-232 activity.

Hope this is of some help in clarifying the two methods. Please feel free to call me if you need more information.

Sincerely,

CONTROLS FOR ENVIRONMENTAL POLLUTION, INC.

James J. Mueller
President

JJM:emr

onthly Calibration QA Reports
November 1990

Detector 322

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resolut
Co57	3.61E+04	1.77E+03	3.75E+04	1.04	
Y88(898)	2.22E+05	9.99E+03	2.11E+05	0.95	
Y88(1836)	2.15E+05	9.89E+03	2.24E+05	1.04	
Cd109	2.05E+06	9.64E+04	1.97E+06	0.96	
Sn113	1.43E+05	6.29E+03	1.45E+05	1.01	
Cs137	1.70E+05	7.14E+03	1.67E+05	0.98	
Ce139	7.60E+04	3.50E+03	8.18E+04	1.08	
Co60(1173)	1.52E+05	6.38E+03	1.49E+05	0.98	
Co60(1332)	1.53E+05	7.04E+03	1.52E+05	0.99	

Monthly Calibration QA Reports
November 1990

Detector 338

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resol
Co57	3.73E+04	1.83E+03	3.69E+04	0.99	
Y88(898)	2.30E+05	1.04E+04	2.24E+05	0.97	
Y88(1836)	2.22E+05	1.02E+04	2.22E+05	1.00	
Cd109	2.12E+06	9.96E+04	2.18E+06	1.03	
Sn113	1.48E+05	6.51E+03	1.35E+05	0.91	
Cs137	1.76E+05	7.39E+03	1.76E+05	1.00	
Ce139	7.86E+04	3.62E+03	7.60E+04	0.97	
Co60(1173)	1.57E+05	6.59E+03	1.59E+05	1.01	
Co60(1332)	1.58E+05	7.27E+03	1.59E+05	1.01	

Monthly Calibration QA Reports
November 1990

Detector 182

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resolu
Co57	3.63E+04	1.78E+03	3.94E+04	1.09	
Y88(898)	2.24E+05	1.01E+04	2.17E+05	0.97	
Y88(1836)	2.17E+05	9.98E+03	2.15E+05	0.99	
Cd109	2.06E+06	9.68E+04	2.06E+06	1.00	
Sn113	1.45E+05	6.38E+03	1.34E+05	0.92	
Cs137	1.71E+05	7.18E+03	1.67E+05	0.98	
Ce139	7.66E+04	3.52E+03	8.06E+04	1.05	
Co60(1173)	1.53E+05	6.43E+03	1.56E+05	1.02	
Co60(1332)	1.54E+05	7.08E+03	1.57E+05	1.02	

ıthly Calibration QA Reports
..vember 1990

Detector 237

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resolutio
Co57	3.52E+04	1.72E+03	3.67E+04	1.04	20
Y88(898)	2.17E+05	9.77E+03	2.16E+05	1.00	22
Y88(1836)	2.10E+05	9.66E+03	2.01E+05	0.96	22
Cd109	2.00E+06	9.40E+04	1.97E+06	0.99	21
Sn113	1.40E+05	6.16E+03	1.33E+05	0.95	23
Cs137	1.66E+05	6.97E+03	1.65E+05	0.99	24
Ce139	7.42E+04	3.41E+03	7.71E+04	1.04	22
Co60(1173)	1.48E+05	6.22E+03	1.52E+05	1.03	24
Co60(1332)	1.49E+05	6.85E+03	1.52E+05	1.02	[illegible]

Monthly Calibration QA Reports
November 1996

Detector 199

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resoluti
Co57	4.97E+04	2.48E+03	5.21E+04	1.05	2
Y88(898)	2.54E+05	1.22E+04	2.53E+05	1.00	2
Y88(1836)	2.46E+05	1.21E+04	2.41E+05	0.98	2
Cd109	2.25E+06	1.12E+05	2.16E+06	0.96	2
Sn113	1.43E+05	6.50E+03	1.39E+05	0.97	2
Cs137	1.27E+05	6.22E+03	1.29E+05	1.02	2
Ce139	7.68E+04	3.69E+03	7.95E+04	1.04	
Co60(1173)	1.48E+05	6.96E+03	1.51E+05	1.02	
Co60(1332)	1.48E+05	7.40E+03	1.49E+05	1.01	
Hg203	1.30E+05	6.50E+03	1.19E+05	0.92	

Monthly Calibration QA Reports
November 1990

Detector 251

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resolut
Co57	4.85E+04	2.43E+03	5.53E+04	1.14	
Y88(898)	2.49E+05	1.20E+04	2.53E+05	1.02	
Y88(1836)	2.40E+05	1.18E+04	2.47E+05	1.03	
Cd109	2.20E+06	1.10E+05	2.30E+06	1.05	
Sn113	1.41E+05	6.49E+03	1.43E+05	1.01	
Cs137	1.25E+05	6.13E+03	1.34E+05	1.07	
Ce139	7.50E+04	3.60E+03	8.20E+04	1.09	
Co60(1173)	1.45E+05	6.82E+03	1.53E+05	1.06	
Co60(1332)	1.45E+05	7.25E+03	1.55E+05	1.07	
Hg203	1.28E+05	6.40E+03	1.29E+05	1.01	

.onthly Calibration QA Reports
November 1990

Detector 226

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resoluti
Co57	3.61E+04	1.77E+03	3.74E+04	1.04	2
Y88(898)	2.22E+05	9.99E+03	2.29E+05	1.03	2
Y88(1836)	2.15E+05	9.69E+03	1.99E+05	0.93	2
Cd109	2.05E+06	9.64E+04	2.07E+06	1.01	2
Sn113	1.43E+05	6.29E+03	1.25E+05	0.87	2
Cs137	1.70E+05	7.14E+03	1.69E+05	0.99	2
Ce139	7.60E+04	3.50E+03	7.57E+04	1.00	2
Co60(1173)	1.52E+05	6.38E+03	1.57E+05	1.03	2
60(1332)	1.53E+05	7.04E+03	1.55E+05	1.01	2

Monthly Calibration QA Reports
November 1990

Detector 306

Isotope Energy	Quantity pCi's	+/-Uncertainty	Measured	Ratio	Resolut
Co57	3.63E+04	1.78E+03	3.75E+04	1.03	
Y88(898)	2.24E+05	1.01E+04	2.26E+05	1.01	
Y88(1836)	2.17E+05	9.98E+03	2.14E+05	0.99	
Cd109	2.06E+06	9.68E+04	2.00E+06	0.97	
Sn113	1.45E+05	6.38E+03	1.38E+05	0.95	
Cs137	1.71E+05	7.18E+03	1.72E+05	1.01	
Ce139	7.66E+04	3.52E+03	8.11E+04	1.06	
Co60(1173)	1.53E+05	6.43E+03	1.58E+05	1.03	
Co60(1332)	1.54E+05	7.08E+03	1.58E+05	1.03	

E

CONTROLS FOR ENVIRONMENTAL POLLUTION, INC.

NUCLEAR MEASUREMENT OPERATING PROCEDURE

STANDARD OPERATING PROCEDURE

NUCLEAR LIBRARY FILE

Date	Rev. #	Reviewed By	Approved By Mgr. of Q/A	Comments
1/2/91	0			

AR101663

Library Title : VAX/VMS Default Nuclide Library
Library file name : SYS$SYSDEVICE:[USER]LIBD.NLB;2
Date printed : 26-APR-1991 14:26:34.41
Number of nuclides : 70
Number of lines : 158

Nuclide Name	Half-Life	Nuclide Type	Key Line	Energy		Abundance
BE-7	53.29D	activation	*	477.59	keV	10.35 %
NA-22	2.60Y	activation	*	1275.00	keV	99.93 %
K-40	1.28E+09Y	natural	*	1460.75	keV	10.67 %
AR-41	1.83H	activation	*	1293.64	keV	99.16 %
SC-46	83.80D	activation	*	889.30	keV	100.00 %
				1120.50	keV	100.00 %
CR-51	27.70D	activation	*	320.03	keV	10.20 %
MN-54	312.20D	activation	*	834.83	keV	100.00 %
CO-57	271.65D	fission	*	122.06	keV	85.60 %
				136.47	keV	11.10 %
CO-58	70.78D	activation	*	810.76	keV	99.44 %
FE-59	44.56D	activation	*	1099.22	keV	56.80 %
				1291.56	keV	43.20 %
CO-60	5.27Y	activation		1173.21	keV	99.90 %
			*	1332.47	keV	100.00 %
ZN-65	244.00D	activation	*	1115.52	keV	50.75 %
SB-75	118.45D	activation		121.11	keV	15.90 %
				136.00	keV	54.00 %
			*	264.65	keV	58.00 %
				279.53	keV	24.90 %
				400.65	keV	11.60 %
RB-83	86.20D	activation	*	520.41	keV	46.00 %
				529.64	keV	30.20 %
				552.65	keV	16.42 %
SR-85	64.85D	fission	*	514.00	keV	99.27 %
Y-88	106.61D	fission		898.02	keV	91.29 %
			*	1836.13	keV	99.34 %
ZR-89	78.43H	fission	*	909.20	keV	100.00 %
NB-94	20300.00Y	activation		702.63	keV	98.00 %
			*	871.10	keV	100.00 %
NB-95	34.97D	fission	*	765.78	keV	99.82 %
ZR-95	63.98D	activation		724.18	keV	43.08 %
			*	756.72	keV	54.60 %
NB-96	23.35H	fission		568.86	keV	55.70 %
			*	778.22	keV	96.80 %
				1091.31	keV	49.40 %
				1200.19	keV	20.00 %
TC-96	4.35D	fission	*	778.22	keV	99.10 %
				812.54	keV	81.50 %
				849.86	keV	96.90 %
				1126.85	keV	15.10 %
NB-97	16.90H	fission	*	657.92	keV	98.20 %
ZR-97	16.90H	fission	*	743.36	keV	92.80 %
MO-99	66.02H	activation	*	140.50	keV	88.70 %
				181.07	keV	6.29 %
				739.40	keV	12.60 %
RU-103	39.35D	fission	*	497.08	keV	86.40 %
RH-106	366.50D	fission	*	622.20	keV	9.80 %
CD-109	453.00D	fission	*	88.03	keV	3.79 %

AR101664

Library title : VAX/VMS Default Nuclide Library
Library file name : SYS$SYSDEVICE:[USER]LIBD.NLB;2
Date printed : 26-APR-1991 14:26:34.41
Number of nuclides : 70
Number of lines : 158

Nuclide Name	Half-Life	Nuclide Type	Key Line	Energy		Abundance
AG-110M	252.20D	activation	*	657.75	keV	94.40 %
				884.70	keV	72.78 %
				937.50	keV	34.27 %
SN-113	115.07D	fission	*	391.69	keV	64.00 %
SB-122	2.68D	activation	*	564.10	keV	70.00 %
I-124	4.15D	fission	*	602.72	keV	61.00 %
				722.78	keV	10.10 %
				1691.02	keV	10.50 %
SB-124	60.20D	fission	*	602.72	keV	98.30 %
				722.78	keV	11.30 %
				1691.02	keV	49.00 %
I125	60.25D		*	35.48	keV	6.70 %
SB-125	2.71Y	fission		176.29	keV	6.80 %
			*	427.95	keV	30.00 %
				463.51	keV	10.50 %
				600.77	keV	17.90 %
				636.15	keV	11.50 %
I-126	13.02D	fission	*	388.63	keV	35.00 %
SB-126	12.40D	fission	*	666.30	keV	99.70 %
				695.00	keV	99.70 %
				697.00	keV	31.90 %
				720.50	keV	57.80 %
I129	1.57E+07Y		*	37.60	keV	7.50 %
I-131	8.04D	fission		284.30	keV	6.04 %
			*	364.48	keV	81.00 %
				636.97	keV	7.24 %
				722.89	keV	1.80 %
TE-132	78.20H	fission	*	228.16	keV	88.00 %
BA-133	10.66Y	fission		81.00	keV	34.30 %
				276.40	keV	7.09 %
				302.85	keV	18.20 %
			*	356.00	keV	62.00 %
				383.85	keV	8.97 %
I-133	20.90H	fission	*	529.87	keV	86.00 %
XE-133	5.24D	fission gas	*	81.00	keV	37.00 %
XE-133M	2.19D	fission gas	*	233.20	keV	10.00 %
CS-134	2.06Y	fission		569.29	keV	15.34 %
			*	604.66	keV	97.56 %
				795.76	keV	85.44 %
				801.84	keV	8.73 %
CS-136	13.00D	fission		176.55	keV	13.56 %
				273.65	keV	12.66 %
				340.57	keV	46.75 %
				818.50	keV	99.70 %
			*	1048.07	keV	79.76 %
				1235.34	keV	19.74 %
CS-137	30.17Y	fission	*	661.65	keV	85.00 %
CS-139	137.20D	fission	*	165.85	keV	79.90 %

AR10166!

Library title : VAX/VMS Default Nuclide Library
Library file name : SYS$SYSDEVICE:[USER]LIBD.NLB;2
Date printed : 26-APR-1991 14:26:34.41
Number of nuclides : 70
Number of lines : 158

Nuclide Name	Half-Life	Nuclide Type	Key Line	Energy		Abundance
BA-140	12.79D	fission		162.61	keV	6.11 %
				304.85	keV	4.37 %
				423.72	keV	3.07 %
			*	537.27	keV	23.60 %
LA-140	40.27H	fission		328.77	keV	18.53 %
				487.03	keV	42.98 %
				815.85	keV	22.40 %
			*	1596.49	keV	95.50 %
CE-141	32.55D	fission	*	145.44	keV	48.40 %
CE-144	284.50D	fission	*	133.54	keV	11.10 %
PM147	2.62Y		*	121.80	keV	0.29 %
EU-152	13.20Y	activation		121.78	keV	30.70 %
				244.67	keV	7.72 %
				344.30	keV	27.20 %
				778.90	keV	12.70 %
				964.00	keV	14.30 %
				1085.80	keV	10.10 %
				1112.07	keV	13.40 %
			*	1408.08	keV	20.70 %
EU154	8.50Y	activation		123.14	keV	40.50 %
			*	1274.00	keV	35.50 %
EU-155	4.96Y	fission	*	86.50	keV	23.00 %
				105.30	keV	100.00 %
W-187	23.85H	activation		134.22	keV	8.50 %
				479.53	keV	21.00 %
			*	685.81	keV	26.00 %
HG-203	46.76D	activation	*	279.19	keV	81.50 %
PB-210	22.26Y	natural	*	46.50	keV	4.05 %
PB-212	1599.00Y	natural	*	238.60	keV	43.00 %
				300.10	keV	4.09 %
				727.00	keV	7.20 %
BI-214	1599.00Y	natural		609.31	keV	46.90 %
			*	1120.30	keV	15.30 %
				1764.00	keV	16.10 %
PB-214	1599.00Y	natural	*	295.20	keV	18.90 %
				351.90	keV	36.70 %
RA-226	1600.00Y	natural		186.18	keV	3.31 %
				241.92	keV	7.60 %
				295.22	keV	18.90 %
				351.99	keV	36.30 %
			*	609.31	keV	42.80 %
				1120.29	keV	14.00 %
				1238.11	keV	5.52 %
				1764.50	keV	14.70 %
AC-228	1.41E 10Y	natural	*	270.20	keV	3.62 %
				463.30	keV	4.64 %
				911.20	keV	27.00 %
				966.00	keV	20.00 %

AR101666

Library title : VAX/VMS Default Nuclide Library
Library file name : SYS$SYSDEVICE:[USER]LIBD.NLB;2
Date printed : 26-APR-1991 14:26:34.41
Number of nuclides : 70
Number of lines : 158

Nuclide Name	Half-Life	Nuclide Type	Key Line	Energy		Abundance
TH-232	1.41E+10Y	natural		238.59	keV	43.00 %
			*	583.14	keV	31.10 %
				911.20	keV	27.00 %
				964.40	keV	4.70 %
				968.80	keV	16.30 %
U-235	7.04E+08Y	natural		143.76	keV	10.50 %
				163.35	keV	4.70 %
			*	185.72	keV	54.00 %
				205.31	keV	4.70 %
NP-237	2.14E+06Y	activation	*	86.49	keV	12.60 %
AM241	432.00Y	activation	*	59.54	keV	35.70 %
AM-243	7370.00Y	fission	*	75.00	keV	66.00 %
CM-244	18.10Y	FISSION	*	43.00	keV	0.03 %

AR101667

APPENDIX B

METCOA On-Site Radiological Testing Results

11/04/90

SAMPLE DESCRIPTION	PICO CI/GM
DRUM 1	.1
2	9.1
3	2.0
4	17.6
5	529.2
6	547.6
7	242.3
8	35.8
9	357.2
10	2.3
11	401.8
12	364.9
	519.9
14	171.5
15	634.2
16	5.9
17	.7
18	61.1
19	65.0
20	1.5
21	5.1
22	747.7
23	22.3
24	87.4
	1444.3

11/04/90

SAMPLE DESCRIPTION	PICO CI/GM
	492.9
27	1674.4
28	617.5
29	1.7
30	396.1
31	617.6
32	845.9
33	596.4
34	28.7
35	104.9
36	307.9
37	171.8
	862.0
39	753.5
40	7.6
41	163.1
42	918.7
43	930.8
44	1577.6
45	366.6
46	833.7
47	1250.1
48	544.3
49	569.4
50	606.6

AR101670

RETCON RADIOANALYSIS REPORT

11/04/90

	SAMPLE DESCRIPTION	PICO CI/GR
[illegible]		504.2
52		429.4
53		359.3
54		766.9
55		1149.3
56		414.3
57		669.6
58		859.2
59		1.2
60		1207.8
61		390.2
62		1.8
		31.4
64		506.2
65		124.8
66		262.6
67		927.9
68		1369.9
69		2258.9
70		112.8
71		.3
72		208.4
73		1793.8
74		753.1
75		1086.6

AR101671

11/04/90

SAMPLE DESCRIPTION	PICO CI/GM
	679.9
77	.4
78	1286.4
79	894.8
80	.7
81	12.0
82	834.9
83	1085.1
84	1.7
85	1556.9
86	368.2
87	1140.8
	25.6
89	7.2
90	8.4
91	1135.7
92	764.2
93	2.4
94	601.9
95	70.9
96	90.8
97	1527.4
98	531.9
99	516.5
100	705.7

NETCOR RADIOANALYSIS REPORT

11/04/90

SAMPLE DESCRIPTION	PICO CI/GS
	496.7
102	597.6
103	46.0
104	684.6
105	8.8
106	338.9
107	435.0
108	.0
109	622.0
110	602.0
111	389.7
112	565.1
[illegible]	788.6
[illegible]	351.9
115	14.4
116	230.1
117	1455.4
118	226.5
119	1346.9
120	1092.6
121	527.5
122	989.6
123	186.7
124	1479.9
125	.1

AR101673

11/04/90

SAMPLE DESCRIPTION	PICO CI/GM
	1367.6
127	923.1
128	.1
129	183.1
130	1549.8
131	796.1
132	270.0
133	450.1
134	1051.0
135	350.6
136	368.9
137	902.1
	959.4
139	.3
140	507.9
141	991.7
142	894.1
143	532.1
144	918.6
145	1184.5
146	1338.0
147	839.9
148	417.7
149	279.9
150	91.2

11/04/90

SAMPLE DESCRIPTION	PICO CI/GM
...	385.5
152	506.2
153	865.4
154	7.4
155	1086.9
156	43.4
157	1177.2
158	1123.1
159	285.7
160	1284.6
161	472.9
162	28.3
[illegible]	385.2
164	817.4
165	231.8
166	27.5
167	925.8
168	650.7
169	70.1
170	12.3
171	.4
172	88.9
173	605.3
174	471.9
175	389.6

11/04/90

SAMPLE DESCRIPTION	PICO CI/GM
	1300.2
177	1.2
178	94.2
179	1677.1
180	416.7
181	335.4
182	1267.7
183	1423.4
184	1657.9
185	1147.8
186	.0
187	29.1
	721.9
189	2476.5
190	1012.4
191	1285.5
192	1086.4
193	1074.6
194	97.6
195	872.1
196	16.4
197	1036.3
198	2012.0
199	.6
200	788.0

11/04/90

SAMPLE DESCRIPTION	PICO CI/GM
	1210.1
202	653.7
203	857.1
204	1485.2
205	90.4
206	882.3
207	997.5
208	66.2
209	869.6
210	524.6
211	64.4
212	2.9
1	.0
	19.5
215	970.3
216	1.2
217	150.9
218	1097.9
219	1078.3
220	62.9
221	1332.5
222	952.6
223	635.1
224	565.4

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	85.2
226	901.2
227	9.2
228	839.1
229	198.2
230	19.2
231	93.8
232	679.4
233	839.3
234	196.3
235	254.6
236	514.2
	380.1
238	536.3
239	1309.7
240	135.9
241	15.8
242	176.0
243	251.9
244	103.6
245	58.7
246	17.3
247	11.9
248	206.7
249	34.5

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	697.2
251	19.3
252	43.9
253	29.7
254	123.8
255	446.8
256	111.7
257	1365.3
258	2.3
259	.0
260	295.2
261	1.2
	114.8
	86.7
264	183.2
265	3.1
266	840.6
267	2.1
268	.2
269	20.0
270	.0
271	45.9
272	5.7
273	701.7
274	18.9

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
[illegible]	36.9
276	801.0
277	44.5
278	682.2
279	733.3
280	133.4
281	1.4
282	1.7
283	.0
284	90.3
285	510.5
286	684.4
[illegible]	109.3
288	732.9
289	1115.4
290	1279.2
291	498.7
292	17.4
293	28.1
294	755.4
295	758.6
296	20.4
297	1117.0
298	109.3
[illegible]	1.9

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11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	180.6
301	392.9
302	74.2
303	1.2
304	933.3
305	728.9
306	959.8
307	4.3
308	724.5
309	554.7
310	.2
311	412.4
	3.4
313	328.3
314	289.2
315	438.2
316	392.8
317	45.0
318	266.4
319	130.3
320	66.9
321	71.6
322	32.7
323	1141.0
324	218.8

AR101681

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	51.5
326	15.0
327	261.8
328	27.1
329	34.4
330	57.2
331	1435.2
332	36.6
333	1.4
334	.8
335	56.8
336	247.7
	.0
338	112.6
339	1155.0
340	1.6
341	1144.3
342	91.5
343	385.2
344	142.9
345	421.1
346	87.6
347	685.1
348	787.8
349	1034.4

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	735.1
351	2.7
352	514.7
353	9.4
354	36.2
355	10.9
356	570.6
357	22.5
358	13.6
359	27.7
360	111.8
361	52.6
[illegible]	7.2
[illegible]	4.4
364	.0
365	144.8
366	18.3
367	1.2
368	109.9
369	11.8
370	18.1
371	.2
372	80.8
373	612.9
374	39.8

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	4.9
376	82.1
377	117.9
378	49.9
379	123.3
380	37.3
381	6.8
382	.1
383	.0
384	.3
385	36.8
386	946.0
[illegible]	625.2
[illegible]	.0
389	.0
390	.0
391	.0
392	3.1
393	407.1
394	57.7
395	386.0
396	1325.5
397	1719.2
398	500.8
399	1316.7

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	1383.5
401	717.1
402	207.8
403	83.8
404	1177.3
405	760.6
406	2039.4
407	781.1
408	1268.9
409	246.4
410	298.4
411	1149.1
412	3.8
413	268.6
414	888.5
415	55.0
416	41.8
417	1162.0
418	1.8
419	2464.9
420	2136.0
421	1950.7
422	245.2
423	1281.9
424	1888.2

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11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
[illegible]	1653.6
426	2.8
427	1129.4
428	703.9
429	676.0
430	1253.3
431	1085.0
432	1363.6
433	1128.8
434	380.7
435	1419.3
436	6.1
	13.9
438	257.2
439	724.5
440	817.8
441	1194.0
442	1090.3
443	.3
444	196.5
445	1743.2
446	299.6
447	152.8
448	1024.4
449	1.8

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
[illegible]	215.1
451	1.8
452	784.9
453	9.9
454	1968.1
455	8.1
456	95.5
457	1910.9
458	.0
459	1369.0
460	23.6
461	836.6
[illegible]	.0
463	55.7
464	1320.3
465	331.0
466	1226.6
467	218.2
468	205.0
469	.7
470	.1
471	.0
472	.0
473	.0
474	.0

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	.5
476	.0
477	3.2
478	.0
479	.0
480	.3
481	75.2
482	17.3
483	.0
484	.0
485	.0
486	163.3
	.1
488	.0
489	8.8
490	.0
491	.0
492	.2
493	.9
494	.0
495	.2
496	.0
497	.0
498	.2
499	.0

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
[illegible]	7.6
501	.0
502	.0
503	1.1
504	.2
505	.1
506	.0
507	.0
508	1.1
509	.1
510	3.7
511	.0
[illegible]2	1.3
[illegible]3	.1
514	.4
515	.5
516	.6
517	7.8
518	.0
519	.0
520	.1
521	.0
522	.0
523	.0
524	.0

11/07/90

SAMPLE DESCRIPTION	PICO CI/GM
	6.8
526	1.7
527	.0
528	.0
529	2.5
530	.2
531	.4
532	1.3
533	.3
534	1.9
535	.0
536	.3
	.0
538	.0
539	1.1
540	9.9
541	.0
542	2.8
543	1.8
544	.1
545	.9
546	.9
547	7.2
548	3.7
549	5.2

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	.0
551	.3
552	1.1
553	.9
554	.1
555	.9
556	.6
557	1.8
558	.0
559	1.9
560	.9
561	.0
562	2.2
3	31.7
564	1.3
565	2.3
566	17.3
567	.0
568	1.3
569	2.4
570	1.3
571	2.6
572	25.6
573	.0
574	.6

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	12.6
576	1.5
577	2.5
578	.9
579	.0
580	1.7
581	.9
582	.9
583	1.6
584	.0
585	.1
586	.3
587	2.3
[illegible]	.6
589	6.4
590	.0
591	.5
592	2.1
593	4.4
594	.9
595	2.7
596	7.9
597	.9
598	237.7
599	14.9

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	.0
601	6.3
602	4.1
603	.6
604	.0
605	.0
606	.8
607	.0
608	.9
609	.0
610	.0
611	1.2
612	.6
.3	.7
614	3.3
615	9.3
616	.8
617	.1
618	.1
619	.1
620	.2
621	.1
622	.2
623	.9
624	.0

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	.2
626	.0
627	3.9
628	.0
629	.1
630	.1
631	.6
632	.6
633	.9
634	.0
635	2.3
636	1.4
637	.0
638	.0
639	339.4
640	4.8
641	.1
642	.5
643	.1
644	7.8
645	.0
646	158.4
647	.1
648	.0
649	.0

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	.0
651	.0
652	.0
653	18.7
654	8.9
655	.6
656	.1
657	.0
658	.0
659	.0
660	.0
661	.0
662	.0
[illegible]	.2
664	.0
665	1.5
666	5.7
667	23.5
668	.0
669	1.9
670	.0
671	.0
672	.0
673	.3
674	75.7

11/11/90

#	SAMPLE DESCRIPTION	PICO CI/GM
		.0
676		.6
677		.0
678		.5
679		.0
680		.1
681		20.2
682		.0
683		.0
684		.3
685		.0
686		.0
[illegible]		2.5
[illegible]8		.1
689		.1
690		.0
691		1.2
692		.0
693		.0
694		10.2
695		.0
696		12.1
697		18.7
698		18.0
699		16.2

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	1.3
/01	37.7
702	15.9
703	13.8
704	.2
705	17.3
706	14.4
707	11.3
708	1.1
709	14.9
710	18.3
711	18.8
712	12.7
.3	10.3
714	2.9
715	4.4
716	32.4
717	28.1
718	7.3
719	.3
720	.8
721	.1
722	11.6
723	.6
724	.3

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	.1
726	.0
727	2.5
728	11.3
729	2.3
730	.2
731	26.9
732	.1
733	16.7
734	.2
735	3.0
736	2.1
737	1.0
[illegible]	7.4
739	11.5
740	1.1
741	18.4
742	1.4
743	1.2
744	1.6
745	3.6
746	.1
747	11.4
748	.8
749	.1

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	1.8
51	.1
752	.1
753	9.3
754	.6
755	1.8
756	17.7
757	13.5
758	13.7
759	8.4
760	1.6
761	15.7
762	2.6
	1.0
764	2.2
765	15.8
766	11.9
767	.7
768	15.9
769	17.4
770	3.0
771	5.5
772	5.4
773	3.6
774	5.6

11/11/90

SAMPLE DESCRIPTION	PICO CI/GM
	14.7
776	23.8
777	26.9
778	11.6
779	.0
780	3.6
781	9.5
782	2.6
783	.5
784	3.6
785	2.9
786	4.3
787	3.3
788	25.6
789	51.9
790	.3
791	3.1
792	3.3
793	.9
794	46.8
795	35.2
796	.6
797	7.2
798	44.1
799	1.3

SAMPLE DESCRIPTION	PICO CI/GM
	18.0
	5.4
02	2.1
803	4.6
804	2.1
805	3.9
806	3.7
807	.8
808	2.7
809	7.3
810	2.9
811	.2
812	.0
	2.1
	2.9
815	.2
816	4.6
817	2.8
818	14.1
819	.6
820	12.2
821	.9
822	56.2
823	16.0
824	.4

SAMPLE DESCRIPTION	PICO CI/GM
	.4
	1.4
827	.0
828	.1
829	.8
830	.6
831	.5
832	.0
833	.0
834	.9
835	.4
836	.2
837	.6
838	.3
	.1
840	.2
841	.1
842	.1
843	2.2
844	.9
845	.0
846	.0
847	1.0
848	.4
849	.5

SAMPLE DESCRIPTION	FICO CI/GX
	2.2
	.9
32	60.1
853	.0
854	45.3
855	1.9
856	1.0
857	.6
858	85.8
859	242.2
860	1.7
861	.7
862	.5
	.4
	2.5
865	.3
866	.0
867	.7
868	6.3
869	.0
870	2.8
871	.4
872	.3
873	.0
874	14.4

SAMPLE DESCRIPTION	PICO CI/GM
	.4
	4.2
877	2.6
878	3.0
879	4.0
880	.4
881	1.3
882	.0
883	1.5
884	.9
885	2.0
886	4.9
887	1.8
[illegible]	.1
[illegible]	1.8
890	1.1
891	3.5
892	6.4
893	.1
894	.1
895	1.9
896	.0
897	17.8
898	.4
899	3.4

SAMPLE DESCRIPTION	PICO CI/GM
	13.3
	.6
02	.2
903	.4
904	10.9
905	2.3
906	5.5
907	3.0
908	19.9
909	5.6
910	3.8
911	1.1
912	.0
[illegible]	9.9
[illegible]	.0
915	2.7
916	.6
917	.0
918	.0
919	.0
920	.4
921	.0
922	.1
923	.4
924	11.2

SAMPLE DESCRIPTION	PICO CI/GM
	3.8
	.2
927	.0
928	.6
929	92.3
930	.8
931	.0
932	.0
933	.5
934	9.6
935	17.6
936	.0
937	.3
	.0
939	.9
940	4.9
941	9.1
942	.3
943	2.6
944	.4
945	.9
946	.0
947	2.9
948	.8
949	2.7

SAMPLE DESCRIPTION	PICO CI/GM
	.1
	.2
52	.0
953	1.6
954	.3
955	.0
956	.8
957	.2
958	6.1
959	1.2
960	2.9
961	1.3
962	3.8
	.5
	.0
965	3.2
966	5.9
967	4.0
968	.0
969	4.0
970	2.7
971	.4
972	3.6
973	2.8

SAMPLE DESCRIPTION	PICO CI/GM
S 1	.5
	1.1
T3	1.8
T4	.6
T5	.0
T6	9.4
T7	.5
T8	1.1
T9	.0
T10	18.3
T11	3.3
T12	2.6
T13	73.1
	53.7
	4.9
T16	.0
T17	5.6
T18	224.5
T19	114.6
T20	.3
T21	127.8
T22	2.4
T23	.0
T24	1.7
T25	.0

SAMPLE DESCRIPTION	PICO CI/GM
	.6
	.6
28	1.1
T29	.2
T30	.0
T31	2.8
T32	249.5
T33	66.2
T34	182.7
T35	536.2
T36	497.0
T37	33.1
T38	294.2
	616.9
	300.2
T41	164.6
T42	467.9
T43	631.9
T44	517.7
T45	724.1
T46	2.9

SAMPLE DESCRIPTION	PICO CI/GM
DEBRIS 1	39.5
DEBRIS 2	401.8
NON RAD DEBRIS	.7
RAD DEBRIS #3	8.4
RAD CUTTING 1	200.2
RAD CUTTING 2	995.5
RAD CUTTING 3	114.5
NON RAD CUTTING	6.7
RAD SLAG 1	15.9
RAD SLAG 2	34.3
RAD SLAG 3	23.5
NON RAD SLAG	2.4
COMPOSITE TOTES	190.9

SAMPLE DESCRIPTION	PICO CI/GM
LOCATION 1-1-T	.7
-N	.5
-1-B	.1
1-2-T	.8
1-2-N	.6
1-2-B	.8
1-3-T	.8
1-3-N	1.0
1-3-B	.7
1-4-T	.1
1-4-N	2.4
1-4-B	.9
1-5-T	.5
-N	1.0
-B	1.1
2-1-T	.9
2-1-N	1.2
2-1-B	.8
2-2-T	1.3
2-2-N	2.5
2-2-B	3.6
2-3-T	1.4
2-3-N	2.7
2-3-B	3.3
2-4-T	2.8

SAMPLE DESCRIPTION	PICO CI/GM
[illegible]-B	3.0
[illegible]-B	4.8
[illegible]-5-T	1.4
2-5-B	1.8
2-5-B	2.0
3-1-T	1.6
3-1-B	1.6
3-1-B	.3
3-2-T	1.1
3-2-B	1.6
3-2-B	1.0
3-3-T	1.6
3-3-B	1.9
[illegible]-B	2.0
[illegible]-T	2.4
3-4-B	22.2
3-4-B	8.7
3-5-T	1.1
3-5-B	1.4
3-5-B	1.5
4-1-T	1.8
4-1-B	4.7
4-1-B	2.1
4-2-T	2.1
4-2-B	3.0

SAMPLE DESCRIPTION	FICO CL/GM
-B	2.9
-T	1.4
-3-N	2.0
4-3-B	1.6
4-4-T	1.9
4-4-N	1.3
4-4-B	1.8
4-5-T	1.9
4-5-N	2.2
4-5-B	2.1

SAMPLE DESCRIPTION	PICO CI/GM
Grid Locations	1.3
	1.4
1-1C	.2
1-1D	.8
2-1A	1.8
2-1B	1.5
2-1C	1.3
2-2A	.2
2-2B	1.5
2-2C	19.6
2-3B	1.4
2-3C	1.5
3-1A	2.4
.B	2.0
A	4.2
3-2B	1.8
4-1A	1.3
4-1B	1.6
4-2A	1.7
4-2B	1.7
5-1A	2.0
5-2A	1.7
5-3A	1.9
5-4A	2.9
6-1A	1.5

SAMPLE DESCRIPTION	PICO CI/GM
6-4	.7
6-7	.4
	1.0
6-3A	2.9
6-3A	.5
7-1A	3.2
7-1B	1.4
7-2A	1.8
7-2B	2.2
7-3A	2.4
7-3B	3.1
8-1A	1.9
8-1B	2.1
8-[illegible]	188.9
	35.3
8-3A	.9
8-3B	1.9
9-1A	1.1
9-1B	2.9
9-1C	1.9
9-2A	.9
9-2B	1.4
9-2C	1.4
9-3A	1.4
9-3B	1.6

12/17/90

SAMPLE DESCRIPTION	PICO CI/GM
1 COMPOSITE 1	1.2
2	1.9
3	1.7
4	4.4
5	2.5
6	1.4
7	2.5
8	15.9
9	1.4
10	2.2

APPENDIX C

Container Logs

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0001	Y	0.14	DEBRIS	RADDEB 1	YES	YES
0002	Y	9.10	DEBRIS	RADDEB 1	YES	YES
0003	N	2.43	DEBRIS	NRB 1	NO	NO
0004	Y	17.60	DEBRIS	RADDEB 3	YES	YES
0005	Y	529.24	CUTTINGS	RADCUT 2	YES	NO
0006	Y	547.61	DEBRIS	RADDEB 2	YES	YES
0007	Y	242.32	DEBRIS	RADDEB 2	YES	YES
0008	N	35.84	SLAG	RADSLG 2	YES	NO
0009	Y	357.21	CUTTINGS	RADCUT 2	YES	NO
0010	Y	2.30	DEBRIS	RADDEB 1	YES	YES
0011	Y	401.76	DEBRIS	RADDEB 2	YES	YES
0012	Y	321.60	SLAG	RADSLG 2	YES	NO
0013	Y	519.85	SLAG	RADSLG 2	YES	NO
0014	Y	171.50	CUTTINGS	RADCUT 2	YES	NO
0015	Y	634.20	SLAG	RADSLG 2	YES	NO
0016	Y	5.87	SLAG	RADSLG 1	YES	NO
0017	Y	[illegible].69	SLAG	RADSLG 1	YES	NO
0018	Y	61.08	SLAG	RADSLG 2	YES	NO
0019	Y	65.03	SLAG	RADSLG 2	YES	NO
0020	Y	1.49	DEBRIS	RADDEB 1	YES	YES
0021	Y	5.09	SLAG	RADSLG 1	YES	NO
0022	Y	747.68	CUTTINGS	RADCUT 2	YES	NO
0023	Y	22.30	CUTTINGS	RADCUT 2	YES	NO
0024	Y	87.41	CUTTINGS	RADCUT 2	YES	NO
0025	Y	1444.31	CUTTINGS	RADCUT 2	YES	NO
0026	Y	492.94	CUTTINGS	RADCUT 2	YES	NO
0027	Y	1674.44	CUTTINGS	RADCUT 2	YES	NO
0028	Y	617.45	CUTTINGS	RADCUT 2	YES	NO
0029	N	1.72	DEBRIS	NRB 1	NO	NO
0030	Y	396.08	CUTTINGS	RADCUT 2	YES	NO
0031	Y	617.57	CUTTINGS	RADCUT 2	YES	NO
0032	Y	845.92	CUTTINGS	RADCUT 2	YES	NO
0033	Y	596.38	CUTTINGS	RADCUT 2	YES	NO
0034	Y	28.73	CUTTINGS	RADCUT 2	YES	NO
0035	Y	104.93	CUTTINGS	RADCUT 2	YES	NO
0036	Y	307.93	CUTTINGS	RADCUT 2	YES	NO
0037	Y	171.94	DEBRIS	RADDEB 2	YES	YES
0038	Y	862.01	CUTTINGS	RADCUT 2	YES	NO
0039	Y	753.52	CUTTINGS	RADCUT 2	YES	NO
0040	Y	7.63	CUTTINGS	RADCUT 1	YES	NO
0041	Y	163.10	CUTTINGS	RADCUT 2	YES	NO
0042	Y	918.72	CUTTINGS	RADCUT 2	YES	NO
0043	Y	930.80	CUTTINGS	RADCUT 2	YES	NO
0044	Y	1577.60	CUTTINGS	RADCUT 2	YES	NO
0045	Y	366.64	CUTTINGS	RADCUT 2	YES	NO
0046	Y	833.67	CUTTINGS	RADCUT 2	YES	NO
0047	Y	1250.09	CUTTINGS	RADCUT 2	YES	NO
0048	Y	544.31	CUTTINGS	RADCUT 2	YES	NO
0049	Y	569.35	DEBRIS	RADDEB 2	YES	YES
0050	Y	606.60	CUTTINGS	RADCUT 2	YES	NO
0051	Y	504.24	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0052	Y	428.35	CUTTINGS	RADCUT 2	YES	NO
0053	Y	359.27	CUTTINGS	RADCUT 2	YES	NO
0054	Y	766.92	CUTTINGS	RADCUT 2	YES	NO
0055	Y	1140.45	CUTTINGS	RADCUT 2	YES	NO
0056	Y	414.33	CUTTINGS	RADCUT 2	YES	NO
0057	Y	669.55	CUTTINGS	RADCUT 2	YES	NO
0058	Y	859.17	CUTTINGS	RADCUT 2	YES	NO
0059	Y	1.20	CUTTINGS	RADCUT 1	YES	NO
0060	Y	1207.79	CUTTINGS	RADCUT 2	YES	NO
0061	Y	390.20	CUTTINGS	RADCUT 2	YES	NO
0062	Y	1.75	CUTTINGS	RADCUT 1	YES	NO
0063	Y	31.41	SLAG	RADSLG 2	YES	NO
0064	Y	506.17	CUTTINGS	RADCUT 2	YES	NO
0065	Y	124.82	SLAG	RADSLG 2	YES	NO
0066	Y	262.64	CUTTINGS	RADCUT 2	YES	NO
0067	Y	927.85	CUTTINGS	RADCUT 2	YES	NO
0068	Y	1369.88	CUTTINGS	RADCUT 2	YES	NO
0069	Y	2258.96	CUTTINGS	RADCUT 2	YES	NO
0070	Y	112.84	SLAG	RADSLG 2	YES	NO
0071	Y	0.27	CUTTINGS	RADCUT 1	YES	NO
0072	Y	308.36	CUTTINGS	RADCUT 2	YES	NO
0073	Y	1753.79	CUTTINGS	RADCUT 2	YES	NO
0074	Y	753.10	CUTTINGS	RADCUT 2	YES	NO
0075	Y	1086.60	CUTTINGS	RADCUT 2	YES	NO
0076	Y	679.90	CUTTINGS	RADCUT 2	YES	NO
0077	Y	0.40	CUTTINGS	RADCUT 1	YES	NO
0078	Y	1286.40	CUTTINGS	RADCUT 2	YES	NO
0079	Y	894.80	CUTTINGS	RADCUT 2	YES	NO
0080	Y	0.72	CUTTINGS	RADCUT 1	YES	NO
0081	Y	12.00	CUTTINGS	RADCUT 3	YES	YES
0082	Y	834.80	CUTTINGS	RADCUT 2	YES	NO
0083	Y	1085.10	CUTTINGS	RADCUT 2	YES	NO
0084	Y	1.70	DEBRIS	RADDEB 1	YES	YES
0085	Y	1556.90	CUTTINGS	RADCUT 2	YES	NO
0086	Y	368.20	DEBRIS	RADDEB 2	YES	YES
0087	Y	1140.80	CUTTINGS	RADCUT 2	YES	NO
0088	Y	0.00	CUTTINGS	RADCUT 1	YES	NO
0089	Y	7.20	SLAG	RADSLG 1	YES	NO
0090	Y	8.40	CUTTINGS	RADCUT 1	YES	NO
0091	Y	1135.70	CUTTINGS	RADCUT 2	YES	NO
0092	Y	764.20	CUTTINGS	RADCUT 2	YES	NO
0093	Y	2.40	CUTTINGS	RADCUT 1	YES	NO
0094	Y	601.90	CUTTINGS	RADCUT 2	YES	NO
0095	Y	70.90	CUTTINGS	RADCUT 2	YES	NO
0096	Y	90.80	SLAG	RADSLG 2	YES	NO
0097	Y	1527.40	CUTTINGS	RADCUT 2	YES	NO
0098	Y	531.90	CUTTINGS	RADCUT 2	YES	NO
0099	Y	516.45	CUTTINGS	RADCUT 2	YES	NO
0100	Y	705.70	CUTTINGS	RADCUT 2	YES	NO
0101	Y	496.70	CUTTINGS	RADCUT 2	YES	NO
0102	Y	597.60	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0103	Y	46.00	SLAG	RADSLG 2	YES	NO
0104	Y	684.60	CUTTINGS	RADCUT 2	YES	NO
0105	Y	8.80	CUTTINGS	RADCUT 1	YES	NO
0106	Y	338.90	CUTTINGS	RADCUT 2	YES	NO
0107	Y	435.00	CUTTINGS	RADCUT 2	YES	NO
0108	Y	0.00	DEBRIS	RADDEB 1	YES	YES
0109	Y	622.80	CUTTINGS	RADCUT 2	YES	NO
0110	Y	602.00	CUTTINGS	RADCUT 2	YES	NO
0111	Y	388.70	CUTTINGS	RADCUT 2	YES	NO
0112	Y	565.10	CUTTINGS	RADCUT 2	YES	NO
0113	Y	788.60	CUTTINGS	RADCUT 2	YES	NO
0114	Y	351.90	CUTTINGS	RADCUT 2	YES	NO
0115	Y	14.40	SLAG	RADSLG 3	YES	NO
0116	Y	230.00	CUTTINGS	RADCUT 2	YES	NO
0117	Y	1455.40	CUTTINGS	RADCUT 2	YES	NO
0118	Y	226.50	CUTTINGS	RADCUT 2	YES	NO
0119	Y	1346.90	CUTTINGS	RADCUT 2	YES	NO
0120	Y	1092.60	CUTTINGS	RADCUT 2	YES	NO
0121	Y	527.50	CUTTINGS	RADCUT 2	YES	NO
0122	Y	989.60	CUTTINGS	RADCUT 2	YES	NO
0123	Y	186.70	CUTTINGS	RADCUT 2	YES	NO
0124	Y	1479.86	CUTTINGS	RADCUT 2	YES	NO
0125	Y	0.10	SLAG	RADSLG 1	YES	NO
0126	Y	1367.60	CUTTINGS	RADCUT 2	YES	NO
0127	Y	923.10	SLAG	RADSLG 2	YES	NO
0128	Y	0.10	CUTTINGS	RADCUT 1	YES	NO
0129	Y	183.10	SLAG	RADSLG 2	YES	NO
0130	Y	1549.80	CUTTINGS	RADCUT 2	YES	NO
0131	Y	796.10	CUTTINGS	RADCUT 2	YES	NO
0132	Y	270.14	CUTTINGS	RADCUT 2	YES	NO
0133	Y	450.13	SLAG	RADSLG 2	YES	NO
0134	Y	1051.00	CUTTINGS	RADCUT 2	YES	NO
0135	Y	350.60	CUTTINGS	RADCUT 2	YES	NO
0136	Y	368.90	SLAG	RADSLG 2	YES	NO
0137	Y	902.10	CUTTINGS	RADCUT 2	YES	NO
0138	Y	959.40	CUTTINGS	RADCUT 2	YES	NO
0139	Y	0.30	CUTTINGS	RADCUT 1	YES	NO
0140	Y	507.92	CUTTINGS	RADCUT 2	YES	NO
0141	Y	991.70	CUTTINGS	RADCUT 2	YES	NO
0142	Y	894.09	CUTTINGS	RADCUT 2	YES	NO
0143	Y	532.10	CUTTINGS	RADCUT 2	YES	NO
0144	Y	918.60	CUTTINGS	RADCUT 2	YES	NO
0145	Y	1184.50	CUTTINGS	RADCUT 2	YES	NO
0146	Y	1338.10	CUTTINGS	RADCUT 2	YES	NO
0147	Y	839.88	CUTTINGS	RADCUT 2	YES	NO
0148	Y	417.70	CUTTINGS	RADCUT 2	YES	NO
0149	Y	279.90	SLAG	RADSLG 2	YES	NO
0150	Y	91.20	CUTTINGS	RADCUT 2	YES	NO
0151	Y	385.50	SLAG	RADSLG 2	YES	NO
0152	Y	506.18	CUTTINGS	RADCUT 2	YES	NO
0153	Y	865.40	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0154	Y	7.43	CUTTINGS	RADCUT 1	YES	NO
0155	Y	1086.90	CUTTINGS	RADCUT 2	YES	NO
0156	Y	43.40	SLAG	RADSLG 2	YES	YES
0157	Y	1177.24	CUTTINGS	RADCUT 2	YES	NO
0158	Y	1123.10	CUTTINGS	RADCUT 2	YES	NO
0159	Y	285.66	CUTTINGS	RADCUT 2	YES	NO
0160	Y	1284.60	CUTTINGS	RADCUT 2	YES	NO
0161	Y	472.90	CUTTINGS	RADCUT 2	YES	NO
0162	Y	28.30	CUTTINGS	RADCUT 2	YES	NO
0163	Y	385.20	DEBRIS	RADDEB 2	YES	YES
0164	Y	817.40	CUTTINGS	RADCUT 2	YES	NO
0165	Y	231.80	CUTTINGS	RADCUT 2	YES	NO
0166	Y	27.50	CUTTINGS	RADCUT 2	YES	NO
0167	Y	925.80	CUTTINGS	RADCUT 2	YES	NO
0168	Y	650.70	CUTTINGS	RADCUT 2	YES	NO
0169	Y	70.10	CUTTINGS	RADCUT 2	YES	NO
0170	Y	12.30	DEBRIS	RADDEB 3	YES	YES
0171	Y	0.40	CUTTINGS	RADCUT 1	YES	NO
0172	Y	88.90	CUTTINGS	RADCUT 2	YES	NO
0173	Y	605.30	CUTTINGS	RADCUT 2	YES	NO
0174	Y	471.90	CUTTINGS	RADCUT 2	YES	NO
0175	Y	389.60	CUTTINGS	RADCUT 2	YES	NO
0176	Y	1300.20	CUTTINGS	RADCUT 2	YES	NO
0177	Y	1.20	CUTTINGS	RADCUT 1	YES	NO
0178	Y	94.20	CUTTINGS	RADCUT 2	YES	NO
0179	Y	1677.10	CUTTINGS	RADCUT 2	YES	NO
0180	Y	416.70	CUTTINGS	RADCUT 2	YES	NO
0181	Y	335.40	CUTTINGS	RADCUT 2	YES	NO
0182	Y	1267.70	CUTTINGS	RADCUT 2	YES	NO
0183	Y	1423.40	CUTTINGS	RADCUT 2	YES	NO
0184	Y	1657.90	CUTTINGS	RADCUT 2	YES	NO
0185	Y	1147.80	CUTTINGS	RADCUT 2	YES	NO
0186	N	0.00	DEBRIS	NRB 1	NO	YES
0187	Y	29.10	CUTTINGS	RADCUT 2	YES	NO
0188	Y	721.90	CUTTINGS	RADCUT 2	YES	NO
0189	Y	2476.50	CUTTINGS	RADCUT 2	YES	NO
0190	Y	1012.40	CUTTINGS	RADCUT 2	YES	NO
0191	Y	1285.50	CUTTINGS	RADCUT 2	YES	NO
0192	Y	1086.40	CUTTINGS	RADCUT 2	YES	NO
0193	Y	1074.60	CUTTINGS	RADCUT 2	YES	NO
0194	Y	97.60	CUTTINGS	RADCUT 2	YES	NO
0195	Y	872.10	CUTTINGS	RADCUT 2	YES	NO
0196	Y	16.40	CUTTINGS	RADCUT 3	YES	NO
0197	Y	1036.30	CUTTINGS	RADCUT 2	YES	NO
0198	Y	2012.00	CUTTINGS	RADCUT 2	YES	NO
0199	Y	0.58	CUTTINGS	RADCUT 1	YES	NO
0200	Y	788.00	CUTTINGS	RADCUT 2	YES	NO
0201	Y	1210.10	CUTTINGS	RADCUT 2	YES	NO
0202	Y	653.70	CUTTINGS	RADCUT 2	YES	NO
0203	Y	857.10	CUTTINGS	RADCUT 2	YES	NO
0204	Y	1485.20	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0205	Y	90.40	CUTTINGS	RADCUT 2	YES	NO
0206	Y	882.30	CUTTINGS	RADCUT 2	YES	NO
0207	Y	997.50	CUTTINGS	RADCUT 2	YES	NO
0208	Y	66.20	CUTTINGS	RADCUT 2	YES	NO
0209	Y	869.20	CUTTINGS	RADCUT 2	YES	NO
0210	Y	524.60	CUTTINGS	RADCUT 2	YES	NO
0211	Y	64.35	CUTTINGS	RADCUT 2	YES	NO
0212	Y	2.90	CUTTINGS	RADCUT 1	YES	NO
0213	Y	0.00	CUTTINGS	RADCUT 1	YES	NO
0214	Y	19.50	CUTTINGS	RADCUT 3	YES	NO
0215	Y	970.30	CUTTINGS	RADCUT 2	YES	NO
0216	Y	1.20	CUTTINGS	RADCUT 1	YES	NO
0217	Y	150.90	SLAG	RADSLG 2	YES	YES
0218	Y	1097.90	CUTTINGS	RADCUT 2	YES	NO
0219	Y	1078.30	CUTTINGS	RADCUT 2	YES	NO
0220	N	62.90	SLAG	RADSLG 2	YES	NO
0221	Y	1332.50	CUTTINGS	RADCUT 2	YES	NO
0222	Y	952.60	CUTTINGS	RADCUT 2	YES	NO
0223	Y	635.10	CUTTINGS	RADCUT 2	YES	NO
0224	Y	565.40	CUTTINGS	RADCUT 2	YES	NO
0225	Y	85.20	CUTTINGS	RADCUT 2	YES	NO
0226	Y	901.20	CUTTINGS	RADCUT 2	YES	NO
0227	Y	9.20	SLAG	RADSLG 1	YES	NO
0228	Y	839.10	CUTTINGS	RADCUT 2	YES	NO
0229	Y	198.20	SLAG	RADSLG 2	YES	NO
0230	N	19.20	DEBRIS	RADDEB 3	YES	YES
0231	Y	93.00	SLAG	RADSLG 2	YES	NO
0232	Y	679.40	CUTTINGS	RADCUT 2	YES	NO
0233	Y	839.30	CUTTINGS	RADCUT 2	YES	NO
0234	Y	196.30	SLAG	RADSLG 2	YES	NO
0235	Y	254.60	CUTTINGS	RADCUT 2	YES	NO
0236	Y	514.20	CUTTINGS	RADCUT 2	YES	NO
0237	Y	380.10	CUTTINGS	RADCUT 2	YES	NO
0238	Y	536.30	CUTTINGS	RADCUT 2	YES	NO
0239	Y	1309.70	CUTTINGS	RADCUT 2	YES	NO
0240	Y	135.90	SLAG	RADSLG 2	YES	NO
0241	Y	15.80	SLAG	RADSLG 3	YES	NO
0242	Y	175.90	DEBRIS	RADDEB 2	YES	YES
0243	Y	251.90	SLAG	RADSLG 2	YES	NO
0244	Y	103.60	CUTTINGS	RADCUT 2	YES	NO
0245	Y	58.70	DEBRIS	RADDEB 2	YES	YES
0246	Y	17.30	SLAG	RADSLG 3	YES	NO
0247	Y	11.90	SLAG	RADSLG 3	YES	NO
0248	Y	206.70	DEBRIS	RADDEB 2	YES	YES
0249	Y	34.50	SLAG	RADSLG 2	YES	NO
0250	Y	697.20	CUTTINGS	RADCUT 2	YES	NO
0251	N	19.50	SLAG	RADSLG 3	YES	NO
0252	Y	43.90	SLAG	RADSLG 2	YES	YES
0253	Y	29.70	DEBRIS	RADDEB 2	YES	YES
0254	Y	123.80	SLAG	RADSLG 2	YES	NO
0255	Y	446.80	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0256	Y	111.70	CUTTINGS	RADCUT 2	YES	NO
0257	Y	1365.50	CUTTINGS	RADCUT 2	YES	NO
0258	Y	2.30	DEBRIS	RADDEB 1	YES	YES
0259	Y	0.60	SLAG	RADSLG 1	YES	NO
0260	Y	295.20	SLAG	RADSLG 2	YES	NO
0261	Y	1.20	SLAG	RADSLG 1	YES	NO
0262	Y	114.80	SLAG	RADSLG 2	YES	NO
0263	Y	86.70	SLAG	RADSLG 2	YES	NO
0264	Y	0.00	DEBRIS	RADDEB 1	YES	YES
0265	N	3.10	DEBRIS	NRB 1	NO	NO
0266	Y	840.60	CUTTINGS	RADCUT 2	YES	NO
0267	N	2.10	DEBRIS	NRB 1	NO	NO
0268	Y	0.20	DEBRIS	RADDEB 1	YES	YES
0269	Y	20.00	CUTTINGS	RADCUT 3	YES	NO
0270	Y	0.00	DEBRIS	RADDEB 1	YES	YES
0271	N	45.90	SLAG	RADSLG 2	YES	NO
0272	Y	5.70	SLAG	RADSLG 1	YES	NO
0273	Y	701.70	SLAG	RADSLG 2	YES	NO
0274	N	18.98	DEBRIS	RADDEB 3	YES	YES
0275	N	36.90	SLAG	RADSLG 2	YES	NO
0276	Y	801.00	DEBRIS	RADDEB 2	YES	YES
0277	Y	44.50	SLAG	RADSLG 2	YES	YES
0278	Y	682.20	SLAG	RADSLG 2	YES	NO
0279	Y	733.00	SLAG	RADSLG 2	YES	YES
0280	N	133.40	SLAG	RADSLG 2	YES	NO
0281	Y	1.40	SLAG	RADSLG 1	YES	NO
0282	Y	1.70	DEBRIS	RADDEB 1	YES	YES
0283	N	0.00	SLAG	NRS 1	NO	NO
0284	N	90.30	SLAG	RADSLG 2	YES	NO
0285	Y	510.50	SLAG	RADSLG 2	YES	NO
0286	Y	684.40	CUTTINGS	RADCUT 2	YES	NO
0287	N	109.30	DEBRIS	RADDEB 2	YES	YES
0288	Y	732.90	CUTTINGS	RADCUT 2	YES	NO
0289	Y	1115.40	CUTTINGS	RADCUT 2	YES	NO
0290	Y	1279.20	CUTTINGS	RADCUT 2	YES	NO
0291	Y	498.70	CUTTINGS	RADCUT 2	YES	NO
0292	N	17.40	SLAG	RADSLG 3	YES	NO
0293	Y	28.13	SLAG	RADSLG 2	YES	NO
0294	Y	755.40	CUTTINGS	RADCUT 2	YES	NO
0295	Y	758.60	CUTTINGS	RADCUT 2	YES	NO
0296	N	20.40	DEBRIS	RADDEB 2	YES	YES
0297	Y	1117.00	CUTTINGS	RADCUT 2	YES	NO
0298	Y	109.30	SLAG	RADSLG 2	YES	NO
0299	Y	1.89	CUTTINGS	RADCUT 1	YES	NO
0300	N	180.60	SLAG	RADSLG 2	YES	NO
0301	Y	392.90	SLAG	RADSLG 2	YES	NO
0302	Y	74.20	DEBRIS	RADDEB 2	YES	YES
0303	Y	1.20	SLAG	RADSLG 1	YES	NO
0304	Y	933.30	CUTTINGS	RADCUT 2	YES	NO
0305	Y	728.90	CUTTINGS	RADCUT 2	YES	NO
0306	Y	959.80	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0307	N	4.30	SLAG	NRS 1	NO	NO
0308	Y	724.50	CUTTINGS	RADCUT 2	YES	NO
0309	Y	554.70	DEBRIS	RADDEB 2	YES	YES
0310	N	0.29	DEBRIS	NRB 1	NO	NO
0311	Y	412.40	DEBRIS	RADDEB 2	YES	YES
0312	N	3.40	SLAG	NRS 1	NO	NO
0313	N	328.30	SLAG	RADSLG 2	YES	NO
0314	Y	288.20	DEBRIS	RADDEB 2	YES	YES
0315	Y	438.20	DEBRIS	RADDEB 2	YES	YES
0316	Y	392.80	DEBRIS	RADDEB 2	YES	YES
0317	N	45.00	SLAG	RADSLG 2	YES	NO
0318	Y	266.40	SLAG	RADSLG 2	YES	NO
0319	Y	130.30	SLAG	RADSLG 2	YES	NO
0320	Y	66.90	SLAG	RADSLG 2	YES	NO
0321	Y	71.60	SLAG	RADSLG 2	YES	NO
0322	N	32.70	SLAG	RADSLG 2	YES	NO
0323	Y	1141.00	CUTTINGS	RADCUT 2	YES	NO
0324	Y	218.80	SLAG	RADSLG 2	YES	NO
0325	Y	51.50	SLAG	RADSLG 2	YES	NO
0326	Y	15.03	SLAG	RADSLG 3	YES	NO
0327	Y	261.80	DEBRIS	RADDEB 2	YES	YES
0328	Y	27.06	SLAG	RADSLG 2	YES	NO
0329	Y	34.37	SLAG	RADSLG 2	YES	NO
0330	Y	57.17	DEBRIS	RADDEB 2	YES	YES
0331	Y	0.00	SLAG	RADSLG 1	YES	NO
0332	Y	36.63	SLAG	RADSLG 2	YES	NO
0333	Y	1.40	CUTTINGS	RADCUT 1	YES	NO
0334	Y	0.80	CUTTINGS	RADCUT 1	YES	NO
0335	Y	56.80	DEBRIS	RADDEB 2	YES	YES
0336	Y	247.70	DEBRIS	RADDEB 2	YES	YES
0337	Y	0.00	DEBRIS	RADDEB 1	YES	YES
0338	Y	112.60	DEBRIS	RADDEB 2	YES	YES
0339	Y	1155.00	CUTTINGS	RADCUT 2	YES	NO
0340	Y	1.60	SLAG	RADSLG 1	YES	NO
0341	Y	1144.30	CUTTINGS	RADCUT 2	YES	NO
0342	Y	91.50	CUTTINGS	RADCUT 2	YES	NO
0343	Y	385.20	CUTTINGS	RADCUT 2	YES	NO
0344	Y	142.90	DEBRIS	RADDEB 2	YES	YES
0345	Y	421.07	DEBRIS	RADDEB 2	YES	YES
0346	Y	87.60	CUTTINGS	RADCUT 2	YES	NO
0347	Y	685.10	SLAG	RADSLG 2	YES	NO
0348	Y	787.80	CUTTINGS	RADCUT 2	YES	NO
0349	Y	1034.40	CUTTINGS	RADCUT 2	YES	NO
0350	Y	735.10	DEBRIS	RADDEB 2	YES	YES
0351	Y	2.72	SLAG	RADSLG 1	YES	NO
0352	Y	514.70	CUTTINGS	RADCUT 2	YES	NO
0353	Y	9.40	DEBRIS	RADDEB 1	YES	YES
0354	Y	36.20	SLAG	RADSLG 2	YES	NO
0355	Y	10.90	SLAG	RADSLG 3	YES	YES
0356	Y	570.60	CUTTINGS	RADCUT 2	YES	NO
0357	Y	0.30	SLAG	RADSLG 1	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0358	Y	13.60	SLAG	RADSLG 3	YES	NO
0359	Y	18.40	SLAG	RADSLG 3	YES	NO
0360	Y	111.80	SLAG	RADSLG 2	YES	NO
0361	N	52.60	CUTTINGS	RADCUT 2	YES	NO
0362	N	7.20	SLAG	NRS 1	NO	NO
0363	Y	4.40	SLAG	RADSLG 1	YES	NO
0364	N	0.00	DEBRIS	NRB 1	NO	NO
0365	Y	144.80	CUTTINGS	RADCUT 2	YES	NO
0366	Y	18.32	SLAG	RADSLG 3	YES	NO
0367	Y	1.20	CUTTINGS	RADCUT 1	YES	NO
0368	Y	109.90	SLAG	RADSLG 2	YES	NO
0369	Y	11.80	SLAG	RADSLG 3	YES	NO
0370	N	18.10	SLAG	RADSLG 3	YES	NO
0371	Y	0.20	SLAG	RADSLG 1	YES	NO
0372	Y	80.80	SLAG	RADSLG 2	YES	NO
0373	Y	612.90	CUTTINGS	RADCUT 2	YES	NO
0374	Y	39.80	SLAG	RADSLG 2	YES	NO
0375	Y	0.00	SLAG	RADSLG 1	YES	NO
0376	Y	82.10	SLAG	RADSLG 2	YES	NO
0377	Y	117.90	DEBRIS	RADDEB 2	YES	YES
0378	Y	49.90	SLAG	RADSLG 2	YES	NO
0379	Y	123.30	SLAG	RADSLG 2	YES	NO
0380	Y	37.30	CUTTINGS	RADCUT 2	YES	NO
0381	Y	6.80	DEBRIS	RADDEB 1	YES	YES
0382	Y	0.10	SLAG	RADSLG 1	YES	NO
0383	Y	0.00	DEBRIS	RADDEB 1	YES	YES
0384	Y	0.29	SLAG	RADSLG 1	YES	NO
0385	Y	36.80	CUTTINGS	RADCUT 2	YES	NO
0386	Y	946.00	CUTTINGS	RADCUT 2	YES	NO
0387	Y	625.20	CUTTINGS	RADCUT 2	YES	NO
0388	N	0.00	DEBRIS	NRB 1	NO	NO
0389	N	0.00	DEBRIS	NRB 1	NO	NO
0390	N	0.00	DEBRIS	NRB 1	NO	NO
0391	N	0.00	DEBRIS	NRB 1	NO	NO
0392	N	3.10	DEBRIS	NRB 1	NO	NO
0393	Y	407.10	DEBRIS	RADDEB 2	YES	YES
0394	N	57.66	SLAG	RADSLG 2	YES	NO
0395	Y	385.90	CUTTINGS	RADCUT 2	YES	NO
0396	Y	1325.50	CUTTINGS	RADCUT 2	YES	NO
0397	Y	1719.20	CUTTINGS	RADCUT 2	YES	NO
0398	Y	500.80	DEBRIS	RADDEB 2	YES	YES
0399	Y	1316.70	CUTTINGS	RADCUT 2	YES	NO
0400	Y	1383.50	CUTTINGS	RADCUT 2	YES	NO
0401	Y	717.10	CUTTINGS	RADCUT 2	YES	NO
0402	Y	207.80	CUTTINGS	RADCUT 2	YES	NO
0403	Y	83.80	CUTTINGS	RADCUT 2	YES	NO
0404	Y	1177.30	CUTTINGS	RADCUT 2	YES	NO
0405	Y	760.60	CUTTINGS	RADCUT 2	YES	NO
0406	Y	2039.40	CUTTINGS	RADCUT 2	YES	NO
0407	Y	781.10	CUTTINGS	RADCUT 2	YES	NO
0408	Y	1268.90	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rac Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0409	Y	246.40	CUTTINGS	RADCUT 2	YES	NO
0410	Y	298.40	DEBRIS	RADDEB 2	YES	YES
0411	Y	1149.10	CUTTINGS	RADCUT 2	YES	NO
0412	N	3.80	CUTTINGS	NRC 1	NO	NO
0413	Y	268.60	CUTTINGS	RADCUT 2	YES	NO
0414	Y	888.50	CUTTINGS	RADCUT 2	YES	NO
0415	Y	55.00	CUTTINGS	RADCUT 2	YES	NO
0416	Y	41.84	CUTTINGS	RADCUT 2	YES	NO
0417	Y	1162.00	CUTTINGS	RADCUT 2	YES	NO
0418	N	1.84	CUTTINGS	NRC 1	NO	NO
0419	Y	2464.90	CUTTINGS	RADCUT 2	YES	NO
0420	Y	2136.00	CUTTINGS	RADCUT 2	YES	NO
0421	Y	1950.70	CUTTINGS	RADCUT 2	YES	NO
0422	Y	245.20	CUTTINGS	RADCUT 2	YES	NO
0423	Y	1281.90	CUTTINGS	RADCUT 2	YES	NO
0424	Y	1888.20	CUTTINGS	RADCUT 2	YES	NO
0425	Y	1653.60	CUTTINGS	RADCUT 2	YES	NO
0426	Y	2.80	CUTTINGS	RADCUT 1	YES	NO
0427	Y	1129.40	CUTTINGS	RADCUT 2	YES	NO
0428	Y	703.90	CUTTINGS	RADCUT 2	YES	NO
0429	Y	676.00	CUTTINGS	RADCUT 2	YES	NO
0430	Y	1253.00	CUTTINGS	RADCUT 2	YES	NO
0431	Y	1085.00	CUTTINGS	RADCUT 2	YES	NO
0432	Y	1363.60	CUTTINGS	RADCUT 2	YES	NO
0433	Y	1128.80	CUTTINGS	RADCUT 2	YES	NO
0434	Y	380.70	CUTTINGS	RADCUT 2	YES	NO
0435	Y	1419.30	CUTTINGS	RADCUT 2	YES	NO
0436	Y	6.10	CUTTINGS	RADCUT 1	YES	NO
0437	Y	13.90	CUTTINGS	RADCUT 3	YES	NO
0438	Y	257.20	CUTTINGS	RADCUT 2	YES	NO
0439	Y	724.50	CUTTINGS	RADCUT 2	YES	NO
0440	Y	817.80	CUTTINGS	RADCUT 2	YES	NO
0441	Y	1194.00	CUTTINGS	RADCUT 2	YES	NO
0442	Y	1090.30	CUTTINGS	RADCUT 2	YES	NO
0443	Y	0.30	CUTTINGS	RADCUT 1	YES	NO
0444	Y	196.50	CUTTINGS	RADCUT 2	YES	NO
0445	Y	1743.20	CUTTINGS	RADCUT 2	YES	NO
0446	Y	299.60	CUTTINGS	RADCUT 2	YES	NO
0447	Y	152.80	CUTTINGS	RADCUT 2	YES	NO
0448	Y	1024.40	CUTTINGS	RADCUT 2	YES	NO
0449	N	1.80	SLAG	NRS 1	NO	NO
0450	N	215.10	CUTTINGS	RADCUT 2	YES	NO
0451	Y	1.80	DEBRIS	RADDEB 1	YES	YES
0452	Y	784.90	DEBRIS	RADDEB 2	YES	YES
0453	Y	9.90	CUTTINGS	RADCUT 1	YES	NO
0454	Y	1968.10	CUTTINGS	RADCUT 2	YES	NO
0455	N	8.10	CUTTINGS	NRC 1	NO	NO
0456	Y	95.50	SLAG	RADSLG 2	YES	NO
0457	Y	1910.90	CUTTINGS	RADCUT 2	YES	NO
0458	N	0.00	SLAG	NRS 1	NO	NO
0459	Y	1369.00	CUTTINGS	RADCUT 2	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0460	Y	23.60	SLAG	RADSLG 2	YES	NO
0461	Y	836.60	CUTTINGS	RADCUT 2	YES	NO
0462	Y	0.00	SLAG	RADSLG 1	YES	NO
0463	Y	55.70	CUTTINGS	RADCUT 2	YES	NO
0464	Y	1320.30	CUTTINGS	RADCUT 2	YES	NO
0465	Y	831.00	CUTTINGS	RADCUT 2	YES	NO
0466	Y	1226.60	CUTTINGS	RADCUT 2	YES	NO
0467	N	218.20	SLAG	RADSLG 2	YES	NO
0468	Y	205.00	SLAG	RADSLG 2	YES	NO
0469	N	0.70	CUTTINGS	NRC 1	NO	NO
0470	N	0.09	DEBRIS	NRB 1	NO	NO
0471	N	0.00	DEBRIS	NRB 1	NO	NO
0472	N	0.00	DEBRIS	NRB 1	NO	NO
0473	N	0.00	DEBRIS	NRB 1	NO	NO
0474	N	0.00	DEBRIS	NRB 1	NO	NO
0475	N	0.50	CUTTINGS	NRC 1	NO	NO
0476	N	0.00	SLAG	NRS 1	NO	NO
0477	N	3.18	CUTTINGS	NRC 1	NO	NO
0478	N	0.00	DEBRIS	NRB 1	NO	NO
0479	N	0.00	CUTTINGS	NRC 1	NO	NO
0480	N	0.33	SLAG	NRS 1	NO	NO
0481	Y	75.21	SLAG	RADSLG 2	YES	NO
0482	Y	17.30	SLAG	RADSLG 3	YES	NO
0483	N	0.00	SLAG	NRS 1	NO	NO
0484	N	0.00	DEBRIS	NRB 1	NO	NO
0485	N	0.00	DEBRIS	NRB 1	NO	NO
0486	N	163.30	SLAG	RADSLG 2	YES	YES
0487	N	0.14	SLAG	NRS 1	NO	NO
0488	N	0.00	DEBRIS	NRB 1	NO	NO
0489	N	8.80	CUTTINGS	NRC 1	NO	NO
0490	N	0.00	DEBRIS	NRB 1	NO	NO
0491	N	0.00	DEBRIS	NRB 1	NO	NO
0492	N	0.20	DEBRIS	NRB 1	NO	NO
0493	N	0.90	DEBRIS	NRB 1	NO	NO
0494	N	0.00	DEBRIS	NRB 1	NO	NO
0495	N	0.20	DEBRIS	NRB 1	NO	NO
0496	N	0.00	DEBRIS	NRB 1	NO	NO
0497	N	0.00	DEBRIS	NRB 1	NO	NO
0498	N	0.20	DEBRIS	NRB 1	NO	NO
0499	N	0.00	DEBRIS	NRB 1	NO	NO
0500	N	7.60	DEBRIS	NRB 1	NO	NO
0501	N	0.00	DEBRIS	NRB 1	NO	NO
0502	N	0.00	DEBRIS	NRB 1	NO	NO
0503	N	1.10	SLAG	NRS 1	NO	NO
0504	N	0.20	CUTTINGS	NRC 1	NO	NO
0505	N	0.10	SLAG	NRS 1	NO	NO
0506	N	0.00	SLAG	NRS 1	NO	NO
0507	N	0.00	DEBRIS	NRB 1	NO	NO
0508	N	1.10	CUTTINGS	NRC 1	NO	NO
0509	N	0.10	SLAG	NRS 1	NO	NO
0510	N	3.70	SLAG	NRS 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0511	N	0.80	DEBRIS	NRB 1	NO	NO
0512	N	1.30	SLAG	NRS 1	NO	NO
0513	N	0.10	SLAG	NRS 1	NO	NO
0514	N	0.40	SLAG	NRS 1	NO	NO
0515	N	0.50	CUTTINGS	NRC 1	NO	NO
0516	N	0.60	DEBRIS	NRB 1	NO	NO
0517	N	0.00	DEBRIS	NRB 1	NO	NO
0518	N	0.00	SLAG	NRS 1	NO	NO
0519	N	0.00	DEBRIS	NRB 1	NO	NO
0520	N	0.10	DEBRIS	NRB 1	NO	NO
0521	N	0.00	DEBRIS	NRB 1	NO	NO
0522	N	0.00	DEBRIS	NRB 1	NO	NO
0523	N	0.00	DEBRIS	NRB 1	NO	NO
0524	N	0.00	DEBRIS	NRB 1	NO	NO
0525	N	6.80	DEBRIS	NRB 1	NO	NO
0526	N	1.70	DEBRIS	NRB 1	NO	NO
0527	N	0.00	SLAG	NRS 1	NO	NO
0528	N	0.00	DEBRIS	NRB 1	NO	NO
0529	N	2.50	DEBRIS	NRB 1	NO	NO
0530	N	0.20	DEBRIS	NRB 1	NO	NO
0531	N	0.40	DEBRIS	NRB 1	NO	NO
0532	N	1.30	DEBRIS	NRB 1	NO	NO
0533	N	0.30	SLAG	NRS 1	NO	NO
0534	N	1.90	SLAG	NRS 1	NO	NO
0535	N	0.00	DEBRIS	NRB 1	NO	NO
0536	N	0.32	SLAG	NRS 1	NO	NO
0537	N	0.00	DEBRIS	NRB 1	NO	NO
0538	N	0.00	DEBRIS	NRB 1	NO	NO
0539	N	1.10	DEBRIS	NRB 1	NO	NO
0540	N	9.90	DEBRIS	NRB 1	NO	NO
0541	N	0.00	DEBRIS	NRB 1	NO	NO
0542	N	2.80	DEBRIS	NRB 1	NO	NO
0543	N	1.80	SLAG	NRS 1	NO	NO
0544	N	0.10	DEBRIS	NRB 1	NO	NO
0545	N	0.90	SLAG	NRS 1	NO	NO
0546	N	0.90	SLAG	NRS 1	NO	NO
0547	N	7.20	DEBRIS	NRB 1	NO	NO
0548	N	3.70	DEBRIS	NRB 1	NO	NO
0549	N	5.20	DEBRIS	NRB 1	NO	NO
0550	N	0.00	DEBRIS	NRB 1	NO	NO
0551	N	0.30	DEBRIS	NRB 1	NO	NO
0552	N	1.10	DEBRIS	NRB 1	NO	NO
0553	N	0.90	DEBRIS	NRB 1	NO	NO
0554	N	0.06	SLAG	NRS 1	NO	NO
0555	N	0.96	DEBRIS	NRB 1	NO	NO
0556	N	0.60	SLAG	NRS 1	NO	NO
0557	N	1.80	SLAG	NRS 1	NO	NO
0558	N	0.00	DEBRIS	NRB 1	NO	NO
0559	N	1.90	SLAG	NRS 1	NO	NO
0560	N	0.90	SLAG	NRS 1	NO	NO
0561	N	0.00	DEBRIS	NRB 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0562	N	2.20	DEBRIS	NRB 1	NO	NO
0563	N	31.70	DEBRIS	RADDEB 2	YES	YES
0564	N	1.30	SLAG	NRS 1	NO	NO
0565	N	2.30	SLAG	NRS 1	NO	NO
0566	N	17.30	SLAG	RADSLG 3	YES	NO
0567	N	0.00	SLAG	NRS 1	NO	NO
0568	N	0.00	SLAG	NRS 1	NO	NO
0569	N	2.40	SLAG	NRS 1	NO	NO
0570	N	1.26	SLAG	NRS 1	NO	NO
0571	N	2.60	SLAG	NRS 1	NO	NO
0572	N	25.60	SLAG	RADSLG 2	YES	YES
0573	N	0.00	SLAG	NRS 1	NO	NO
0574	N	0.60	DEBRIS	NRB 1	NO	NO
0575	N	12.00	DEBRIS	RADDEB 3	YES	YES
0576	N	1.50	SLAG	NRS 1	NO	NO
0577	N	2.50	DEBRIS	NRB 1	NO	NO
0578	N	0.90	SLAG	NRS 1	NO	NO
0579	N	0.00	SLAG	NRS 1	NO	NO
0580	N	1.70	DEBRIS	NRB 1	NO	NO
0581	N	0.90	DEBRIS	NRB 1	NO	NO
0582	N	0.90	DEBRIS	NRB 1	NO	NO
0583	N	1.60	DEBRIS	NRB 1	NO	NO
0584	N	0.00	SLAG	NRS 1	NO	NO
0585	N	0.10	DEBRIS	NRB 1	NO	NO
0586	N	0.30	SLAG	NRS 1	NO	NO
0587	N	2.30	SLAG	NRS 1	NO	NO
0588	N	0.60	DEBRIS	NRB 1	NO	NO
0589	N	6.40	DEBRIS	NRB 1	NO	NO
0590	N	0.00	DEBRIS	NRB 1	NO	NO
0591	N	0.50	DEBRIS	NRB 1	NO	NO
0592	N	2.10	DEBRIS	NRB 1	NO	NO
0593	N	4.40	DEBRIS	NRB 1	NO	NO
0594	N	0.90	DEBRIS	NRB 1	NO	NO
0595	N	2.70	SLAG	NRS 1	NO	NO
0596	N	7.90	SLAG	NRS 1	NO	NO
0597	N	0.90	DEBRIS	NRB 1	NO	NO
0598	N	237.70	DEBRIS	RADDEB 2	YES	YES
0599	Y	14.90	DEBRIS	RADDEB 3	YES	YES
0600	N	6.30	DEBRIS	NRB 1	NO	NO
0601	N	0.00	CUTTINGS	NRC 1	NO	NO
0602	N	4.10	DEBRIS	NRB 1	NO	NO
0603	N	0.60	DEBRIS	NRB 1	NO	NO
0604	N	0.00	DEBRIS	NRB 1	NO	NO
0605	N	0.00	SLAG	NRS 1	NO	NO
0606	N	0.80	DEBRIS	NRB 1	NO	NO
0607	N	0.00	DEBRIS	NRB 1	NO	NO
0608	N	0.90	DEBRIS	NRB 1	NO	NO
0609	N	0.00	DEBRIS	NRB 1	NO	NO
0610	N	0.00	DEBRIS	NRB 1	NO	NO
0611	N	1.20	DEBRIS	NRB 1	NO	NO
0612	N	0.60	SLAG	NRS 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0613	N	0.72	SLAG	NRS 1	NO	NO
0614	N	3.30	SLAG	NRS 1	NO	NO
0615	N	9.30	SLAG	NRS 1	NO	NO
0616	N	0.00	DEBRIS	NRB 1	NO	NO
0617	N	0.10	DEBRIS	NRB 1	NO	NO
0618	N	0.10	DEBRIS	NRB 1	NO	NO
0619	N	0.10	DEBRIS	NRB 1	NO	NO
0620	N	0.20	DEBRIS	NRB 1	NO	NO
0621	N	0.10	DEBRIS	NRB 1	NO	NO
0622	N	0.20	DEBRIS	NRB 1	NO	NO
0623	N	0.90	DEBRIS	NRB 1	NO	NO
0624	N	0.00	DEBRIS	NRB 1	NO	NO
0625	N	0.20	DEBRIS	NRB 1	NO	NO
0626	N	0.00	DEBRIS	NRB 1	NO	NO
0627	N	3.90	SLAG	NRS 1	NO	NO
0628	N	0.00	DEBRIS	NRB 1	NO	NO
0629	N	0.10	DEBRIS	NRB 1	NO	NO
0630	N	0.10	DEBRIS	NRB 1	NO	NO
0631	N	0.60	DEBRIS	NRB 1	NO	NO
0632	N	0.60	SLAG	NRS 1	NO	NO
0633	N	0.90	SLAG	NRS 1	NO	NO
0634	N	0.00	SLAG	NRS 1	NO	NO
0635	N	2.30	SLAG	NRS 1	NO	NO
0636	N	1.40	DEBRIS	NRB 1	NO	NO
0637	N	0.00	DEBRIS	NRB 1	NO	NO
0638	N	0.00	DEBRIS	NRB 1	NO	NO
0639	N	0.00	SLAG	NRS 1	NO	NO
0640	Y	4.75	SLAG	RADSLG 1	YES	NO
0641	N	0.10	DEBRIS	NRB 1	NO	NO
0642	N	0.50	SLAG	NRS 1	NO	NO
0643	N	0.10	SLAG	NRS 1	NO	NO
0644	N	7.80	SLAG	NRS 1	NO	NO
0645	N	0.00	SLAG	NRS 1	NO	NO
0646	N	158.40	DEBRIS	RADDEB 2	YES	YES
0647	N	0.10	SLAG	NRS 1	NO	NO
0648	N	0.00	DEBRIS	NRB 1	NO	NO
0649	N	0.00	SLAG	NRS 1	NO	NO
0650	N	0.00	DEBRIS	NRB 1	NO	NO
0651	N	0.00	SLAG	NRS 1	NO	NO
0652	N	0.00	SLAG	NRS 1	NO	NO
0653	N	18.70	DEBRIS	RADDEB 3	YES	YES
0654	N	8.90	DEBRIS	NRB 1	NO	NO
0655	N	0.60	SLAG	NRS 1	NO	NO
0656	N	0.14	SLAG	NRS 1	NO	NO
0657	N	0.00	DEBRIS	NRB 1	NO	NO
0658	N	0.00	SLAG	NRS 1	NO	NO
0659	N	0.00	SLAG	NRS 1	NO	NO
0660	N	0.00	SLAG	NRS 1	NO	NO
0661	N	0.00	DEBRIS	NRB 1	NO	NO
0662	N	0.00	DEBRIS	NRB 1	NO	NO
0663	N	0.00	DEBRIS	NRB 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0664	N	0.00	DEBRIS	NRB 1	NO	NO
0665	N	1.50	DEBRIS	NRB 1	NO	NO
0666	N	5.70	DEBRIS	NRB 1	NO	NO
0667	N	23.50	DEBRIS	RADDEB 3	YES	YES
0668	N	0.00	DEBRIS	NRB 1	NO	NO
0669	N	1.90	DEBRIS	NRB 1	NO	NO
0670	N	0.00	DEBRIS	NRB 1	NO	NO
0671	N	0.00	DEBRIS	NRB 1	NO	NO
0672	N	0.00	DEBRIS	NRB 1	NO	NO
0673	N	0.30	DEBRIS	NRB 1	NO	NO
0674	N	75.70	DEBRIS	RADDEB 2	YES	YES
0675	N	0.00	DEBRIS	NRB 1	NO	NO
0676	N	0.60	DEBRIS	NRB 1	NO	NO
0677	N	0.00	DEBRIS	NRB 1	NO	NO
0678	N	0.50	DEBRIS	NRB 1	NO	NO
0679	N	0.00	DEBRIS	NRB 1	NO	NO
0680	N	0.10	SLAG	NRS 1	NO	NO
0681	N	20.24	DEBRIS	RADDEB 2	YES	YES
0682	N	0.00	DEBRIS	NRB 1	NO	NO
0683	N	0.00	DEBRIS	NRB 1	NO	NO
0684	N	0.30	DEBRIS	NRB 1	NO	NO
0685	N	0.00	DEBRIS	NRB 1	NO	NO
0686	N	0.00	DEBRIS	NRB 1	NO	NO
0687	N	2.50	DEBRIS	NRB 1	NO	NO
0688	N	0.10	DEBRIS	NRB 1	NO	NO
0689	N	0.10	DEBRIS	NRB 1	NO	NO
0690	N	0.00	DEBRIS	NRB 1	NO	NO
0691	N	1.20	DEBRIS	NRB 1	NO	NO
0692	N	0.00	DEBRIS	NRB 1	NO	NO
0693	N	0.00	DEBRIS	NRB 1	NO	NO
0694	N	10.20	DEBRIS	RADDEB 3	YES	YES
0695	N	0.00	SLAG	NRS 1	NO	NO
0696	N	12.10	DEBRIS	RADDEB 3	YES	YES
0697	N	18.70	DEBRIS	RADDEB 3	YES	YES
0698	N	18.00	DEBRIS	RADDEB 3	YES	YES
0699	N	16.20	DEBRIS	RADDEB 3	YES	YES
0700	N	1.30	SLAG	NRS 1	NO	NO
0701	N	37.72	SLAG	RADSLG 2	YES	NO
0702	N	15.90	DEBRIS	RADDEB 3	YES	YES
0703	N	13.80	DEBRIS	RADDEB 3	YES	YES
0704	N	0.20	SLAG	NRS 1	NO	NO
0705	N	17.30	DEBRIS	RADDEB 3	YES	YES
0706	N	14.40	SLAG	RADSLG 3	YES	NO
0707	N	11.30	SLAG	RADSLG 3	YES	NO
0708	N	1.10	SLAG	NRS 1	NO	NO
0709	N	14.90	SLAG	RADSLG 3	YES	NO
0710	N	18.30	SLAG	RADSLG 3	YES	NO
0711	N	18.80	SLAG	RADSLG 3	YES	NO
0712	N	12.70	DEBRIS	RADDEB 3	YES	YES
0713	N	10.30	SLAG	RADSLG 3	YES	NO
0714	Y	2.90	SLAG	RADSLG 1	YES	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0715	N	4.40	SLAG	NRS 1	NO	NO
0716	N	32.40	SLAG	RADSLG 2	YES	NO
0717	N	28.10	SLAG	RADSLG 2	YES	NO
0718	N	7.30	SLAG	NRS 1	NO	NO
0719	N	0.30	SLAG	NRS 1	NO	NO
0720	N	0.00	DEBRIS	NRB 1	NO	NO
0721	N	0.10	DEBRIS	NRB 1	NO	NO
0722	N	11.60	DEBRIS	RADDEB 3	YES	YES
0723	N	0.60	DEBRIS	NRB 1	NO	NO
0724	N	0.30	SLAG	NRS 1	NO	NO
0725	N	0.10	DEBRIS	NRB 1	NO	NO
0726	N	0.00	CUTTINGS	NRC 1	NO	NO
0727	Y	2.50	SLAG	RADSLG 1	YES	YES
0728	N	11.30	SLAG	RADSLG 3	YES	NO
0729	N	2.30	DEBRIS	NRB 1	NO	NO
0730	N	0.20	DEBRIS	NRB 1	NO	NO
0731	Y	26.90	SLAG	RADSLG 2	YES	YES
0732	N	0.10	DEBRIS	NRB 1	NO	NO
0733	N	16.70	DEBRIS	RADDEB 3	YES	YES
0734	N	0.20	DEBRIS	NRB 1	NO	NO
0735	N	3.00	SLAG	NRS 1	NO	NO
0736	N	2.10	DEBRIS	NRB 1	NO	NO
0737	N	1.00	DEBRIS	NRB 1	NO	NO
0738	N	7.40	SLAG	NRS 1	NO	NO
0739	N	11.50	DEBRIS	RADDEB 3	YES	YES
0740	N	1.05	DEBRIS	NRB 1	NO	NO
0741	N	18.40	DEBRIS	RADDEB 3	YES	YES
0742	N	1.40	DEBRIS	NRB 1	NO	NO
0743	N	1.20	DEBRIS	NRB 1	NO	NO
0744	N	1.60	DEBRIS	NRB 1	NO	NO
0745	N	3.60	DEBRIS	NRB 1	NO	NO
0746	N	0.10	DEBRIS	NRB 1	NO	NO
0747	N	0.10	DEBRIS	NRB 1	NO	NO
0748	N	0.80	DEBRIS	NRB 1	NO	NO
0749	N	0.10	DEBRIS	NRB 1	NO	NO
0750	N	1.80	DEBRIS	NRB 1	NO	NO
0751	N	0.10	DEBRIS	NRB 1	NO	NO
0752	N	0.10	DEBRIS	NRB 1	NO	NO
0753	N	9.30	DEBRIS	NRB 1	NO	NO
0754	N	0.60	CUTTINGS	NRC 1	NO	NO
0755	N	1.80	SLAG	NRS 1	NO	NO
0756	N	17.70	DEBRIS	RADDEB 3	YES	YES
0757	N	13.50	DEBRIS	RADDEB 3	YES	YES
0758	N	13.70	DEBRIS	RADDEB 3	YES	YES
0759	N	8.40	DEBRIS	NRB 1	NO	NO
0760	N	1.60	SLAG	NRS 1	NO	NO
0761	N	15.70	DEBRIS	RADDEB 3	YES	YES
0762	N	2.60	SLAG	NRS 1	NO	NO
0763	N	1.00	SLAG	NRS 1	NO	NO
0764	N	2.18	SLAG	NRS 1	NO	NO
0765	N	15.80	DEBRIS	RADDEB 3	YES	YES

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0766	N	11.90	DEBRIS	RADDEB 3	YES	YES
0767	N	0.70	CUTTINGS	NRC 1	NO	NO
0768	N	15.90	DEBRIS	RADDEB 3	YES	YES
0769	N	17.40	DEBRIS	RADDEB 3	YES	YES
0770	N	3.00	SLAG	NRS 1	NO	NO
0771	N	5.50	SLAG	NRS 1	NO	NO
0772	N	5.40	SLAG	NRS 1	NO	NO
0773	N	3.60	SLAG	NRS 1	NO	NO
0774	N	5.60	SLAG	NRS 1	NO	NO
0775	N	14.70	SLAG	RADSLG 3	YES	YES
0776	N	23.80	SLAG	RADSLG 2	YES	YES
0777	N	26.91	SLAG	RADSLG 2	YES	NO
0778	N	11.60	SLAG	RADSLG 3	YES	NO
0779	N	0.00	SLAG	NRS 1	NO	NO
0780	N	3.60	SLAG	NRS 1	NO	NO
0781	N	9.50	SLAG	NRS 1	NO	NO
0782	N	2.60	SLAG	NRS 1	NO	NO
0783	N	0.50	SLAG	NRS 1	NO	NO
0784	N	3.60	SLAG	NRS 1	NO	NO
0785	N	2.90	SLAG	NRS 1	NO	NO
0786	N	4.30	SLAG	NRS 1	NO	NO
0787	N	3.30	SLAG	NRS 1	NO	NO
0788	Y	25.60	SLAG	RADSLG 2	YES	NO
0789	N	51.90	SLAG	RADSLG 2	YES	NO
0790	N	0.30	DEBRIS	NRB 1	NO	NO
0791	N	3.10	DEBRIS	NRB 1	NO	NO
0792	N	3.30	DEBRIS	NRB 1	NO	NO
0793	N	0.90	DEBRIS	NRB 1	NO	NO
0794	N	46.80	SLAG	RADSLG 2	YES	YES
0795	N	35.20	SLAG	RADSLG 2	YES	NO
0796	N	0.60	DEBRIS	NRB 1	NO	NO
0797	N	7.20	DEBRIS	NRB 1	NO	NO
0798	Y	44.10	SLAG	RADSLG 2	YES	NO
0799	N	1.30	SLAG	NRS 1	NO	NO
0800	N	18.00	DEBRIS	RADDEB 3	YES	YES
0801	N	5.40	SLAG	NRS 1	NO	NO
0802	N	2.10	SLAG	NRS 1	NO	NO
0803	N	4.60	SLAG	NRS 1	NO	NO
0804	N	2.10	SLAG	NRS 1	NO	NO
0805	N	3.90	DEBRIS	NRB 1	NO	NO
0806	N	3.70	SLAG	NRS 1	NO	NO
0807	N	0.80	DEBRIS	NRB 1	NO	NO
0808	N	2.70	DEBRIS	NRB 1	NO	NO
0809	N	7.30	DEBRIS	NRB 1	NO	NO
0810	N	2.90	SLAG	NRS 1	NO	NO
0811	N	0.20	SLAG	NRS 1	NO	NO
0812	N	0.00	DEBRIS	NRB 1	NO	NO
0813	N	2.10	DEBRIS	NRB 1	NO	NO
0814	N	2.90	SLAG	NRS 1	NO	NO
0815	N	0.20	SLAG	NRS 1	NO	NO
0816	N	4.60	SLAG	NRS 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0817	N	0.00	DEBRIS	NRB 1	NO	NO
0818	N	14.10	DEBRIS	RADDEB 3	YES	YES
0819	N	0.56	SLAG	NRS 1	NO	NO
0820	N	12.20	SLAG	RADSLG 3	YES	NO
0821	N	0.90	SLAG	NRS 1	NO	NO
0822	N	56.20	SLAG	RADSLG 2	YES	NO
0823	N	16.00	DEBRIS	RADDEB 3	YES	YES
0824	N	0.40	SLAG	NRS 1	NO	NO
0825	N	0.40	SLAG	NRS 1	NO	NO
0826	N	1.40	SLAG	NRS 1	NO	NO
0827	N	0.00	SLAG	NRS 1	NO	NO
0828	N	0.02	SLAG	NRS 1	NO	NO
0829	N	0.80	SLAG	NRS 1	NO	NO
0830	N	0.60	DEBRIS	NRB 1	NO	NO
0831	N	0.50	DEBRIS	NRB 1	NO	NO
0832	N	0.00	SLAG	NRS 1	NO	NO
0833	N	0.00	SLAG	NRS 1	NO	NO
0834	N	0.90	DEBRIS	NRB 1	NO	NO
0835	N	0.40	DEBRIS	NRB 1	NO	NO
0836	N	0.20	SLAG	NRS 1	NO	NO
0837	N	0.60	DEBRIS	NRB 1	NO	NO
0838	N	0.30	SLAG	NRS 1	NO	NO
0839	N	0.02	DEBRIS	NRB 1	NO	NO
0840	N	0.20	DEBRIS	NRB 1	NO	NO
0841	N	0.10	DEBRIS	NRB 1	NO	NO
0842	N	0.10	SLAG	NRS 1	NO	NO
0843	N	2.20	DEBRIS	NRB 1	NO	NO
0844	N	0.90	SLAG	NRS 1	NO	NO
0845	N	0.00	DEBRIS	NRB 1	NO	NO
0846	N	0.00	DEBRIS	NRB 1	NO	NO
0847	N	1.00	SLAG	NRS 1	NO	NO
0848	N	0.40	SLAG	NRS 1	NO	NO
0849	N	0.50	DEBRIS	NRB 1	NO	NO
0850	N	2.20	DEBRIS	NRB 1	NO	NO
0851	N	0.90	CUTTINGS	NRC 1	NO	NO
0852	N	60.10	CUTTINGS	RADCUT 2	YES	NO
0853	N	0.00	DEBRIS	NRB 1	NO	NO
0854	N	45.30	CUTTINGS	RADCUT 2	YES	NO
0855	N	1.90	CUTTINGS	NRC 1	NO	NO
0856	N	1.00	CUTTINGS	NRC 1	NO	NO
0857	N	0.60	CUTTINGS	NRC 1	NO	NO
0858	N	85.80	CUTTINGS	RADCUT 2	YES	NO
0859	N	242.20	CUTTINGS	RADCUT 2	YES	NO
0860	N	1.70	CUTTINGS	NRC 1	NO	NO
0861	N	0.70	CUTTINGS	NRC 1	NO	NO
0862	N	0.50	CUTTINGS	NRC 1	NO	NO
0863	N	0.40	SLAG	NRS 1	NO	NO
0864	N	2.50	CUTTINGS	NRC 1	NO	NO
0865	N	0.30	CUTTINGS	NRC 1	NO	NO
0866	N	0.00	CUTTINGS	NRC 1	NO	NO
0867	N	0.70	CUTTINGS	NRC 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0868	N	6.30	DEBRIS	NRB 1	NO	NO
0869	N	0.00	CUTTINGS	NRC 1	NO	NO
0870	N	2.80	DEBRIS	NRB 1	NO	NO
0871	N	0.40	DEBRIS	NRB 1	NO	NO
0872	N	0.30	SLAG	NRS 1	NO	NO
0873	N	0.00	SLAG	NRS 1	NO	NO
0874	N	14.40	SLAG	RADSLG 3	YES	NO
0875	N	0.40	SLAG	NRS 1	NO	NO
0876	N	4.24	SLAG	NRS 1	NO	NO
0877	N	2.60	SLAG	NRS 1	NO	NO
0878	N	3.00	DEBRIS	NRB 1	NO	NO
0879	N	4.00	SLAG	NRS 1	NO	NO
0880	N	0.40	DEBRIS	NRB 1	NO	NO
0881	N	1.30	SLAG	NRS 1	NO	NO
0882	N	0.00	DEBRIS	NRB 1	NO	NO
0883	N	1.50	DEBRIS	NRB 1	NO	NO
0884	N	0.90	DEBRIS	NRB 1	NO	NO
0885	N	2.00	SLAG	NRS 1	NO	NO
0886	N	4.90	DEBRIS	NRB 1	NO	NO
0887	N	1.80	DEBRIS	NRB 1	NO	NO
0888	N	0.10	DEBRIS	NRB 1	NO	NO
0889	N	1.80	DEBRIS	NRB 1	NO	NO
0890	N	1.10	SLAG	NRS 1	NO	NO
0891	N	3.50	DEBRIS	NRB 1	NO	NO
0892	N	6.40	SLAG	NRS 1	NO	NO
0893	N	0.10	CUTTINGS	NRC 1	NO	NO
0894	N	0.10	CUTTINGS	NRC 1	NO	NO
0895	N	1.90	DEBRIS	NRB 1	NO	NO
0896	N	0.00	DEBRIS	NRB 1	NO	NO
0897	N	17.80	DEBRIS	RADDEB 3	YES	YES
0898	N	0.40	DEBRIS	NRB 1	NO	NO
0899	N	3.40	SLAG	NRS 1	NO	NO
0900	N	13.30	DEBRIS	RADDEB 3	YES	YES
0901	N	0.60	DEBRIS	NRB 1	NO	NO
0902	N	0.20	SLAG	NRS 1	NO	NO
0903	N	0.40	DEBRIS	NRB 1	NO	NO
0904	N	10.97	SLAG	RADSLG 3	YES	NO
0905	N	2.30	DEBRIS	NRB 1	NO	NO
0906	N	5.50	SLAG	NRS 1	NO	NO
0907	N	3.10	DEBRIS	NRB 1	NO	NO
0908	N	19.90	SLAG	RADSLG 3	YES	NO
0909	N	5.60	DEBRIS	NRB 1	NO	NO
0910	N	3.80	SLAG	NRS 1	NO	NO
0911	N	1.10	SLAG	NRS 1	NO	NO
0912	N	0.00	DEBRIS	NRB 1	NO	NO
0913	N	9.90	DEBRIS	NRB 1	NO	NO
0914	N	0.00	DEBRIS	NRB 1	NO	NO
0915	N	2.70	DEBRIS	NRB 1	NO	NO
0916	N	0.60	DEBRIS	NRB 1	NO	NO
0917	N	0.00	SLAG	NRS 1	NO	NO
0918	N	0.00	SLAG	NRS 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0919	N	0.00	CUTTINGS	NRC 1	NO	NO
0920	N	0.40	DEBRIS	NRB 1	NO	NO
0921	N	0.00	CUTTINGS	NRC 1	NO	NO
0922	N	0.10	DEBRIS	NRB 1	NO	NO
0923	N	0.40	DEBRIS	NRB 1	NO	NO
0924	N	11.20	DEBRIS	RADDEB 3	YES	YES
0925	N	3.80	DEBRIS	NRB 1	NO	NO
0926	N	0.20	DEBRIS	NRB 1	NO	NO
0927	N	0.00	DEBRIS	NRB 1	NO	NO
0928	N	0.00	SLAG	NRS 1	NO	NO
0929	N	92.30	DEBRIS	RADDEB 2	YES	YES
0930	N	0.80	DEBRIS	NRB 1	NO	NO
0931	N	0.00	SLAG	NRS 1	NO	NO
0932	N	0.00	SLAG	NRS 1	NO	NO
0933	N	0.50	DEBRIS	NRB 1	NO	NO
0934	N	9.60	DEBRIS	NRB 1	NO	NO
0935	N	17.60	DEBRIS	RADDEB 3	YES	YES
0936	N	0.00	DEBRIS	NRB 1	NO	NO
0937	N	0.30	DEBRIS	NRB 1	NO	NO
0938	N	0.00	DEBRIS	NRB 1	NO	NO
0939	N	0.90	DEBRIS	NRB 1	NO	NO
0940	N	4.90	DEBRIS	NRB 1	NO	NO
0941	N	9.10	DEBRIS	NRB 1	NO	NO
0942	N	0.30	DEBRIS	NRB 1	NO	NO
0943	N	2.60	DEBRIS	NRB 1	NO	NO
0944	N	0.40	DEBRIS	NRB 1	NO	NO
0945	N	0.90	DEBRIS	NRB 1	NO	NO
0946	N	0.00	DEBRIS	NRB 1	NO	NO
0947	N	2.90	DEBRIS	NRB 1	NO	NO
0948	N	0.80	DEBRIS	NRB 1	NO	NO
0949	N	0.00	SLAG	NRS 1	NO	NO
0950	N	0.10	DEBRIS	NRB 1	NO	NO
0951	N	0.20	DEBRIS	NRB 1	NO	NO
0952	N	0.00	DEBRIS	NRB 1	NO	NO
0953	N	1.60	DEBRIS	NRB 1	NO	NO
0954	N	0.30	DEBRIS	NRB 1	NO	NO
0955	N	0.00	DEBRIS	NRB 1	NO	NO
0956	N	0.80	SLAG	NRS 1	NO	NO
0957	N	0.20	DEBRIS	NRB 1	NO	NO
0958	N	6.10	DEBRIS	NRB 1	NO	NO
0959	N	1.20	DEBRIS	NRB 1	NO	NO
0960	N	2.90	DEBRIS	NRB 1	NO	NO
0961	N	1.30	DEBRIS	NRB 1	NO	NO
0962	N	3.80	DEBRIS	NRB 1	NO	NO
0963	N	0.50	DEBRIS	NRB 1	NO	NO
0964	N	0.00	SLAG	NRS 1	NO	NO
0965	N	3.20	DEBRIS	NRB 1	NO	NO
0966	N	0.00	SLAG	NRS 1	NO	NO
0967	N	4.00	DEBRIS	NRB 1	NO	NO
0968	N	0.00	DEBRIS	NRB 1	NO	NO
0969	N	4.00	DEBRIS	NRB 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
0970	N	2.70	DEBRIS	NRB 1	NO	NO
0971	N	0.40	DEBRIS	NRB 1	NO	NO
0972	N	3.60	SLAG	NRS 1	NO	NO
0973	N	2.80	SLAG	NRS 1	NO	NO
D-01	N	N/A	SAMPLES		NO	NO
D-02	Y	N/A	SAMPLES		YES	NO
D-03	N	N/A	SAMPLES		NO	NO
D-04	Y	N/A	SAMPLES		YES	NO
D-05	N	N/A	PLASTIC CONT.		NO	NO
D-06	Y	N/A	SAMPLES		YES	NO
D-07	N	N/A	EMPTY		NO	NO
D-08	N	N/A	DIRT		NO	NO
D-08	N	N/A	SAMPLES		NO	NO
D-09	N	N/A	ACIDS		NO	NO
D-10	N	N/A	SAMPLE JARS		NO	NO
D-11	N	N/A	CUTTINGS		NO	NO
D-12	N	N/A	CUTTINGS		NO	NO
D-13	N	N/A	CUTTINGS		NO	NO
D-14	N	N/A	WATER		NO	NO
D-15	N	N/A	SAMPLES		NO	NO
D-16	N	N/A	WATER		NO	NO
D-17	N	N/A	SAMPLES		NO	NO
D-19	N	N/A	CUTTINGS		NO	NO
D-20	N	N/A			NO	NO
D-21	N	N/A	SAMPLES		NO	NO
D-22	N	N/A			NO	NO
D-23	N	N/A	SAMPLES		NO	NO
D-24	N	N/A			NO	NO
D-25	N	N/A	EMPTY		NO	NO
D-26	N	N/A	SAMPLES		NO	NO
D-27		N/A			NO	NO
T01	N	0.50	DIRT	NRT 1	NO	NO
T02	N	1.10	DEBRIS	NRT 1	NO	NO
T03	N	1.80	DIRT	NRT 1	NO	NO
T04	N	0.60	DEBRIS	NRT 1	NO	NO
T05	N	0.00	CUTTINGS	NRT 1	NO	NO
T06	N	9.40	SLAG	NRT 1	NO	NO
T07	N	0.50	BATT. CASINGS	NRT 1	NO	NO
T08	N	1.10	DEBRIS	NRT 1	NO	NO
T09	N	0.00	DEBRIS	NRT 1	NO	NO
T10	N	18.30	DIRT	RT 1	YES	NO
T11	N	3.30	SLAG	NRT 1	NO	NO
T12	N	2.60	DEBRIS	NRT 1	NO	NO
T13	Y	73.10	DEBRIS	RT 1	YES	NO
T14	Y	53.70	DEBRIS	RT 1	YES	NO
T15	N	4.90	SLAG	NRT 1	NO	NO
T16	N	N/A	EMPTY	NRT 1	NO	NO
T17	N	5.60	DEBRIS	NRT 1	NO	NO
T18	Y	224.50	DEBRIS	RT 1	YES	NO
T19	Y	114.60	DEBRIS	RT 1	YES	NO
T20	N	0.25	DIRT	NRT 1	NO	NO

Drum ID	Rad Alarm	Read PCIG	Contents	SAMPLE CATEGORY	RAD Y/N	RCRA YES/NO
T21	Y	127.80	SLAG	RT 1	YES	NO
T22	N	2.43	DEBRIS	NRT 1	NO	NO
T23	N	0.00	BATT. CASINGS	NRT 1	NO	NO
T24	N	1.70	DEBRIS	NRT 1	NO	NO
T25	N	0.00	BATT. CASINGS	NRT 1	NO	NO
T26	N	0.60	SLAG	NRT 1	NO	NO
T27	N	0.56	SAND	NRT 1	NO	NO
T28	N	1.10	DEBRIS	NRT 1	NO	NO
T29	N	0.20	DEBRIS	NRT 1	NO	NO
T30	N	0.00	BATT. CASINGS	NRT 1	NO	NO
T31	N	2.80	DEBRIS	NRT 1	NO	NO
T32	Y	249.50	DEBRIS	RT 1	YES	NO
T33	Y	66.20	DEBRIS	RT 1	YES	NO
T34	Y	182.70	SLAG	RT 1	YES	NO
T35	Y	536.20	DEBRIS	RT 1	YES	NO
T36	Y	497.00	DEBRIS	RT 1	YES	NO
T37	Y	33.10	DEBRIS	RT 1	YES	NO
T38	Y	294.20	DEBRIS	RT 1	YES	NO
T39	Y	616.90	DEBRIS	RT 1	YES	NO
T40	Y	300.20	DEBRIS	RT 1	YES	NO
T41	Y	164.60	DEBRIS	RT 1	YES	NO
T42	Y	467.90	DEBRIS	RT 1	YES	NO
T43	Y	631.90	DEBRIS	RT 1	YES	NO
T44	Y	517.70	DEBRIS	RT 1	YES	NO
T45	Y	724.10	CUTTINGS	RT 1	YES	NO
T46	N	2.98	DEBRIS	NRT 1	NO	NO

APPENDIX D

Analytical Data Summaries

and

Laboratory Reporting Sheets

MATERIALS CONTAINED IN DRUMS AND TOTES

METCOA RESTART SITE, PULASKI, PENNSYLVANIA

Parameter	Units	Sample Identification													
		RadSig 1	RadSig 2	RadSig 3	Radcut 1	Radcut 2	Radcut 3	Raddeb 1	Raddeb 2	Raddeb 3	NRS 1	NRC 1	NRB 1	RT 1	NRT 1
RCRA Characteristics															
Corrosivity	pH	8.50	9.00	9.90	9.50	9.50	10.04	5.50	8.50	9.20	9.80	10.57	9.60	9.90	9.70
Ignitability	Degrees C	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90
Reactivity (Cyanide)	mg/kg	<1.0	<1.0	<0.1	<1.0	<1.0	<0.1	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Reactivity (Sulfide)	mg/kg	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250
Inorganics (TCLP)															
Magnesium	mg/liter	569.00	573.00	567.00	991.00	967.00	1400.00	30.40	1390.00	127.00	16.30	1350.00	150.00	22.50	298.00
Nickel	mg/liter	82.00	46.90	42.80	<0.05	<0.05	0.09	3.38	9.88	36.80	1.32	0.05	0.05	0.15	295.00
Copper	mg/liter	1.77	<0.05	<0.05	<0.05	<0.05	<0.05	0.94	3.05	0.11	0.06	<0.05	0.08	<0.05	0.44
Zinc	mg/liter	2.27	0.28	0.16	<0.05	<0.05	<0.05	2.12	0.14	6.68	1.17	<0.05	<0.05	<0.05	27.20
Arsenic	mg/liter	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.20	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	mg/liter	5.66	0.53	0.84	0.08	0.20	0.13	0.12	0.15	0.46	<0.05	<0.05	0.40	0.32	2.29
Cadmium	mg/liter	0.28	0.049	<0.05	<0.05	<0.05	<0.05	17.30	1.10	66.10	<0.05	<0.05	0.11	0.25	13.60
Chromium	mg/liter	0.30	0.27	0.40	0.42	0.41	0.69	0.05	1.44	0.17	<0.05	0.67	0.27	0.82	0.49
Lead	mg/liter	0.10	0.09	0.10	0.07	0.08	0.06	0.07	0.47	0.11	<0.05	<0.05	0.20	0.12	0.25
Mercury	mg/liter	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0046	0.0007	<0.0004	<0.0004	0.0036	<0.0004
Selenium	mg/liter	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.08	<0.01	<0.01	<0.01	<0.01	0.094	0.01
Silver	mg/liter	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.24	<0.05	<0.05	<0.05	<0.05	<0.05	0.21
Volatile Organics (TCLP)															
Benzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylethyl Ketone	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyridine	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chlor	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MATERIALS CONTAINED IN DRUMS AND TOTES
METCOA RESTART SITE, PULASKI, PENNSYLVANIA

Parameter	Units	Sample Identification													
		RadStg 1	RadStg 2	RadStg 3	Radcut 1	Radcut 2	Radcut 3	Raddeb 1	Raddeb 2	Raddeb 3	NRS 1	NRC 1	NRB 1	RT 1	NRT 1
Semivolatile Organics (TCLP)															
O-cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
M-cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	mg/liter	ND	ND	ND	ND	0.0025	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lindane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-D	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silvex	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Radiological Analyses (Total)															
Thorium-232	pCi/gram	3.76+/-0.51	214+/-13	222+/-12	97.4+/-3.5	1211+/-130	76.3+/-0.3	116+/-18	1339+/-90	7.41+/-.30	0.45+/-0.12	5.65+/-1.55	1.30+/-0.25	118+/-14	0.37+/-0.10

ND-Not Detected
NA-Not Analyzed
No Data-Data not available on date of this report

AR101741

BULK DEBRIS PILES

METCOA RESTART SITE, PULASKI, PENNSYLVANIA

Parameter	Units	Sample Identification			
		Pile 1	Pile 2	Pile 3	Pile 4
RCRA Characteristics					
Corrosivity	pH	6.50	6.50	6.50	6.00
Ignitability	Degrees C	>90	>90	>90	>90
Reactivity (Cyanide)	mg/kg	<0.01	<0.01	<0.01	<0.01
Reactivity (Sulfide)	mg/kg	<250	<250	<250	<250
Inorganics (TCLP)					
Magnesium	mg/liter	8.10	125.00	158.00	156.00
Nickel	mg/liter	1.25	55.90	22.80	11.90
Copper	mg/liter	0.242	<0.05	0.142	2.87
Zinc	mg/liter	0.064	0.748	114.00	6.67
Arsenic	mg/liter	<0.01	<0.01	<0.01	<0.01
Barium	mg/liter	0.17	1.06	1.24	1.24
Cadmium	mg/liter	0.16	116.00	30.20	52.80
Chromium	mg/liter	0.10	0.11	0.09	0.09
Lead	mg/liter	0.10	195.00	2.25	168.00
Mercury	mg/liter	<0.0004	0.0005	<0.0004	<0.0004
Selenium	mg/liter	<0.01	<0.01	<0.01	<0.01
Silver	mg/liter	<0.05	<0.05	<0.05	<0.05
Volatile Organics (TCLP)					
Benzene	mg/liter	ND	ND	ND	ND
Carbon Tetrachloride	mg/liter	ND	ND	ND	ND
Chlorobenzene	mg/liter	ND	ND	ND	ND
Chloroform	mg/liter	ND	ND	ND	ND
1,2-Dichloroethane	mg/liter	ND	ND	ND	ND
1,1-Dichloroethene	mg/liter	ND	ND	ND	ND
Methylethyl Ketone	mg/liter	ND	ND	ND	ND
Pyridine	mg/liter	ND	ND	ND	ND
Tetrachloroethene	mg/liter	ND	ND	ND	ND
Trichloroethene	mg/liter	ND	ND	ND	ND
Vinyl Chloride	mg/liter	ND	ND	ND	ND

MATERIALS CONTAINED IN DRUMS AND TOTES

METCOA RESTART SITE, PULASKI, PENNSYLVANIA

Parameter	Units	Sample Identification			
		Pile 1	Pile 2	Pile 3	Pile 4
Semivolatile Organics (TCLP)					
O-cresol	mg/liter	ND	ND	ND	ND
M-cresol	mg/liter	ND	ND	ND	ND
P-cresol	mg/liter	ND	ND	ND	ND
Pentachlorophenol	mg/liter	ND	ND	ND	ND
2,4,5-Trichlorophenol	mg/liter	ND	ND	ND	ND
2,4,8-Trichlorophenol	mg/liter	ND	ND	ND	ND
2,4-Dinitrotoluene	mg/liter	ND	ND	ND	ND
Hexachlorobenzene	mg/liter	ND	ND	ND	ND
Hexachlorobutadiene	mg/liter	ND	ND	ND	ND
Hexachloroethane	mg/liter	ND	ND	ND	ND
Nitrobenzene	mg/liter	ND	ND	ND	ND
Chlordane	mg/liter	ND	ND	ND	ND
Endrin	mg/liter	ND	ND	ND	ND
Heptachlor	mg/liter	ND	ND	ND	ND
Lindane	mg/liter	ND	ND	ND	ND
Methoxychlor	mg/liter	ND	ND	ND	ND
Toxaphene	mg/liter	ND	ND	ND	ND
2,4-D	mg/liter	ND	ND	ND	ND
Silvex	mg/liter	ND	ND	ND	ND
1,4-Dichlorobenzene	mg/liter	ND	ND	ND	ND
Cresol	mg/liter	ND	ND	ND	ND
Radiological Analyses (Total)					
Thorium-232	pCi/gram	0.57+/-0.11	2.5+/-0.44	2.45+/-0.29	1.85+/-0.56

ND-Not Detected
NA-Not Analyzed
No Data-Data not available on date of this report

NONVEGETATED AREAS/AREAS OF ACCUMULATED DEBRIS

METCOA RESTART SITE, PULASKI, PENNSYLVANIA

Parameter	Units	Sample Identification									
		Grid 1	Grid 2	Grid 3	Grid 4	Grid 5	Grid 6	Grid 7	Grid 8	Grid 9	Grid 10
RCRA Characteristics											
Corrosivity	pH	9.00	9.35	8.32	9.10	9.32	8.60	9.16	9.45	9.30	9.20
Ignitability	Degrees C	>90	>90	>90	>90	>90	>90	>90	>90	>90	>90
Reactivity (Cyanide)	mg/kg	1.10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Reactivity (Sulfide)	mg/kg	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250
Inorganics (TCLP)											
Magnesium	mg/liter	17.80	24.90	22.80	24.20	28.00	30.00	37.70	377.00	34.80	31.20
Nickel	mg/liter	0.67	2.59	13.20	6.73	5.81	3.88	6.63	17.30	1.78	0.88
Copper	mg/liter	<0.05	0.98	35.20	1.63	4.34	1.05	0.72	1.68	1.62	0.15
Zinc	mg/liter	0.11	2.86	9.33	2.22	0.88	0.71	0.28	2.03	0.11	<0.05
Arsenic	mg/liter	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	mg/liter	1.24	1.60	0.48	1.49	1.16	0.98	0.94	1.05	1.01	0.87
Cadmium	mg/liter	1.29	6.46	43.20	8.27	9.97	6.08	3.50	4.98	1.83	0.12
Chromium	mg/liter	0.11	0.07	0.05	<0.05	<0.05	<0.05	0.08	0.11	<0.05	<0.05
Lead	mg/liter	0.10	0.08	1.23	0.23	0.10	0.07	0.10	0.12	0.11	0.11
Mercury	mg/liter	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.000
Selenium	mg/liter	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0
Silver	mg/liter	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Volatile Organics (TCLP)											
Benzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylethyl Ketone	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyridine	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NONVEGETATED AREAS/AREAS OF ACCUMULATED DEBRIS

METCOA RESTART SITE, PULASKI, PENNSYLVANIA

Parameter	Units	Sample Identification									
		Grid 1	Grid 2	Grid 3	Grid 4	Grid 5	Grid 6	Grid 7	Grid 8	Grid 9	Grid 10
Semivolatile Organics (TCLP)											
O-cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
M-cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lindane	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-D	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silvex	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cresol	mg/liter	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Radiological Analyses (Total)											
Thorium-232	pCi/gram	0.54+/-0.14	1.71+/-0.25	1.33+/-0.28	.77+/-0.27	1.14+/-0.24	1.36+/-0.27	46.5+/-0.80	98.5+/-0.90	0.51+/-0.17	7.57+/-0.41

ND-Not Detected
NA-Not Analyzed
No Data-Data not available on date of this report

P.O. BOX 5351 • Santa Fe, New Mexico 87501 OUT OF STATE 800/545-2188 • FAX - 505-982-92

Laidlaw Environmental Serv.
P.O. Box 14964
Greensboro, NC 27415

Attn: Jim McKown

Work ID: Enviro. W.Q. & Organics
P O # : 43159

Date Received: 12/07/90
Date Reported: 01/17/91
Work Order: 90-12-140
Category: TCLP

AR101746

Test	Units	Pile 1 Comp of 15 @ Metcoa 11/30/90 14:46	Pile 2 Comp of 15 @ Metcoa 12/01/90 10:40	Pile 3 Comp of 15 @ Metcoa 12/01/90 15:20	Pile 4 Comp of 15 @ Metcoa 12/02/90 15:21
Corrosivity (pH)	units	6.50	6.50	6.50	6.0
Copper (total)	mg/liter	0.242 mg/liter TCLP	<0.05 mg/liter TCLP	0.142 mg/liter TCLP	2.87 mg/liter TCLP
Ignitability	Degrees C	>90	>90	>90	>90
Magnesium (total)	mg/liter	8.10 mg/liter TCLP	125 mg/liter TCLP	158 mg/liter TCLP	156 mg/liter TCLP
Nickel (total)	mg/liter	1.25 mg/liter TCLP	55.9 mg/liter TCLP	22.8 mg/liter TCLP	11.9 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	<0.1	<0.1	<1.0	<1.0
Reactivity (Sulfide)	mg/kg	<250.0	<250.0	<250.0	<250.0
Reactivity	mg/kg	*	*	*	*

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CEP, Inc. REPORT Work Order # 90-12-140

eceived: 12/07/90 Continued From Above

est	Units	Pile 1 Comp of 15 @ Metcoa 11/30/90 14:46	Pile 2 Comp of 15 @ Metcoa 12/01/90 10:40	Pile 3 Comp of 15 @ Metcoa 12/01/90 15:20	Pile 4 Comp of 15 @ Metcoa 12/02/90 15:21
inc (total)	mg/liter	0.064 mg/liter TCLP	0.748 mg/liter TCLP	114 mg/liter TCLP	6.67 mg/liter TCLP

est	Units	RADCUT 1 Comp--Radcutting 12/04/90 10:10	RADCUT 2 Comp--Radcutting 12/04/90 14:30	RADDEB 1 Comp-D Rad 12/05/90 10:15	RADDEB 2 Comp-D Rad 12/05/90 14:00
orrosivity (pH)	units	9.50	9.50	5.50	8.50
opper (total)	mg/liter	<0.05 mg/liter TCLP	<0.05 mg/liter TCLP	0.943 mg/liter TCLP	3.05 mg/liter TCLP
gnitability	Degrees C	>90	>90	>90	>90
agnesium (total)	mg/liter	991 mg/liter TCLP	967 mg/liter TCLP	30.4 mg/liter TCLP	1390 mg/liter TCLP
ickel (total)	mg/liter	<0.05 mg/liter TCLP	<0.05 mg/liter TCLP	3.38 mg/liter TCLP	9.88 mg/liter TCLP
eactivity (Cyanide)	mg/kg	<1.0	<1.0	<1.0	<1.0

AR101747

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CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Continued From Above

AR101748

Test	Units	RADCUT 1 Comp--Radcutting 12/04/90 10:10	RADCUT 2 Comp--Radcutting 12/04/90 14:30	RADDEB 1 Comp-D Rad 12/05/90 10:15	RADDEB 2 Comp-D Rad 12/05/90 14:00
Reactivity (Sulfide)	mg/kg	<250.0	<250.0	<250.0	<250.0
Reactivity	mg/kg	*	*	*	*
Zinc (total)	mg/liter	<0.05 mg/liter TCLP	<0.05 mg/liter TCLP	2.12 mg/liter TCLP	0.141 mg/liter TCLP

Test	Units	RADSLG1 Comp of Rad Slag 12/05/90 15:50	RADSLG2 Comp of Rad Slag 12/05/90 16:45
Corrosivity (pH)	units	8.50	9.00
Copper (total)	mg/liter	1.77 mg/liter TCLP	<0.05 mg/liter TCLP
Ignitability	Degrees C	>90	>90
Magnesium (total)	mg/liter	569 mg/liter TCLP	573 mg/liter TCLP

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Received: 12/07/90

CEP, Inc. REPORT

Work Order # 90-12-140
Continued From Above

AR101749

Test	Units	RADSLG1 Comp of Rad Slag 12/05/90 15:50	RADSLG2 Comp of Rad Slag 12/05/90 16:45
Nickel (total)	mg/liter	82.0 mg/liter TCLP	46.9 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	<1.0	<1.0
Reactivity (Sulfide)	mg/kg	<250.0	<250.0
Reactivity	mg/kg	*	*
Zinc (total)	mg/liter	2.27 mg/liter TCLP	0.280 mg/liter TCLP

cc: C. Gallagher
5711 Etheridge Street
Houston, TX 77087

cc: de maximus, Inc.
604 Executive Park Dr Ste 601
Knoxville, TN 37923
Attn: Mark Travers

* Non reactive.

Approved By:

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID Pile 1 Comp of 15 @ Metcoa FRACTION 01A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 11/30/90 14:46:00 Category SOLID

AR101750

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.59+/-0.17
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.59+/-0.17

All results report in:

UNITS pCi/gram

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 1 Comp of 15 @ Metcoa FRACTION 01A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 11/30/90 14:46:00 Category SOLID

AR101751

PARAMETER	RESULT	LIMIT
O-cresol	<0.01	0.01
M-cresol	<0.01	0.01
P-cresol	<0.01	0.01
Pentachlorophenol	<0.004	0.004
2,4,5-Trichlorophenol	<0.005	0.005
2,4,6-Trichlorophenol	<0.003	0.003
2,4-Dinitrotoluene	<0.006	0.006
Hexachlorobenzene	<0.002	0.002
Hexachlorobutadiene	<0.001	0.001
Hexachloroethane	<0.002	0.002
Nitrobenzene	<0.002	0.002
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.004	0.004
Cresol	<0.01	0.01

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-...0

...ceived: 12/07/90

Results by Sample

AMPLE ID Pile 1 Comp of 15 @ Metcoa FRACTION 01A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 11/30/90 14:46:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	0.17		12/14/90	NR
Cadmium	0.16		12/14/90	NR
Chromium	0.10		12/14/90	NR
Lead	0.10		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101752

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID Pile 1 Comp of 15 @ Metcoa FRACTION 01A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 11/30/90 14:46:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.57+/-0.11

All results reported in:

UNITS pCi/gram

AR101753

Controls for ...
P.O. BOX 5351 • Santa Fe, New Mexico 87502

Work Order # 90-1 40

CEP, Inc. REPORT

Page 9

Received: 12/07/90

Results by Sample

SAMPLE ID Pile 1 Comp of 15 @ Metcoa FRACTION 01A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 11/30/90 14:46:00 Category SOLID

AR101754

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 2 Comp of 15 @ Metcoa FRACTION 02A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/01/90 10:40:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.33+/-0.09
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.34+/-0.08

All results report in:

UNITS pCi/gram

AR101755

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 CEP, Inc. REPORT Work Order # [illegible]12-140

Received: 12/07/90 Results by Sample

AR101756

SAMPLE ID Pile 2 Comp of 15 @ Metcoa FRACTION 02A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/01/90 10:40:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.01	0.01
M-cresol	<0.01	0.01
P-cresol	<0.01	0.01
Pentachlorophenol	<0.004	0.004
2,4,5-Trichlorophenol	<0.005	0.005
2,4,6-Trichlorophenol	<0.003	0.003
2,4-Dinitrotoluene	<0.006	0.006
Hexachlorobenzene	<0.002	0.002
Hexachlorobutadiene	<0.001	0.001
Hexachloroethane	<0.002	0.002
Nitrobenzene	<0.002	0.002
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.004	0.004
Cresol	<0.01	0.01

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID Pile 2 Comp of 15 @ Metcoa FRACTION 02A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/01/90 10:40:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	1.06		12/14/90	NR
Cadmium	116		12/14/90	NR
Chromium	0.11		12/14/90	NR
Lead	195		12/14/90	NR
Mercury	0.0005		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101757

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 2 Comp of 15 @ Metcoa FRACTION 02A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/01/90 10:40:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	2.50+/-0.44

All results reported in:

UNITS pCi/gram

AR101758

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

AR 1 1759

SAMPLE ID Pile 2 Comp of 15 @ Metcoa FRACTION 02A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/01/90 10:40:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 3 Comp of 15 @ Metcoa FRACTION 03A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/01/90 15:20:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.22+/-0.06
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.19+/-0.07

All results report in:

UNITS pCi/gram

AR101760

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 3 Comp of 15 @ Metcoa FRACTION 03A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/01/90 15:20:00 Category SOLID

AR101761

PARAMETER	RESULT	LIMIT
O-cresol	<0.01	0.01
M-cresol	<0.01	0.01
P-cresol	<0.01	0.01
Pentachlorophenol	<0.004	0.004
2,4,5-Trichlorophenol	<0.005	0.005
2,4,6-Trichlorophenol	<0.003	0.003
2,4-Dinitrotoluene	<0.006	0.006
Hexachlorobenzene	<0.002	0.002
Hexachlorobutadiene	<0.001	0.001
Hexachloroethane	<0.002	0.002
Nitrobenzene	<0.002	0.002
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.004	0.004
Cresol	<0.01	0.01

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-1[illegible]140

Received: 12/07/90

Results by Sample

SAMPLE ID Pile 3 Comp of 15 @ Metcoa FRACTION 03A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/01/90 15:20:00 Category SOLID

AR101762

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	1.24		12/14/90	NR
Cadmium	30.2		12/14/90	NR
Chromium	0.09		12/14/90	NR
Lead	2.25		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 3 Comp of 15 @ Metcoa FRACTION 03A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/01/90 15:20:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	2.45+/-0.29

All results reported in:

UNITS pCi/gram

AR101763

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID Pile 3 Comp of 15 @ Metcoa FRACTION 03A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/01/90 15:20:00 Category SOLID

AR101764

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

AR101765

SAMPLE ID Pile 4 Comp of 15 @ Metcoa FRACTION 04A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/02/90 15:21:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.29+/-0.08
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.22+/-0.07

All results report in:

UNITS pCi/gram

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 4 Comp of 15 @ Metcoa FRACTION 04A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/02/90 15:21:00 Category SOLID

AR101766

PARAMETER	RESULT	LIMIT
O-cresol	<0.01	0.01
M-cresol	<0.01	0.01
P-cresol	<0.01	0.01
Pentachlorophenol	<0.004	0.004
2,4,5-Trichlorophenol	<0.005	0.005
2,4,6-Trichlorophenol	<0.003	0.003
2,4-Dinitrotoluene	<0.006	0.006
Hexachlorobenzene	<0.002	0.002
Hexachlorobutadiene	<0.001	0.001
Hexachloroethane	<0.002	0.002
Nitrobenzene	<0.002	0.002
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.004	0.004
Cresol	<0.01	0.01

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 4 Comp of 15 @ Metcoa FRACTION 04A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/02/90 15:21:00 Category SOLID

AR101767

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/18/90	JK
Barium	1.24		12/14/90	NR
Cadmium	52.8		12/14/90	NR
Chromium	0.09		12/14/90	NR
Lead	168		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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Page 23 CEP, Inc. REPORT Work Order # 90 -140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 4 Comp of 15 @ Metcoa FRACTION 04A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/02/90 15:21:00 Category SOLID

AR101768

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1.85+/-0.56

All results reported in:

UNITS pCi/gram

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID Pile 4 Comp of 15 @ Metcoa FRACTION 04A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/02/90 15:21:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

Page 23 CEP, Inc. REPORT Work Order # 90-1[illegible]140

Received: 12/07/90 Results by Sample

SAMPLE ID RADCUT 1 Comp-Radcutting FRACTION 05A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/04/90 10:10:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.12+/-0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.11+/-0.05

All results report in:

UNITS pCi/gram

AR101770

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Page 26 CEP, Inc. REPORT Work Order # 90-12-140
Received: 12/07/90 Results by Sample

SAMPLE ID RADCUT 1 Comp-Radcutting FRACTION 05A TEST CODE TCLP01 NAME TCLP Organics
Date & Time Collected 12/04/90 10:10:00 Category SOLID

AR101771

PARAMETER	RESULT	LIMIT
O-cresol	<0.1	0.1
M-cresol	<0.1	0.1
P-cresol	<0.1	0.1
Pentachlorophenol	<0.04	0.04
2,4,5-Trichlorophenol	<0.05	0.05
2,4,6-Trichlorophenol	<0.03	0.03
2,4-Dinitrotoluene	<0.06	0.06
Hexachlorobenzene	<0.02	0.02
Hexachlorobutadiene	<0.01	0.01
Hexachloroethane	<0.02	0.02
Nitrobenzene	<0.02	0.02
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.04	0.04
Cresol	<0.1	0.1

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADCUT 1 Comp-Radcutting FRACTION 05A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/04/90 10:10:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/18/90	JK
Barium	0.08		12/14/90	NR
Cadmium	<0.05		12/14/90	NR
Chromium	0.42		12/14/90	NR
Lead	0.07		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101772

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADCUT 1 Comp-Radcutting FRACTION 05A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/04/90 10:10:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	97.4+/-3.5

All results reported in:

UNITS pCi/gram

AR101773

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 CEP, Inc. REPORT Work Order # 5[illegible]2-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADCUT 1 Comp-Radcutting FRACTION 05A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/04/90 10:10:00 Category SOLID

AR110974

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADCUT 2 Comp-Radcutting FRACTION 06A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/04/90 14:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	<0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	<0.05

All results report in:

UNITS pCi/gram

AR101775

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Page 31 CEP, Inc. REPORT Work Order # 90 2-140
Received: 12/07/90 Results by Sample

SAMPLE ID RADCUT 2 Comp-Radcutting FRACTION 06A TEST CODE TCLP01 NAME TCLP Organics
Date & Time Collected 12/04/90 14:30:00 Category SOLID

AR101776

PARAMETER	RESULT	LIMIT
O-cresol	<0.1	0.1
M-cresol	<0.1	0.1
P-cresol	<0.1	0.1
Pentachlorophenol	<0.04	0.04
2,4,5-Trichlorophenol	<0.05	0.05
2,4,6-Trichlorophenol	<0.03	0.03
2,4-Dinitrotoluene	<0.06	0.06
Hexachlorobenzene	<0.02	0.02
Hexachlorobutadiene	<0.01	0.01
Hexachloroethane	<0.02	0.02
Nitrobenzene	<0.02	0.02
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	0.0025	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.04	0.04
Cresol	<0.1	0.1

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADCUT 2 Comp-Radcutting FRACTION 06A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/04/90 14:30:00 Category SOLID

AR101777

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/18/90	JK
Barium	0.20		12/14/90	NR
Cadmium	<0.05		12/14/90	NR
Chromium	0.41		12/14/90	NR
Lead	0.08		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADCUT 2 Comp-Radcutting FRACTION 06A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/04/90 14:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1211+/-130

All results reported in:

UNITS pCi/gram

ARI01778

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADCUT 2 Comp-Radcutting FRACTION 06A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/04/90 14:30:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADDEB 1 Comp-Debris Rad FRACTION 07A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/05/90 10:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	<0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	<0.05

All results report in:

UNITS pCi/gram

AR101780

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADDEB 1 Comp-Debris Rad FRACTION 07A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/05/90 10:15:00 Category SOLID

ARI01781

PARAMETER	RESULT	LIMIT
O-cresol	<0.1	0.1
M-cresol	<0.1	0.1
P-cresol	<0.1	0.1
Pentachlorophenol	<0.04	0.04
2,4,5-Trichlorophenol	<0.05	0.05
2,4,6-Trichlorophenol	<0.03	0.03
2,4-Dinitrotoluene	<0.06	0.06
Hexachlorobenzene	<0.02	0.02
Hexachlorobutadiene	<0.01	0.01
Hexachloroethane	<0.02	0.02
Nitrobenzene	<0.02	0.02
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.04	0.04
Cresol	<0.1	0.1

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90[illegible]2-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADDEB 1 Comp-Debris Rad FRACTION 07A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/05/90 10:15:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/18/90	JK
Barium	0.12		12/14/90	NR
Cadmium	17.30		12/14/90	NR
Chromium	0.05		12/14/90	NR
Lead	0.07		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101782

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADDEB 1 Comp-Debris Rad FRACTION 07A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/05/90 10:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	116+/-18

All results reported in:

UNITS pCi/gram

AR101783

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 CEP, Inc. REPORT Work Order # 90[illegible]2-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADDEB 1 Comp-Debris Rad FRACTION 07A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/05/90 10:15:00 Category SOLID

AR101784

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

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Received: 12/07/90

CEP, Inc. REPORT

Results by Sample

Work Order # 90-12-140

AR101785

SAMPLE ID RADDEB 2 Comp-Debris Rad FRACTION 08A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/05/90 14:00:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.29+/-0.04
Uranium-235	0.05	0.05+/-0.01
Uranium-238	0.05	0.45+/-0.05

All results report in:

UNITS pCi/gram

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 CEP, Inc. REPORT Work Order # 90 12-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADDEB 2 Comp-Debris Rad FRACTION 08A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/05/90 14:00:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.1	0.1
M-cresol	<0.1	0.1
P-cresol	<0.1	0.1
Pentachlorophenol	<0.04	0.04
2,4,5-Trichlorophenol	<0.05	0.05
2,4,6-Trichlorophenol	<0.03	0.03
2,4-Dinitrotoluene	<0.06	0.06
Hexachlorobenzene	<0.02	0.02
Hexachlorobutadiene	<0.01	0.01
Hexachloroethane	<0.02	0.02
Nitrobenzene	<0.02	0.02
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.04	0.04
Cresol	<0.1	0.1

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

AR101786

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADDEB 2 Comp-Debris Rad FRACTION 08A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/05/90 14:00:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	1.20		12/18/90	JK
Barium	0.15		12/14/90	NR
Cadmium	1.10		12/14/90	NR
Chromium	1.44		12/14/90	NR
Lead	0.47		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	0.076		12/26/90	JK
Silver	0.24		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101787

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 CEP, Inc. REPORT Work Order # 90 12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADDEB 2 Comp-Debris Rad FRACTION 08A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/05/90 14:00:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1339+/-70

All results reported in:

UNITS pCi/gram

AR101788

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADDEB 2 Comp-Debris Rad FRACTION 08A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/05/90 14:00:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

AR101789

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Page 45 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADSLG1 Comp of Rad Slag FRACTION 09A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/05/90 15:50:00 Category SOLID

AR108790

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.22+/-0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.15+/-0.04

All results report in:

UNITS pCi/gram

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADSLG1 Comp of Rad Slag FRACTION 09A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/05/90 15:50:00 Category SOLID

AR107791

PARAMETER	RESULT	LIMIT
O-cresol	<0.1	0.1
M-cresol	<0.1	0.1
P-cresol	<0.1	0.1
Pentachlorophenol	<0.04	0.04
2,4,5-Trichlorophenol	<0.05	0.05
2,4,6-Trichlorophenol	<0.03	0.03
2,4-Dinitrotoluene	<0.06	0.06
Hexachlorobenzene	<0.02	0.02
Hexachlorobutadiene	<0.01	0.01
Hexachloroethane	<0.02	0.02
Nitrobenzene	<0.02	0.02
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.04	0.04
Cresol	<0.1	0.1

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90 12-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADSLG1 Comp of Rad Slag FRACTION 09A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/05/90 15:50:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/18/90	JK
Barium	5.66		12/14/90	NR
Cadmium	0.28		12/14/90	NR
Chromium	0.30		12/14/90	NR
Lead	0.10		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101792

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADSLG1 Comp of Rad Slag FRACTION 09A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/05/90 15:50:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	3.76+/-0.51

All results reported in:

UNITS pCi/gram

ARID1793

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 CEP, Inc. REPORT Work Order # 9[illegible]12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADSLG1 Comp of Rad Slag FRACTION 09A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/05/90 15:50:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/15/91
ANALYST DVM
UNITS ug/liter

AR101734

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADSLG2 Comp of Rad Slag FRACTION 10A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/05/90 16:45:00 Category SOLID

AR101795

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.28+/-0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.32+/-0.08

All results report in:

UNITS pCi/gram

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADSLG2 Comp of Rad Slag FRACTION 10A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/05/90 16:45:00 Category SOLID

AR101796

PARAMETER	RESULT	LIMIT
O-cresol	<0.1	0.1
M-cresol	<0.1	0.1
P-cresol	<0.1	0.1
Pentachlorophenol	<0.04	0.04
2,4,5-Trichlorophenol	<0.05	0.05
2,4,6-Trichlorophenol	<0.03	0.03
2,4-Dinitrotoluene	<0.06	0.06
Hexachlorobenzene	<0.02	0.02
Hexachlorobutadiene	<0.01	0.01
Hexachloroethane	<0.02	0.02
Nitrobenzene	<0.02	0.02
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.04	0.04
Cresol	<0.1	0.1

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADSLG2 Comp of Rad Slag FRACTION 10A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/05/90 16:45:00 Category SOLID

AR101797

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/18/90	JK
Barium	0.53		12/14/90	NR
Cadmium	0.049		12/14/90	NR
Chromium	0.27		12/14/90	NR
Lead	0.09		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90

Results by Sample

SAMPLE ID RADSLG2 Comp of Rad Slag FRACTION 10A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/05/90 16:45:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	214+/-13

All results reported in:

UNITS pCi/gram

ARI01798

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 CEP, Inc. REPORT Work Order # 90-12-140

Received: 12/07/90 Results by Sample

SAMPLE ID RADSLG2 Comp of Rad Slag FRACTION 10A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/05/90 16:45:00 Category SOLID

AR101799

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/15/91
ANALYST DVM
UNITS ug/liter

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Received: 12/07/90 Nonreported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01A ! GA_PKG

AR101800

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Laidlaw Environmental Serv.
P.O. Box 14964
Greensboro, NC 27415

Attn: Jim McKown

Work ID: Enviro. W.Q. & Organics
P O # :

Date Received: 12/17/90
Date Reported: 01/17/91
Work Order: 90-12-321
Category: TCLP

AR101801

Test	Units	Grid 1 Comp. of Grid 1 12/11/90 11:20	Grid 2 Comp. of Grid 2 12/11/90 12:15	Grid 3 Comp. of Grid 3 12/11/90 12:51	Grid 5 Comp. of Grid 5 12/11/90 15:28
Corrosivity (pH)	units	9.00	9.35	8.32	9.32
Copper (total)	mg/liter	<0.05 mg/liter TCLP	0.98 mg/liter TCLP	35.2 mg/liter TCLP	4.34 mg/liter TCLP
Ignitability	Degrees C	>90	>90	>90	>90
Magnesium (total)	mg/liter	17.8 mg/liter TCLP	24.9 mg/liter TCLP	22.8 mg/liter TCLP	26.0 mg/liter TCLP
Nickel (total)	mg/liter	0.67 mg/liter TCLP	2.59 mg/liter TCLP	13.2 mg/liter TCLP	5.81 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	1.1	<1.0	<1.0	<1.0
Reactivity (Sulfide)	mg/kg	<250.0	<250.0	<250.0	<250.0
Reactivity	mg/kg	*	*	*	*

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Received: 12/17/90

Continued From Above

Test	Units	Grid 1 Comp. of Grid 1 12/11/90 11:20	Grid 2 Comp. of Grid 2 12/11/90 12:15	Grid 3 Comp. of Grid 3 12/11/90 12:51	Grid 5 Comp. of Grid 5 12/11/90 15:28
Zinc (total)	mg/liter	0.11 mg/liter TCLP	2.86 mg/liter TCLP	9.33 mg/liter TCLP	0.88 mg/liter TCLP

Test	Units	Grid 6 Comp. of Grid 6 12/11/90 16:02	Grid 7 Comp. of Grid 7 12/11/90 15:38	Grid 8 Comp. of Grid 8 12/11/90 16:26	Grid 9 Comp. of Grid 9 12/12/90 10:30
Corrosivity (pH)	units	8.60	9.16	9.45	9.30
Copper (total)	mg/liter	1.05 mg/liter TCLP	0.72 mg/liter TCLP	1.68 mg/liter TCLP	1.62 mg/liter TCLP
Ignitability	Degrees C	>90	>90	>90	>90
Magnesium (total)	mg/liter	30.0 mg/liter TCLP	37.7 mg/liter TCLP	377 mg/liter TCLP	34.8 mg/liter TCLP
Nickel (total)	mg/liter	3.88 mg/liter TCLP	6.63 mg/liter TCLP	17.3 mg/liter TCLP	1.78 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	<1.0	1.0	<1.0	<1.0

AR101802

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CEP, Inc. REPORT

Work Order # 90-12-321
Continued From Above

Received: 12/17/90

Test	Units	Grid 6 Comp. of Grid 6 12/11/90 16:02	Grid 7 Comp. of Grid 7 12/11/90 15:38	Grid 8 Comp. of Grid 8 12/11/90 16:26	Grid 9 Comp. of Grid 9 12/12/90 10:30
Reactivity (Sulfide)	mg/kg	<250.0	<250.0	<250.0	<250.0
Reactivity	mg/kg	*	*	*	*
Zinc (total)	mg/liter	0.71 mg/liter TCLP	0.26 mg/liter TCLP	2.03 mg/liter TCLP	0.11 mg/liter TCLP

Test	Units	Grid 4 Comp. of Grid 4 12/12/90 10:01	Grid 10 Comp. of Grid 10 12/12/90 11:25	Grid 9 MS/MS DUP 12/12/90 10:30
Corrosivity (pH)	units	9.10	9.20	8.98
Copper (total)	mg/liter	1.63 mg/liter TCLP	0.15 mg/liter TCLP	0.51 mg/liter TCLP
Ignitability	Degrees C	>90	>90	>90
Magnesium (total)	mg/liter	24.2 mg/liter TCLP	31.2 mg/liter TCLP	33.5 mg/liter TCLP

AR101803

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Received: 12/17/90

CEP, Inc. REPORT

Work Order # 90-12-321
Continued From Above

Test	Units	Grid 4 Comp. of Grid 4 12/12/90 10:01	Grid 10 Comp. of Grid 10 12/12/90 11:25	Grid 9 MS/MS DUP 12/12/90 10:30
Nickel (total)	mg/liter	6.73 mg/liter TCLP	0.86 mg/liter TCLP	1.73 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	<1.0	<1.0	<1.0
Reactivity (Sulfide)	mg/kg	<250.0	<250.0	<250.0
Reactivity	mg/kg	*	*	*
Zinc (total)	mg/liter	2.22 mg/liter TCLP	<0.05 mg/liter TCLP	0.06 mg/liter TCLP

cc: C. Gallagher
5711 Etheridge Street
Houston, TX 77087

cc: de maximus, Inc.
604 Executive Park Dr Ste 601
Knoxville, TN 37923
Attn: Mark Travers

* Non reactive.

Approved By:

AR101804

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Received: 12/17/90

CEP, Inc. REPORT

Results by Sample

Work Order # 90-12-321

AR101805

SAMPLE ID Grid 1 Comp. of Grid 1 FRACTION 01A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/11/90 11:20:00 Category SOIL

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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CEP, Inc. REPORT

Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 1 Comp. of Grid 1 FRACTION 01A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/11/90 11:20:00 Category SOIL

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	1.24		12/20/90	NR
Cadmium	1.29		12/20/90	NR
Chromium	0.11		12/20/90	NR
Lead	0.10		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101806

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 1 Comp. of Grid 1 FRACTION 01A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/11/90 11:20:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.54+/-0.14

All results reported in:

UNITS pCi/gram

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AR101807

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CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 1 Comp. of Grid 1 FRACTION 01A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/11/90 11:20:00 Category SOIL

AR101808

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

AR101809

SAMPLE ID Grid 2 Comp. of Grid 2 FRACTION 02A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/11/90 12:15:00 Category SOIL

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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Page 10 CEP, Inc. REPORT Work Order # 90-12-021

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 2 Comp. of Grid 2 FRACTION 02A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/11/90 12:15:00 Category SOIL

AR101810

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	1.60		12/20/90	NR
Cadmium	6.46		12/20/90	NR
Chromium	0.07		12/20/90	NR
Lead	0.08		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 2 Comp. of Grid 2 FRACTION 02A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/11/90 12:15:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1.71+/-0.25

All results reported in:

UNITS pCi/gram

AR101811

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 2 Comp. of Grid 2 FRACTION 02A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/11/90 12:15:00 Category SOIL

AR101812

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 3 Comp. of Grid 3 FRACTION 03A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/11/90 12:51:00 Category SOIL

AR101813

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 3 Comp. of Grid 3 FRACTION 03A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/11/90 12:51:00 Category SOIL

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	0.48		12/20/90	NR
Cadmium	43.2		12/20/90	NR
Chromium	0.05		12/20/90	NR
Lead	1.23		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 3 Comp. of Grid 3 FRACTION 03A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/11/90 12:51:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1.33+/-0.28

All results reported in:

UNITS pCi/gram

AR101815

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 3 Comp. of Grid 3 FRACTION 03A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/11/90 12:51:00 Category SOIL

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

AR101816

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 CEP, Inc. REPORT Work Order # 90-12-321
Received: 12/17/90 Results by Sample

SAMPLE ID Grid 5 Comp. of Grid 5 FRACTION 04A TEST CODE TCLP01 NAME TCLP Organics
Date & Time Collected 12/11/90 15:28:00 Category SOIL

AR101817

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 5 Comp. of Grid 5 FRACTION 04A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/11/90 15:28:00 Category SOIL

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	1.16		12/20/90	NR
Cadmium	9.97		12/20/90	NR
Chromium	<0.05		12/20/90	NR
Lead	0.10		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101818

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 5 Comp. of Grid 5 FRACTION 04A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/11/90 15:28:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1.14+/-0.24

All results reported in:

UNITS pCi/gram

AR101819

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 CEP, Inc. REPORT Work Order # 90 12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 5 Comp. of Grid 5 FRACTION 04A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/11/90 15:28:00 Category SOIL

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 6 Comp. of Grid 6 FRACTION 05A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/11/90 16:02:00 Category SOIL

AR104821

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 6 Comp. of G 6 FRACTION 05A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/11/90 16:02:00 Category SOIL

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	0.98		12/20/90	NR
Cadmium	6.08		12/20/90	NR
Chromium	<0.05		12/20/90	NR
Lead	0.07		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101822

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 6 Comp. of Grid 6 FRACTION 05A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/11/90 16:02:00 Category SOIL

AR101823

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1.36+/-0.27

All results reported in:

UNITS pCi/gram

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 6 Comp. of Grid 6 FRACTION 05A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/11/90 16:02:00 Category SOIL

AR 10 024

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 7 Comp. of Grid 7 FRACTION 06A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/11/90 15:38:00 Category SOIL

AR10V625

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90 12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 7 Comp. of Grid 7 FRACTION 06A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/11/90 15:38:00 Category SOIL

AR101826

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	0.94		12/20/90	NR
Cadmium	3.50		12/20/90	NR
Chromium	0.06		12/20/90	NR
Lead	0.10		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 7 Comp. of Grid 7 FRACTION 06A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/11/90 15:38:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	46.5+/-0.8

All results reported in:

UNITS pCi/gram

AR101827

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 7 Comp. of Grid 7 FRACTION 06A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/11/90 15:38:00 Category SOIL

ARI 0828

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 8 Comp. of Grid 8 FRACTION 07A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/11/90 16:26:00 Category SOIL

AR101829

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 8 Comp. of Grid 8 FRACTION 07A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/11/90 16:26:00 Category SOIL

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	1.05		12/20/90	NR
Cadmium	4.98		12/20/90	NR
Chromium	0.11		12/20/90	NR
Lead	0.12		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101830

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 8 Comp. of Grid 8 FRACTION 07A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/11/90 16:26:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	98.5+/-0.9

All results reported in:

UNITS pCi/gram

AR101831

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 8 Comp. of Grid 8 FRACTION 07A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/11/90 16:26:00 Category SOIL

AR181832

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 9 Comp. of Grid 9 FRACTION 08A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/12/90 10:30:00 Category SOIL

ARI 01833

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 9 Comp. of Grid 9 FRACTION 08A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/12/90 10:30:00 Category SOIL

AR101834

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	1.01		12/20/90	NR
Cadmium	1.83		12/20/90	NR
Chromium	<0.05		12/20/90	NR
Lead	0.11		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 9 Comp. of Grid 9 FRACTION 08A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/12/90 10:30:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.51+/-0.17

All results reported in:

UNITS pCi/gram

AR101835

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 9 Comp. of Grid 9 FRACTION 08A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/12/90 10:30:00 Category SOIL

AR101836

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 4 Comp. of Grid 4 FRACTION 09A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/12/90 10:01:00 Category SOIL

AR101837

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 4 Comp. of Grid 4 FRACTION 09A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/12/90 10:01:00 Category SOIL

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	1.49		12/20/90	NR
Cadmium	8.27		12/20/90	NR
Chromium	<0.05		12/20/90	NR
Lead	0.23		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101838

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 4 Comp. of Grid 4 FRACTION 09A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/12/90 10:01:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.77+/-0.27

All results reported in:

UNITS pCi/gram

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AR101839

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 4 Comp. of Grid 4 FRACTION 09A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/12/90 10:01:00 Category SOIL

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

AR101840

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 10 Comp. of Grid 10 FRACTION 10A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/12/90 11:25:00 Category SOIL

AR101841

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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P.O. BOX [illegible] • Gallup, New Mexico [illegible] OUT OF STATE 800/545-2188 • FAX - 505-982-92[illegible]

 CEP, Inc. REPORT Work Order # 90-[illegible]-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 10 Comp. of Grid 10 FRACTION 10A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/12/90 11:25:00 Category SOIL

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	0.87		12/20/90	NR
Cadmium	0.12		12/20/90	NR
Chromium	<0.05		12/20/90	NR
Lead	0.11		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101842

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 10 Comp. of Grid 10 FRACTION 10A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/12/90 11:25:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	REBULT
Thorium-232	0.05	7.57+/-0.41

All results reported in:

UNITS pCi/gram

AR101843

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Grid 10 Comp. of Grid 10 FRACTION 10A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/12/90 11:25:00 Category SOIL

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

AR 101844

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 9 MS/MS DUP FRACTION 11A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/12/90 10:30:00 Category SOIL

AR 010845

PARAMETER	RESULT	LIMIT
O-cresol	<0.050	0.050
M-cresol	<0.050	0.050
P-cresol	<0.050	0.050
Pentachlorophenol	<0.020	0.020
2,4,5-Trichlorophenol	<0.025	0.025
2,4,6-Trichlorophenol	<0.015	0.015
2,4-Dinitrotoluene	<0.030	0.030
Hexachlorobenzene	<0.010	0.010
Hexachlorobutadiene	<0.0050	0.0050
Hexachloroethane	<0.010	0.010
Nitrobenzene	<0.010	0.010
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.020	0.020
Cresol	<0.050	0.050

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 9 MS/MS DUP FRACTION 11A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/12/90 10:30:00 Category SOIL

AR101846

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	0.94		12/20/90	NR
Cadmium	1.45		12/20/90	NR
Chromium	<0.05		12/20/90	NR
Lead	0.10		12/20/90	NR
Mercury	<0.0004		12/27/90	JK
Selenium	<0.01		12/26/90	JK
Silver	<0.05		12/20/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 9 MS/MS DUP FRACTION 11A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/12/90 10:30:00 Category SOIL

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.73+/-0.29

All results reported in:

UNITS pCi/gram

AR010847

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90

Results by Sample

SAMPLE ID Grid 9 MS/MS DUP FRACTION 11A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/12/90 10:30:00 Category SOIL

AR101848

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/09/91
ANALYST DVM
UNITS ug/liter

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 CEP, Inc. REPORT Work Order # 90-12-321

Received: 12/17/90 Results by Sample

SAMPLE ID Processed Blank FRACTION 12A TEST CODE TCLP 1 NAME TCLP Metals

Date & Time Collected not specified Category WATER

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/26/90	JK
Barium	<0.05		01/02/91	NR
Cadmium	<0.05		01/02/91	NR
Chromium	<0.05		01/02/91	NR
Lead	<0.05		01/02/91	NR
Mercury	<0.0004			
Selenium	<0.01			
Silver	<0.05		01/02/91	NR

Notes and Definitions for this Report:

UNITS mg/liter

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AR101849

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Received: 12/17/90 Nonreported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01A 1 GA_PKG

AR101850

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Laidlaw Environmental Serv.
P.O. Box 14964
Greensboro, NC 27415

Attn: Jim McKown

Work ID: Enviro., W.Q. & Organics
P O # : 43159

Date Received: 12/11/90
Date Reported: 01/17/91
Work Order: 90-12-188
Category: TCLP

AR101851

Test	Units	RADSLA3 Comp. of RAD SLAG 12/06/90 13:30	RADCUT3 Comp. of RAD CUTT. 12/06/90 15:15	RADDEB3 Comp. of RAD DEBRIS 12/06/90 15:40	NRS1 Comp. of NON RAD SLAG 12/07/90 09:00
Corrosivity (pH)	units	9.90	10.04	9.20	9.80
Copper (total)	mg/liter	<0.05 mg/liter TCLP	<0.05 mg/liter TCLP	0.113 mg/liter TCLP	0.056 mg/liter TCLP
Ignitability	Degrees C	>90	>90	>90	>90
Magnesium (total)	mg/liter	567 mg/liter TCLP	1400 mg/liter TCLP	127 mg/liter TCLP	16.3 mg/liter TCLP
Nickel (total)	mg/liter	42.8 mg/liter TCLP	0.092 mg/liter TCLP	36.8 mg/liter TCLP	1.32 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	<0.1	<0.1	<0.1	<0.1
Reactivity (Sulfide)	mg/kg	<250.0	<250.0	<250.0	<250.0
Reactivity	mg/kg	*	*	*	*

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Received: 12/11/90

CEP, Inc. REPORT

Work Order # 90-12-188
Continued From Above

AR101852

Test	Units	RADSLA3 Comp. of RAD SLAG 12/06/90 13:30	RADCUT3 Comp. of RAD CUTT. 12/06/90 15:15	RADDEB3 Comp. of RAD DEBRIS 12/06/90 15:40	NRS1 Comp. of NON RAD SLAG 12/07/90 09:00
Zinc (total)	mg/liter	0.155 mg/liter TCLP	<0.05 mg/liter TCLP	6.68 mg/liter TCLP	1.17 mg/liter TCLP

Test	Units	NRC1 Comp. of Non RAD CUTI. 12/08/90 13:30	NRB1 Comp. of RAD DEBRIS 12/08/90 15:40	RT1 Comp. of RAD TOTES 12/09/90 09:30	NRT1 Comp of NON RAD TOTES 12/09/90 11:15
Corrosivity (pH)	units	10.57	9.60	9.90	9.70
Copper (total)	mg/liter	<0.05 mg/liter TCLP	0.080 mg/liter TCLP	<0.05 mg/liter TCLP	0.437 mg/liter TCLP
Ignitability	Degrees C	>90	>90	>90	>90
Magnesium (total)	mg/liter	1350 mg/liter TCLP	150 mg/liter TCLP	22.5 mg/liter TCLP	298 mg/liter TCLP
Nickel (total)	mg/liter	0.050 mg/liter TCLP	0.051 mg/liter TCLP	0.146 mg/liter TCLP	295 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	<0.1	<0.1	<0.1	<0.1

Controls for Environmental Pollution, Inc.
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Received: 12/11/90

CEP, Inc. REPORT

Work Order # 90-12-188
Continued From Above

AR101853

Test	Units	NRC1 Comp. of Non RAD CUIT. 12/08/90 13:30	NRB1 Comp. of RAD DEBRIS 12/08/90 15:40	RT1 Comp. of RAD TOTES 12/09/90 09:30	NRT1 Comp of NON RAD TOTES 12/09/90 11:15
Reactivity (Sulfide)	mg/kg	<250.0	<250.0	<250.0	<250.0
Reactivity	mg/kg	*	*	*	*
Zinc (total)	mg/liter	<0.05 mg/liter TCLP	<0.05 mg/liter TCLP	<0.05 mg/liter TCLP	27.2 mg/liter TCLP

Test	Units	NRT1 Matrix Spike Dup. 12/09/90 11:15
Corrosivity (pH)	units	9.50
Copper (total)	mg/liter	<0.05 mg/liter TCLP
Ignitability	Degrees C	>90
Magnesium (total)	mg/liter	590 mg/liter TCLP

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Received: 12/11/90

Continued From Above

AR101854

Test	Units	NRT1 Matrix Spike Dup. 12/09/90 11:15
Nickel (total)	mg/liter	421 mg/liter TCLP
Reactivity (Cyanide)	mg/kg	<0.1
Reactivity (Sulfide)	mg/kg	<250.0
Reactivity	mg/kg	*
Zinc (total)	mg/liter	23.2 mg/liter TCLP

cc: C. Gallagher
5711 Etheridge Street
Houston, TX 77087

cc: de maximus, Inc.
604 Executive Park Dr Ste 601
Knoxville, TN 37923
Attn: Mark Travers

* Non reactive.

Approved By:

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADSLA3 Comp. of RAD SLAG FRACTION 01A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/06/90 13:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.37+/-0.09
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.33+/-0.08

All results report in:

UNITS pCi/gram

AR101855

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OUT OF STATE 800/545-2188 • FAX - 505-982-

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADSLA3 Comp. of RAD SLAG FRACTION 01A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/06/90 13:30:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

AR101856

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2199 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADSLA3 Comp. of RAD SLAG FRACTION 01A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/06/90 13:30:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	0.84		12/14/90	NR
Cadmium	<0.05		12/14/90	NR
Chromium	0.40		12/14/90	NR
Lead	0.10		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101857

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OUT OF STATE 800/545-2188 • FAX • 505-982-9

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADSLA3 Comp. of RAD SLAG FRACTION 01A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/06/90 13:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	222+/-12

All results reported in:

UNITS pCi/gram

ARI 01858

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 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADSLA3 Comp. of RAD SLAG FRACTION 01A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/06/90 13:30:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

AR101859

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OUT OF STATE 800/545-2188 • FAX - 505-982-9

Received: 12/11/90

Results by Sample

SAMPLE ID RADCUT3 Comp. of RAD CUTT. FRACTION 02A TEST CODE ISOU S NAME Isotopic Uranium
Date & Time Collected 12/06/90 15:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	<0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	<0.05

All results report in:

UNITS pCi/gram

AR101860

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2198 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADCUT3 Comp. of RAD CUTT. FRACTION 02A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/06/90 15:15:00 Category SOLID

ARP01861

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

P.O. BOX 5351 • Santa Fe, New Mexico 875 OUT OF STATE 800/545-2188 • FAX - 505-982-9

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADCUT3 Comp. of RAD CUTT. FRACTION 02A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/06/90 15:15:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	0.13		12/14/90	NR
Cadmium	<0.05		12/14/90	NR
Chromium	0.69		12/14/90	NR
Lead	0.06		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR401862

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADCUT3 Comp. of RAD CUTT. FRACTION 02A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/06/90 15:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	76.3+/-0.3

All results reported in:

UNITS pCi/gram

AR101863

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 8 2 OUT OF STATE 800/545-2188 • FAX - 505-982 9

 CEP, Inc. REPORT Work Order # 90-12-188
Received: 12/11/90 Results by Sample

SAMPLE ID RADCUT3 Comp. of RAD CUTT. FRACTION 02A TEST CODE ZHE R1 NAME Zero Head Space Extraction
Date & Time Collected 12/06/90 15:15:00 Category SOLID

AR101864

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

Controls for Environmental Protection, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2198 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID RADDEB3 Comp. of RAD DEBRIS FRACTION 03A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/06/90 15:40:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.18+/-0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.09+/-0.03

All results report in:

UNITS pCi/gram

AR101865

P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2186 • FAX - 505-982-9

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADDEB3 Comp. of RAD DEBRIS FRACTION 03A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/06/90 15:40:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

AR101866

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID RADDEB3 Comp. of RAD DEBRIS FRACTION 03A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/06/90 15:40:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	0.46		12/14/90	NR
Cadmium	66.1		12/14/90	NR
Chromium	0.17		12/14/90	NR
Lead	0.11		12/14/90	NR
Mercury	0.0046		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2188 • FAX - 505-982-9

Received: 12/11/90 Results by Sample

SAMPLE ID RADDEB3 Comp. of RAD DEBRIS FRACTION 03A TEST CODE TH2325 NAME Thorium-232
Date & Time Collected 12/06/90 15:40:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	7.41+/-0.30

All results reported in:

UNITS pCi/gram

AR101868

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RADDEB3 Comp. of RAD DEBRIS FRACTION 03A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/06/90 15:40:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

AR101869

P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2188 • FAX - 505-982-5

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRS1 Comp. of NON RAD SLAG FRACTION 01A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/07/90 09:00:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	<0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	<0.05

All results report in:

UNITS pCi/gram

AR101870

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188
Received: 12/11/90 Results by Sample

SAMPLE ID NRS1 Comp. of NON RAD SLAG FRACTION 04A TEST CODE TCLP01 NAME TCLP Organics
Date & Time Collected 12/07/90 09:00:00 Category SOLID

AR101871

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2188 • FAX - 505-982-9

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRS1 Comp. of NON RAD SLAG FRACTION 04A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/07/90 09:00:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	<0.05		12/14/90	NR
Cadmium	<0.05		12/14/90	NR
Chromium	<0.05		12/14/90	NR
Lead	<0.05		12/14/90	NR
Mercury	0.0007		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101872

Consultants for Environmental Production, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

SAMPLE ID NRS1 Comp. of NON RAD SLAG FRACTION 04A TEST CODE TH2325 NAME Thorium-232
Date & Time Collected 12/07/90 09:00:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.45+/-0.12

All results reported in:

UNITS pCi/gram

AR101873

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2188 • FAX - 505-982-

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID NRS1 Comp. of NON RAD SLAG FRACTION 04A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/07/90 09:00:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

R101874

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID NRC1 Comp. of Non RAD CUTT. FRACTION 05A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/08/90 13:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.19+/-0.10
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.08+/-0.10

All results report in:

UNITS pCi/gram

AR101875

Controls for Environmental Protection, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2188 • FAX - 505-982-9

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID NRC1 Comp. of Non RAD CUTT. FRACTION 05A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/08/90 13:30:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

AR101876

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRC1 Comp. of Non RAD CUTT. FRACTION 05A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/08/90 13:30:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	<0.05		12/14/90	NR
Cadmium	<0.05		12/14/90	NR
Chromium	0.67		12/14/90	NR
Lead	<0.05		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR 301877

P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2188 • FAX - 505-982-

Received: 12/11/90

Results by Sample

SAMPLE ID NRC1 Comp. of Non RAD CUTT. FRACTION 05A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/08/90 13:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	5.65+/-1.55

All results reported in:

UNITS pCi/gram

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188
Received: 12/11/90 Results by Sample

SAMPLE ID NRC1 Comp. of Non RAD CUTT. FRACTION 05A TEST CODE ZHE R1 NAME Zero Head Space Extraction
Date & Time Collected 12/08/90 13:30:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

AR301879

P.O. BOX 5351 • Santa Fe, New Mexico 87
OUT OF STATE 800/545-2188 • FAX - 505-982-9

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID NRB1 Comp. of RAD DEBRIS FRACTION 06A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/08/90 15:40:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.33+/-0.08
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.29+/-0.08

All results report in:

UNITS pCi/gram

AR101880

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRB1 Comp. of RAD DEBRIS FRACTION 06A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/08/90 15:40:00 Category SOLID

AR101881

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

P.O. BOX 5351 • Santa Fe, New Mexico 8 2 OUT OF STATE 800/545-2188 • FAX - 505-982 39

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRB1 Comp. of RAD DEBRIS FRACTION 06A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/08/90 15:40:00 Category SOLID

AR101882

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	0.40		12/14/90	NR
Cadmium	0.11		12/14/90	NR
Chromium	0.27		12/14/90	NR
Lead	0.20		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	<0.01		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRB1 Comp. of RAD DEBRIS FRACTION 06A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/08/90 15:40:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	1.30+/-0.25

All results reported in:

UNITS pCi/gram

AR101883

Consultants for Environmental Protection, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-9[illegible]3289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRB1 Comp. of RAD DEBRIS FRACTION 06A TEST CODE ZHE R1 NAME Zero Head Space Extractio

Date & Time Collected 12/08/90 15:40:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

AR101188

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID RT1 Comp. of RAD TOTES FRACTION 07A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/09/90 09:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.43+/-0.07
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.73+/-0.09

All results report in:

UNITS pCi/gram

AR 101885

P.O. BOX 5351 • Santa Fe, New Mexico 502 OUT OF STATE 800/545-2188 • FAX - 505-9 289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RT1 Comp. of RAD TOTES FRACTION 07A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/09/90 09:30:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

ARI 0886

Consultants for Environmental Protection, Inc.
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 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID RT1 Comp. of RAD TOTES FRACTION 07A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/09/90 09:30:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	0.32		12/14/90	NR
Cadmium	0.25		12/14/90	NR
Chromium	0.82		12/14/90	NR
Lead	0.12		12/14/90	NR
Mercury	0.0036		12/19/90	JK
Selenium	0.094		12/18/90	JK
Silver	<0.05		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101887

P.O. BOX 5351 • Santa Fe, New Mexic 7502 OUT OF STATE 800/545-2188 • FAX - 505-9 9289

Received: 12/11/90 Results by Sample

SAMPLE ID RT1 Comp. of RAD TOTES FRACTION 07A TEST CODE TH2325 NAME Thorium-232
Date & Time Collected 12/09/90 09:30:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	118+/-14

All results reported in:

UNITS pCi/gram

Consultants for Environmental Production, Inc.
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 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID RT1 Comp. of RAD TOTES FRACTION 07A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/09/90 09:30:00 Category SOLID

AR101888

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

P.O. BOX 5351 • Santa Fe, New Mexic 502 OUT OF STATE 800/545-2188 • FAX - 505-9 289

Received: 12/11/90 Results by Sample

SAMPLE ID NRT1 Comp of NON RAD TOTES FRACTION 08A TEST CODE ISOU S NAME Isotopic Uranium
Date & Time Collected 12/09/90 11:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.36+/-0.07
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.31+/-0.07

All results report in:

UNITS pCi/gram

AR101890

Controls for Environmental Protection, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

 CEP, Inc. REPORT Work Order # 90-12-188
Received: 12/11/90 Results by Sample

SAMPLE ID NRT1 Comp of NON RAD TOTES FRACTION 08A TEST CODE TCLP01 NAME TCLP Organics
Date & Time Collected 12/09/90 11:15:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	<0.03	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

AR101891

P.O. BOX 5351 • Santa Fe, New Mexico 02 OUT OF STATE 800/545-2188 • FAX - 505-9F 289

Received: 12/11/90 Results by Sample

SAMPLE ID NRT1 Comp of NON RAD TOTES FRACTION 08A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/09/90 11:15:00 Category SOLID

AR101892

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	2.29		12/14/90	NR
Cadmium	13.6		12/14/90	NR
Chromium	0.49		12/14/90	NR
Lead	0.25		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	0.013		12/18/90	JK
Silver	0.21		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9289

Received: 12/11/90 Results by Sample

SAMPLE ID NRT1 Comp of NON RAD TOTES FRACTION 08A TEST CODE TH2325 NAME Thorium-232
Date & Time Collected 12/09/90 11:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.37+/-0.10

All results reported in:

UNITS pCi/gram

AR101893

Controls for Environmental Education, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 02 OUT OF STATE 800/545-2188 • FAX - 505-98 189

Received: 12/11/90

Results by Sample

SAMPLE ID NRT1 Comp of NON RAD TOTES FRACTION 08A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/09/90 11:15:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/08/91
ANALYST DVM
UNITS ug/liter

AR101898

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-992-9289

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90

Results by Sample

SAMPLE ID NRT1 Matrix Spike Dup. FRACTION 09A TEST CODE ISOU S NAME Isotopic Uranium

Date & Time Collected 12/09/90 11:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/g	RESULT
Uranium-234	0.05	0.19+/-0.05
Uranium-235	0.05	<0.05
Uranium-238	0.05	0.15+/-0.04

All results report in:

UNITS pCi/gram

AR101895

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 8750 OUT OF STATE 800/545-2188 • FAX - 505-982-92

 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRT1 Matrix Spike Dup. FRACTION 09A TEST CODE TCLP01 NAME TCLP Organics

Date & Time Collected 12/09/90 11:15:00 Category SOLID

PARAMETER	RESULT	LIMIT
O-cresol	<0.05	0.05
M-cresol	<0.05	0.05
P-cresol	<0.05	0.05
Pentachlorophenol	<0.02	0.02
2,4,5-Trichlorophenol	<0.03	0.03
2,4,6-Trichlorophenol	<0.02	0.02
2,4-Dinitrotoluene	0.30	0.03
Hexachlorobenzene	<0.01	0.01
Hexachlorobutadiene	<0.005	0.005
Hexachloroethane	<0.01	0.01
Nitrobenzene	<0.01	0.01
Chlordane	<0.03	0.03
Endrin	<0.003	0.003
Heptachlor	<0.001	0.001
Lindane	<0.06	0.06
Methoxychlor	<1.4	1.4
Toxaphene	<0.07	0.07
2,4-D	<1.4	1.4
Silvex	<0.14	0.14
1,4-Dichlorobenzene	<0.02	0.02
Cresol	<0.05	0.05

Notes and Definitions for this Report:

DATE RUN 12/21/90
ANALYST DVM
UNITS mg/liter

AR101896

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 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID NRT1 Matrix Spike Dup. FRACTION 09A TEST CODE TCLP S NAME TCLP Metals

Date & Time Collected 12/09/90 11:15:00 Category SOLID

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01		12/17/90	JK
Barium	3.45		12/14/90	NR
Cadmium	16.3		12/14/90	NR
Chromium	0.49		12/14/90	NR
Lead	0.20		12/14/90	NR
Mercury	<0.0004		12/19/90	JK
Selenium	0.027		12/18/90	JK
Silver	0.13		12/14/90	NR

Notes and Definitions for this Report:

UNITS mg/liter

AR101897

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 CEP, Inc. REPORT Work Order # 90-12-188

eceived: 12/11/90

Results by Sample

AMPLE ID NRT1 Matrix Spike Dup. FRACTION 09A TEST CODE TH2325 NAME Thorium-232

Date & Time Collected 12/09/90 11:15:00 Category SOLID

Type of Analysis	Detection Limit pCi/gram	RESULT
Thorium-232	0.05	0.69+/-0.19

All results reported in:

UNITS pCi/gram

AR101898

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 CEP, Inc. REPORT Work Order # 90-12-188

'eceived: 12/11/90 Results by Sample

AMPLE ID NRT1 Matrix Spike Dup. FRACTION 09A TEST CODE ZHE R1 NAME Zero Head Space Extraction

Date & Time Collected 12/09/90 11:15:00 Category SOLID

PARAMETER	RESULT	LIMIT
Benzene	<4.40	4.40
Carbon Tetrachloride	<2.80	2.80
Chlorobenzene	<6.00	6.00
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
1,1-Dichloroethylene	<2.80	2.80
Methylethyl Ketone	<10.0	10.0
Pyridine	<10.0	10.0
Tetrachloroethylene	<4.10	4.10
Trichloroethylene	<1.90	1.90
Vinyl Chloride	<2.00	2.00

Notes and Definitions for this Report:

DATE RUN 01/14/91
ANALYST DVM
UNITS ug/liter

AR101899

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 CEP, Inc. REPORT Work Order # 90-12-188

Received: 12/11/90 Results by Sample

SAMPLE ID BLANK FRACTION 10A TEST CODE TCLP 1 NAME TCLP Metals

Date & Time Collected not specified Category WATER

PARAMETER	RESULT	LIMIT	INJECTED	ANALYST
Arsenic	<0.01			
Barium	<0.05			
Cadmium	<0.05			
Chromium	<0.05			
Lead	<0.05			
Mercury	<0.0004			
Selenium	<0.01			
Silver	<0.05			

Notes and Definitions for this Report:

UNITS mg/liter

AR101900

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FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01A I GA_PKG

AR101901

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Laidlaw Environmental Serv.
P.O. Box 14964
Greensboro, NC 27415

Attn: Jim McKown

Work ID: Enviro. W.Q. & Organics
P O # : 43159

Date Received: 12/14/90
Date Reported: 01/17/91
Work Order: 90-12-286
Category:

AR101902

Test	Units	OF 1-Outfall Liquid Sample 12/13/90 10:30
Silver (total)	mg/liter	<0.03
Aluminum (total)	mg/liter	0.1
Arsenic (total)	mg/liter	<0.01
Barium (total)	mg/liter	<0.03
Beryllium	mg/liter	0.009
Calcium (total)	mg/liter	23.5
Cadmium (total)	mg/liter	0.090
Cyanide, Distillation(tot)	mg/liter	<0.01

Page 2 CEP, Inc. REPORT Work Order # 5[illegible]12-286
Received: 12/14/90 Continued From Above

Test	Units	OF 1-Outfall Liquid Sample 12/13/90 10:30
Cobalt (total)	mg/liter	0.09
Chromium (total)	mg/liter	0.01
Copper (total)	mg/liter	0.030
Iron (total)	mg/liter	<0.03
Mercury (total)	mg/liter	<0.0004
Potassium (total)	mg/liter	3.91
Magnesium (total)	mg/liter	138
Manganese (total)	mg/liter	0.241
Sodium (total)	mg/liter	3.94
Nickel (total)	mg/liter	0.311
Lead (total)	mg/liter	0.001

AR101903

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 CEP, Inc. REPORT Work Order # 90-12-286

Received: 12/14/90 Continued From Above

AR101904

Test	Units	OF 1-Outfall Liquid Sample 12/13/90 10:30
Antimony (total)	mg/liter	<0.03
Selenium (total)	mg/liter	<0.01
Thorium-232	pCi/liter	<0.6
Thallium (total)	mg/liter	<0.03
Vanadium (total)	mg/liter	<0.03
Zinc (total)	mg/liter	1.51

cc: C. Gallagher
5711 Etheridge Street
Houston, TX 77087

cc: de maximus, Inc.
604 Executive Park Dr Ste 601
Knoxville, TN 37923
Attn: Mark Travers

Approved By:

P.O. BOX 5351 • Santa Fe, New Mexico 87

 CEP, Inc. REPORT Work Order # 90-12-286

Received: 12/14/90 Results by Sample

SAMPLE ID OF 1-Outfall Liquid Sample FRACTION 01D TEST CODE 8080 W NAME EPA - method 8080

Date & Time Collected 12/13/90 10:30:00 Category WATER

PARAMETER	RESULT	LIMIT
Alpha-BHC	<0.050	0.050
Beta-BHC	<0.050	0.050
Gamma-BHC	0.084	0.050
Delta-BHC	<0.10	0.10
Heptachlor	<0.050	0.050
Aldrin	<0.050	0.050
Heptachlor epoxide	<1.0	1.0
Endosulfan I	<0.10	0.10
4,4'-DDE	<0.050	0.050
Dieldrin	<0.050	0.050
Endrin	<0.10	0.10
Endosulfan II	<0.050	0.050
4,4'-DDD	<0.10	0.10
Endrin Aldehyde	<0.20	0.20
Endosulfan Sulfate	<0.50	0.50
4,4-DDT	<0.10	0.10
Methoxychlor	<2.0	2.0
Chlordane	<0.10	0.10
Toxaphene	<2.0	2.0
PCB-1016	<5.0	5.0
PCB-1221	<5.0	5.0
PCB-1232	<5.0	5.0
PCB-1242	<5.0	5.0
PCB-1248	<5.0	5.0
PCB-1254	<5.0	5.0
PCB-1260	<5.0	5.0

AR101905

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 CEP, Inc. REPORT Work Order # 90-12-286
Received: 12/14/90 Results by Sample Continued From Above

SAMPLE ID OF 1-Outfall Liquid Sample FRACTION 01D TEST CODE 8080 W NAME EPA - method 8080
Date & Time Collected 12/13/90 10:30:00 Category WATER

Notes and Definitions for this Report:

DATE RUN 01/02/91
ANALYST DVM
UNITS ug/liter

AR101906

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 CEP, Inc. REPORT Work Order # 90 12-286

Received: 12/14/90 Results by Sample

SAMPLE ID OF 1-Outfall Liquid Sample FRACTION 01C TEST CODE 8240 W NAME EPA - method 8240

Date & Time Collected 12/13/90 10:30:00 Category WATER

AR101907

PARAMETER	RESULT	LIMIT
Chloromethane	<10.0	10.0
Bromomethane	<10.0	10.0
Vinyl Chloride	<2.00	2.00
Chloroethane	<10.0	10.0
Methylene Chloride	<2.80	2.80
Acetone	<10.0	10.0
Carbon Disulfide	<5.00	5.00
1,1-Dichloroethene	<2.80	2.80
1,1-Dichloroethane	<4.70	4.70
trans-1,2-Dichloroethene	<1.60	1.60
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
2-Butanone	<10.0	10.0
1,1,1-Trichloroethane	<3.80	3.80
Carbon Tetrachloride	<2.80	2.80
Vinyl Acetate	<10.0	10.0
Bromodichloromethane	<2.20	2.20
1,1,2,2-Tetrachloroethane	<6.90	6.90
1,2-Dichloropropane	<6.00	6.00
trans-1,3-Dichloropropene	<5.00	5.00
Trichloroethene	<1.90	1.90
Dibromochloromethane	<3.10	3.10
1,1,2-Trichloroethane	<5.00	5.00
Benzene	<4.40	4.40
cis-1,3-Dichloropropene	<5.00	5.00
2-Chloroethyl Vinyl Ether	<10.0	10.0
Bromoform	<4.70	4.70

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 CEP, Inc. REPORT Work Order # 90-12-286

Received: 12/14/90 Results by Sample Continued From Above

SAMPLE ID OF 1-Outfall Liquid Sample FRACTION 01C TEST CODE 8240 W NAME EPA - method 8240

Date & Time Collected 12/13/90 10:30:00 Category WATER

2-Hexanone	<10.0	10.0
4-Methyl-2-Pentanone	<10.0	10.0
Tetrachloroethene	<4.10	4.10
Toluene	<6.00	6.00
Chlorobenzene	<6.00	6.00
Ethyl Benzene	<7.20	7.20
Styrene	<5.00	5.00
Total Xylenes	<5.00	5.00

Notes and Definitions for this Report:

DATE RUN 01/14/91
ANALYST DVM
UNITS ug/liter

AR101908

P.O. BOX 5351 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-982-9199

 CEP, Inc. REPORT Work Order # 90-12-286

Received: 12/14/90 Results by Sample

SAMPLE ID OF 1-Outfall Liquid Sample FRACTION 01D TEST CODE 8270 W NAME EPA - method 8270

Date & Time Collected 12/13/90 10:30:00 Category WATER

PARAMETER	RESULT	LIMIT
Phenol	<1.50	1.50
Bis(2-Chloroethyl) Ether	<5.70	5.70
2-Chlorophenol	<3.30	3.30
1,3-Dichlorobenzene	<1.90	1.90
1,4-Dichlorobenzene	<4.40	4.40
Benzyl Alcohol	<20.0	20.0
1,2-Dichlorobenzene	<1.90	1.90
Bis(2-Chloroisopropyl)Ether	<5.70	5.70
4-Methylphenol	<10.0	10.0
N-Nitroso-di-N-propylamine	<4.60	4.60
Hexachloroethane	<1.60	1.60
Nitrobenzene	<1.90	1.90
Isophorone	<2.20	2.20
2-Nitrophenol	<3.60	3.60
2,4-Dimethylphenol	<2.70	2.70
Benzoic Acid	<10.0	10.0
Bis(2-Chlorethoxy)Methane	<5.30	5.30
2,4-Dichlorophenol	<2.70	2.70
1,2,4-Trichlorobenzene	<1.90	1.90
Naphthalene	<1.60	1.60
4-Chloroanaline	<20.0	20.0
Hexachlorobutadiene	<0.900	0.900
4-Chloro-3-Methylphenol	<3.00	3.00
2-Methylnaphthalene	<10.0	10.0
Hexachlorocyclopentadiene	<10.0	10.0
2,4,6-Trichlorophenol	<2.50	2.75
2,4,5-Trichlorophenol	<10.0	10.0

AR101909

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 CEP, Inc. REPORT Work Order # 90-12-286
Received: 12/14/90 Results by Sample Continued From Above

SAMPLE ID OF 1-Outfall Liquid Sample FRACTION 01D TEST CODE 8270 W NAME EPA - method 8270
Date & Time Collected 12/13/90 10:30:00 Category WATER

2-Chloronapthalene	<10.0	10.0
2-Nitroanaline	<50.0	50.0
Dimethyl phthalate	<1.60	1.60
Acenaphthylene	<3.50	3.50
3-Nitroaniline	<50.0	50.0
Acenaphthene	<1.90	1.90
2,4-Dinitrophenol	<42.0	42.0
4-Nitrophenol	<50.0	50.0
Dibenzofuran	<10.0	10.0
2,4-Dinitrotoluene	<5.70	5.70
2,6-Dinitrotoluene	<1.90	1.90
Diethylphthalate	<22.0	22.0
4-Chlorophenylphenylether	<4.20	4.20
Fluorene	<1.90	1.90
4-Nitroaniline	<50.0	50.0
4,6-Dinitro-2-methylphenol	<24.0	24.0
N-Nitrosdiphenylamine	<10.0	10.0
4-Bromophenylphenylether	<1.90	1.90
Hexachlorobenzene	<1.90	1.90
Pentachlorophenol	<3.60	3.60
Phenanthrene	<5.40	5.40
Anthracene	<1.90	1.90
Di-n-butylphthalate	<2.50	2.50
Fluoranthene	<2.20	2.20
Pyrene	<1.90	1.90
Butyl benzyl phthalate	<2.50	2.50
3,3'-Dichlorobenzidine	<44.0	44.0
Benzo(a)anthracene	<7.80	7.80
bis(2-ethylhexyl)phthalate	<2.50	2.50
Chrysene	<2.50	2.50
Di-n-octyl phthalate	<2.50	2.50

AR101910

P.O. BOX 5351 • Santa Fe, New Mexico 87 OUT OF STATE 800/545-2188 • FAX - 505-982-9-89

 CEP, Inc. REPORT Work Order # 70-12-286

Received: 12/14/90 Results by Sample Continued From Above

SAMPLE ID OF 1-Outfall Liquid Sample FRACTION 01D TEST CODE 8270 W NAME EPA - method 8270

Date & Time Collected 12/13/90 10:30:00 . Category WATER

Benzo(b)fluoranthene	<4.80	4.80
Benzo(k)fluoranthene	<2.50	2.50
Benzo(a)pyrene	<2.50	2.50
Indeno(1,2,3-cd)pyrene	<3.70	3.70
Dibenzo(a,h)anthracene	<2.50	2.50
Benzo(g,h,i)perylene	<4.10	4.10
2-Methylphenol	<10.0	10.0

Notes and Definitions for this Report:

DATE RUN 12/27/91
ANALYST DVM
UNITS ug/liter

AR101911

OUT OF STATE 800/545-2188 • FAX - 505-982-9289

Laidlaw Environmental Serv.
P.O. Box 14964
Greensboro, NC 27415

Attn: Jim McKown

Work ID: Enviro. W.Q. & Organics
P O # : 43159

Date Received: 12/20/90
Date Reported: 01/17/91
Work Order: 90-12-431
Category:

AR101912

Test	Units	WDC 1 12/19/90 08:35
Silver (total)	mg/liter	<0.03
Aluminum (total)	mg/liter	0.2
Arsenic (total)	mg/liter	<0.01
Barium (total)	mg/liter	0.09
Beryllium	mg/liter	0.014
Calcium (total)	mg/liter	23.0
Cadmium (total)	mg/liter	<0.001
Cyanide, Distillation(tot)	mg/liter	<0.01

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 CEP, Inc. REPORT Work Order # 90-12-431

Received: 12/20/90 Continued From Above

AR101913

Test	Units	WDC 1
		12/19/90 08:35
Cobalt (total)	mg/liter	<0.05
Chromium (total)	mg/liter	0.02
Copper (total)	mg/liter	0.271
Iron (total)	mg/liter	21.0
Mercury (total)	mg/liter	0.006
Potassium (total)	mg/liter	50.3
Magnesium (total)	mg/liter	138
Manganese (total)	mg/liter	0.628
Sodium (total)	mg/liter	104
Nickel (total)	mg/liter	1.13
Lead (total)	mg/liter	0.2

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Received: 12/20/90

CEP, Inc. REPORT

Work Order # 90-12-431
Continued From Above

AR101914

Test	Units	WDC 1
		12/19/90 08:35
Antimony (total)	mg/liter	0.692
Selenium (total)	mg/liter	0.011
Thorium-232	pCi/liter	<0.6
Thallium (total)	mg/liter	<0.05
Vanadium (total)	mg/liter	0.077
Zinc (total)	mg/liter	0.219

cc: C. Gallagher
5711 Etheridge Street
Houston, TX 77087

cc: de maximus, Inc.
604 Executive Park Dr Ste 601
Knoxville, TN 37923
Attn: Mark Travers

Approved By: _____

P.O. BOX 5851 • Santa Fe, New Mexico 87502 OUT OF STATE 800/545-2188 • FAX - 505-98[illegible]289

 CEP, Inc. REPORT Work Order # 90-12-431

Received: 12/20/90

Results by Sample

SAMPLE ID WDC 1 FRACTION 01C TEST CODE 8080 W NAME EPA - method 8080

Date & Time Collected 12/19/90 08:35:00 Category WATER

AR101915

PARAMETER	RESULT	LIMIT
Alpha-BHC	0.072	0.050
Beta-BHC	<0.050	0.050
Gamma-BHC	0.111	0.050
Delta-BHC	<0.10	0.10
Heptachlor	0.065	0.050
Aldrin	<0.050	0.050
Heptachlor epoxide	<1.0	1.0
Endosulfan I	<0.10	0.10
4,4'-DDE	0.138	0.050
Dieldrin	<0.050	0.050
Endrin	<0.10	0.10
Endosulfan II	<0.050	0.050
4,4'-DDD	<0.10	0.10
Endrin Aldehyde	<0.20	0.20
Endosulfan Sulfate	<0.50	0.50
4,4-DDT	<0.10	0.10
Methoxychlor	<2.0	2.0
Chlordane	<0.10	0.10
Toxaphene	<2.0	2.0
PCB-1016	<5.0	5.0
PCB-1221	<5.0	5.0
PCB-1232	<5.0	5.0
PCB-1242	<5.0	5.0
PCB-1248	<5.0	5.0
PCB-1254	<5.0	5.0
PCB-1260	<5.0	5.0

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Received: 12/20/90

CEP, Inc. REPORT
Results by Sample

Work Order # 90-12-431
Continued From Above

SAMPLE ID WDC 1

FRACTION 01C TEST CODE 8080 W NAME EPA - method 8080
Date & Time Collected 12/19/90 08:35:00 Category WATER

Notes and Definitions for this Report:

DATE RUN 01/03/91
ANALYST DVM
UNITS ug/liter

AR101916

Page 6 CEP, Inc. REPORT Work Order # 90-12-431

Received: 12/20/90 Results by Sample

SAMPLE ID WDC 1 FRACTION 01A TEST CODE 8240 W NAME EPA - method 8240

Date & Time Collected 12/19/90 08:35:00 Category WATER

PARAMETER	RESULT	LIMIT
Chloromethane	<10.0	10.0
Bromomethane	<10.0	10.0
Vinyl Chloride	<2.00	2.00
Chloroethane	<10.0	10.0
Methylene Chloride	<2.80	2.80
Acetone	<10.0	10.0
Carbon Disulfide	<5.00	5.00
1,1-Dichloroethene	<2.80	2.80
1,1-Dichloroethane	<4.70	4.70
trans-1,2-Dichloroethene	<1.60	1.60
Chloroform	<1.60	1.60
1,2-Dichloroethane	<2.80	2.80
2-Butanone	<10.0	10.0
1,1,1-Trichloroethane	<3.80	3.80
Carbon Tetrachloride	<2.80	2.80
Vinyl Acetate	<10.0	10.0
Bromodichloromethane	<2.20	2.20
1,1,2,2-Tetrachloroethane	<6.90	6.90
1,2-Dichloropropane	<6.00	6.00
trans-1,3-Dichloropropene	<5.00	5.00
Trichloroethene	<1.90	1.90
Dibromochloromethane	<3.10	3.10
1,1,2-Trichloroethane	<5.00	5.00
Benzene	<4.40	4.40
cis-1,3-Dichloropropene	<5.00	5.00
2-Chloroethyl Vinyl Ether	<10.0	10.0
Bromoform	<4.70	4.70

AR101917

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Received: 12/20/90

CEP, Inc. REPORT
Results by Sample

Work Order # 90-12-431
Continued From Above

SAMPLE ID WDC 1 FRACTION 01A TEST CODE 8240 W NAME EPA - method 8240
Date & Time Collected 12/19/90 08:35:00 Category WATER

AR101918

2-Hexanone	<10.0	10.0
4-Methyl-2-Pentanone	<10.0	10.0
Tetrachloroethene	<4.10	4.10
Toluene	<6.00	6.00
Chlorobenzene	<6.00	6.00
Ethyl Benzene	<7.20	7.20
Styrene	<5.00	5.00
Total Xylenes	<5.00	5.00

Notes and Definitions for this Report:

DATE RUN 01/15/91
ANALYST DVM
UNITS ug/liter

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Page 8 CEP, Inc. REPORT Work Order # 90-12-431

Received: 12/20/90 Results by Sample

SAMPLE ID WDC 1 FRACTION 01B TEST CODE 8270 W NAME EPA - method 8270

Date & Time Collected 12/19/90 08:35:00 Category WATER

AR10919

PARAMETER	RESULT	LIMIT
Phenol	<1.50	1.50
Bis(2-Chloroethyl) Ether	<5.70	5.70
2-Chlorophenol	<3.30	3.30
1,3-Dichlorobenzene	<1.90	1.90
1,4-Dichlorobenzene	<4.40	4.40
Benzyl Alcohol	<20.0	20.0
1,2-Dichlorobenzene	<1.90	1.90
Bis(2-Chloroisopropyl)Ether	<5.70	5.70
4-Methylphenol	<10.0	10.0
N-Nitroso-di-N-propylamine	<4.60	4.60
Hexachloroethane	<1.60	1.60
Nitrobenzene	<1.90	1.90
Isophorone	<2.20	2.20
2-Nitrophenol	<3.60	3.60
2,4-Dimethylphenol	<2.70	2.70
Benzoic Acid	<10.0	10.0
Bis(2-Chlorethoxy)Methane	<5.30	5.30
2,4-Dichlorophenol	<2.70	2.70
1,2,4-Trichlorobenzene	<1.90	1.90
Naphthalene	<1.60	1.60
4-Chloroanaline	<20.0	20.0
Hexachlorobutadiene	<0.900	0.900
4-Chloro-3-Methylphenol	<3.00	3.00
2-Methylnaphthalene	<10.0	10.0
Hexachlorocyclopentadiene	<10.0	10.0
2,4,6-Trichlorophenol	<2.50	2.75
2,4,5-Trichlorophenol	<10.0	10.0

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Received: 12/20/90

CEP, Inc. REPORT
Results by Sample

Work Order # 90-12-431
Continued From Above

SAMPLE ID WDC 1 FRACTION 01B TEST CODE 8270 W NAME EPA - method 8270
Date & Time Collected 12/19/90 08:35:00 Category WATER

2-Chloronapthalene	<10.0	10.0
2-Nitroanaline	<50.0	50.0
Dimethyl phthalate	<1.60	1.60
Acenaphthylene	<3.50	3.50
3-Nitroaniline	<50.0	50.0
Acenaphthene	<1.90	1.90
2,4-Dinitrophenol	<42.0	42.0
4-Nitrophenol	<50.0	50.0
Dibenzofuran	<10.0	10.0
2,4-Dinitrotoluene	<5.70	5.70
2,6-Dinitrotoluene	<1.90	1.90
Diethylphthalate	<22.0	22.0
4-Chlorophenylphenylether	<4.20	4.20
Fluorene	<1.90	1.90
4-Nitroaniline	<50.0	50.0
4,6-Dinitro-2-methylphenol	<24.0	24.0
N-Nitrosdiphenylamine	<10.0	10.0
4-Bromophenylphenylether	<1.90	1.90
Hexachlorobenzene	<1.90	1.90
Pentachlorophenol	<3.60	3.60
Phenanthrene	<5.40	5.40
Anthracene	<1.90	1.90
Di-n-butylphthalate	<2.50	2.50
Fluoranthene	<2.20	2.20
Pyrene	<1.90	1.90
Butyl benzyl phthalate	<2.50	2.50
3,3'-Dichlorobenzidine	<44.0	44.0
Benzo(a)anthracene	<7.80	7.80
bis(2-ethylhexyl)phthalate	<2.50	2.50
Chrysene	<2.50	2.50
Di-n-octyl phthalate	<2.50	2.50

AR101920

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Received: 12/20/90

CEP, Inc. REPORT

Results by Sample

Work Order # 90-12-431

Continued From Above

SAMPLE ID WDC 1

FRACTION 01B TEST CODE 8270 W NAME EPA - method 8270

Date & Time Collected 12/19/90 08:35:00 Category WATER

Benzo(b)fluoranthene	<4.80	4.80
Benzo(k)fluoranthene	<2.50	2.50
Benzo(a)pyrene	<2.50	2.50
Indeno(1,2,3-cd)pyrene	<3.70	3.70
Dibenzo(a,h)anthracene	<2.50	2.50
Benzo(g,h,i)perylene	<4.10	4.10
2-Methylphenol	<10.0	10.0

Notes and Definitions for this Report:

DATE RUN 01/09/91

ANALYST DVM

UNITS ug/liter

AR101921

APPENDIX E

Health and Safety Plan

Implementation Data

GSX Services, Inc.
Remedial Services Group
1415 Woodside Drive
P O Box 14964
Greensboro, NC 27415-4964
919-272-0185
919-373-0308 FAX#

To: Merle Baldwin

From: Gavin Burdge Gavin Burdge

Date: November 19, 1990

Subject: Background Air Sampling for Metals at the METCOA Job

"Breathing zone" air samples were collected on remedial workers at the METCOA job location November 3, 1990. These air samples were collected for 305 - 480 minutes to evaluate the potential background concentrations of airborne heavy metals.

Air samples were collected with calibrated personal air sampling pumps and 0.8 micron pore size, mixed cellulose ester, 37 mm diameter filters held in plastic cassettes. The sampling train was worn by select workers who were anticipated to have maximum potential exposures. One breathing zone sample was also collected on a worker whose duties included decontamination in the contamination reduction zone.

Air samples were collected and analyzed following standard methods of the National Institute for Occupational Safety and Health (NIOSH). All samples were sent by Federal Express to the Wisconsin Occupational Health Laboratory for analyses.

Air sampling was done during the mobilization phase. Work included obtaining background measurements of radioactivity, and initial mobilization and preparation of equipment (overpacks) in the exclusion zone. A minimum amount of time was spent in the exclusion zone. No dust generating activities were performed. Most time was spent outside the exclusion zone.

All sample results were reported as "no significant metals detected."

The following are the specific results:

Person	Sample Time	Results
Donald Hall Decon Area Only Decon Attendant	333 mins	No Significant Metals Detected
Clint Tillis Recovery Technician	314 mins	No Significant Metals Detected

METCOA November 3, 1990 Air Sampling

Person	Sample Time	Results
Frank Drayton Recovery Technician	305 mins	No Significant Metals Detected
Clark Alexander Recovery Technician	480 mins	No Significant Metals Detected

Enclosed are chain of custody documentation, calibration records and the Wisconsin Occupational Health Laboratory Report.

cc: Patricia Jennings
Stan Coates
David Spencer

STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN
CENTER FOR HEALTH SCIENCES

In Reply Please Refer to:
Wisconsin Occupational Hea:- .aboratory
979 Jonathon Drive
Madison, WI 53713
(608) 263-6550

November 15, 1990

Gavin Burdge
GSX
PO Box 14964
1415 Woodside Drive
Greensboro, NC 27415-4964

Dear Gavin:

Below are results for samples we received from you on November 8, 1990 for analysis:

Sample #	Lab #	Sample Results
110390-1	284689	No significant metals detected
110390-2	284690	No significant metals detected
110390-3	284691	No significant metals detected
110390-4	284692	No significant metals detected

If you have any questions regarding these results, please feel free to contact me.

Sincerely,

Terry Burk

Terry Burk, CIH, Chemist Supervisor III

TB/ms

GSX
INDUSTRIAL HYGIENE GROUP

CHAIN OF CUSTODY RECORD

GSX Services, Inc.—EA[illegible]GION
P.O. Box 14964 1415 Woo[illegible]
Greensboro, NC 27415-4964
(919) 272-0185

PROJECT NAME: METCOA

PROJ. # METCOA

PROJECT LOCATION: PULASKI PA. #311

STA. NO.	DATE	(mins) TIME	COMP	GRAB	DS9901 SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	SIZE: 37mm MCE 0.8μ Pres.	Flow Rate (l/min)	REMARKS
Donald Hall	11/3/90	333		✓	110390-1 284689	1	1	2.2	Dust Screen For Metals
Clint Tillis	11/3/90	314		✓	110390-2 284690	1	1	2.1	" " "
Frank Drayton	11/3/90	305		✓	110390-3 284691	1	1	1.9	" " "
Clark Alexander	11/3/90	480		✓	110390-4 284692	1	1	2.0	" " "

SAMPLED BY AND TITLE (SIGNATURE)	DATE/TIME	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
Gavin Budge Group I.H.	11/7/90 1420	Gavin Budge	11/7/90 1500	Fed Ex

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY LAB: (SIGNATURE)
	1		NOV	8 1990	[illegible]

REMARKS: BACKGROUND AIR MONITORING METCOA JOB / Metals

SAMPLE SHIPPED VIA: ☐ UPS ☐ BUS ☑ FEDERAL EXPRESS

DESIGNATED LABORATORY: Wisc. Occ. Health Lab.

AR101926

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location: METCOA, PULASKI PA.

Ambient Temperature:

Pressure: Std.

Pump #: G3558

Average Flow Rate:

Sampling Media-Calibration Method:

Metals

Comments:

work: Moving overpacks into building; sampling air for radioactivity

Background only

	G3558 w/ white cassette		3692 w/ white cassette	
Pre-Sample Calibration	1.) 2028	cc/min	2208	
	2.) 2024		2181	Frank
	3.) 2015	Clark	2164	Drayton
Nov. 3, 1990	4.) 2021	Alexander	2181	
	5.) 2019	moving drums	2170	Sampler
	6.) 2020	& assisting	2190	on 30850
Average Flow	2027			
	2021	m 08:50		
	2022	Lunch 1245	2177	123 mins + fault
Post-Sample Calibration	1.) 2043	cc/min	1671	
	2.) 2035	2030	1698	
	3.) 2041		1695	182 mins
	4.) 2037	off 1650	1720	
	5.) ~~2008~~		1635	1932
	6.) 2035		1701	
Average Flow:	2031		1.686	
	2038			

Calibrated By: [signature]

Date Nov. 3, 1990

598-7561 (11-89)

AR101927

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location: METCOA, Pulaski PA.

Ambient Temperature:

Pressure: Std ≈70°F

Pump #: D02203

Background only

Average Flow Rate:

Sampling Media-Calibration Method:

White Cassettes

Comments:

		D02203		D02209	
Pre-Sample Calibration	1.)		cc/min		
	2.)	2113		2206	
	3.)	2113		2292	Donald
	4.)	2106		2287	Hall
	5.)	2110		2240	Decon dress
	6.)	2105		2285	only
Average Flow		2047		2290	Shro. 33mins
Shro. 14 mins		2099	2097	2267	333mins
Post-Sample Calibration	1.)		cc/min		
	2.)	2097		2225	
	3.)	2096		2230	2242
	4.)	2094		2224	
	5.)	2093		2216	26°C
	6.)	2096		2209	TWA
Average Flow:		2094		2206	
		2095		2218	

Recovery technician moving drums Chit sampling/ ~~Blue~~ tillis runners

Calibrated By: GB **Date** Nov 3

596-7561 (11-89)

AR101928

GSX INDUSTRIAL HYGIENE GROUP

CHAIN OF CUSTODY RECORD

GSX Services, Inc.—EASTERN REGION
P.O. Box 14964 1415 Woodsi
Greensboro, NC 27415-4964
(919) 272-0185

PROJECT NAME: METCOA

PROJ. # METCOA

PROJECT LOCATION: PULASKI PA

STA. NO.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	SIZE: 37mm MCE 0.8μ Pre Sig	Flow Rate (l/min)	REMARKS
[illegible]	[illegible]	333		✓	110390-1	1	1	2.2	Dust Screen For Metals
[illegible]	[illegible]	314		✓	110390-2	1	1	2.1	" " "
[illegible]	[illegible]	305		✓	110390-3	1	1	1.9	" " "
[illegible]	[illegible]	480		✓	110390-4	1	1	2.0	" " "

SAMPLED BY AND TITLE (SIGNATURE)	DATE/TIME	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
[illegible]	11/7/90 1420	Gavin Burdge	11/7/90 1500	Fed EX

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY LAB: (SIGNATURE)

REMARKS: AIR MONITORING Met TOB / Metals

SAMPLE SHIPPED VIA: ☐ UPS ☐ BUS ☑ FEDERAL EXPRESS

DESIGNATED LABORATORY: Wisc. Occ. Lab.

GSX INDUSTRIAL HEALTH GROUP

CHAIN OF CUSTODY RECORD

GSX Services, Inc.—EA[illegible] GION
P.O. Box 14964 1415 Woo[illegible]
Greensboro, NC 27415-4964
(919) 272-0185

page ____ of ____

PROJECT NAME: ME COA RESTART SITE

PROJECT LOCATION: [illegible] PENNSYLVANIA

PROJ. #

STATION	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	SIZE	METALS								REMARKS
		0900			111290-01	1		X								8" TWA
		0900			111290-02	1		X								8" TWA
		0900			111390-01	1		X								—
		0900			111390-02	1		X								—
					111390-03	1			BLANK							BLANK

SAMPLED BY AND TITLE (SIGNATURE)	DATE/TIME	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
[illegible] Power Supervisor	111390 / 1300			
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY LAB: (SIGNATURE)

REMARKS

SAMPLE SHIPPED VIA
☐ UPS ☐ BUS
☐ FEDERAL EXPRESS

DESIGNATED LABORATORY

WHITE YELLOW

AR101930

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
METCOA PENNSYLVANIA	111290	0540	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE PERSONAL AREA OTHER:
RAD Sampling Drums	PERSONAL B.Z.
	SAMPLING DEVICE/PUMP NUMBE: #1 SKC PI PUMP

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
FORKLIFT OPER.	8-5 AM PM	111290	

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
MARCO DIAZ	453818839	METALS

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES X NO	MSA-APR	Full SHIFT	Temp 42°F Hum. 60%

OTHER PPE USED:	OTHER CONDITIONS
LEVEL C	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³)
111290-01	0900	1700	480	2. LPM	960 LPM		

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY
Pre 0745, 2. LPM Ast 1710, 2. LPM [illegible]	Pablo M Sanchez

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS
LEVEL C	

DISTRIBUTION:
FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY HAS
MEDICAL DEPARTMENT - GOLD

AR101931

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
METCOA PENNSYLVANIA	111290	0541	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE PERSONAL AREA OTHER:
RAD. Sampling Drums	PERSONAL B.Z.
	SAMPLING DEVICE/PUMP NUMBER: #2 SKC P.I. Pump

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
Sampling Drum Tec	8-45 AM	111290	

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
FRANK DRAYTON		METALS

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES X NO	MSH-HPR	Full shift	T. 42°F 60% H.

OTHER PPE USED:	OTHER CONDITIONS
LEVEL C.	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (f/cc)
111290-02	0900	1700	470	2. LPM	940. LPM		

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY
PRE 0740, 2. LPM POST 1705, 2. LPM JML	PHILIP M. SCHNEIDER

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION:
FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY HILL
MEDICAL DEPARTMENT - GOLD

AR101992

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA: METCOH PENNSYLVANIA	DATE: 111390	FORM NUMBER: [illegible] . 0544
OPERATION/TASK/ASSIGNMENT: RAD. Sampling Drums		SAMPLE TYPE: PERSONAL; OTHER: Personal
		SAMPLING DEVICE/PUMP NUMBER: #1 SKC
JOB CLASSIFICATION/TITLE: Forklift oper	SHIFT: 7-5	LAST CALIBRATION DATE: 111390; COLLE
EMPLOYEE NAME: REDOLFO DIAZ	SSN: 465 757636	CHEMICAL(S) SAMPLED: METALS
RESPIRATOR USED? YES X NO; TYPE: MSA Full Face APK; DURATION: Full 8 Shift		WEATHER CONDITIONS: T 38° F H 47
OTHER PPE USED: ~~Type~~ Level C		OTHER CONDITIONS:

SAMPLE IDENTIFICATION	SAMPLE TIME START	SAMPLE TIME STOP	SAMPLE TIME DURATION (Min.)	SAMPLE VOLUME CALIBRATED RATE	SAMPLE VOLUME LITERS	ANALYSIS CHEMICAL(S)	ANALYSIS CONCE (ppm)
111390-01	0700	1300	300	2. LPM	600 LPM		

SAMPLER CHECKED (TIME, INITIALS): Pre 0740 ~ 2. LPM Post 1313 ~ 2. LPM [signature]

SAMPLED BY: PHILLIP M SCHREIBE

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS: LEVEL C

ADDITIONAL INFORMATION/COMMENTS:

DISTRIBUTION: FACILITY MANAGER - WHITE; INDUSTRIAL HYGIENE - YELLOW; FACILITY HAS; MEDICAL DEPARTMENT - GOLD

AR101933

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
METCOA PENNSYLVANIA	111390	0646	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE PERSONAL AREA OTHER:
Rad Sampling of Drums	PERSONAL B.Z.
	SAMPLING DEVICE/PUMP NUMBER: #2 SKC P1 PUMP

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
FORKLIFT OPR.	8-5	111390	

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
ERIC BRANCH	519654457	METALS

RESPIRATOR USED? YES X NO	TYPE	DURATION	WEATHER CONDITIONS
	MSA Fullface APR.	7° Shift	T 30°F H 48%

OTHER PPE USED:	OTHER CONDITIONS
LEVEL - C	

SAMPLE IDENTIFICATION	SAMPLE TIME START	STOP	DURATION (Min.)	SAMPLE VOLUME CALIBRATED RATE	LITERS	ANALYSIS CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (f/cc)
111390-02	0800	1300	300	2. LPM	600 LPM		

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY
Pre 0742 m 2. LPM Post 1310 m 2. LPM	Phillip M Schneider

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS
Level C	

DISTRIBUTION:
FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY HAS PINK
MEDICAL DEPARTMENT

AR101934

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
MIFTON PENNSYLVANIA	111390	0545	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE PERSONAL AREA OTHER:
BLANK	SAMPLING DEVICE/PUMP NUMBER

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED

RESPIRATOR USED? YES NO	TYPE	DURATION	WEATHER CONDITIONS
OTHER PPE USED:			OTHER CONDITIONS

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³)
111390-03	BLANK						

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY
	PHILIP M. SCHILLER

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION: FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW

AR101935

GSX

GSX Services, Inc.
Remedial Services Group
1415 Woodside Drive
P.O. Box 14964
Greensboro, NC 27415-4964
919-272-0185
919-373-0308 FAX#

To: Merl Baldwin

From: Gavin Burdge

Subject: Industrial Hygiene Air Sampling at Metcoa

Date: December 13, 1990

Industrial hygiene air samples were collected November 12, and 13, 1990 by Phillip Schreiber, Laidlaw Environmental Services Health and Safety Officer/Project Supervisor, and David Spencer, LES Regional Health and Safety Manager at the Metcoa Remedial Services' job location. These air samples were taken for a full 8-hour work shift to evaluate potential employee exposure to airborne heavy metal dusts. Air samples were collected in the "breathing zone" of select workers during normal work activities in the drum storage building.

The air samples are 8-hour time-weighted average concentrations. All samples were sent to the Wisconsin Occupational Health Laboratory for analyses. Calibrated personal air sampling pumps were used to collect a known amount of air onto 37 mm mixed cellulose ester filters. The filters were digested using an appropriate acid or acids and then diluted with distilled water to a known volume. Samples were then run on a Jarrell-Ash Plasma Emission Spectrograph for metals.

Metals detected in the air samples included cadmium, chromium copper, iron, and nickel. The following are the concentrations detected: (All sample results are given in milligrams of substance per cubic meter of air (mg/m^3).

Sample	Cadmium	Chromium	Copper	Iron	Nickel
111290-1	0.008	0.002	0.006	0.02	0.012
111290-2	0.01	0.002	0.007	0.028	0.015
111390-1	< 0.002	< 0.001	< 0.002	< 0.008	< 0.002
111390-2	0.012	0.003	0.007	0.032	0.017

Iron is a nuisance dust. Chromium is the total detected and the analytical method does not distinguish between hexavalent, the more toxic form of chromium. Nickel is listed by the American Conference of Governmental Industrial Hygienists (ACGIH) as a confirmed human carcinogen. Cadmium is listed by ACGIH as a suspected carcinogen.

The following are the ACGIH Threshold Limit Values as 8-hour time-weighted average concentrations:

Substance	TLV-TWA (mg/m3)
Cadmium	0.01 (90/91 Notice of Intended Change)
Chromium	0.5 (Chromium metal)
Copper	1
Iron	Nuisance Dust
Nickel	0.05 (90/91 Notice of Intended Change)

Note: The ACGIH has proposed lowering the TLVs of cadmium and nickel (90/91 Notice of Intended Changes) from 0.05 mg/m^3 and 1 mg/m^3 respectively.

A sample November 12, 1990, equaled the recommended 0.01 mg/m^3 TLV. A nickel concentration of 0.2 mg/m^3 on November 13, 1990 was a little less than half of the TLV.

Personnel should continue wearing full-face raespirators with high efficiency particulate air (HEPA) filters during work in the exclusion zone. Personnel also should wash their hands and face as part of the decontamination procedures after leaving the exclusion zone.

STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN
CENTER FOR HEALTH SCIENCES

In Reply Please Refer to:
Wisconsin Occupational Health Laboratory
979 Jonathon Drive
Madison, WI 53713
(608) 263-6550

December 10, 1990

Gavin Burdge
GSX Services - Laidlaw
PO Box 14964
1415 Woodside Drive
Greensboro, NC 27415-4964

RE: Metcoa Restart Site

Dear Gavin:

Below are results for samples we received from you on November 27, 1990 for analysis:

Substance		Cadmium	Chromium	Copper	Iron	Nickel
Sample	Lab #					
111290-						
01	287055	.008	.002	.006	.02	.012
02	287056	.01	.002	.007	.028	.015
111390-						
01	287057	<.002-ND	<.001-ND	<.002	<.008	<.002
02	287058	.012	.003	.007	.032	.017
03	287059	<1.25-ND	<.63-ND	<.002	.017	<1.25-ND

Samples reported out in mg/m3 except blank - ug/filter

If you have any questions regarding these results, please feel free to contact me.

Sincerely,

Terry Burk

Terry Burk, Chemist Supervisor III, CIH

TB/ms

METALS SAMPLES RESULTS
Received on NOV. 27, 1990

THE FILTERS WERE DIGESTED USING AN APPROPRIATE ACID OR ACIDS AND THEN DILUTED WITH DISTILLED WATER TO A KNOWN VOLUME. SAMPELS WERE THEN RUN ON A JARRELL-ASH PLASMA EMISSION SPECTROGRAPH FOR METALS. THOSE WITH APPRECIABLE CONCENTRATIONS ARE REPORTED.

nalysts. Shakker Amer

Date reported DEC. 10, 1990

WISCONSIN OCCUPATIONAL HEALTH LABORATORY
STATE LABORATORY OF HYGIENE

GSX
INDUSTRIAL HYGIENE GROUP

#371

CHAIN OF CUSTODY RECORD

GSX Services, Inc.—EAS[illegible]ION
P.O. Box 14964 1415 Woo[illegible]
Greensboro, NC 27415-4964
(919) 272-0185

1 of 1

PROJECT NAME: [redacted]

PROJ. #

PROJECT LOCATION: Pulaski Pennsylvania

DS 9901

STA. NO.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	METALS - DUST		REMARKS
	111290	S 0900		X	F 1700 111290-01 287055	1	X		8° TWA - 960 liters
	111290	S 0900		X	F 1700 111290-02 287056	1	X		8° TWA 960 liters
	111390	S 0800		X	F1300 111390-01 287057	1	X		— 600 liters
	111390	S 0800		X	F1300 111390-02 287058	1	X		— 600 liters
	111390	N/A			111390-03 287059	1	X	BLANK	BLANK

SAMPLED BY AND TITLE (SIGNATURE)	DATE/TIME	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
M Schreiber Project Supervisor	111390 1300	David W Spener	11-26-90 9:00	Federal Express

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY LAB: (SIGNATURE)
				2:19 pm NOV 27 1990	[illegible] McGary

REMARKS: Send Report and bill to Gavin Burdge in Greensboro, NC

SAMPLE SHIPPED VIA: ☐ UPS ☐ BUS ☒ FEDERAL EXPRESS

DESIGNATED LABORATORY

AR101940

DEC 13 '90 10:22 LAIDLAW ENVIRONMENTAL SERVICES

P.6

[illegible] YELLOW [illegible] COPY TO FIELD SUPPORT OFFICE

990-7562 (11-89)

RADIOACTIVE

AIR SAMPLING REPORT

The following formulas were used to calculate the true concentration of long lived nuclides collected on the high volume air samples;

$$C = \frac{C2 - C1\, e^{-\lambda \Delta t}}{1 - e^{-\lambda \Delta t}}$$

Where: C2 = 24 hour count(t2)

C1 = 4 hour count (t1)

Δt = time t2-t1

If measurements are made exactly at 4 hours & 24 hours then;

$t = 20$ and $e^{-\lambda \Delta t} = 0.271$

Therefore:

$$C = \frac{C2 - 0.271\, C1}{0.729}$$

$$\text{Concentration} = \frac{C}{E\, m\, R}$$

Where: Concentration = disintergrations per minute/ meter^3

C = counts/minute

m = # of minutes of sampling

R = sampling rate in meter^3/minute

E = efficency of counter

or:

$$\text{Concentration} = \frac{C \times 10^{-12}}{2.22\, E\, m\, R}$$

Where Concenration = microCuries/ centimeter^3

SAMPLE	DATE	TIME	CFM	SAMPLE TIME	COUNT t0	COUNT t1	COUNT t2	E	DPM	CONCENTRAT
22	4/10/91	0843	35	5 minutes	145	3	0	21	0	0 uC/cc
23	4/12/91	0236	35	5 minutes	36	0	0	21	0	0 uCi/cc
24	4/13/91	0738	35	5 minutes	108	4	0	21	0	0 uCi/cc
25	4/14/91	0747	35	5 minutes	100	0	0	21	0	0 uCi/cc
26	4/15/91	073[illegible]	35	5 minutes	83	0	0	21	0	0 uCi/cc

RADIOACTIVE

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Where Concenration = microCuries/ centimeter^3

SAMPLE	DATE	TIME	CFM	SAMPLE TIME	COUNT t0	COUNT t1	COUNT t2	E	DPM	CONCENTRAT
1	10/31/90	1438	35	5 minutes	406	23	1	0.36	0	0 uCi/cc
2	11/1/90	1121	35	5 minutes	446	11	0	0.33	0	0 uCi/cc
3	11/3/90	1134	35	5 minutes	341	14	0	0.37	0	0 uCi/cc
4	11/3/90	1153	35	5 minutes	364	21	0	0.37	0	0 uCi/cc

RADIOACTIVE

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or:

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Where Concenration = microCuries/ centimeter^3

SAMPLE	DATE	TIME	CFM	SAMPLE TIME	COUNT t0	COUNT t1	COUNT t2	E	DPM	CONCENTRA
5	3/12/91	1107	35	5 minutes	-	-	1	0.2	5	1.7×10^{-14}
6	3/14/91	1535	35	5 minutes	1	0	0	0.2	0	0 uCi/cc
7	3/13/91	1514	35	5 minutes	0	0	0	0.2	0	0 uCi/cc
8	3/14/91	1547	35	5 minutes	22	0	0	0.2	0	0 uCi/cc
9	3/12/91	1749	35	5 minutes	0	0	0	0.2	0	0 uCi/cc
10	3/13/91	2015	35	5 minutes	0	0	0	0.2	0	0 uCi/cc
11	3/14/91	2050	35	5 minutes	0	0	0	0.2	0	0 uCi/cc

RADIOACTIVE

AIR SAMPLING REPORT

The following formulas were used to calculate the true concentration of long lived nuclides collected on the high volume air samples;

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$$\text{Concentration} = \frac{C \times 10^{-12}}{2.22\, E\, m\, R}$$

Where Concenration = microCuries/ centimeter^3

SAMPLE	DATE	TIME	CFM	SAMPLE TIME	COUNT t0	COUNT t1	COUNT t2	'E	DPM	CONCENTRA
12	3/15/9	0934	35	5 minutes	25	2	0	0.19	0	0 uCi/c
13	3/15/9	1048	35	5 minutes	30	0	0	0.19	0	0 uCi/c
14	3/19/9	0956	35	5 minutes	68	7	0	0.19	0	0 uCi/c
15	3/23/9	0926	35	5 minutes	124	12	3	0.19	15	0 uCi/c

RADIOACTIVE

AIR SAMPLING REPORT

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C1 = 4 hour count (t1)

Δt = time t2-t1

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Therefore:

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Where: Concentration = disintergrations per minute/ meter^3

C = counts/minute

m = # of minutes of sampling

R = sampling rate in meter^3/minute

E = efficency of counter

or:

$$\text{Concentration} = \frac{C \times 10^{-12}}{2.22\, E\, m\, R}$$

Where Concenration = microCuries/ centimeter^3

SAMPLE	DATE	TIME	CFM	SAMPLE TIME	COUNT t0	COUNT t1	COUNT t2	E	DPM	CONCENTRATI
16	3/6/91	0848	35	5 minutes	276	4	0	.20	0	0 uCi/cc
17	4/6/91	1220	35	5 minutes	100	0	0	.20	0	0 uCi/cc
18	4/7/91	0658	35	5 minutes	551	0	0	.20	0	0 uCi/cc
19	4/7/91	1045	35	5 minutes	49	0	0	.20	0	0 uCi/cc
20	4/9/91	0740	35	5 minutes	150	0	0	.21	0	0 uCi/cc
21	4/9/91	1057	35	5 minutes	106	0	0	.21	0	0 uCi/cc

RADIOACTIVE

AIR SAMPLING REPORT

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m = # of minutes of sampling

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SAMPLE	DATE	TIME	CFM	SAMPLE TIME	COUNT t0	COUNT t1	COUNT t2	E	DPM	CONCENTRATI
22	4/10/91	0843	35	5 minutes	145	3	0	21	0	0 uC/cc
23	4/12/91	0236	35	5 minutes	36	0	0	21	0	0 uCi/cc
24	4/13/91	0738	35	5 minutes	108	4	0	21	0	0 uCi/cc
25	4/14/91	0747	35	5 minutes	100	0	0	21	0	0 uCi/cc
26	4/15/91	0735	35	5 minutes	83	0	0	21	0	0 uCi/cc

AR101946

RADIOACTIVE

AIR SAMPLING REPORT

The following formulas were used to calculate the true concentrat of long lived nuclides collected on the high volume air samples;

$$C = \frac{C2 - C1\, e^{-\lambda \Delta t}}{1 - e^{-\lambda \Delta t}}$$

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C = counts/minute

m = # of minutes of sampling

R = sampling rate in meter^3/minute

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24	4/13/91	0738	35	5 minutes	108	4	0	21	0	0 uCi/cc
25	4/14/91	0747	35	5 minutes	100	0	0	21	0	0 uCi/cc
26	4/15/91	073[illegible]	35	5 minutes	83	0	0	21	0	0 uCi/cc

AR101947

Air Sample Locations

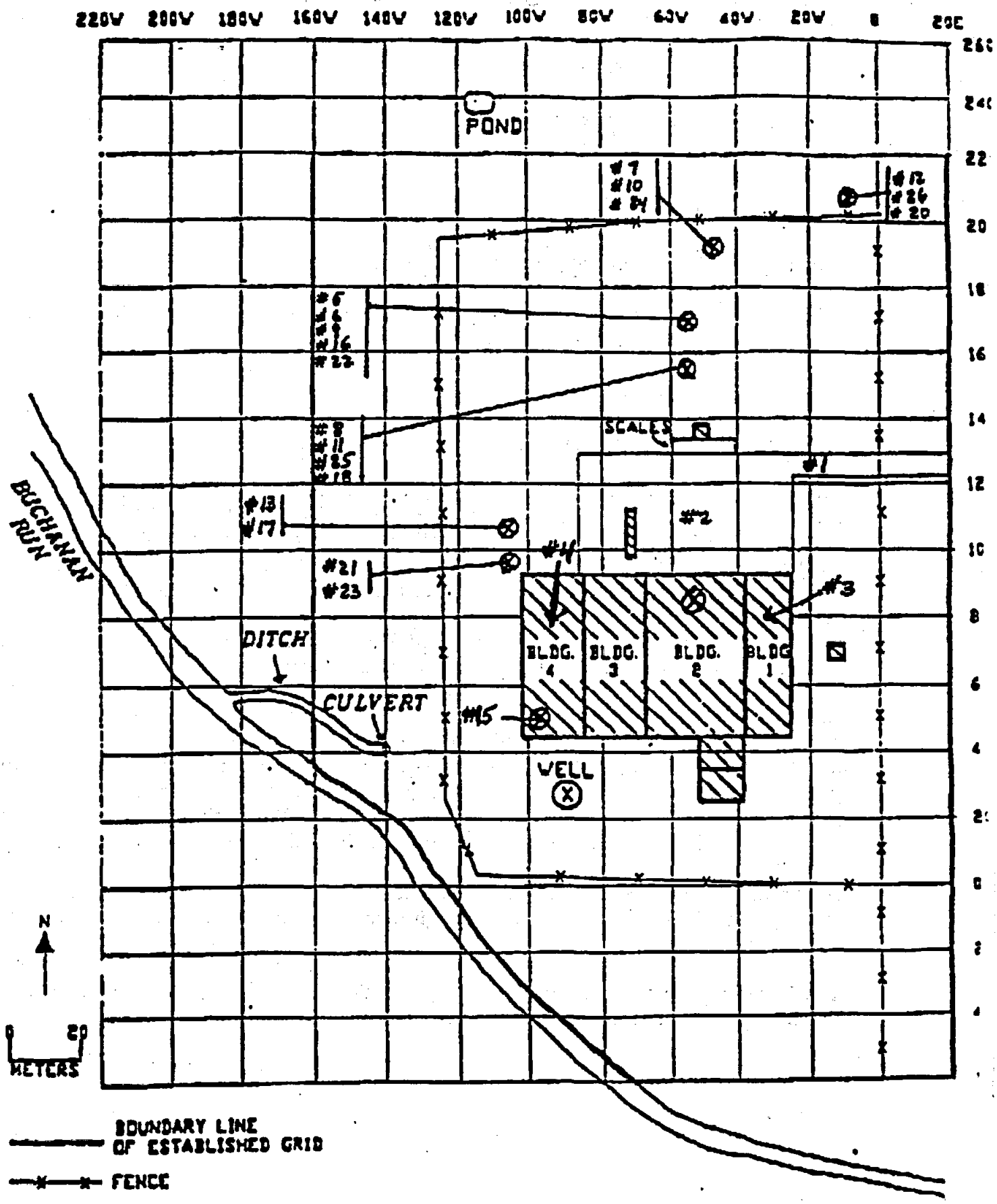

FIGURE 2: Grid Established For Survey Reference

LAIDLAW ENVIRONMENTAL SERVICES

Field Services

To: Merl Baldwin

From: Gavin Burdge

Subject: **Air Samples Collected by Hardy Ratcliff March 13 - April 9, 1991, at the METCOA Job Location**

Date: May 6, 1991

Introduction and Description of Work

Air samples were collected March 13, 14, 15, 20, 23, and April 7 & 9, 1991, at the METCOA Restart Project. Air samples were taken by Hardy Ratcliff, TRICIL/LAIDLAW ENVIRONMENTAL SERVICES Site Health and Safety Officer, in the "breathing zone" (BZ) of select persons during normal work activities. Area samples were also taken at various locations during remedial work. Prior personal air samples collected November 12 & 13, 1991, detected cadmium, chromium, copper, iron and nickel. Cadmium was detected in some of the samples at the recommended Threshold Limit Value concentration (0.01 mg/m^3; 0.01 milligrams of cadmium per cubic meter of air).

Air sampling pumps were calibrated with a primary standard. Know air volumes were collected and samples were analyzed following standard methods of the National Institute for Occupational Safety and Health (NIOSH). Air samples were collected on 0.8 micron pore size mixed cellulose ester filters and analyzed by a Jarrell Ash Emission Spectrometer (see attachment). All air samples were analyzed by the Wisconsin Occupational Health Laboratory which is accredited by the Amercian Industrial Hygiene Association.

All air sample results are for the collected time period. No assumptions are made for the unsampled periods. All concentrations are given in milligrams of substance per cubic meter of air, mg/m^3.

The laboratory report, calibration records, analytical method information, and exposure monitoring report forms are included as attachments to this report.

Laidlaw Environmental Services (TS), Inc.
1415 Woodside Drive Post Office Box 14964 Greensboro, North Carolina 27415.4964
Phone 919.272.0185 Fax 919.373.0308

Air Samples Collected by Hardy Ratcliff
March 13 - April 9, 1991
at the METCOA Job Location

Results

Location/ Date & Sample Time	Substance	Concentration
Area Sample During loading of Soil from Stockpile #1 March 13, 1991 515 minutes	No significant Metals Detected	
Area Sample Warehouse March 13, 1991 515 minutes	Cadmium Iron Lead	0.008 mg/m³ 0.013 mg/m³ 0.002 mg/m³
BZ TRICIL Employee Relocating Drums in Warehouse March 13, 1991 160 minutes	Cadmium	0.011 mg/m³
BZ TRICIL employee Operating Forklift in Warehouse March 13, 1991 380 minutes	No Significant Metals Detected	
BZ TRICIL Employee Operating Forklift in Warehouse March 13, 1991 380 minutes	Cadmium	0.004 mg/m³
Area Sample North of Warehouse near Slag Pile March 14, 1991 500 minutes	No Significant Metals Detected	

AR101950

Air Samples Collected by Hardy Ratcliff
March 13 - April 9, 1991
at the METCOA Job Location

Area Sample 15 ft. downwind of Soil Pile #4 March 14, 1991 500 minutes	Cadmium	0.005 mg/m³
Area Sample March 15, 1991 420 minutes	No Significant Metals Detected	
Area Sample Placed at Scale during Staging of Drums March 20, 1991 375 minutes	Cadmium Copper Iron	0.012 mg/m³ 0.007 mg/m³ 0.024 mg/m³
Area Sample Near Pile #1 while being Transferred March 23, 1991 464 minutes	Cadmium	0.005 mg/m³
Area Sample Northeast of Pile #4 April 7, 1991 140 minutes	No Significant Metals Detected	
Area Sample April 9, 1991 535 minutes	No Significant Metals detected	

<u>Discussion</u>

Cadmium, copper, lead, and iron were detected during this air sampling. Copper, lead, and iron concentrations detected were hygienically insignificant. Cadmium concentrations were none detected to 0.012 mg/m³. The highest concentration of cadmium detected was an area sampled during drum staging.

AR101951

Air Samples Collected by Hardy Ratcliff
March 13 - April 9, 1991
at the METCOA Job Location

Two (2) of twelve (12) air samples for cadmium equalled or slightly exceeded the recommendation of the American Conference of Governmental Industrial Hygienists (ACGIH) for 8-hour time-weighted average occupational exposures. These concentrations are called Threshold Limit Values (TLVs). The ACGIH lists cadmium in the 1990/1991 TLV book in the "Notice of Intended Changes." The proposed TLV for cadmium is 0.01 mg/m^3.

All personnel wore personal protective equipment including safety shoes/boots, booties, gloves, Tyvek coveralls and full-face respirators with high efficiency particulate air (HEPA) cartridges thereby providing adequate protection against exposure to these contaminants.

AR101952

STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN
CENTER FOR HEALTH SCIENCES

In Reply Please Refer to:
Wisconsin Occupational Health Laboratory
979 Jonathon Drive
Madison, WI 53713
(608) 263-6550
FAX (608) 263-6551

May 2, 1991

Mr. H. Radcliff, Site Safety Office
Laidlaw Env. Services
Rt 551 North
Pulaski, PA 16143

RE: Metcoa Restart Site

Dear Mr. Radcliff:

Below are results for samples we received from you on April 23, 1991 for analysis:

Substance		Cadmium	Copper	Iron	Lead
Sample #	Lab #				
40991	306828	No significant metals detected			
40791	306829	No significant metals detected			
32391	306830	0.005 mg/m3			
2091	306831	0.012 mg/m3	0.007 mg/m3	0.024 mg/m3	
31491A	306832	0.005 mg/m3			
31391	306833	No significant metals detected			
313191C	306834	0.008 mg/m3		.013 mg/m3	.002 mg/m3
31391D	306835	0.011 mg/m3			
31391E	306836	No significant metals detected			
31391AA	306837	0.004 mg/m3			
31491B	306838	No significant metals detected			
31591A	306839	No significant metals detected			

Samples were screened for the following metals: Al, Ca, Cd, Co, Cr, Cu, Fe, Mn, Mg, Mo, Ni, Pb, Sb, Se, Sn and Zn. Only these reported above were present in detectable quantities.

If you have any questions regarding these results, please feel free to contact me.
Sincerely,

Terry Burk

Terry Burk, CIH,
Assistant Director

IDUSTRIAL HYGIENE GROUP

P.O. Box 14964 1415 Woodside Dr.
Greensboro, NC 27415-4964
(919) 272-0185

CHAIN OF CUSTODY RECORD

page ____ of ____

PROJECT NAME: METCOA RESTART SITE

PROJ. # 23

PROJECT LOCATION: Pulaski, Pa. #311

STA. NO.	DATE	TIME (min)	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	SIZE	37 mm filter cassette Flow Rate L/min	Liters	REMARKS
					DS 9901					
Area Sample	4/3/91	535		✓	40991 306828	1		2.06	1102	Dust Screen for METALS
Area Sample	4/1/91	140		✓	40791 306829	1		2.02	288	"
Area Sample	3/22/91	464		✓	32391 306830	1		2.05	951	"
Area Sample	3/20/91	375		✓	32091 306831	1		2.06	772	"
Area Sample	3/14/91	500		✓	31491-A 306832	1		2.04	1020	"
Area Sample	3/13/91	515		✓	31391-B 306833	1		1.99	1025	"
Area Sample	3/13/91	515		✓	31391-C 306834	1		1.98	1020	"
Sample Dropper	3/13/91	160		✓	31391-D 306835	1		1.97	315	"
R. Diaz	3/13/91	380		✓	31391-E 306836	1		2.02	768	"
M. Diaz	3/13/91	380		✓	31391-AA 306837	1		1.98	752	"
Area Sample	3/14/91	500		✓	31491-B 306838	1		2.02	1010	"
Area Sample	3/13/91	430		✓	31591-A 306839	1		2.06	865	"

Bill to: P.O. Box 14964
Greensboro, NC 27415
ATTN MARGIE GIRGIS
} Marvin Blendge

SAMPLED BY AND TITLE (SIGNATURE)	DATE/TIME	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
Site Safety Officer	4/23/91 1500		4/23/91 1630	Fed Ex

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY LAB: (SIGNATURE)
			3:25pm	APR 23 1991	

REMARKS: Background Air Monitoring, Metcoa Restart Site, Metals

SAMPLE SHIPPED VIA: ☐ UPS ☐ BUS ☒ FEDERAL EXPRESS

DESIGNATED LABORATORY

DISTRIBUTION: WHITE — ORIGINAL ACCOMPANIES SHIPMENT. YELLOW — CLIENT PINK — COPY 1 SUPPORT OFFICE.

52 (11-90)

AR101954

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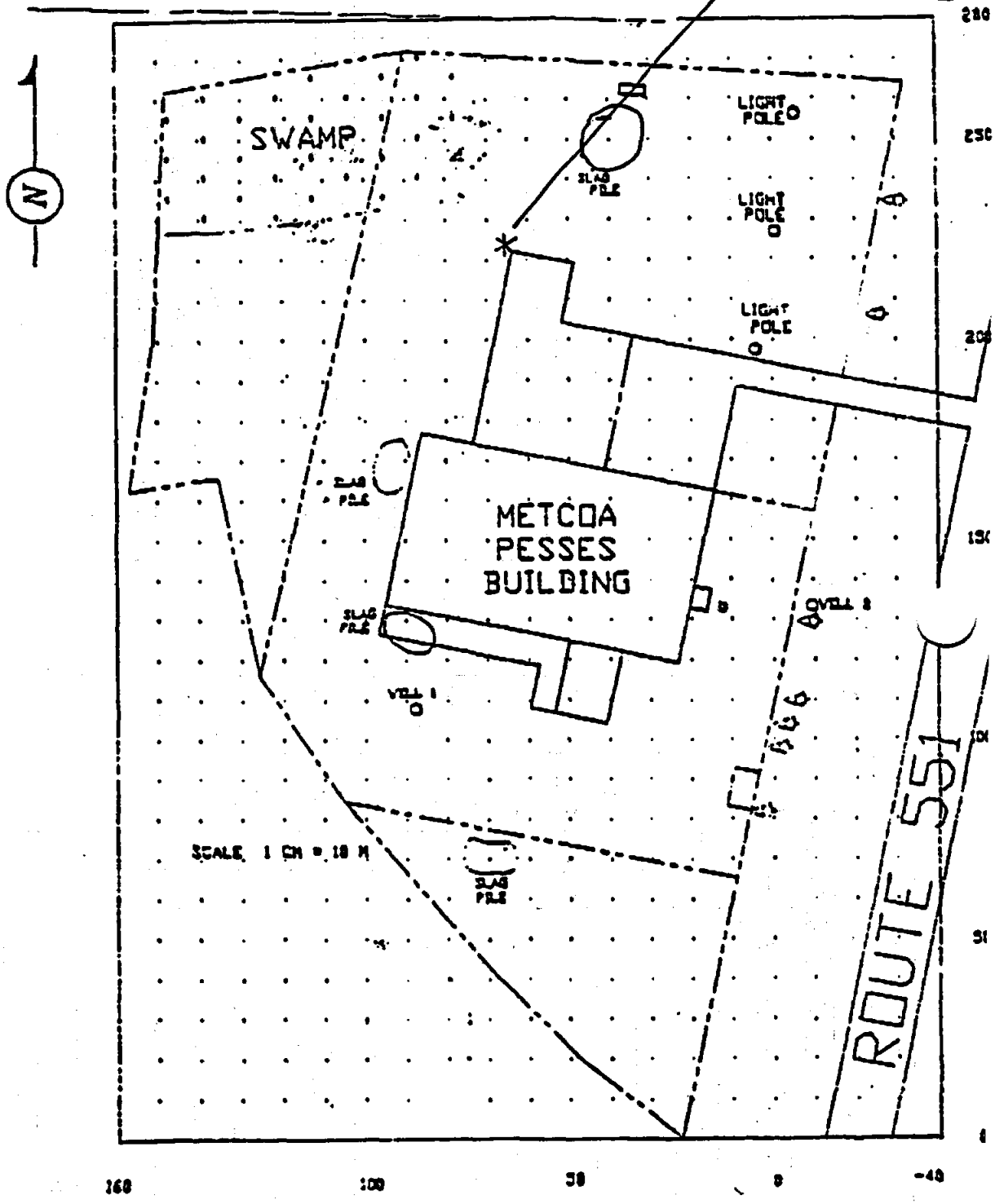
To Joe Carter	From Banipal
Co. TAT Region III / UTL	Co. TAT Region III CH.
Dept.	Phone # (609) 482-0222
Fax # (304) 233-7983	Fax #

SAMPLE # 31491-A
3/14/91



METCOA RESTART SITE
PULASKI, LAWRENCE CO., PA.
AUGUST 20, 1990

AR101955

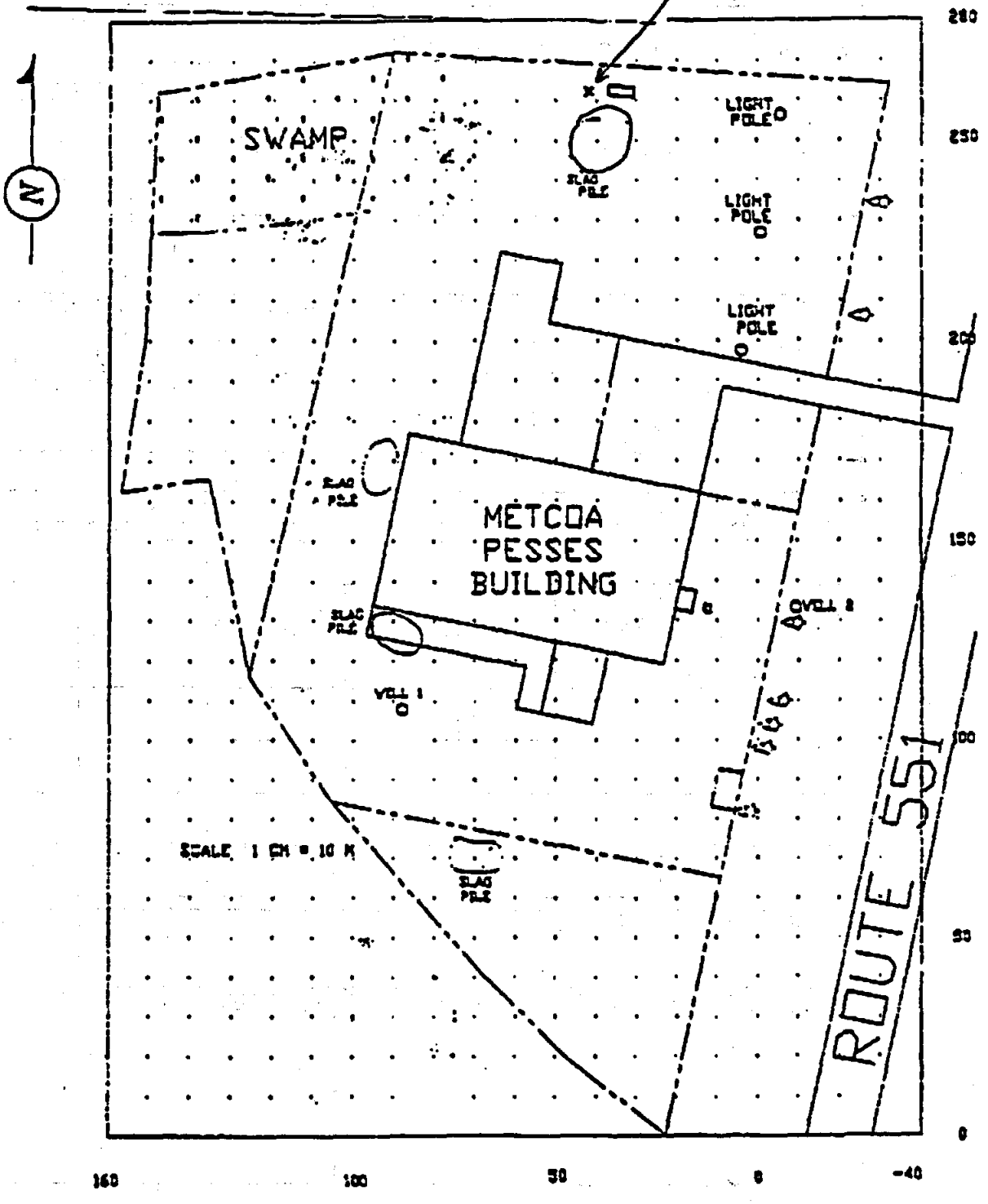
SENT BY:WESTON/TAT

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

To Joe Carter	From Banipal
Co. TAT Region III/WL	Co. TAT Region III CH.
Dept.	Phone # (609) 482-6222
Fax # (304) 233-7983	Fax #

Sample # 31391-B

3/13/91



METCOA RESTART SITE
PULASKI, LAWRENCE CO., PA.
AUGUST 20, 1990

AR101956

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
Metcoa Destart	3/13/91	C597	1 OF

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE PERSONAL / OTHER: AREA
Loading Soil for transport	SAMPLING DEVICE/PUMP NUMBER

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
		3/13/91	Millipore

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
		Metals

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES NO	MSA		Overcast

OTHER PPE USED:	OTHER CONDITIONS
Tyvec, Boots Gloves	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (f/cc)
31391 B	10:00 A.			2.0 L/min			

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION:

FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY H&S-PINK
MEDICAL DEPARTMENT-GOLD

596-7570 (11-89)

AR101957

GSX

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
MetCoa, Pulaski Pa	3-12-91	C597	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE: PERSONAL / AREA / OTHER:
Loading Soil from Pile # 1 into Williams Bros Roll off Box	SAMPLING DEVICE/PUMP NUMBER: Grab Sample

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
N/A			Fiberglas Filter

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
H Ratcliff	457-74-9324	Thorium

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES / NO	MSA	10 min	Clear, Temp 48° Wind Nile

OTHER PPE USED:	OTHER CONDITIONS
Tyvec, Gloves, Boots	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (f/cc)
AS1291	4:09 pm	4:14 pm	5 min	35 cfm		Thorium	

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY
3:00 pm HR	H. Ratcliff

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION:

FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY H&S-PINK
MEDICAL DEPARTMENT-GOLD

S96-7570 (11-89)

AR101958

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
Metcoa Restart Dulaski Pa	3-13-91	1597	1 OF

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE / OTHER:	PERSONAL	AREA
Loading Soil from Pile #1 for Shipment to treatment Facility			✓

SAMPLING DEVICE/PUMP NUMBER: Grab Sampler

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
N/A			

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
H. Ratcliffe	487-74-9374	

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES (circled) NO	MSA	10 min	Overcast Temp 40° Wind N/A

OTHER PPE USED:	OTHER CONDITIONS
Tyvec, Gloves, Boots	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (f/cc)
AS 1391	11:02	11:07	5	35 cfm			

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION:

FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY H&S-PINK
MEDICAL DEPARTMENT-GOLD

596-7570 (11-89)

AR101959

GSX

GSX SERVICES, INC.

Sample No. 32091

AIR SAMPLING/CALIBRATION RECORD

START: 10:15
STOP: 4:30
375 min

Job Location: METCO

Ambient Temperature:

Pressure:

Pump #: 14498

Average Flow Rate: 2.06 L/min

Sampling Media-Calibration Method:

Comments: Area Sample placed at Scale during Staging of Rad Drums.

Pre-Sample Calibration

1.) 2070 cc/min
2.) 2069
3.) 2063
4.) 2062
5.) 2054
6.) 2070

Average Flow 2065 – 2.06 L/min

Post-Sample Calibration

1.) 2058 cc/min
2.) 2073
3.) 2052
4.) 2056
5.) 2070
6.) 2072

Average Flow: 2064 – 2.06 L/min

Calibrated By: [illegible] Date 3/20/91

596-7561 (11 89)

AR101960

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

31591-A

Job Location: METCO A

START - 9:30

Ambient Temperature: 70°

STOP - 4:30

420 min

Pressure:

Pump #: 14498

Average Flow Rate: 2.06 L/min

Sampling Media-Calibration Method:

Comments: Area Sample 20 FT S.W pile #4 while being loaded

Pre-Sample Calibration

1.) 2070 cc/min
2.) 2063
3.) 2069
4.) 2062
5.) 2054
6.) 2070

2.06 L/m

Average Flow

Post-Sample Calibration

1.) 2072 cc/min
2.) 2070
3.) 2073
4.) 2058
5.) 2056
6.) 2052

Average Flow:

Calibrated By: HR

Date 3/15/91

598-7581 (11-89)

AR101961

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

31491-B

Job Location:

Ambient Temperature: 70°

Pressure:

Pump #: 14491U

Average Flow Rate: 2.02

Sampling Media-Calibration Method:

Comments: Area Sample Whse during drum Sampling

Pre-Sample Calibration

1.) 2014 cc/min
2.) 2005
3.) 2008
4.) 2005
5.) 2001
6.) 2004 2.04 l/min

2005

Average Flow

Post-Sample Calibration

1.) 2015 cc/min
2.) 2020
3.) 2096
4.) 2091
5.) 2080
6.) 2081

2.04 l/min

Average Flow:

Calibrated By: [signature] Date 3/04/91

598-7561 (11-89)

AR101962

GSX

GSX SERVICES, INC.

START - 8:10 AM
STOP: 4:30 PM

AIR SAMPLING/CALIBRATION RECORD

Job Location: METCON RESTART

Sample # 31491 - A

Ambient Temperature: 70°

Pressure:

Pump #: 14498U

Average Flow Rate: 2.0 L/min

Sampling Media-Calibration Method:

Comments: Area Sample 15' downwind of Soil pile*

Pre-Sample Calibration

1.) 2015 cc/min
2.) 2005
3.) 2008
4.) 2005
5.) 2003
6.) 2004

Average Flow 2007 - 2.0 L/min

Post-Sample Calibration

1.) 2115 cc/min
2.) 2103
3.) 2096
4.) 2092
5.) 2087
6.) 2080

Average Flow: 2096 - 2.09 L/min

Calibrated By: [signature] Date 3/14/91

508-7561 (11-89)

AR101963

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 8.10 AM
STOP - 4:45 PM
515 min

Job Location: METCOA RESTART, Pulaski PA.

Ambient Temperature: 70°

Pressure:

Pump #: 14498 U

Average Flow Rate: 1.99 L/min

Sampling Media-Calibration Method:

Comments: SAMPLING for METALS during loading of Soil FROM STOCKPILE No. 1 AREA SAMPLE.

SAMPLE No: 31391B

Pre-Sample Calibration

1.) 1984 cc/min
2.) 2019
3.) 2001
4.) 2000
5.) 2000
6.) 1996

Average Flow 2002 / 2.00 L/MIN

Post-Sample Calibration

1.) 1979 cc/min
2.) 1982
3.)
4.) 1975
5.) 1977
6.) 1965

Average Flow: 1976 1.98 L/min

Calibrated By: HH Date 8/13/91

500-7561 (11-89)

AR101964

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 8:10 AM
STOP - 4:45
515 min

Job Location: METCO

Ambient Temperature: 70°

Pressure:

Pump #: 14499 U

Average Flow Rate: 1.98 L/min

Sampling Media-Calibration Method:

Comments:
WAREHOUSE AREA (BACKGROUND) SAMPLING. Sample # 3139IC

Pre-Sample Calibration
1.) 1999 cc/min
2.) 1996
3.) 1996
4.) 1999
5.) 2000
6.) 2008

Average Flow 2000 2.0 L/m.

Post-Sample Calibration
1.) 1999 cc/min
2.) 1988
3.) 1991
4.) 2000
5.) 1991
6.) 1988

Average Flow: 1993 - 1.99 L/min

Calibrated By: HL Date 3/17/91

508-7581 (11-89)

AR101965

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 9:30 - 60
STOP - 10:30
START - 3:05 100
STOP - 4:45
160 min

Job Location: METCOA

Ambient Temperature: 70°

Pressure:

Pump #: 14496 U

Average Flow Rate: 1.97 L/min

Sampling Media-Calibration Method:

Comments: WORK BY FRANK Drayton (SS#) while RELOCATING drums in WAREHOUSE.

SAMPLE # 31391D

Pre-Sample Calibration

1.) 2003 cc/min
2.) 2017
3.) 2011
4.) 2009
5.) 2005
6.) 2005

Average Flow 2008 - 2.00 L/min

Post-Sample Calibration

1.) 1945 cc/min
2.) 1932
3.) 1937
4.) 1936
5.) 1936
6.) 1938

Average Flow: 1937 1.94 L/min

Calibrated By: HR Date 3/13/91

S96-7541 (11-89)

AR101966

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 8:00 23
STOP - 11:50
START - 3:00 150
STOP - 5:30
390

Job Location: METCOA

Ambient Temperature: 70°

Pressure:

Pump #: 14500 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments: Pump on R. DIAZ (SS No.) operating FORKLIFT IN WAREHOUSE

Pre-Sample Calibration

1.) 2020 cc/min
2.) 2019
3.) 2020
4.) 2020
5.) 2021
6.) 2020

SAMPLE # 31

Average Flow 2020 - 2.02 L/min

Post-Sample Calibration

1.) 2026 cc/min
2.) 2024
3.) 2023
4.) 2023
5.) 2027
6.) 2024

Average Flow: 2025 - 2.02 L/min

Calibrated By: [illegible]

Date 3/13/91

508-7561 (11-89)

AR101967

GSX SERVICES, INC.

Sample # 31391:

AIR SAMPLING/CALIBRATION RECORD

START - 8:00
STOP - 11:50
START - 3:00
STOP - 5:20

380 min

Job Location: METCOA

Ambient Temperature: 70°

Pressure:

Pump #: 14497 U

Average Flow Rate: 1.98 L/min

Sampling Media-Calibration Method:

Comments: Pump used on M Drive Forklift operation in warehouse
Sample No. 31391-A

Pre-Sample Calibration

1.) 2009 cc/min
2.) 2013
3.)
4.) 1992
5.) 2005
6.) 2007

Average Flow 2005 - 2.0 L/min

Post-Sample Calibration

1.) 1988 cc/min
2.) 1988
3.) 1987
4.) 1983
5.) 1987
6.) 1986

Average Flow: 1987 - 1.99 L/min

Calibrated By: [signature] Date 3/13/91

506-7541 (11-89)

AR101968

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location: METCO, Pulaski

Ambient Temperature: 70°

Pressure:

Pump #: 14499 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration

1.) 20.83 cc/min
2.) ~~20.83~~ 20.86
3.) 20.85
4.) 2079
5.) 2079
6.) 2080

Average Flow 20 82 2.08 L/min

Post-Sample Calibration

1.) cc/min
2.)
3.)
4.)
5.)
6.)

Average Flow:

Calibrated By [signature] Date 4 MAR 91

508-7561 (11-89)

AR101969

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location: METCOA, Pulaski

Ambient Temperature: 70°

Pressure:

Pump #: 14497 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration	1.) 2020	cc/min
	2.) 2023	
	3.) 2024	
	4.) 2025	
	5.) 2020	
	6.) 2017	
Average Flow	2021	2.02 L/min
Post-Sample Calibration	1.)	cc/min
	2.)	
	3.)	
	4.)	
	5.)	
	6.)	

Average Flow:

Calibrated By: [signature] Date 4 Mar 91

506-7561 (11-89)

AR101970

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location:

Ambient Temperature:

Pressure:

Pump #: 14498 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration

1.) ~~1998~~ 2003 cc/min
2.) ~~1972~~ 1992
3.) 1990
4.) 1992
5.) 1990
6.) 1990

Average Flow 1.993 L/min

Post-Sample Calibration

1.) cc/min
2.)
3.)
4.)
5.)
6.)

Average Flow:

Calibrated By: [signature] Date 4 Mar 91

506-7561 (11-89)

AR101971

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location:

Ambient Temperature:

Pressure:

Pump #: 14496 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration	1.) 2004	cc/min
	2.) 2020	
	3.) 2021	
	4.) 2021	
	5.) 2023	
	6.) 2025	
Average Flow	2.019 L/min	
Post-Sample Calibration	1.)	cc/min
	2.)	
	3.)	
	4.)	
	5.)	
	6.)	
Average Flow:		

Calibrated By: [signature] Date 4 Mar 91

896-7561 (11-89)

AR101972

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location:

Ambient Temperature:

Pressure:

Pump #: 14500 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration	1.) 1997	cc/min
	2.) 2003	
	3.) 2001	
	4.) 2005	
	5.) 2007	
	6.) 2012	

Average Flow 2.004 L/min

Post-Sample Calibration	1.)	cc/min
	2.)	
	3.)	
	4.)	
	5.)	
	6.)	

Average Flow:

Calibrated By: Hardy Katchy Date 4 MAR 91

598-7581 (11-89)

AR101973

METALS SAMPLE PREPARATION

File Name: met1.prp

1. LOG IN OF SAMPLES: Group the samples by study and in numerical order within each study. Decide on the digestion procedure, the instrument/Act, and the dilution volume. Label the glassware with elements requested for analysis, as determined from sections 2-4 below. Place all samples matched with a single blank in the same size volumetric flask and run under the same conditions.

   A. If the samples are PVC filters (FWS-B = yellow, FWS-D = red) be sure they have been weighed. If only chromate or chromic acid (hexachrome-Cr VI) is requested, send them to Wet Chemistry for analysis.

   B. If the samples are special tubes, see Sections 8 and 9.

2. DIGESTION SELECTION: If the request is for "Metals", "fume", "welding fumes", or any combination of metals EXCEPT insoluble W, Organo Tin, Organo Lead, Be, Sn, V, Sb, Se, B, Zr, Si, Ti, Se, Au, Ag, As, KOH or NaOH, the samples are digested by the standard procedure (5A). Each of the excepted metals has its own digestion, Section 5B to 5G, or section 8 or 9.

3. INSTRUMENT/ACT SELECTION: If any study asks for Ba, U, or is a CASH BASIS study asking for "metals", the samples are given standard digestion and run on the Water act.

   Studies requesting Sr, Li, Lu, La, In, P, Y, or Rb are digested by the standard procedure but run on the Atom Comp 775.

   Bi, Hf, Ru, Rh, Ta, Os, W, Nb, Pt and Te have special digestion procedures and run on the Atom Comp 775.

4. FLASK SELECTION: Except for bulks and wipe/swipe samples, all others are placed in a 125 Phillips beaker, digested and transferred to a volumetric flask. The volumetric should be 25 ml, unless the air volume collected is <100 liter and the sample filters, appear clean, in which case use a 10 ml volumetric. The exception to this is, lead requests from a firing range, where a 25 ml flask is used regardless of the air volume collected.

NOTE: Do not split up samples from their blank; treat the entire set alike, which usually means putting them all in a 25 ml volumetric flasks if any sample in a study requires it. Also run all samples matched with a blank on the water act, if any sample with the blank requires the water act.

5. FILTER DIGESTION

A. STANDARD PROCEDURE FOR MCEF FILTERS (HA OR AA): Place filter in 125 Phillips beaker. Add 2 ml of concentrated HNO_3 and heat until the filter dissolves and the acid nearly evaporates. Remove from heat before the acid completely evaporates, cool and add 2 ml of concentrated HCl (for 10 ml volumetric use 1 ml of HCl). Boil until the nitrogen oxide fumes are gone, then cool and transfer to the appropriate volumetric flask. (See Section 4) Use the same size volumetric for all the samples of a study that are paired with the same blank. Add 100 ul of the 250 ppm selenium working standard to each 25 ml volumetric flask and bring to volume with deionized water.

Don't add Se as internal standard in any of the 10 ml volumetric flasks.

B. DIGESTION PROCEDURE FOR As: Same as standard procedure (5A), except HNO3 is added in place of HCL. Arsenic is more volatile than the other metals, and the Phillips beakers should be marked as As, and placed on the cooler corners of the hot plate. Mark As on the volumetric flask and it will be run in the ICP and on the AA also.

C. DIGESTION PROCEDURE FOR Ag, V, B, Se, Bi: Same as standard procedure (5A) except HNO_3 added in place of HCl and samples are run on the Water act. Place the beakers on the cooler corners of the hot plate. Use colored 10 ml volumetric flasks regardless of the air volume.

D. DIGESTION PROCEDURE FOR Be, Zr, Sb, Hf, and Au: Same as standard procedure (Section 5A) except 1 ml of HCL and 1 ml of HNO3 are used for each of the two acid additions. Mark these metals on the volumetric flask and the samples are run on the Water act for all metals except Hf which is ran on the Atom Comp 775.

E. DIGESTION PROCEDURE FOR Se: Same as standard procedure (5A) except HNO3 is added in place of HCL. Do not add selenium standard. Mark Se on the volumetric flask.

F. Digestion Procedure for Ti: For this, a special reagent must be prepared. Dissolve 40 grams of ammonium sulfate in 100 ml of concentrated sulfuric acid. Place the sample in 125 ml Phillips beaker. Add 2 ml of concentrated HNO_3, heat and evaporate to 1 ml then add 6 ml of the ammonium sulfate/H_2SO_4 reagent plus boiling chips and reflux over high heat (200 degrees C) for 20 minutes. Transfer to a volumetric flask (Section 4). Mark TiO_2 on the flask and the samples are run on the Water Act.

G. DIGESTION PROCEDURE FOR NaOH and/or KOH: If only these are requested, place the filter in a 20 ml test tube. Add 10 ml of distilled water and sonicate for 5 minutes. Mark the tube and run on the Water Act.

H. DIGESTION PROCEDURE FOR Sn: Same as the standard procedure (5A) except HCl is added in place of nitric acid.

I. DIGESTION OF PVC FILTERS (FWS-B OR FWS-D): Place filter in 125 Phillips beaker. Add 2 ml of concentrated HNO_3 and heat. (The filter may dissolve if it is one of the poor quality (PVC/acrylate types). Do NOT evaporate to dryness, but after several minutes, cool and add 2 ml of concentrated HCl. (If the filter dissolved in HNO_3 it will reprecipitate now.) Boil until the nitrogen oxides fumes are gone then cool and transfer to the appropriate volumetric flask (25 ml if air volume >100 liters, 10 ml if <100 liters).

6. WIPE/SWIPE SAMPLE DIGESTION: Place filter in 250 ml Phillips beaker with the filter as open as possible. Squirt approximately 10 ml of distilled water and swirl. Add 4 ml of concentrated HCL, swirl and heat for 15 minutes. Cool and transfer to a 50 ml volumetric flask. Bring to volume with distilled water.

7. BULK DIGESTION: Mark and Weigh sample into a 125 ml preweighed Phillips beaker.

A. Paints - weigh 10-20 drops (approximately 0.2 g)

B. Paint chips - separate the paint chips from rest of the samples and weigh about 0.1g of chips.

C. Metal wire pieces, solder (For solder use HCl only to digest). Scrape off oxide, then weigh 0.03 to 0.05 grams.

D. Sand - weigh about 1 gram.

E. Liquids - water can be run without digestion. For other liquids, use 1.0 ml aliquot.

F. Most bulks - weigh about 0.1 gm of a representative sub sample of the homogenized bulk.

Bulk Digestion Procedure:
Add 4-6 ml of concentrated HNO_3 (except for solder) and reflux for 1 hour.
Cool and add 8 ml of concentrated HCl, reflux for 10 mins, then heat until fumes are gone.
Transfer to a 100 ml volumetric flask.

8. MISCELLANEOUS SPECIAL METHODS:

A. MERCURY SAMPLE PREPARATION:
Mercury samples are either dosimeter badges or glass tubes filled with either hopcalite or hydrar. Glass tubes are opened by scoring them above the spun glass and using a cloth towel to break them. Put spun glass in 25 ml volumetric flask. Add 1.25 ml of concentrated HNO_3, swirl and add 1.25 ml of concentrated HCl. Let stand for 1 hour about at room temperature swirling every 15 minutes. Bring to volume with distilled water.

For badges, remove the screen surface with a hooked metal syringe plunger. The opened glass tubes and descreened badges area treated as follows:

Empty the contents into a labeled 50 ml volumetric flask. Add 2.5 ml of concentrated HNO_3, swirl and add 2.5 ml of concentrated HCl and swirl again. Let stand for 1 hour at room temperature swirling every 15 minutes. Bring to volume with distilled water.

Each flask should be labeled Hg, and run on the AA.

B. STIBINE (H_3Sb)
Stibine is collected on special silica gel tubes impregnated with mercuric chloride. Open each tube and empty its contents into a labelled 25 ml volumetric flask. Add 2 ml of concentrated HCl and swirl. Let stand at room temperature for 1 hour swirling every 15 minutes. Bring to volume with distilled water. The flask should be labelled Sb, and run on the ICAP.

C. INSOLUBLE TUNGSTEN (W)

If a MCEF filter sample asks for Tungsten along with other metals, it is digested by the standard procedure (5A) and run on the Atom Comp 775. But if "insoluble" or "total" Tungsten is requested the following procedure separates and assays "soluble W" and "Insoluble W."

Place each sample filter and blank in a Buchner funnel contaminated side up. Moisten each filter with 5 drops of distilled water, apply vacuum (via a side-arm test tube) to firmly seat the filter, then release the vacuum. Add 3 ml of water to the filter and allow to stand for 2 minutes. Apply vacuum and draw the water into the tube. Repeat with another 3 ml of water and transfer the contents of the test tube to a 10 ml volumetric flask. Rinse the test tube with 1 ml of Na_2SO_4 (20% w/v) followed by 1 ml of distilled water, combining these rinses with the original extract. Dilute to volume. This flask contains the "soluble Tungsten" and is run on the Atom Comp 775. If total tungsten was requested, place the extracted filter in a teflon beaker, add 12 ml of concentrated nitric acid, cover with a teflon beaker cover and place in a 200 degree C mineral oil bath for 12 hours. Then cool the oil bath to 110 degrees C, remove the beaker cover and allow the sample to evaporate to dryness. If charring occurs add 3 ml of concentrated nitric acid and evaporate again. Add 2 ml of concentrated nitric acid and 2 ml of concentrated hydrofluoric acid, swirl to mix, return to the 110 degree oil bath and allow to evaporate to dryness (about 2 1/2 hours). Add 2.5 ml NaOH (0.5 M) and heat for 15 minutes at 110 °C). Rinse the beaker with 5 ml of deionized water and dilute to volume. This flask contains the "insoluble Tungsten" and is run on the Atom Comp 775.

9. SPECIAL CASE DIGESTION:

A. If Pb and Sn are requested digest with concentrated HCl, HCl

B. If Pb is requested along with Ag, digest with concentrated HNO_3, HNO_3.

C. If Si is requested in a bulk, fusion with anhydrous Na_2CO_3 in a platinum crucible at a temperature of 1000 °C with a flux to sample ratio of 5:1.
Swirl molten mass to ensure complete exposure to the flux. Transfer to a Phillips beaker with warm distilled water. Add 2 ml of concentrated HCl and heat for complete dissolution. Transfer to a volumetric flask and make up to volume. Run on the water act.

D. If Si is requested in air or wipe samples dry ash them in platinum crucibles first at 250 °C, then increase the temperature gradually till complete ashing is done. Then cool, add 0.5 g of Na_2CO_3 and follow the former procedure indicated in C.

E. DIBORANE:
10 ml of 3% hydrogen peroxide is pipetted into each plastic tube. Discard the glass wool and quickly add the charcoal, and the tube is capped immediately. The tubes are allowed to stand for thirty minutes, then placed for twenty minutes in an ultrasonic bath. The samples are then analysed on the ICAP, on the Water Act.

F. ARSINE:
Score charcoal tube in front of the first (longer) section and break open. Remove and discard glass wool. Transfer charcoal to a 10 ml conical test tube and cap it. Remove and discard separating section of foam. Transfer second section to a 2 ml test tube with a stopper. Just prior to analysis, add 10 mls of 0.01 M nitric acid to the test tube containing the first section and 1 ml of 0.01 M HNO_3 to the test tube containing the second section. Sonicate with the ultrasonic for 30 minutes. Then centrifuge for 10 minutes. Then run on AA.

G. TETRAETHYL LEAD:
Phillips beakers employed are cleaned by refluxing 1:1 HNO_3 in them. After cooling, they are rinsed thoroughly with deionized water.

The portions of charcoal from the samples and standards are added to the cleaned beaker, with the A and B portions being added to separate beakers. A 5 ml portion of concentrated HNO_3 is added to each beaker, the beaker is covered with a watch glass, and the solution is heated for 30 to 45 minutes. The watch glass is rinsed into the beaker and removed. The solution is evaporated down to 1 to 2 ml. The beaker is cooled and the solution is transferred to a 10 ml volumetric flask; the charcoal is rinsed well. The solution is made up to volume. Analysis is done by atomic absorption.

H. ORGANO TIN:
First open and remove front fiberglass filter and place in 20 X 150 mm screw cap tubes. Add 10 ml acetonitrile volumetrically and 10 ul acetic acid and cap. Ultrasonicate for 30 minutes. Use same procedure for desorption of the front portion and the back portion of the sorbent tube. Analysis is done by the AA.

I. Soluble/Insoluble Elements

Place the filters in a 125 ml Phillips beaker. Add 10 ml DI water and sonicate for 15 minutes. Transfer the liquid to a filtration flask fitted with a MCEF filter and filter collecting the filtrate in test tube. Dilute the filtrate to volume with DI water and analyze as soluble portion of the sample. Remove the MCEF filter from the filtering apparatus and place the filter in the Phillips beaker with original filter. Digest the filtrate according to the method appropriate for the element requested.

Jarrell Ash ICAP 9000
<<Equip Code 790>>

File Name: Meti.ins

ICAP atomic emission spectrometer consists of a direct reading spectrometer, R.F. generator, an ICAP (Inductively coupled Argon Plasma) Excitation Source and a computer plus Data Acquisition System.

Starting Up the Instrument:

1. Before starting, make sure the red light of SB and FAT is on, the input attenuator dial is on 050 and the offset dial is on 604, the forward power is on, and the load control tuning is on Automatic and the automatic forward power control dial is on 278.

2. Turn the Argon gas line on, to read a pressure of 50 lb/m^2.

3. Turn the water line all the way on.

4. Turn the LPM Coolant switch up and the Plasma LPM switch up and the sample LPM Knob counter-clockwise.

5. Turn the two peristatic pumps switches on and make sure they read 600 (rinse) and 575 (sample) respectively.

6. Go back to the sample LPM Knob and continue turning it counter-clockwise till the ball stabilizes.

7. Lift the line and Control Switches up and wait for 1 min.

8. Press the RF button on and a red light will show, wait for another min.

9. Switch on the autosampler and make sure that its probe is immersed in the rinsing tube.

10. Turn the sample LPM Knob all the way clockwise.

11. Turn the RF Power Knob till the indicator reads 0.5 Kw, push the ignitor red button and keep turning the power knob up till the torch lights, then reduce the power down to 1.0 Kw and then change the automatic power switch from manual to automatic, and turn the RF Power Knob up again all the way.

12. Slowly start turning the sample knob counter-clockwise till you start seeing the ball coming up, then turn the Plasma LPM switch down, continue turning the sample knob counter-clockwise till the ball stabilizes.

13. Turn RF Power Alarm switch to read 6 o'clock.

14. Wait 30 min for the instrument to warm up.

Computer and Data Acquisition System:

1. Turn computer ON.

2. Hit ESC and keep on escaping until you get to write Autotest and then enter. Now your computer is ready to be used for Yttrium and profiling.

15. Checking the Flame with Yttrium: Fill a test tube with approximately 1000 ppm Yttrium soln. << made up by dissolving approximately 0.4106 g Yttrium Nitrate Pentahydrate / 100 ml deionized water>> put the tube in any position in a rack. Type Autotest, Enter, Hit M to move, type the x,y and the rack # of your test tube position and the rack code is always 21. Check the flame symmetry and intensity. If not right, adjust with the up and down or left and right position knobs inside the instrumant compartment. Type, R, for rinse and fast forward the flow in the pump for about 60 sec to get rid of the Yttrium.

16. Profiling the instrument:
   A. Fill a test tube with approximately 13 ppm Fe soln. made up by diluting the 1000 ppm standard Fe soln. with deionized water, put the tube in any position in a rack.
   B. Get the probe in the Fe soln and hit Q. Press any key, type WICS, Enter, get to Analyze New Sample, Enter, Choose the Act you want (Norm or Water), enter, move to Doug option, Enter. Go to reprofile spectrophotometer, enter. Enter PCN # which is 37 for Fe. when asked for Automatic Profile, choose N.
   C. Write down the starting position of the red indicator, calculate 80-90% of this reading and the new reading will be the value at which you are going to profile.
   D. Turn the micrometer till the red indicator goes to zero, then turn it in the opposite direction till the red indicator reach the predetermined profiling value, write down the micrometer reading (R1), keep turning the micrometer till you will go to the maximum deflection of the red indicator and come back again to the same predetermined profiling value, take the micrometer reading (R2). Then take the average (R1 + R2/2). Correct the micrometer to read the average value for your profiling.
   E. Hit ESC, answer N for reprofile another channel, enter reset autosampler to rinse.

17. <u>Editing Your Trays</u>:

A. Write cd/WICS and enter twice, write WICS and enter , go down to F7 (define autosampler try) and enter, answer <u>N</u> for use common standard, go down to read tray from disk and enter, choose a file which has the same act you want to run (Norm or Water) and enter, go to new tray configuration and inter, change rinse time to 47 and enter, change delay time to 78 and enter, go up to cups and write down the No. of cups in your rack, correct No. of restandardization to No. of racks +1, go to repeats and hit 3, then hit escape, go to edit rack data #1 and enter.

B. Edit your cups in rack # 1 , by writing the standard # or sample # and when you finish the first page go to the second page by hitting page down (Pg Dn), after last entry hit ESC, ESC again, go down to save current tray and enter, then go up to print current tray and hit enter, get two copies of you tray.

18. <u>Running the Samples</u>: Go to Main Menu
Make sure correction for interferences are off, and the delay time is corrected to 78, go up to store to new file and enter, choose an existing file with same date and enter, go up to use autosampler and enter, find todays tray and enter and answer no to any command and enter.

19. Making up the Standards:

A. <u>NORM ACT Standards</u>:

N-1 Blank <<8 ml conc. HCl/100 ml deionized H_2O>>
N-2 Ca, Cd, Co, Cu, Mg, Mn, Pb, Zn
N-3 Al, Fe, Mo, Ni, Sb
N-4 As, Cr, Se
N-5 Sn

B. <u>WATER ACT Standards</u>:

W-1 Blank <<8ml conc. HCl/100 ml deionized H_2O>>
W-2 Ba, Ca, Cd, Co, Cu, Mg, Pb, Zn, Mn
W-3 Al, Be, Fe, Mo, Ni, Sb, Ti, Zr
W-4 As, B, Cr, Se, Si
W-5 U, V
W-6 Au, Sn
W-7 Ag
W-8 Na, K

C. To make up standards , 0.5 ml of stock solution in pipetted in to a 50 ml volumetric flask. After all the metals are in the flask add 4 ml HCl (except for W-5 and W-7 which is 4 ml HNO_3) and bring to volume with deionized water. All concentrations are 10 ppm except Cu, Zn, Ca, Al, As are 5 ppm and Cd, Cr, Se, Be, B, V, U, Ag and Na are 1 ppm.

LAIDLAW ENVIRONMENTAL SERVICES

Field Services

To: Merl Baldwin

From: Gavin Burdge

Subject: **Air Samples Collected by Hardy Ratcliff March 13 - April 9, 1991, at the METCOA Job Location**

Date: May 6, 1991

Introduction and Description of Work

Air samples were collected March 13, 14, 15, 20, 23, and April 7 & 9, 1991, at the METCOA Restart Project. Air samples were taken by Hardy Ratcliff, TRICIL/LAIDLAW ENVIRONMENTAL SERVICES Site Health and Safety Officer, in the "breathing zone" (BZ) of select persons during normal work activities. Area samples were also taken at various locations during remedial work. Prior personal air samples collected November 12 & 13, 1991, detected cadmium, chromium, copper, iron and nickel. Cadmium was detected in some of the samples at the recommended Threshold Limit Value concentration (0.01 mg/m^3; 0.01 milligrams of cadmium per cubic meter of air).

Air sampling pumps were calibrated with a primary standard. Know air volumes were collected and samples were analyzed following standard methods of the National Institute for Occupational Safety and Health (NIOSH). Air samples were collected on 0.8 micron pore size mixed cellulose ester filters and analyzed by a Jarrell Ash Emission Spectrometer (see attachment). All air samples were analyzed by the Wisconsin Occupational Health Laboratory which is accredited by the Amercian Industrial Hygiene Association.

All air sample results are for the collected time period. No assumptions are made for the unsampled periods. All concentrations are given in milligrams of substance per cubic meter of air, mg/m^3.

The laboratory report, calibration records, analytical method information, and exposure monitoring report forms are included as attachments to this report.

Laidlaw Environmental Services (TS), Inc.
1416 Woodside Drive Post Office Box 14964 Greensboro, North Carolina 27415.4964
Phone 919.272.0185 Fax 919.373.0308

Air Samples Collected by Hardy Ratcliff
March 13 - April 9, 1991
at the METCOA Job Location

Results

Location/ Date & Sample Time	Substance	Concentration
Area Sample During loading of Soil from Stockpile #1 March 13, 1991 515 minutes	No significant Metals Detected	
Area Sample Warehouse March 13, 1991 515 minutes	Cadmium Iron Lead	0.008 mg/m³ 0.013 mg/m³ 0.002 mg/m³
BZ TRICIL Employee Relocating Drums in Warehouse March 13, 1991 160 minutes	Cadmium	0.011 mg/m³
BZ TRICIL employee Operating Forklift in Warehouse March 13, 1991 380 minutes	No Significant Metals Detected	
BZ TRICIL Employee Operating Forklift in Warehouse March 13, 1991 380 minutes	Cadmium	0.004 mg/m³
Area Sample North of Warehouse near Slag Pile March 14, 1991 500 minutes	No Significant Metals Detected	

AR101985

Air Samples Collected by Hardy Ratcliff
March 13 - April 9, 1991
at the METCOA Job Location

Area Sample 15 ft. downwind of Soil Pile #4 March 14, 1991 500 minutes	Cadmium	0.005 mg/m^3
Area Sample March 15, 1991 420 minutes	No Significant Metals Detected	
Area Sample Placed at Scale during Staging of Drums March 20, 1991 375 minutes	Cadmium Copper Iron	0.012 mg/m^3 0.007 mg/m^3 0.024 mg/m^3
Area Sample Near Pile #1 while being Transferred March 23, 1991 464 minutes	Cadmium	0.005 mg/m^3
Area Sample Northeast of Pile #4 April 7, 1991 140 minutes	No Significant Metals Detected	
Area Sample April 9, 1991 535 minutes	No Significant Metals detected	

<u>Discussion</u>

Cadmium, copper, lead, and iron were detected during this air sampling. Copper, lead, and iron concentrations detected were hygienically insignificant. Cadmium concentrations were none detected to 0.012 mg/m^3. The highest concentration of cadmium detected was an area sampled during drum staging.

AR101986

Air Samples Collected by Hardy Ratcliff
March 13 - April 9, 1991
at the METCOA Job Location

Two (2) of twelve (12) air samples for cadmium equalled or slightly exceeded the recommendation of the American Conference of Governmental Industrial Hygienists (ACGIH) for 8-hour time-weighted average occupational exposures. These concentrations are called Threshold Limit Values (TLVs). The ACGIH lists cadmium in the 1990/1991 TLV book in the "Notice of Intended Changes." The proposed TLV for cadmium is 0.01 mg/m^3.

All personnel wore personal protective equipment including safety shoes/boots, booties, gloves, Tyvek coveralls and full-face respirators with high efficiency particulate air (HEPA) cartridges thereby providing adequate protection against exposure to these contaminants.

AR101987

STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN
CENTER FOR HEALTH SCIENCES

In Reply Please Refer to:
Wisconsin Occupational Health Laboratory
979 Jonathon Drive
Madison, WI 53713
(608) 263-6550
FAX (608) 263-6551

May 2, 1991

Mr. H. Radcliff, Site Safety Office
Laidlaw Env. Services
Rt 551 North
Pulaski, PA 16143

RE: Metcoa Restart Site

Dear Mr. Radcliff:

Below are results for samples we received from you on April 23, 1991 for analysis:

Sample #	Lab #	Substance: Cadmium	Copper	Iron	Lead
40991	306828	No significant metals detected			
40791	306829	No significant metals detected			
32391	306830	0.005 mg/m3			
2091	306831	0.012 mg/m3	0.007 mg/m3	0.024 mg/m3	
31491A	306832	0.005 mg/m3			
31391	306833	No significant metals detected			
313191C	306834	0.008 mg/m3			
31391D	306835	0.011 mg/m3		.013 mg/m3	.002 mg/m3
31391E	306836	No significant metals detected			
31391AA	306837	0.004 mg/m3			
31491B	306838	No significant metals detected			
31591A	306839	No significant metals detected			

Samples were screened for the following metals: Al, Ca, Cd, Co, Cr, Cu, Fe, Mn, Mg, Mo, Ni, Pb, Sb, Se, Sn and Zn. Only these reported above were present in detectable quantities.

If you have any questions regarding these results, please feel free to contact me.
Sincerely,

Terry Burk

Terry Burk, CIH,
Assistant Director

AR101988

GSX INDUSTRIAL HYGIENE GROUP

CHAIN OF CUSTODY RECORD

P.O. Box 14964 1415 Woodside Dr
Greensboro, NC 27415-4964
(919) 272-0185

page _ of _

PROJECT NAME: METCOA RESTART SITE

PROJ. # 23

PROJECT LOCATION: Pulaski, Va. #311

STA. NO.	DATE	TIME (Min)	COMP	GRAB	SAMPLE IDENTIFICATION (DS 9901)	NUMBER OF CONTAINERS	SIZE: 37 mm Micro quartz Flow Rate L/min	Sitem	REMARKS
Area Sample	4/1/91	535		✓	40991 306828	1	2.00	1102	Dust Screen for METALS
Area Sample	4/1/91	140		✓	40791 306829	1	2.00	288	"
Area Sample	3/20/91	464		✓	32391 306830	1	2.05	951	"
Area Sample	3/20/91	375		✓	32091 306831	1	2.00	772	"
Area Sample	3/14/91	500		✓	31491-A 306832	1	2.04	1020	"
Area Sample	3/13/91	515		✓	31391-B 306833	1	1.99	1025	"
Area Sample	3/13/91	515		✓	31391-C 306834	1	1.98	1020	"
Frank Dragon	3/13/91	160		✓	31391-D 306835	1	1.97	315	"
R. Diaz	3/13/91	380		✓	31391-E 306836	1	2.02	768	"
M. Diaz	3/13/91	380		✓	31391-AA 306837	1	1.98	752	"
Area Sample	3/14/91	500		✓	31491-B 306838	1	2.02	1010	"
Area Sample	3/13/91	420		✓	31591-A 306839	1	2.00	845	"

Bill to: P.O. Box 14964
Greensboro, NC 27415
ATTN MARY GIRGIS

Harvin Brendge

SAMPLED BY AND TITLE (SIGNATURE)	DATE/TIME	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
Handy Latecky Site Safety Officer	4/22/91 1500	Handy Latecky	4/22/91 1630	Fed Ex
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME / RECEIVED BY LAB: (SIGNATURE)
			3:25pm	APR 23 1991 / Ann McHaney

REMARKS: Background Air Monitoring, Metcoa Restart Site, Metals

SAMPLE SHIPPED VIA: ☐ UPS ☐ BUS ☒ FEDERAL EXPRESS

DESIGNATED LABORATORY

DISTRIBUTION: WHITE — ORIGINAL ACCOMPANIES SHIPMENT, YELLOW — CLIENT PINK — COPY TO FIELD SUPPORT OFFICE.

998-7562 (11-89)

AR101989

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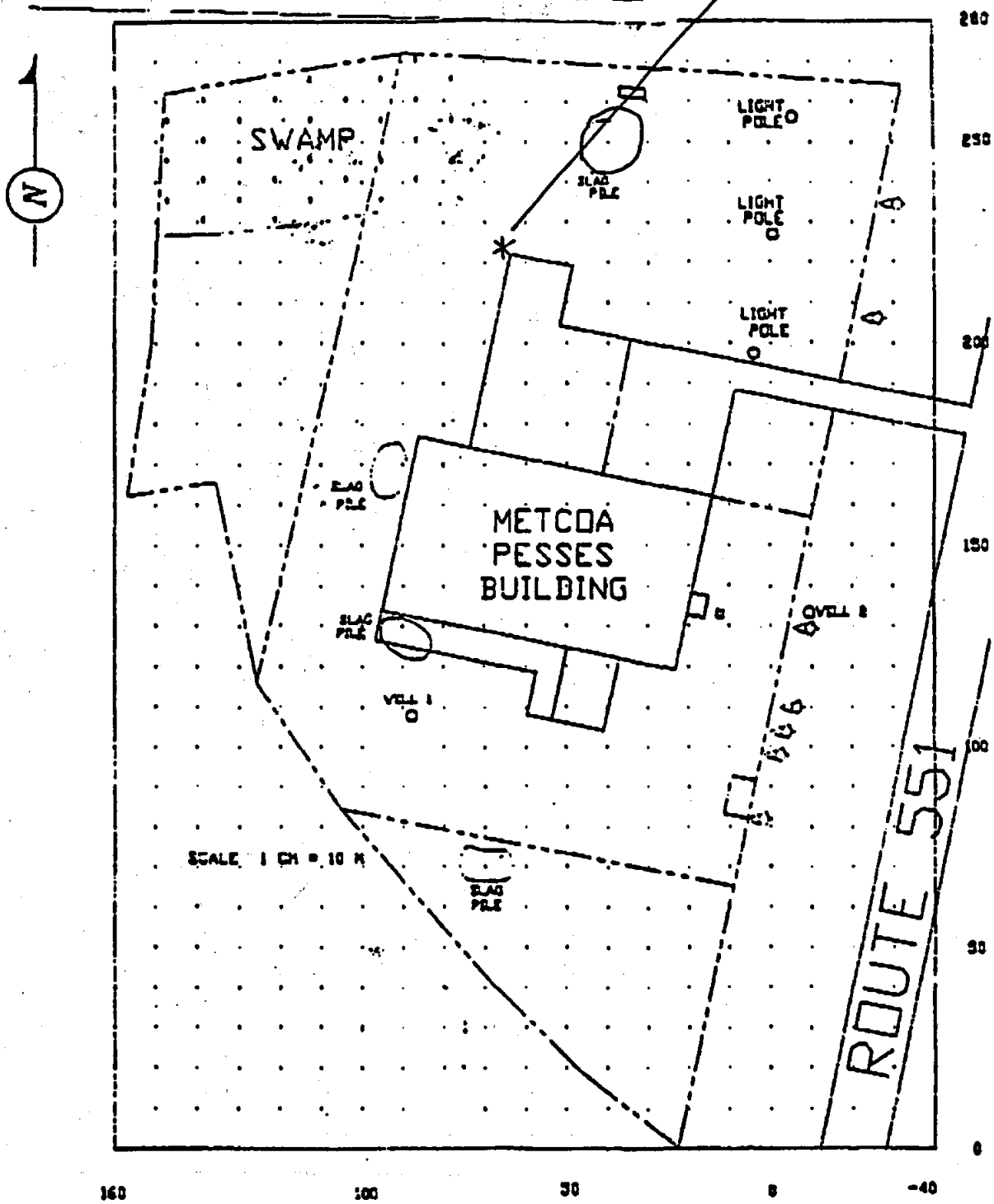
To Joe Carter	From Banipal
Co. TAT Region III / UKL	Co. TAT Region III CH.
Dept.	Phone # (609) 482-0222
Fax # (304) 233-7983	Fax #

Sample # 31491-A
3/14/91



METCOA RESTART SITE
PULASKI, LAWRENCE CO., PA.
AUGUST 20, 1990

AR101990

SENT BY:WESTON TAT

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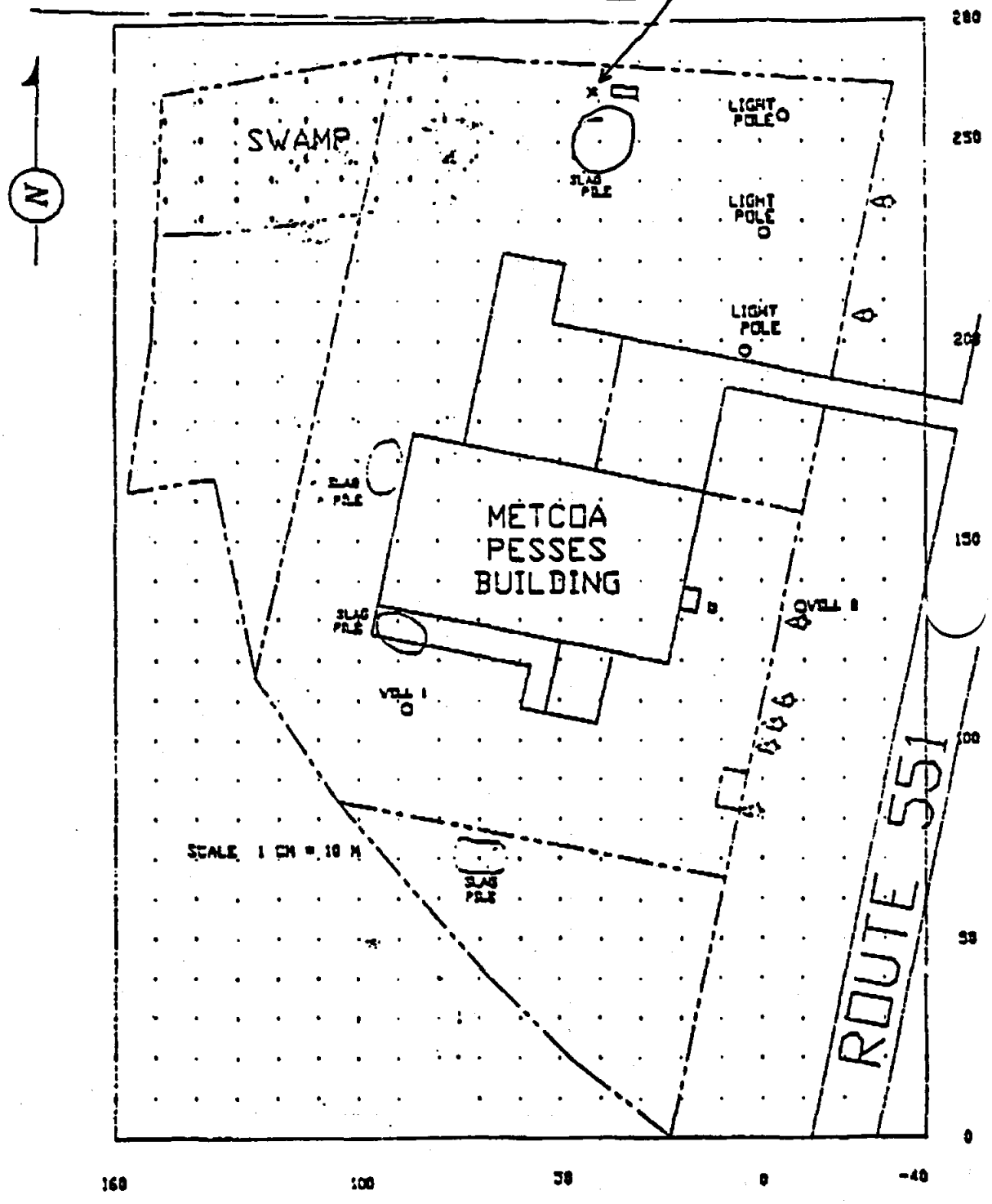
To Joe Carter	From Banipal
Co. TAT Region III/WU	Co. TAT Region III CH.
Dept.	Phone # (609) 482-0222
Fax # (304) 233-7983	Fax #

Sample # 31391-B

3/13/9



METCOA RESTART SITE
PULASKI, LAWRENCE CO., PA.
AUGUST 20, 1990

AR101991

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
METCOA RESTART	3/13/91	C597	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE: PERSONAL / AREA / OTHER:
Loading Soil for transport	SAMPLING DEVICE/PUMP NUMBER

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
		3/13/91	Millipore

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
		METALS

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES / NO	MSA		Overcast

OTHER PPE USED:	OTHER CONDITIONS
Tyvec, Boots Gloves	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (f/cc)
3/391 B	10:00 A.			2.0 L/min			

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION:

FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY H&S-PINK
MEDICAL DEPARTMENT-GOLD

598-7570 (11-89)

AR101992

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
METCOA, Pulaski Pa	3-12-91	0597	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE: PERSONAL / AREA / OTHER:
Loading Soil from Pile # 1 into Williams Bros Roll off Box	SAMPLING DEVICE/PUMP NUMBER: Grab Sample

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
NA			Fiberglas Filter

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
H Ratcliff	457-24-9334	Thorium

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES / NO	MSA	10 min	Clear, Temp 48° Wind Nile

OTHER PPE USED:	OTHER CONDITIONS
Tyvec, Gloves, Boots	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (fibers)
AS1291	4:09 pm	4:14 pm	5 min	35 cfm		Thorium	

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY
3:00 pm HR	H. Ratcliff

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION:

FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY H&S-PINK
MEDICAL DEPARTMENT-GOLD

598-7570 (11-89)

AR101993

GSX SERVICES, INC.

INDUSTRIAL HYGIENE EXPOSURE MONITORING REPORT FORM

FACILITY/AREA	DATE	FORM NUMBER	PAGE
Metcoa Restart Dulaski PA	3-13-91	C597	1 OF 1

OPERATION/TASK/ASSIGNMENT	SAMPLE TYPE / OTHER:	PERSONAL	AREA
Loading Soil from Pile #1 for Shipment to treatment Facility			✓

SAMPLING DEVICE/PUMP NUMBER: Grab Sampler

JOB CLASSIFICATION/TITLE	SHIFT	LAST CALIBRATION DATE	COLLECTION MEDIA
N/A			

EMPLOYEE NAME	SSN	CHEMICAL(S) SAMPLED
H. Ratcliffe	457-74-9374	

RESPIRATOR USED?	TYPE	DURATION	WEATHER CONDITIONS
YES (circled) NO	MSA	10 min	Overcast Temp 40° Wind Hole

OTHER PPE USED:	OTHER CONDITIONS
Tyvec, Gloves, Boots	

SAMPLE IDENTIFICATION	SAMPLE TIME			SAMPLE VOLUME		ANALYSIS	
	START	STOP	DURATION (Min.)	CALIBRATED RATE	LITERS	CHEMICAL(S)	CONCENTRATION (ppm) (Mg/m³) (f/cc)
AS 1391	11:02	11:07	5	35 cfm			

SAMPLER CHECKED (TIME, INITIALS)	SAMPLED BY

ENGINEERING CONTROLS/WORK PRACTICE CONTROLS	ADDITIONAL INFORMATION/COMMENTS

DISTRIBUTION:

FACILITY MANAGER - WHITE
INDUSTRIAL HYGIENE - YELLOW
FACILITY H&S-PINK
MEDICAL DEPARTMENT-GOLD

596-7570 (11-89)

AR101994

GSX SERVICES, INC.

Sample No. 32091

AIR SAMPLING/CALIBRATION RECORD

START: 3:15
STOP: 4:30
375 min

Job Location: METCO A

Ambient Temperature:

Pressure:

Pump #: 14498

Average Flow Rate: 2.06 L/min

Sampling Media-Calibration Method:

Comments: Area Sample placed at Scale during staging of Rad Drums.

Pre-Sample Calibration

1.) 2070 cc/min
2.) 2069
3.) 2063
4.) 2062
5.) 2054
6.) 2070

Average Flow 2065 – 2.06 L/min

Post-Sample Calibration

1.) 2058 cc/min
2.) 2073
3.) 2052
4.) 2056
5.) 2070
6.) 2072

Average Flow: 2064 – 2.06 L/min

Calibrated By: H.R. Date 3/20/91

598-7561 (11 89)

AR101995

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

3159/-A

Job Location: METCOA

START - 9:30

Ambient Temperature: 70°

STOP - 4:30

420 min

Pressure:

Pump #: 14498

Average Flow Rate: 2.06 L/min

Sampling Media-Calibration Method:

Comments: Area Sample 20 FT S.W Pile #4 while being loaded

Pre-Sample Calibration

1.) 2070 cc/min
2.) 2063
3.) 2069
4.) 2062
5.) 2054
6.) 2070

2.06 L/m

Average Flow

Post-Sample Calibration

1.) 2072 cc/min
2.) 2070
3.) 2073
4.) 2058
5.) 2056
6.) 2052

Average Flow:

Calibrated By: HR

Date 3/15/91

598 7561 (11-89)

AR101996

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

31491-B

Job Location:

Ambient Temperature: 70°

Pressure:

Pump #: 14491U

Average Flow Rate: 2.02

Sampling Media-Calibration Method:

Comments: Area Sample Whse during drum Sampling

Pre-Sample Calibration

1.) 2014 cc/min
2.) 2005
3.) 2008
4.) 2005
5.) 2001
6.) 2004

2.04 L/min

2005

Average Flow

Post-Sample Calibration

1.) 2015 cc/min
2.) 2020
3.) 2096
4.) 2091
5.) 2080
6.) 2081

2.04 L/min

Average Flow:

Calibrated By: [signature] Date 3/14/91

598-7581 (11-89)

AR101997

GSX

GSX SERVICES, INC.

Start - 8:10a
Stop: 4:30 pm

AIR SAMPLING/CALIBRATION RECORD

Job Location: Metcon Restart

Sample # 31491 - A

Ambient Temperature: 70°

Pressure:

Pump #: 14498U

Average Flow Rate: 2.0 L/min

Sampling Media-Calibration Method:

Comments: Area Sample 15' downwind of Soil pile #

Pre-Sample Calibration

1.) 2015 cc/min
2.) 2005
3.) 2008
4.) 2005
5.) 2003
6.) 2004

Average Flow 2007 - 2.0 L/min

Post-Sample Calibration

1.) 2115 cc/min
2.) 2103
3.) 2096
4.) 2092
5.) 2087
6.) 2080

Average Flow: 2096 - 2.09 L/min

Calibrated By: [signature] Date 3/14/91

598-7561 (11-89)

AR101998

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 8.10 AM
STOP - 4:45 PM
515 min

Job Location: METCOA RESTART, Pulaski PA.

Ambient Temperature: 70°

Pressure:

Pump #: 14498 U

Average Flow Rate: 1.99 L/min

Sampling Media-Calibration Method:

Comments: SAMPLING for METALS during loading of Soil FROM STOCKPILE No. 1 AREA Sample.

SAMPLE No: 31391

Pre-Sample Calibration

1.) 1984 cc/min
2.) 2019
3.) 2001
4.) 2000
5.) 2000
6.) 1996

Average Flow 2002 / 2.00 L/MIN

Post-Sample Calibration

1.) 1979 cc/min
2.) 1982
3.)
4.) 1975
5.) 1977
6.) 1965

Average Flow: 1976 1.98 L/min

Calibrated By: HL Date 8/13/91

508-7581 (11-89)

AR101999

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 8:10 AM
STOP - 4:45
515 min

Job Location: METCO

Ambient Temperature: 70°

Pressure:

Pump #: 14499 U

Average Flow Rate: 1.98 L/min

Sampling Media-Calibration Method:

Comments:
WAREHOUSE AREA (BACKGROUND) SAMPLING. Sample # 3139IC

Pre-Sample Calibration

1.) 1999 cc/min
2.) 1996
3.) 1996
4.) 1999
5.) 2000
6.) 2008

Average Flow 2000 2.0 L/m.

Post-Sample Calibration

1.) 1999 cc/min
2.) 1988
3.) 1991
4.) 2000
5.) 1996
6.) 1988

Average Flow: 1993 - 1.99 L/min

Calibrated By: HL Date 3/12/91

598-7561 (11-89)

AR102000

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 9:30
STOP - 10:30 - 60
START - 3:05 100
STOP - 4:45
160 min

Job Location: METCOA

Ambient Temperature: 70°

Pressure:

Pump #: 14496 U

Average Flow Rate: 1.97 L/min

Sampling Media-Calibration Method:

Comments: WORK BY FRANK DRAYTON (SS#) while RELOCATING drums in WAREHOUSE.

SAMPLE # 31391

Pre-Sample Calibration

1.) 2003 cc/min
2.) 2017
3.) 2011
4.) 2009
5.) 2005
6.) 2005

Average Flow 2008 → 2.00 L/min

Post-Sample Calibration

1.) 1945 cc/min
2.) 1932
3.) 1937
4.) 1936
5.) 1936
6.) 1938

Average Flow: 1937 1.94 L/min

Calibrated By: HR

Date 3/13/91

596-7561 (11-89)

AR102001

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

START - 8:00 230
STOP - 11:50
START - 3:00 150
STOP - 5:30
380

Job Location: METCOA

Ambient Temperature: 70°

Pressure:

Pump #: 14500 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments: Pump on R. DIAZ (SS No.) OPERATING FORKLIFT IN WAREHOUSE

SAMPLE # 31391E

Pre-Sample Calibration

1.) 2020 cc/min
2.) 2019
3.) 2020
4.) 2020
5.) 2021
6.) 2020

Average Flow 2020 - 2.02 L/min

Post-Sample Calibration

1.) 2029 cc/min
2.) 2024
3.) 2023
4.) 2023
5.) 2027
6.) 2024

Average Flow: 2025 - 2.02 L/min

Calibrated By: [illegible] Date 3/13/91

598-7561 (11-89)

AR102002

GSX SERVICES, INC.

Sample # 31391-A

AIR SAMPLING/CALIBRATION RECORD

START - 8:00
STOP - 11:50
START - 3:00
STOP - 5:30

380 min

Job Location: METCOA

Ambient Temperature: 70°

Pressure:

Pump #: 14497 U

Average Flow Rate: 1.98 L/min

Sampling Media-Calibration Method:

Comments: Pump used on M Diaz Forklift operation in warehouse
Sample No. 31391-A

Pre-Sample Calibration

1.) 2009 cc/min
2.) 2013
3.)
4.) 1992
5.) 2005
6.) 2007

Average Flow 2005 - 2.0 L/min

Post-Sample Calibration

1.) 1988 cc/min
2.) 1988
3.) 1987
4.) 1983
5.) 1987
6.) 1986

Average Flow: 1987 - 1.99 L/min

Calibrated By: [signature] Date 3/13/91

598-7561 (11-89)

AR102003

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location: METCOA, Pulaski

Ambient Temperature: 70°

Pressure:

Pump #: 14499 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration

1.) 20.83 cc/min
2.) ~~20.83~~ 20.86
3.) 20.85
4.) 2079
5.) 2079
6.) 2080

Average Flow

2082 2.08 L/min

Post-Sample Calibration

1.) cc/min
2.)
3.)
4.)
5.)
6.)

Average Flow:

Calibrated By [signature] Date 4 Mar 91

598-7561 (11-89)

AR102004

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location: METCOA, Pulaski

Ambient Temperature: 70°

Pressure:

Pump #: 14497 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration	1.) 2020	cc/min
	2.) 2023	
	3.) 2024	
	4.) 2025	
	5.) 2020	
	6.) 2017	
Average Flow	2021	2.02 L/min
Post-Sample Calibration	1.)	cc/min
	2.)	
	3.)	
	4.)	
	5.)	
	6.)	

Average Flow:

Calibrated By: [signature] Date 4 Mar 91

598-7561 (11-89)

AR102005

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location:

Ambient Temperature:

Pressure:

Pump #: 14498 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration

1.) ~~1998~~ 2003 cc/min
2.) ~~1972~~ 1992
3.) 1990
4.) 1992
5.) 1990
6.) 1990

Average Flow 1.993 L/min

Post-Sample Calibration

1.) cc/min
2.)
3.)
4.)
5.)
6.)

Average Flow:

Calibrated By: [signature] Date 4 Mar 91

596-7561 (11-89)

AR102006

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location:

Ambient Temperature:

Pressure:

Pump #: 14496 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration	1.) 2004 2.) 2020 3.) 2021 4.) 2021 5.) 2023 6.) 2025	cc/min
Average Flow	2.019 L/min	
Post-Sample Calibration	1.) 2.) 3.) 4.) 5.) 6.)	cc/min

Average Flow:

Calibrated By: [signature] Date 4 Mar 91

598-7561 (11-89)

AR102007

GSX

GSX SERVICES, INC.

AIR SAMPLING/CALIBRATION RECORD

Job Location:

Ambient Temperature:

Pressure:

Pump #: 14500 U

Average Flow Rate:

Sampling Media-Calibration Method:

Comments:

Pre-Sample Calibration	1.) 1997	cc/min
	2.) 2003	
	3.) 2001	
	4.) 2005	
	5.) 2007	
	6.) 2012	
Average Flow	2.004 L/min	
Post-Sample Calibration	1.)	cc/min
	2.)	
	3.)	
	4.)	
	5.)	
	6.)	

Average Flow:

Calibrated By: Hardy Katchy Date 4 MAR 91

596-7561 (11-89)

AR102008

METALS SAMPLE PREPARATION

File Name: metl.prp

1. LOG IN OF SAMPLES: Group the samples by study and in numerical order within each study. Decide on the digestion procedure, the instrument/Act, and the dilution volume. Label the glassware with elements requested for analysis, as determined from sections 2-4 below. Place all samples matched with a single blank in the same size volumetric flask and run under the same conditions.

   A. If the samples are PVC filters (FWS-B = yellow, FWS-D = red) be sure they have been weighed. If only chromate or chromic acid (hexachrome-Cr VI) is requested, send them to Wet Chemistry for analysis.

   B. If the samples are special tubes, see Sections 8 and 9.

2. DIGESTION SELECTION: If the request is for "Metals", "fume", "welding fumes", or any combination of metals EXCEPT insoluble W, Organo Tin, Organo Lead, Be, Sn, V, Sb, Se, B, Zr, Si, Ti, Se, Au, Ag, As, KOH or NaOH, the samples are digested by the standard procedure (5A). Each of the excepted metals has its own digestion, Section 5B to 5G, or section 8 or 9.

3. INSTRUMENT/ACT SELECTION: If any study asks for Ba, U, or is a CASH BASIS study asking for "metals", the samples are given standard digestion and run on the Water act.

   Studies requesting Sr, Li, Lu, La, In, P, Y, or Rb are digested by the standard procedure but run on the Atom Comp 775.

   Bi, Hf, Ru, Rh, Ta, Os, W, Nb, Pt and Te have special digestion procedures and run on the Atom Comp 775.

4. FLASK SELECTION: Except for bulks and wipe/swipe samples, all others are placed in a 125 Phillips beaker, digested and transferred to a volumetric flask. The volumetric should be 25 ml, unless the air volume collected is <100 liter and the sample filters, appear clean, in which case use a 10 ml volumetric. The exception to this is, lead requests from a firing range, where a 25 ml flask is used regardless of the air volume collected.

NOTE: Do not split up samples from their blank; treat the entire set alike, which usually means putting them all in a 25 ml volumetric flasks if any sample in a study requires it. Also run all samples matched with a blank on the water act, if any sample with the blank requires the water act.

5. FILTER DIGESTION

A. STANDARD PROCEDURE FOR MCEF FILTERS (HA OR AA): Place filter in 125 Phillips beaker. Add 2 ml of concentrated HNO_3 and heat until the filter dissolves and the acid nearly evaporates. Remove from heat before the acid completely evaporates, cool and add 2 ml of concentrated HCl (for 10 ml volumetric use 1 ml of HCl). Boil until the nitrogen oxide fumes are gone, then cool and transfer to the appropriate volumetric flask. (See Section 4) Use the same size volumetric for all the samples of a study that are paired with the same blank. Add 100 ul of the 250 ppm selenium working standard to each 25 ml volumetric flask and bring to volume with deionized water.

Don't add Se as internal standard in any of the 10 ml volumetric flasks.

B. DIGESTION PROCEDURE FOR As: Same as standard procedure (5A), except HNO3 is added in place of HCL. Arsenic is more volatile than the other metals, and the Phillips beakers should be marked as As, and placed on the cooler corners of the hot plate. Mark As on the volumetric flask and it will be run in the ICP and on the AA also.

C. DIGESTION PROCEDURE FOR Ag, V, B, Se, Bi: Same as standard procedure (5A) except HNO_3 added in place of HCl and samples are run on the Water act. Place the beakers on the cooler corners of the hot plate. Use colored 10 ml volumetric flasks regardless of the air volume.

D. DIGESTION PROCEDURE FOR Be, Zr, Sb, Hf, and Au: Same as standard procedure (Section 5A) except 1 ml of HCL and 1 ml of HNO3 are used for each of the two acid additions. Mark these metals on the volumetric flask and the samples are run on the Water act for all metals except Hf which is ran on the Atom Comp 775.

E. DIGESTION PROCEDURE FOR Se: Same as standard procedure (5A) except HNO3 is added in place of HCL. Do not add selenium standard. Mark Se on the volumetric flask.

F. Digestion Procedure for Ti: For this, a special reagent must be prepared. Dissolve 40 grams of ammonium sulfate in 100 ml of concentrated sulfuric acid. Place the sample in 125 ml Phillips beaker. Add 2 ml of concentrated HNO_3, heat and evaporate to 1 ml then add 6 ml of the ammonium sulfate/H_2SO_4 reagent plus boiling chips and reflux over high heat (200 degrees C) for 20 minutes. Transfer to a volumetric flask (Section 4). Mark TiO_2 on the flask and the samples are run on the Water Act.

G. DIGESTION PROCEDURE FOR NaOH and/or KOH: If only these are requested, place the filter in a 20 ml test tube. Add 10 ml of distilled water and sonicate for 5 minutes. Mark the tube and run on the Water Act.

H. DIGESTION PROCEDURE FOR Sn: Same as the standard procedure (5A) except HCl is added in place of nitric acid.

I. DIGESTION OF PVC FILTERS (FWS-B OR FWS-D): Place filter in 125 Phillips beaker. Add 2 ml of concentrated HNO_3 and heat. (The filter may dissolve if it is one of the poor quality (PVC/acrylate types). Do NOT evaporate to dryness, but after several minutes, cool and add 2 ml of concentrated HCl. (If the filter dissolved in HNO_3 it will reprecipitate now.) Boil until the nitrogen oxides fumes are gone then cool and transfer to the appropriate volumetric flask (25 ml if air volume >100 liters, 10 ml if <100 liters).

6. WIPE/SWIPE SAMPLE DIGESTION: Place filter in 250 ml Phillips beaker with the filter as open as possible. Squirt approximately 10 ml of distilled water and swirl. Add 4 ml of concentrated HCL, swirl and heat for 15 minutes. Cool and transfer to a 50 ml volumetric flask. Bring to volume with distilled water.

7. BULK DIGESTION: Mark and Weigh sample into a 125 ml preweighed Phillips beaker.

A. Paints - weigh 10-20 drops (approximately 0.2 g)

B. Paint chips - separate the paint chips from rest of the samples and weigh about 0.1g of chips.

C. Metal wire pieces, solder (For solder use HCl only to digest). Scrape off oxide, then weigh 0.05 grams.

D. Sand - weigh about 1 gram.

E. Liquids - water can be run without digestion. For other liquids, use 1.0 ml aliquot.

F. Most bulks - weigh about 0.1 gm of a representative sub sample of the homogenized bulk.

Bulk Digestion Procedure:
Add 4-6 ml of concentrated HNO_3 (except for solder) and reflux for 1 hour.
Cool and add 8 ml of concentrated HCl, reflux for 10 mins, then heat until fumes are gone.
Transfer to a 100 ml volumetric flask.

8. MISCELLANEOUS SPECIAL METHODS:

A. MERCURY SAMPLE PREPARATION:
Mercury samples are either dosimeter badges or glass tubes filled with either hopcalite or hydrar. Glass tubes are opened by scoring them above the spun glass and using a cloth towel to break them. Put spun glass in 25 ml volumetric flask. Add 1.25 ml of concentrated HNO_3, swirl and add 1.25 ml of concentrated HCl. Let stand for 1 hour about at room temperature swirling every 15 minutes. Bring to volume with distilled water.

For badges, remove the screen surface with a hooked metal syringe plunger. The opened glass tubes and descreened badges area treated as follows:

Empty the contents into a labeled 50 ml volumetric flask. Add 2.5 ml of concentrated HNO_3, swirl and add 2.5 ml of concentrated HCl and swirl again. Let stand for 1 hour at room temperature swirling every 15 minutes. Bring to volume with distilled water.

Each flask should be labeled Hg, and run on the AA.

B. STIBINE (H_3Sb)
Stibine is collected on special silica gel tubes impregnated with mercuric chloride. Open each tube and empty its contents into a labelled 25 ml volumetric flask. Add 2 ml of concentrated HCl and swirl. Let stand at room temperature for 1 hour swirling every 15 minutes. Bring to volume with distilled water. The flask should be labelled Sb, and run on the ICAP.

C. INSOLUBLE TUNGSTEN (W)

If a MCEF filter sample asks for Tungsten along with other metals, it is digested by the standard procedure (5A) and run on the Atom Comp 775. But if "insoluble" or "total" Tungsten is requested the following procedure separates and assays "soluble W" and "Insoluble W."

Place each sample filter and blank in a Buchner funnel contaminated side up. Moisten each filter with 5 drops of distilled water, apply vacuum (via a side-arm test tube) to firmly seat the filter, then release the vacuum. Add 3 ml of water to the filter and allow to stand for 2 minutes. Apply vacuum and draw the water into the tube. Repeat with another 3 ml of water and transfer the contents of the test tube to a 10 ml volumetric flask. Rinse the test tube with 1 ml of Na_2SO_4 (20% w/v) followed by 1 ml of distilled water, combining these rinses with the original extract. Dilute to volume. This flask contains the "soluble Tungsten" and is run on the Atom Comp 775. If total tungsten was requested, place the extracted filter in a teflon beaker, add 12 ml of concentrated nitric acid, cover with a teflon beaker cover and place in a 200 degree C mineral oil bath for 12 hours. Then cool the oil bath to 110 degrees C, remove the beaker cover and allow the sample to evaporate to dryness. If charring occurs add 3 ml of concentrated nitric acid and evaporate again. Add 2 ml of concentrated nitric acid and 2 ml of concentrated hydrofluoric acid, swirl to mix, return to the 110 degree oil bath and allow to evaporate to dryness (about 2 1/2 hours). Add 2.5 ml NaOH (0.5 M) and heat for 15 minutes at 110 °C). Rinse the beaker with 5 ml of deionized water and dilute to volume. This flask contains the "insoluble Tungsten" and is run on the Atom Comp 775.

9. SPECIAL CASE DIGESTION:

A. If Pb and Sn are requested digest with concentrated HCl, HCl

B. If Pb is requested along with Ag, digest with concentrated HNO_3, HNO_3.

C. If Si is requested in a bulk, fusion with anhydrous Na_2CO_3 in a platinum crucible at a temperature of 1000 °C with a flux to sample ratio of 5:1.
Swirl molten mass to ensure complete exposure to the flux. Transfer to a Phillips beaker with warm distilled water. Add 2 ml of concentrated HCl and heat for complete dissolution. Transfer to a volumetric flask and make up to volume. Run on the water act.

D. If Si is requested in air or wipe samples dry ash them in platinum crucibles first at 250 °C, then increase the temperature gradually till complete ashing is done. Then cool, add 0.5 g of Na_2CO_3 and follow the former procedure indicated in C.

E. DIBORANE:
10 ml of 3% hydrogen peroxide is pipetted into each plastic tube. Discard the glass wool and quickly add the charcoal, and the tube is capped immediately. The tubes are allowed to stand for thirty minutes, then placed for twenty minutes in an ultrasonic bath. The samples are then analysed on the ICAP, on the Water Act.

F. ARSINE:
Score charcoal tube in front of the first (longer) section and break open. Remove and discard glass wool. Transfer charcoal to a 10 ml conical test tube and cap it. Remove and discard separating section of foam. Transfer second section to a 2 ml test tube with a stopper. Just prior to analysis, add 10 mls of 0.01 M nitric acid to the test tube containing the first section and 1 ml of 0.01 M HNO_3 to the test tube containing the second section. Sonicate with the ultrasonic for 30 minutes. Then centrifuge for 10 minutes. Then run on AA.

G. TETRAETHYL LEAD:
Phillips beakers employed are cleaned by refluxing 1:1 HNO_3 in them. After cooling, they are rinsed thoroughly with deionized water.

The portions of charcoal from the samples and standards are added to the cleaned beaker, with the A and B portions being added to separate beakers. A 5 ml portion of concentrated HNO_3 is added to each beaker, the beaker is covered with a watch glass, and the solution is heated for 30 to 45 minutes. The watch glass is rinsed into the beaker and removed. The solution is evaporated down to 1 to 2 ml. The beaker is cooled and the solution is transferred to a 10 ml volumetric flask; the charcoal is rinsed well. The solution is made up to volume. Analysis is done by atomic absorption.

H. ORGANO TIN:
First open and remove front fiberglass filter and place in 20 X 150 mm screw cap tubes. Add 10 ml acetonitrile volumetrically and 10 ul acetic acid and cap. Ultrasonicate for 30 minutes. Use same procedure for desorption of the front portion and the back portion of the sorbent tube. Analysis is done by the AA.

I. Soluble/Insoluble Elements

Place the filters in a 125 ml Phillips beaker. Add 10 ml DI water and sonicate for 15 minutes. Transfer the liquid to a filtration flask fitted with a MCEF filter and filter collecting the filtrate in test tube. Dilute the filtrate to volume with DI water and analyze as soluble portion of the sample. Remove the MCEF filter from the filtering apparatus and place the filter in the Phillips beaker with original filter. Digest the filtrate according to the method appropriate for the element requested.

Jarrell Ash ICAP 9000
<<Equip Code 790>>

File Name: Met1.ins

ICAP atomic emission spectrometer consists of a direct reading spectrometer, R.F. generator, an ICAP (Inductively Coupled Argon Plasma) Excitation Source and a computer plus Data Acquisition System.

Starting Up the Instrument:

1. Before starting, make sure the red light of SB and FAT is on, the input attenuator dial is on 050 and the offset dial is on 604, the forward power is on, and the load control tuning is on Automatic and the automatic forward power control dial is on 278.

2. Turn the Argon gas line on, to read a pressure of 50 lb/m^2.

3. Turn the water line all the way on.

4. Turn the LPM Coolant switch up and the Plasma LPM switch up and the sample LPM Knob counter-clockwise.

5. Turn the two peristatic pumps switches on and make sure they read 600 (rinse) and 575 (sample) respectively.

6. Go back to the sample LPM Knob and continue turning it counter-clockwise till the ball stabilizes.

7. Lift the line and Control Switches up and wait for 1 min.

8. Press the RF button on and a red light will show, wait for another min.

9. Switch on the autosampler and make sure that its probe is immersed in the rinsing tube.

10. Turn the sample LPM Knob all the way clockwise.

11. Turn the RF Power Knob till the indicator reads 0.5 Kw, push the ignitor red button and keep turning the power knob up till the torch lights, then reduce the power down to 1.0 Kw and then change the automatic power switch from manual to automatic, and turn the RF Power Knob up again all the way.

12. Slowly start turning the sample knob counter-clockwise till you start seeing the ball coming up, then turn the Plasma LPM switch down, continue turning the sample knob counter-clockwise till the ball stabilizes.

13. Turn RF Power Alarm switch to read 6 o'clock.

14. Wait 30 min for the instrument to warm up.

Computer and Data Acquisition System:

1. Turn computer ON.

2. Hit ESC and keep on escaping until you get to write Autotest and then enter. Now your computer is ready to be used for Yttrium and profiling.

15. Checking the Flame with Yttrium: Fill a test tube with approximately 1000 ppm Yttrium soln. << made up by dissolving approximately 0.4106 g Yttrium Nitrate Pentahydrate / 100 ml deionized water>> put the tube in any position in a rack. Type Autotest, Enter, Hit M to move, type the x,y and the rack # of your test tube position and the rack code is always 21. Check the flame symmetry and intensity. If not right, adjust with the up and down or left and right position knobs inside the instrument compartment. Type, R, for rinse and fast forward the flow in the pump for about 60 sec to get rid of the Yttrium.

16. Profiling the instrument:
   A. Fill a test tube with approximately 13 ppm Fe soln. made up by diluting the 1000 ppm standard Fe soln. with deionized water, put the tube in any position in a rack.
   B. Get the probe in the Fe soln and hit Q. Press any key, type WICS, Enter, get to Analyze New Sample, Enter, Choose the Act you want (Norm or Water), enter, move to Doug option, Enter. Go to reprofile spectrophotometer, enter. Enter PCN # which is 37 for Fe. when asked for Automatic Profile, choose N.
   C. Write down the starting position of the red indicator, calculate 80-90% of this reading and the new reading will be the value at which you are going to profile.
   D. Turn the micrometer till the red indicator goes to zero, then turn it in the opposite direction till the red indicator reach the predetermined profiling value, write down the micrometer reading (R1), keep turning the micrometer till you will go to the maximum deflection of the red indicator and come back again to the same predetermined profiling value, take the micrometer reading (R2). Then take the average (R1 + R2/2). Correct the micrometer to read the average value for your profiling.
   E. Hit ESC, answer N for reprofile another channel, enter reset autosampler to rinse.

17. <u>Editing Your Trays</u>:

A. Write cd/WICS and enter twice, write WICS and enter , go down to F7 (define autosampler try) and enter, answer <u>N</u> for use common standard, go down to read tray from disk and enter, choose a file which has the same act you want to run (Norm or Water) and enter, go to new tray configuration and inter, change rinse time to 47 and enter, change delay time to 78 and enter, go up to cups and write down the No. of cups in your rack, correct No. of restandardization to No. of racks +1, go to repeats and hit 3, then hit escape, go to edit rack data #1 and enter.

B. Edit your cups in rack # 1 , by writing the standard # or sample # and when you finish the first page go to the second page by hitting page down (Pg Dn), after last entry hit ESC, ESC again, go down to save current tray and enter, then go up to print current tray and hit enter, get two copies of you tray.

18. <u>Running the Samples</u>: Go to Main Menu
Make sure correction for interferences are off, and the delay time is corrected to 78, go up to store to new file and enter, choose an existing file with same date and enter, go up to use autosampler and enter, find todays tray and enter and answer no to any command and enter.

19. Making up the Standards:

A. <u>NORM ACT Standards</u>:

N-1 Blank <<8 ml conc. HCl/100 ml deionized H_2O>>
N-2 Ca, Cd, Co, Cu, Mg, Mn, Pb, Zn
N-3 Al, Fe, Mo, Ni, Sb
N-4 As, Cr, Se
N-5 Sn

B. <u>WATER ACT Standards</u>:

W-1 Blank <<8ml conc. HCl/100 ml deionized H_2O>>
W-2 Ba, Ca, Cd, Co, Cu, Mg, Pb, Zn, Mn
W-3 Al, Be, Fe, Mo, Ni, Sb, Ti, Zr
W-4 As, B, Cr, Se, Si
W-5 U, V
W-6 Au, Sn
W-7 Ag
W-8 Na, K

C. To make up standards , 0.5 ml of stock solution in pipetted in to a 50 ml volumetric flask. After all the metals are in the flask add 4 ml HCl (except for W-5 and W-7 which is 4 ml HNO_3) and bring to volume with deionized water. All concentrations are 10 ppm except Cu, Zn, Ca, Al, As are 5 ppm and Cd, Cr, Se, Be, B, V, U, Ag and Na are 1 ppm.

APPENDIX F

Correspondence

List

Date	Correspondence
February 8, 1991	Letter from M. Travers, de maximis, inc. to C. Manning, EPA-Region III summarizing activities completed to sample and analyze the non-vegetated areas and areas of accumulated debris
February 20, 1991	Letter from M. Travers, de maximis, inc, to C. Manning, EPA-Region III transmitting force majeure report to cover loss of GSX/Laidlaw site manager/QA/QC officer to active duty during Persian Gulf War
February 27, 1991	Letter from M. Travers, de maximis, inc, to C. Manning, EPA-Region III transmitting information relative to performance of stabilization of hazardous materials on-site
February 28, 1991	Letter from M. Travers, de maximis, inc, to C. Manning, EPA-Region III describing protocol used to evaluate site materials as "mixed wastes"
March 12, 1991	Letter from M. Travers, de maximis, inc, to C. Manning, EPA-Region III regarding additional SCDHEC informational requirements from Chem-Nuclear
March 15, 1991	Letter from M. Travers, de maximis, inc, to C. Manning, EPA-Region III regarding stabilization of materials at Pinewood facility and potential project delays
March 19. 1991	Letter from M. Travers, de maximis, inc, to C. Manning, EPA-Region III regarding notification by Pinewood facility's management that they would no longer accept site materials
March 21, 1991	Letter from M. Travers, de maximis, inc, to C. Manning, EPA-Region III regarding clarification of project delays and Pinewood's termination of receipt of site materials (with attachment letters)