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WORK PLAN FOR THE DISMANTLEMENT AND REMOVAL OF THE FILTER BAGHOUSE AND CONVEYOR ASSEMBLY LOCATED IN THE G-1 BUILDING AT 1000 HARVARD AVENUE, CLEVELAND, OHIO

SEPTEMBER 1996, REVISION 0

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- B. Koh and Associates, Inc. -
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Springville, New York 14141

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9199 Reisterstown Road, Suite 111-C
Owings Mills, Maryland 21117-4520

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APPROVED

B. Koh and Associates, Inc.

PROJECT DIRECTOR

Theodore G. Adams
Name (Please Print Clearly or Type)

Theodore G Adams / 9/30/96
Signature / Date

APPROVED

B. Koh and Associates, Inc.

PROJECT MANAGER

James Berghoff
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Jim Berghoff / 10/1/96
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Duane A. Raffel / 10/1/96
Signature / Date

LIST OF TABLES

Table 1 Air Monitoring/Sampling Action Levels

Table 2 Radioactive Contamination Limits

LIST OF FIGURES

Figure 1 Engelhard Corporation - Site Layout

Work Plan for the Dismantlement and Removal of the Filter Baghouse
and Conveyor Assembly
Located in the G-1 Building
at 1000 Harvard Avenue
Cleveland, Ohio

1.0 INTRODUCTION

This document presents a work plan for the dismantlement and removal of the filter baghouse and related conveyor assembly located in the northeast corner of Building G-1. The work will be performed in accordance with the guidelines contained in the Engelhard Corporation Health and Safety Plan (Engelhard Site, Cleveland, Ohio), May 1995, Revision 0, and the Radiological Control Plan (Engelhard Corporation), Revision 0, May 1995.

1.1 Purpose

The purpose of this work plan is to outline the steps that will be undertaken by B. Koh and Associates, Inc. to remove the old baghouse and conveyor system located on the first, second and third floors of the BGD (a subsidiary of Chevron) building. The baghouse and conveyor system is owned by the Engelhard Corporation.

1.2 Scope

The scope of this work plan is limited to the dismantlement and removal of the baghouse and conveyor assemblies located at the northeast corner of the BGD G-1 building (Figure 1). The baghouse and conveyor structures extend from the first to the third floors. These structures are free standing or are connected to existing structural members. However, they do not provide any necessary structural integrity to the building, or provide any support to load bearing formations. Temporary lighting will be utilized, along with an air compressor, to operate the pneumatic tools required to perform the dismantlement and removal activities. A cutting torch will be used to remove sections too large to be disassembled by hand. The walls and floor will be protected with plywood, as required to prevent any spread of existing contamination.

Entrance and exit from the building will be accomplished via the external stairway and entrance door on the second floor, located on the northwest corner of the building (Figure 1). An alternate entrance and

exit point will be through the previously established control point on the southeast corner of the building, if the first point is deemed inadequate for any reason (Figure 1).

All materials related to the dismantlement and removal of the filter baghouse and conveyor assembly that have been determined to be free of radiological contamination will be removed from the building through an open window. The anticipated opening will be on the second floor of the building's north wall, adjacent to the filter baghouse (Figure 1). Sections of plywood currently covering these windows will be carefully removed to allow access to scrap metal dumpsters staged on the cement pad below. After dismantlement and removal operations are completed, the window coverings will be returned to their original condition.

Although the baghouse and conveyor are not believed to be contaminated, materials that contain surface contamination above the unrestricted release criteria will be decontaminated, as necessary. Any materials or residual products left in the baghouse of conveyor system will be handled and disposed of in an appropriate manner.

2.0 METHODOLOGY

2.1 Preparation of Work Area

Before the dismantlement process begins, the existing electrical service to the filter baghouse and conveyor assembly will be de-energized by a competent electrician. Plywood will be placed on the floors, as required, to prevent the spread of existing contamination and to afford a clean work surface to prevent the baghouse and conveyor from becoming contaminated. Temporary lighting will be utilized in the work areas, as required, to provide the necessary illumination to perform the work. The installation of the temporary lighting will be under the guidance of an electrician to insure safe work practices.

An air compressor will be utilized to provide the necessary support for air driven tools that will be sued in the dismantlement and removal activities.

Dismantlement and removal of the baghouse and conveyor system in presented in Section 4.0.

3.0 GENERAL SAFETY AND RADIOLOGICAL CONTROLS

3.1 General Safety Controls

3.1.1 Fire

Two ten pound (minimum) A-B-C rated fire extinguishers will be kept in the immediate vicinity during the use of any cutting torches or spark producing tools to minimize the possibility of fire. A "fire watch" will be provided for at least 30 minutes after the last cut is made to minimize the possibility of a fire.

3.1.2 Confined Space

Some of the interior portions of the baghouse may be considered a confined space, while B. Koh and Associates, Inc. workers have received the required confined space training, all disassembly work will be performed from the exterior of the structure until the interior portion(s) can be reclassified.

3.1.3 Falls

As the structures are dismantled and removed, openings will be created in the floors. The "openings" will be created by the removal of the structures, not by removal of flooring slabs or material. This will require the use of safety ropes or guard rails around these openings to prevent workers from falling into them. These safety devices will be employed as the situation dictates to maintain a safe work area.

3.1.4 Personal Protective Equipment

The material that was processed by this equipment was fluorspar (CaF_2), an inorganic salt comprised of calcium fluoride, quartz silica and calcium carbonate. The use of a HEPA filter equipped respirator is suggested when removing the filter bags since silica, a component of fluorspar, is considered a potential carcinogen at concentrations above 0.1 mg/m^3. Air sampling will be performed to determine the

fluorspar concentrations and to determine the need for respiratory protection. A description of the air sampling protocol is described in Section 3.2.4.1. Filter pads will be dried and weighed before and after the work day to determine the fluorspar airborne concentration.

3.1.5 Respiratory Protection

If air purifying respirators are required, full face respirator, with combination organic vapor and high efficiency dust and mist/radioactive cartridges, will be used. Respirators belong to, and are only used and maintained by, the individual to whom they have been issued. Each B. Koh and subcontractor employee who anticipates working onsite must be trained, fit tested, and declared medically fit to wear respiratory equipment prior to participating in field activities. Respiratory protection requirement for radiological contaminants are specified in Section 10.0 of the Radiological Control Plan (Engelhard Corporation, May 1995).

3.2 Radiological Controls

3.2.1 Surveys

All radiological surveys of surfaces of the filter baghouse and conveyor assembly will be performed by qualified radiation technicians using calibrated instruments and approved field procedures.

3.2.1.1 Surface Scans

Surface scans of the filter baghouse and the conveyor assembly will be performed using a calibrated GM pancake probe (Ludlum model 44-9) coupled to a ratemeter (Ludlum model 2221) or a calibrated 100 cm^2 gas proportional detector (Ludlum model 43-68) coupled to a ratemeter (Ludlum model 2241) prior to the start of or in parallel with dismantling activities.

Guidance in performing surface scans is contained in Engelhard Field Procedures and NUREG/CR-5849. Surface scans will be performed by holding the probe approximately 0.25 to 0.5 inch away from the surface to be surveyed. The probe will be passed slowly across the surface (≈ 2 inches/second) while listening for changes in the audible output of the instruments for quick response to elevated beta/gamma levels. Table 1 provides radioactive contamination limits to be used during all site activities.

3.2.2 Exposure Rates

Exposure rates will be taken prior to dismantling and removal of the filter baghouse and conveyor assembly and routinely as work progresses. Exposure rate measurements will be obtained at one meter above the surface, using a calibrated Bicron microrem survey meter.

3.2.3 Smear Swipe Samples

Smear samples of the filter baghouse and conveyor assembly, as well as the plywood, set up prior to removal of the filter baghouse and conveyor assembly, will be performed routinely to ascertain the presence of removable contamination during work activities. Smear samples will be taken using a two-inch diameter adhesive backed smear sample patch. The area swiped will be approximately 100 cm^2 (16 in 2). Swipes will be counted for alpha and beta-gamma radioactivity by using a scaler counter and probe. Each swipe will be counted for one minute for both alpha and beta-gamma activity using a calibrated Ludlum model 2929 or equivalent. Swipes will be dry prior to counting. Table 1 provides radioactive contamination limits to be used during all site activities.

3.2.4 Air Sampling

3.2.4.1 Work Area

Air samples will be collected daily using low volume grab samplers within the work area to demonstrate compliance with the occupational limits specified in 10 CFR 20, Appendix B, Table 1. Air samplers will

be operated continuously while work is being performed using an Eberline RAS-1 flow rate air sampler (or equivalent). The frequency and location of sampling equipment will be dictated by the activities that occur each day.

3.2.4.2 Environmental

To demonstrate compliance with the public limits specified in 10 CFR 20, Appendix B, Table 2 perimeter air samples will be collected and analyzed daily. The sampler(s) will be positioned at appropriate locations outside of the building to collect potential releases from the building.

All work area and environmental air samples will be counted for both alpha and beta-gamma activity using a calibrated Ludlum model 2929 or equivalent each day after work activities have been completed. Additionally, all air samples will be recounted after one week to determine the long-lived radioactivity present on the filters.

3.2.5 TLDs

3.2.5.1 Environmental Monitoring

Direct exposure to the public is presently being monitored with environmental thermoluminescent dosimeters (TLDs). The TLDs are placed at strategic locations along the site perimeters. The TLDs are changed quarterly and analyzed and evaluated by a dosimeter processor that holds current dosimetry accreditation from the National Voluntary Accreditation Program (NAVLAP) of the National Institute of Standards and Technology. These TLDs will confirm that no member of the public has received an exposure greater than the 10 CFR 20 non-occupational limit (100 mRem/yr).

3.2.5.2 Personnel Monitoring

B. Koh and Associates, Inc. will use TLD badges to measure personnel radiation exposure.

All personnel required to regularly enter and work in the radiologically restricted area will be provided with a primary dosimeter (TLD). This dosimeter will be worn daily throughout the duration of the project. Dosimetry will be analyzed at the end of work activities to determine radiation exposure of the individual. Visitors will be assigned a temporary dosimeter (TLD) or a self-reading dosimeter (SRD).

Table 2 presents TLD action levels which will be used during the site dismantling and removal activities.

3.2.6 Respiratory Protective Equipment

To maintain the internal exposure of radioactive materials to ALARA, engineering controls such as applying a fine mist of water or utilizing hepa filtered vacuum units will be used to the maximum extent possible. If engineering controls are not adequate, as demonstrated by work area air sampling, then respiratory protection will be considered to control internal exposures to radioactive materials.

Table 2 presents air monitoring/sampling action levels which will be used during the site dismantling and removal activities.

In addition, respiratory protection may be used for protection against dusts and other airborne, non-radioactive sources, such as operations conducted during removal of fluorspar filter bags within the filter baghouse. Full facepiece, negative pressure respirators will be worn for all radiological work, while half facepiece, negative pressure respirators will be worn for non-radiological (dust) work. Additional guidance on respiratory protection equipment selection and use can be found in Section 10.0 of the Radiological Control Plan (Engelhard Corporation, May 1995).

3.2.7 Personal Protective Equipment

PPE that will protect employees from the hazards and potential hazards likely to be encountered during dismantlement and removal activities will be selected and used. PPE selection will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site. Additional guidance on PPE required for radiological constituents is described in Section 11.0 of the Radiological Control Plan. The level of protection provided will be increased when conditions deem it necessary to reduce employee exposures to below permissible exposure limits and published exposure levels for hazardous substances.

3.2.7.2 Levels of Protection

All field activities will be performed at Level D. Level D protective clothing includes, but is not limited to:

- Work Clothes or Coverall and Tyveks
- Safety Boots or Steel Toe Work Shoes
- Safety Glasses or Goggles
- Hard Hat
- TLDs

In addition, hearing protection may be used as deemed necessary.

Respiratory protection will be used as described in Section 3.2.6.

3.2.8 Dust Suppression

If dismantlement and removal work generates or could potentially generate a visible dust cloud, or if general airborne dust or airborne radionuclide monitoring exhibits elevated concentrations, a water mist

will be applied to reduce dust generation. In addition, the filter bag assemblies remaining within the filter baghouse will be carefully lowered into open plastic bags to help reduce airborne fluorspar during operations to clean up the interior of the filter baghouse.

4.0 DISMANTLEMENT

Beginning with the top of the structures, any electrical conduits, wiring and motors will be disconnected and removed. The large ducting will be disassembled using pneumatic wrenches in the reverse order that it was originally installed. The light gauge sheet metal will be disassembled by removing the existing fasteners using pneumatic wrenches and a cutting torch. After the baghouse interior is exposed, the fiberglass insulation will be removed and placed into containers for disposal. The filter bags will then be disconnected at the top and lowered into containers for disposal. The structures will then be cut into manageable pieces in preparation for removal from the building. As the sections are removed from the structure, they will be surveyed and decontaminated as necessary to prepare for placement into the scrap dumpster (Figure 1) for shipment offsite. Any material that cannot be decontaminated will be placed in suitable containers and stored in the boiler house. The actual removal of the disassembled pieces from the building will be accomplished manually or by the use of a lift from the exterior of the building. Any other refuse will be disposed of in a safe and sanitary manner, as required by federal, state or local ordinances.

5.0 CLEAN-UP AND RESTORATION

The plywood used to prevent the spread of existing contamination will be surveyed, and, if necessary, will be decontaminated to unrestricted release levels before disposal.

Personal protection equipment will be surveyed and decontaminated, if required, and any equipment which is not able to be returned to an acceptable level will be disposed of as contaminated waste.

The plywood which was removed from the window opening will be refastened and any which was damaged will be replaced to match existing.

The pad area outside of the building where the scrap dumpster and compressor/generator was staged will be surveyed for contamination, and if any is found it will be removed and placed in an approved container for disposal.

TABLE 1
RADIOACTIVE CONTAMINATION LIMITS

NUCLIDES[a]	AVERAGE[b, c, f]	MAXIMUM[b, d, f]	REMOVABLE[b, e, f]
Equipment: U-nat, U-235, U-238 and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm^2	3,000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm βγ/100 cm^2	15,000 dpm βγ/100 cm^2	1,000 dpm βγ/100 cm^2
Personnel	200 dpm βγ 20 dpm α		

[a] *Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.*

[b] *As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.*

[c] *Measurements of average contaminant should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each such object.*

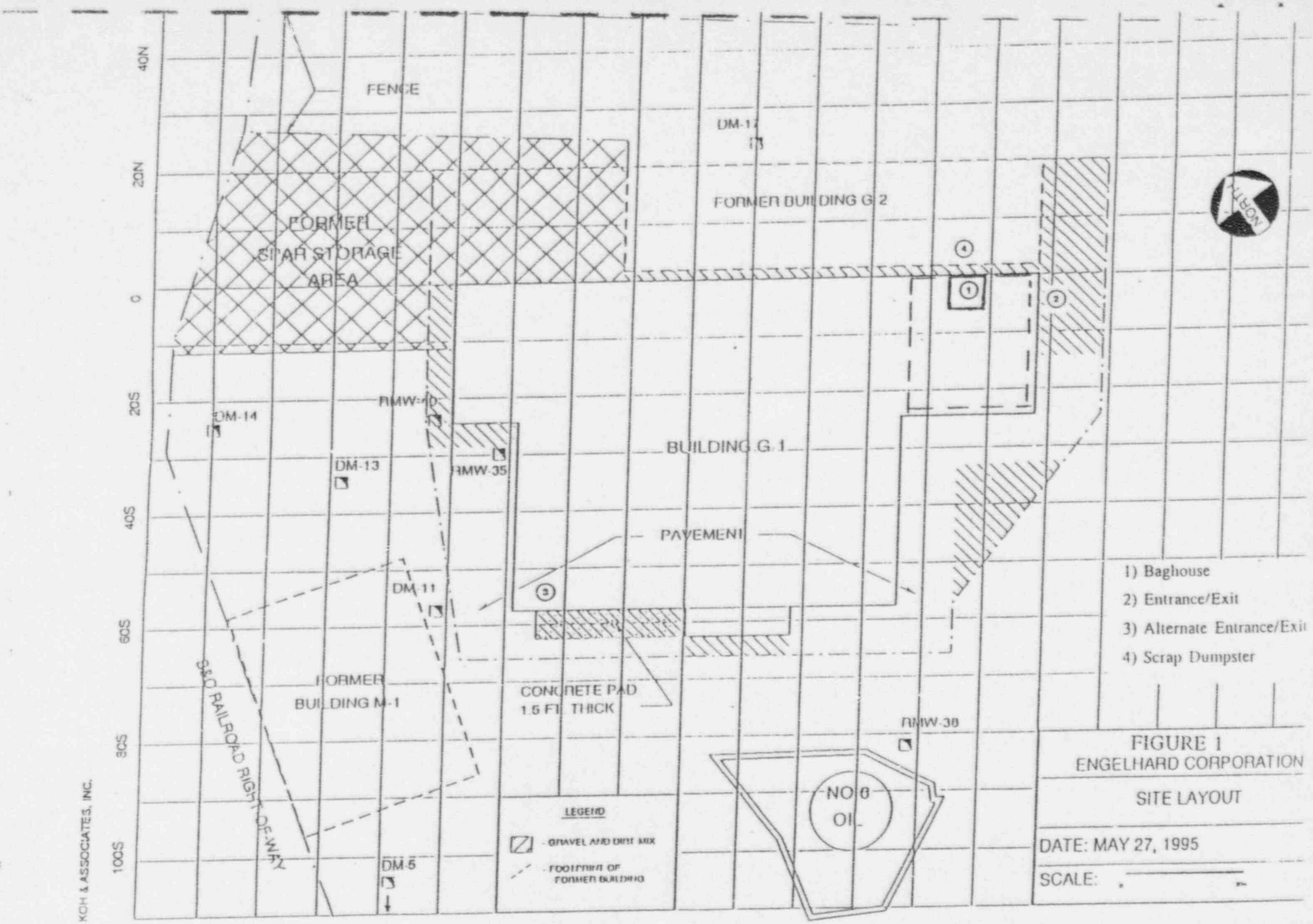
[d] *The maximum contamination level applies to an area of not more than 100 cm^2.*

[e] *The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.*

[f] *The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.*

TABLE 2
AIR MONITORING/SAMPLING ACTION LEVELS

TYPE OF MEASUREMENT	READING	ACTION
TLD - Personnel	>50 mrem/qtr	• Investigate exposure source(s), evaluate tasks/operations involving potential for exposure, establish ALARA controls to reduce exposures as appropriate. • Notify PM and RSO.
TLD - Project Site Perimeter	2 times background	• Determine source and evaluate impact on public. • Notify PM and RSO.
Work Area Air Samples for Particulate Radioactivity	Administrative Limit (50% of 10 CFR 20 limit)	• Investigate additional engineering. methods to reduce exposure to airborne materials. • Notify PM and RSO. • Increase frequency of work site air sampling.
Work Area Air Samples for Particulate Radioactivity	0.10 to 0.25 of 10 CFR 20 Limit	• Investigate the need for respiratory protection. • Notify PM and RSO.
Perimeter sampling for Particulate Radioactivity	>0.5 of 10 CFR 20 Limit	• Notify PM and RSO. • Evaluate controls of off-site emissions and modify as appropriate.



B. KOH & ASSOCIATES, INC.

ENGEL-5

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September 13, 1996

Ms. Ruth Vandegrift
Ohio Department of Health
Bureau of Radiological Health Services
Post Office Pox 118
Columbus, OH 43266-0118

SUBJECT: DECOMMISSIONING OF ENGELHARD SITE, CLEVELAND, OHIO

Dear Ms. Vandegrift:

On August 14, 1996, Mr. William Snell of my staff contacted you by telephone concerning the decommissioning of the Engelhard site at 1000 Harvard Avenue, Cleveland, Ohio. As you were already aware, the Chevron Corporation and the Engelhard Corporation were working to decommission the Chevron Plant "C" Building and the area surrounding the building at this site. Mr. Snell had contacted you to inform you that we had been informally notified by B. Koh and Associates, Inc., on behalf of Engelhard, that they were planning on moving ahead to develop a decommissioning plan to remediate other remaining contaminated areas at this site.

In past discussions with ODH (Ohio Department of Health), we had informally agreed that ODH would assume the lead for Engelhard's decommissioning of these other areas at the site once the Chevron Building remediation was completed. However, following Engelhard's recent notification of their intent to move ahead to complete remediation at the site, we raised the issue of regulatory jurisdiction with NRC Headquarters. As Mr. Snell informed you, we were told that we should maintain the lead for the decommissioning of the entire site since it is NRC regulatable material. Based on Mr. Snell's discussion with you, it is our understanding that this was acceptable, and you would continue to offer the support of ODH in our efforts at this site. We also agreed to ensure that you continue to receive copies of all correspondence concerning this decommissioning effort.

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If you have any questions, please contact me (630/829-9872) or Mr. Snell (630/829-9871).

Sincerely,

Original Signed by

J. W. McCormick-Barger, Chief
Decommissioning Branch

Project Code: 698

cc: M. Weber, NMSS, DWM
A. Kopas, Engelhard Corp.
T. Adams, B. Koh & Associates
C. Pederson, RIII
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