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K-65 SILO VERTICAL BORING SAMPLING AND ANALYSIS PLAN RI/FS WORK PLAN ADDENDUM MARCH 1991

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REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO

RI/FS WORK PLAN ADDENDUM:

K-65 SILO BERM VERTICAL BORING SAMPLING AND ANALYSIS PLAN

MARCH 1991

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K-65 SILO BERM VERTICAL BORING SAMPLING PLAN

1.0 INTRODUCTION

The K-65 silo berm soils will be analyzed for geotechnical, chemical and radiological parameters, based on the following historical information:

- The K-65 silo leakage history as documented in a memorandum from R.C Heatherton, National Lead Company of Ohio (NLO), to Central Files, NLO, dated November 25, 1953, Subject: "K-65 Storage Tank No. 1".
- A preliminary radiological assessment indicates the possible presence of silo-derived radon daughter products, lead 210, polonium 210, and stable lead in the soils surrounding the K-65 silos.

The K-65 silo berms will be sampled and analyzed to determine and verify the extent of contamination in the soils surrounding the K-65 silos.

A site specific health and safety plan has been written and will be implemented to insure worker safety and satisfy applicable regulations.

1.1 EMERGENCY PROCEDURES

If an emergency situation arises during the course of this work, it will be handled as outlined in the WMCO K-65 Silo Numbers and 1 and 2 Area Emergency Procedures (SOP 65-C-201). If radioactive materials, exceeding the action levels identified in the safety plan are encountered, the boring will be immediately plugged as this will be an indication that the silo is leaking excessively.

1.2 DRILLING AND SAMPLING PROCEDURES

The following subsections outline the K-65 silo berm vertical boring sampling effort.

1.2.1 Drilling Procedures

The Vibracore[1] technique will be used for the four vertical borings. The vibracorer barrel will be lined with a Lexan sleeve. The inner diameter of the sleeve will be three inches. After drilling and sampling is complete, the boring will be plugged with cement-bentonite grout utilizing the tremie line method.

1.2.2 Sampling Procedures - Four Vertical Borings

Four vertical borings will be advanced and sampled between two and three feet from the exterior of the silo walls, at locations adjacent to the decant ports, utilizing the Vibracore technique. A continuous core of berm material will be collected from each boring to a maximum depth of 30 feet. See Figure 1-1 for the boring locations. All samples will be screened for radioactivity and volatiles.

After initial radiological screening of the core is completed, the core will be sectioned into 12-inch sample lengths. Additional radiological screening of the sample sections will be accomplished in the field, with a pancake GM meter and an alpha detector, after the sections have been screened for volatile organics with an Hnu. The open ends of each 12-inch sample will be screened for volatile organics immediately after the completion of the sectioning cut.

Six samples from each boring will be submitted for radiological and Lead-210 analyses. A sample will be selected from each 5-foot interval in all borings. The sample displaying the highest radiological screening value within each interval will be submitted for radiological and Lead-210 analyses. If all samples within an interval display similar screening values then a sample from near the mid-point of the interval will be analyzed.

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[1]Vibra-Corer Sampling Device - Solids sampling equipment consisting of a air-driven head assembly connected to a pipe barrel with a threaded penetrating probe containing inner LEXAN sleeve used to extract long core samples. If required, a cutter/catch assembly located at the bottom of the pipe barrel is used to penetrate and retain the sample residues.

HSL analyses will be performed on three samples from each boring. A sample will be selected from the 0 to 10 ft., the 10 to 20 ft. and the 20 to 30 ft. intervals. The sample with the highest Hnu reading from each interval will be submitted for a full HSL analysis. A sample from near the middle of each interval will be analyzed for HSL constituents, if no elevated Hnu readings are observed.

A TCLP test for organic and inorganic constituents will be performed on one sample from each boring. The sample will be selected from near the mid-point of each boring.

Geotechnical analyses specified in Table 2 will be performed on three samples from each boring. One sample will be selected from each of the intervals of 0 to 10 ft., and 10 to 20 ft. and 20 to 30 ft.

The balance of unused sample sections will be sealed and archived. All boring logs, sample collection records, and analyses shall be performed per the RI/FS Quality Assurance Project Plan requirements unless they are specifically altered in this addendum. Sample analyses are specified in **Sections 1.3 and 1.4** and summarized in Tables 1 and 2.

1.3 RADIOLOGICAL AND CHEMICAL ANALYSES

Samples at the specified intervals will be analyzed for radiological and chemical constituents. The required radiological and chemical analyses are listed below:

- Full radiological analysis as defined in the "RI/FS, FMPC, Quality Assurance Project Plan," dated March 31, 1988.
- Pb-210 (sample concentrations of polonium 210 can also be determined from this analysis, because there had been sufficient storage time to allow the nuclides to reach secular equilibrium).
- Full HSL analysis as defined in the "RI/FS, FMPC, Quality Assurance Plan," dated March 31, 1988.
- TCLP Organics and Inorganics

Sample preparation and analysis will be performed in accordance with the RI/FS FMPC Quality Assurance Project Plan, dated March 31, 1988.

1.4 GEOTECHNICAL ANALYSES

The physical properties of the embankment will be used to determine the expected soils behavior during remedial alternative soil conditioning, such as grout injection, as well as general geological and descriptive geotechnical parameters. The analyses ASTM standards and procedures are identified in Table 2.

All sample analytical testing must be conducted as specified under the appropriate ASTM standards and laboratory procedures using qualified geotechnical technician(s) and properly calibrated apparatus which meet the intent of ASTM D3740-80. Documentation for the testing will conform to the standards set forth in the RI/FS, FMPC Quality Assurance Project Plan," QAPP.

1.5 DURATION

Four Vertical Borings:

Training	=	2.5 days
Sampling: 4 borings @ 1 boring/2 days	=	8.0 days
Set-up, Plugging Boring, Rig Maintenance, Tear Down and Decontamination: @ 2 days/boring	=	8.0 days
Total Work Days to Complete Task	=	18.5 days