Hematite Revitalization Program

Utility/Support Building Construction Zone

Soil Sampling Results

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CORE SAMPLING - HEMATITE CONSTRUCTION AREA

Core samples at one-foot intervals to a depth of six feet were obtained at locations C1 through C5, using a split spoon core sampler with an I.D. of 1-1/2 inches. A 2.5 to 3 inch section was taken after drilling to the proper depth. The split spoon sampler and all equipment involved was cleaned with a high pressure water spray between samples to prevent cross-contamination. The outer 1/4 inch was "peeled" from the sections to eliminate any surface smearing which may have occurred during sampler penetration. The sample size retained was about 100 grams. The consistency of most samples was "packed mud".

The samples were dried and crushed and a 0.5 gram portion removed for counting. The 0.5 gram sample was spread evenly on the bottom of a metal planchett and counted for 10 minutes for gross alpha activity, using a Tennelec LB5100 low background counting system. Results were multiplied by the factor of 4.47 to correct for alpha absorption in the sample.

NEW SEWER LINE, FOOTING AND GENERAL AREA SAMPLING - HEMATITE CONSTRUCTION AREA

Evenly distributed sample locations were established using the "Storage/ Utility Building" drawings. These sample locations are labeled SU1 - SU22 (footing), SUFL1 - SUFL18 (general area) and SUSL1 - SUSL10a (new sewer).

Samples had to be taken in sequence of excavation locations.

The asphalt was removed one section at a time to avoid uncovering any large areas of dirt before they could be analyzed. The reason for this procedure was to lessen the possibility of rain water spreading any possible contamination.

After each location was excavated, a 100 gm sample was removed using a stainless steel scoop.

Each footing sample had to be analyzed prior to pouring of concrete.

The samples were dried and crushed and a 0.5 gram portion removed for counting. The 0.5 gram sample was spread evenly on the bottom of a metal planchett and counted for 10 minutes for gross alpha activity, using a Tennelec LB5100 low background counting system. Results were multiplied by a factor of 4.47 to correct for alpha absorption in the sample.

GRID SAMPLING - HEMATITE CONSTRUCTION AREA

A 25 foot grid pattern was established covering the area where the Storage/Utilities building is to be built. The sample locations are labeled G1 - G17.

Samples were taken at the corners of each grid cell.

Each sample was taken at a depth of 1 foot.

Sample size ~ 100 gms taken with a stainless steel scoop.

The scoop was thoroughly cleaned between samples to avoid cross contamination.

The samples were dried and crushed and a 0.5 gram portion removed for counting. The 0.5 gram sample was spread evenly on the bottom of a metal planchett

and counted for 10 minutes for gross alpha activity, using a Tennelec LB5100 low background counting system. Results were multiplied by a factor of 4.47 to correct for alpha absorption in the sample.

STORM SEWER SAMPLING - HEMATITE CONSTRUCTION AREA

Storm sewer removal and sampling was done in conjunction with the excavation of the footings and of the general area.

Prior to starting work, radiation training was provided to the contractors involved with the excavation of the sewer pipe. This is the same training provided to the CE employees. A backhoe was used to remove the dirt down to the top of the sewer pipe. Any excavated dirt which was analyzed and determined clean was moved to a designated location outside of the fenced area. Any excavated dirt which was analyzed and determined to be contaminated, was placed into tote boxes and prepared for burial.A backhoe was also used to remove the soil from around one side of the pipe down to the same level as the bottom of the pipe. This soil was handled in the same manner as described above. The area around the excavation was continually being monitored for gross beta/gamma activity using a nuclear Chicago Model 2650 survey meter.

The area under the pipe joints was removed by shovel so that the H.P. technician could access the soil for sampling. Sheets of plastic were placed below each joint before separation to catch any leakage. Most sludge, if any, was solid enough that only very small amounts were lost from each section during removal. Each sample from joint or sludge from inside the pipes was approximately 200 cc. After inspection, each pipe was placed into a tote box for burial.

The samples were dried and crushed and a 0.5 gram portion removed for counting. The 0.5 gram sample was spread evenly on the bottom of a metal planchett and counted for 10 minutes for gross alpha activity, using a Tennelec LB5100 low background counting system. Results were multiplied by the factor of 4.47 to correct for alpha absorption in the sample.

STORAGE/UTILITY BUILDING - GROUND SAMPLE PLAN

NEW SEWER LINE SAMPLES

SAMPLE NUMBER	Pci/GM	SAMPLE DEPTH
SUSL 1	22	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 2	23	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 3	22	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 4	23	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 5	26	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 6	5	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 7	22	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 8	27	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 9	6	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 10	28	SAMPLE TAKEN DIRECTLY BELOW SURFACE
SUSL 1 a	16	APPROX. 36 INCHES BELOW SURFACE
SUSL 2 a	9	APPROX. 36 INCHES BELOW SURFACE
SUSL 3 a	13	APPROX. 36 INCHES BELOW SURFACE
SUSL 4 a	16	APPROX. 36 INCHES BELOW SURFACE
SUSL 5 a	27	APPROX. 36 INCHES BELOW SURFACE
SUSL 6 a	14	APPROX. 36 INCHES BELOW SURFACE
SUSL 7 a	12	APPROX. 36 INCHES BELOW SURFACE
SUSL 8 a	28	APPROX. 36 INCHES BELOW SURFACE
SUSL 9 a	9	APPROX. 36 INCHES BELOW SURFACE
SUSL 10 a	13	APPROX. 36 INCHES BELOW SURFACE

CORE SAMPLES

C1	8	SAMPLE TAKEN DIRECTLY BELOW ASPHALT
C1	8	APPROX. 12 INCHES BELOW SURFACE
C1	11	APPROX. 24 INCHES BELOW SURFACE
C1	11	APPROX. 36 INCHES BELOW SURFACE
C1	5	APPROX. 48 INCHES BELOW SURFACE
C1	21	APPROX. 60 INCHES BELOW SURFACE
C1	5	APPROX. 72 INCHES BELOW SURFACE
C2	11	SAMPLE TAKEN DIRECTLY BELOW ASPHALT
C2	18	APPROX. 12 INCHES BELOW SURFACE
C2	12	APPROX. 24 INCHES BELOW SURFACE
C2	11	APPROX. 36 INCHES BELOW SURFACE
C2	11	APPROX. 48 INCHES BELOW SURFACE
C2	9	APPROX. 60 INCHES BELOW SURFACE
C2	5	APPROX. 72 INCHES BELOW SURFACE
C3	3	SAMPLE TAKEN DIRECTLY BELOW ASPHALT
C3	14	APPROX. 12 INCHES BELOW SURFACE
C3	5	APPROX. 24 INCHES BELOW SURFACE
C3	14	APPROX. 36 INCHES BELOW SURFACE
C3	9	APPROX. 48 INCHES BELOW SURFACE
C3	6	APPROX. 60 INCHES BELOW SURFACE
C3	5	APPROX. 72 INCHES BELOW SURFACE
C4	22	SAMPLE TAKEN DIRECTLY BELOW ASPHALT
C4	142	APPROX. 12 INCHES BELOW SURFACE
C4	20	APPROX. 24 INCHES BELOW SURFACE
C4	28	APPROX. 36 INCHES BELOW SURFACE
C4	8	APPROX. 48 INCHES BELOW SURFACE
C4	12	APPROX. 60 INCHES BELOW SURFACE
C4	15	APPROX. 72 INCHES BELOW SURFACE
C5	43	SAMPLE TAKEN DIRECTLY BELOW ASPHALT
C5	43	APPROX. 12 INCHES BELOW SURFACE
C5	11	APPROX. 24 INCHES BELOW SURFACE
C5	17	APPROX. 36 INCHES BELOW SURFACE
C5	3	APPROX. 48 INCHES BELOW SURFACE
C5	2	APPROX. 60 INCHES BELOW SURFACE
C5	8	APPROX. 72 INCHES BELOW SURFACE

STORAGE/UTILITIES BLDG
NEW SEWER LINE SAMPLES
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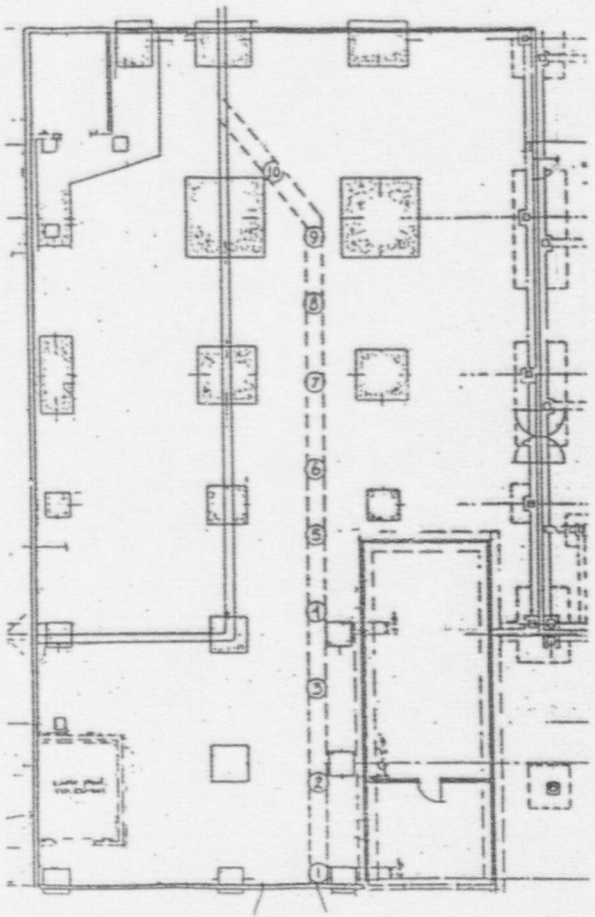

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CORE SAMPLES
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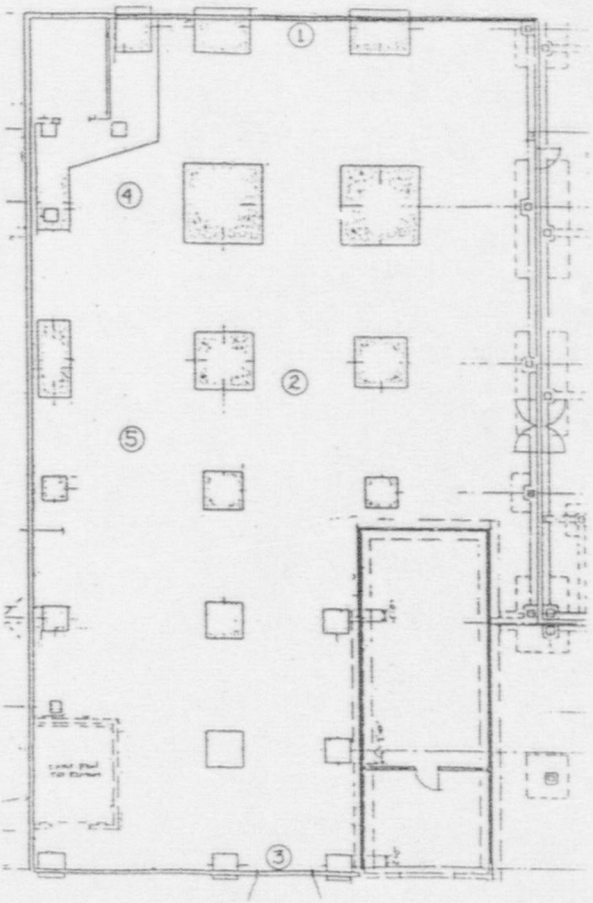

STORAGE/UTILITY BUILDING - GROUND SAMPLE PLAN

FOOTING SAMPLES

SAMPLE NUMBER	Pci/GM	SAMPLE DEPTH
SU 1	10	APPROX. 36 INCHES BELOW SURFACE
SU 2	15	APPROX. 36 INCHES BELOW SURFACE
SU 3	6	APPROX. 36 INCHES BELOW SURFACE
SU 4	18	APPROX. 36 INCHES BELOW SURFACE
SU 5	10	APPROX. 36 INCHES BELOW SURFACE
SU 6	21	APPROX. 36 INCHES BELOW SURFACE
SU 7	23	APPROX. 36 INCHES BELOW SURFACE
SU 8	13	APPROX. 36 INCHES BELOW SURFACE
SU 9	7	APPROX. 36 INCHES BELOW SURFACE
SU 10	14	APPROX. 36 INCHES BELOW SURFACE
SU 11	18	APPROX. 36 INCHES BELOW SURFACE
SU 12	7	APPROX. 36 INCHES BELOW SURFACE
SU 13	22	APPROX. 36 INCHES BELOW SURFACE
SU 14	14	APPROX. 18 INCHES BELOW SURFACE
SU 15	6	APPROX. 36 INCHES BELOW SURFACE
SU 16	11	APPROX. 36 INCHES BELOW SURFACE
SU 17	23	APPROX. 54 INCHES BELOW SURFACE
SU 18	16	APPROX. 60 INCHES BELOW SURFACE
SU 19	19	APPROX. 48 INCHES BELOW SURFACE
SU 20	18	APPROX. 48 INCHES BELOW SURFACE
SU 21	11	APPROX. 48 INCHES BELOW SURFACE
SU 22	7	APPROX. 48 INCHES BELOW SURFACE

25 FOOT GRID SAMPLES

G 1	4	APPROX. 18 INCHES BELOW SURFACE
G 2	15	APPROX. 18 INCHES BELOW SURFACE
G 3	15	APPROX. 12 INCHES BELOW SURFACE
G 4	15	APPROX. 12 INCHES BELOW SURFACE
G 5	12	APPROX. 12 INCHES BELOW SURFACE
G 6	11	APPROX. 12 INCHES BELOW SURFACE
G 7	25	APPROX. 12 INCHES BELOW SURFACE
G 8	7	APPROX. 12 INCHES BELOW SURFACE
G 9	9	APPROX. 12 INCHES BELOW SURFACE
G 10	5	APPROX. 12 INCHES BELOW SURFACE
G 11	12	APPROX. 18 INCHES BELOW SURFACE
G 12	9	APPROX. 12 INCHES BELOW SURFACE
G 13	8	APPROX. 18 INCHES BELOW SURFACE
G 14	11	APPROX. 12 INCHES BELOW SURFACE
G 15	26	APPROX. 12 INCHES BELOW SURFACE
G 16	5	APPROX. 18 INCHES BELOW SURFACE
G 17	12	APPROX. 18 INCHES BELOW SURFACE

GENERAL AREA SAMPLES

SUFL 1	14	APPROX. 12 INCHES BELOW SURFACE
SUFL 2	18	APPROX. 36 INCHES BELOW SURFACE
SUFL 3	24	DIRECTLY BELOW ASPHALT/CONCRETE
SUFL 4	21	APPROX. 12 INCHES BELOW SURFACE
SUFL 5	16	APPROX. 48 INCHES BELOW SURFACE
SUFL 6	9	DIRECTLY BELOW ASPHALT/CONCRETE
SUFL 7	19	APPROX. 42 INCHES BELOW SURFACE
SUFL 8	5	APPROX. 18 INCHES BELOW SURFACE
SUFL 9	14	APPROX. 36 INCHES BELOW SURFACE
SUFL 10	9	DIRECTLY BELOW ASPHALT/CONCRETE
SUFL 11	23	DIRECTLY BELOW ASPHALT/CONCRETE
SUFL 12	8	DIRECTLY BELOW ASPHALT/CONCRETE
SUFL 13	21	DIRECTLY BELOW ASPHALT/CONCRETE
SUFL 14	9	DIRECTLY BELOW ASPHALT/CONCRETE
SUFL 15	22	APPROX. 48 INCHES BELOW SURFACE
SUFL 16	23	SEE GRID SAMPLE GEa FOR SAMPLE INFO
SUFL 17	14	APPROX. 10 INCHES BELOW SURFACE
SUFL 18	7	APPROX. 10 INCHES BELOW SURFACE

STORAGE/UTILITIES BLDG
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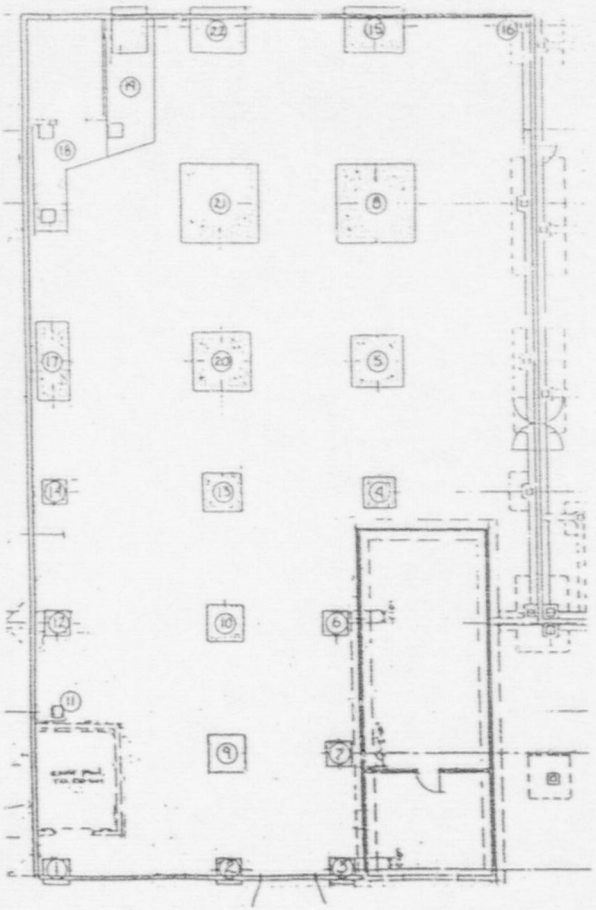

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25 FOOT GRID SAMPLES
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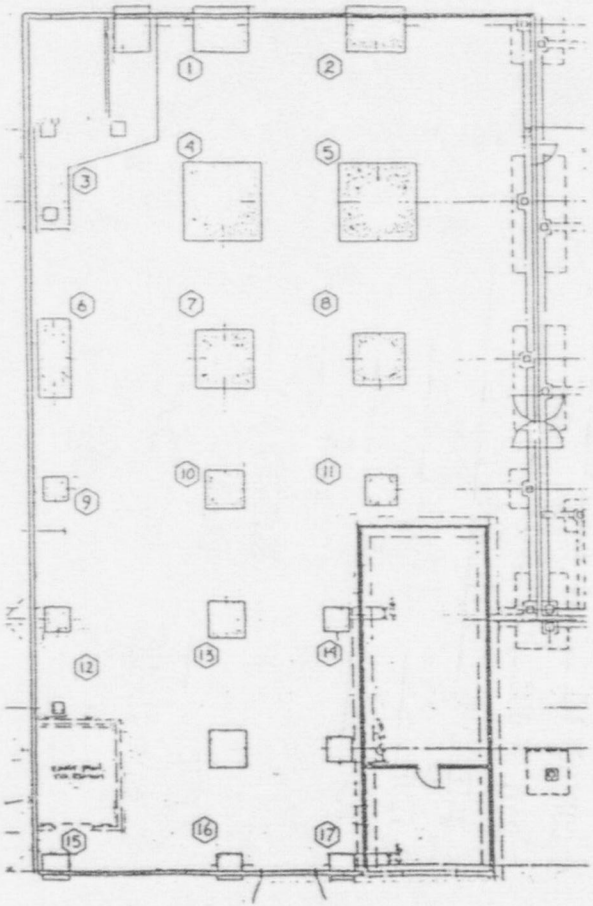

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GENERAL AREA SAMPLES
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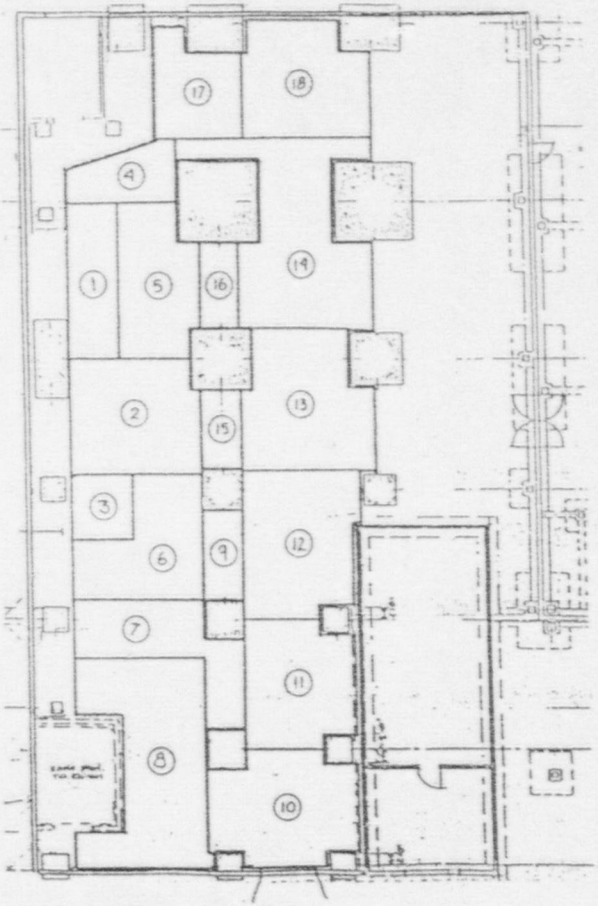

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FCUF ✓
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PDR ✓
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I & E REF. ✓
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