**MASON - de VERTEUIL
GEOTECHNICAL SERVICES**

A division of
Dodson-Lindblom Associates, Inc.

Neil E. Mason, P.E., Manager
Paul D. de Verteuil, P.E., Assistant Manager

6035 Huntley Road
Columbus, Ohio 43229
(614) 888-0576

November 5, 1985

C. M. B.

NOV 07 1985

Mr. Miles Schmidt
Danis Industries Corporation
1801 East First Street
Dayton, Ohio 45403

Re: Corrective Treatments
Closed Barrel Landfill
Tremont City, Ohio
M V Job No. 85-192

Gentlemen:

As requested, we have observed landfill repair operations and performed compaction testing relative to earthwork for the referenced project. In addition, laboratory testing for permeability was performed on a sample of the cover fill material placed on site. This report pertains to work performed during the period 8-28-85 to 10-16-85.

Prior to any placement of cover fill material, a "closed weave" geofabric was observed, in place, at the areas indicated on the attached drawing. Approximately 12 inches of fill was then placed over the "closed weave" fabric, compacted, and was tested for degree of compaction. An "open weave" geofabric was then placed upon the layer of fill above the "closed weave" fabric. At least 2 feet of compacted fill was then placed above the fabric thereby providing an adequate cover of low permeability material.

For detailed information about the results of the compaction testing you are referred to the attachments, which include the following:

1. Laboratory Data Sheets, one (1), presenting the moisture-density relation and related data for a soil sample considered as representative of the fill material. This serves as control data for checking the degree of compaction of the fill.
2. Summary of Compaction Test Data - presenting the findings of density testing of the fill. The field testing consists of:
 - a. Measuring the wet density, moisture content, and dry density of the tested interval, using a nuclear densometer.

- b. Making a one-point proctor determination at test locations. The results indicate which set of project control data is most similar to the fill materials being tested.
- c. Determining the compaction obtained, by dividing the dry unit weight of the tested interval by the maximum dry density at optimum moisture content as shown by the control curve. Results are expressed as a percentage.
- d. Comparing the test results with job requirements.

Remarks on the summary sheet show compliance or non-compliance with requirements, and a brief statement for the cause of non-compliance.

Supplemental tests are taken in areas of non-compliance after steps have been taken by the contractor to correct the deficiencies. These tests are indicated by the same number with a suffix letter beginning with "A".

Typical curves were used as control data for checking the degree of compaction in some instances. Typical curves, presenting the moisture-density relationships for a wide range of soils encountered in this area have been developed by us. These curves are used in place of, or to supplement, project curves, and are selected on the basis of a one-point proctor determination.

A sample of the cover fill material, compacted to 94.8 percent of maximum dry density as established by ASTM procedure D 698, was tested for permeability in the laboratory. The coefficient of permeability (k) of this sample was determined to be 9.425×10^{-8} centimeters per second.

On September 11, 1985 a cutoff trench, located between 430N and 700N on line 5E, (see attached drawing) was excavated to intercept water bearing sand seams encountered within the underlying soils. The trench extended to a depth of approximately 10 feet deep, with a width of about 10 to 15 feet. The trench was then filled with low permeability silt clay type soils and was tested for density, the results of which are shown in the Summary of Compaction Test Data as test numbers 16 and 17.

On our final site visit, the site had been graded to the elevations shown on the attached drawing, providing a favorable surface drainage for the site.

In general, the following statements summarize the corrective treatments performed on the Closed Barrel Landfill site;

1. "Sinkhole" areas were filled in and were reinforced with two layers of stabilization fabric: a closed weave fabric underlying an open weave fabric. At least 2 feet of fill was placed over areas in which geofabric is located to provide a suitable protective cover.
2. Fill material was compacted to a density of at least 95 percent of maximum dry density as established by ASTM procedure D 698, providing a cover of low permeability material.
3. A ten foot deep trench was excavated and filled in with compacted low permeability material to intercept sand seams downslope and east of barrel storage cells.
4. The site was contoured to a final grade which provides an adequate drainage pattern to hasten surface runoff flow.

If you should have any questions regarding this report, or if we can be of further assistance, please call.

Respectfully submitted,

MASON - de VERTEUIL GEOTECHNICAL SERVICES

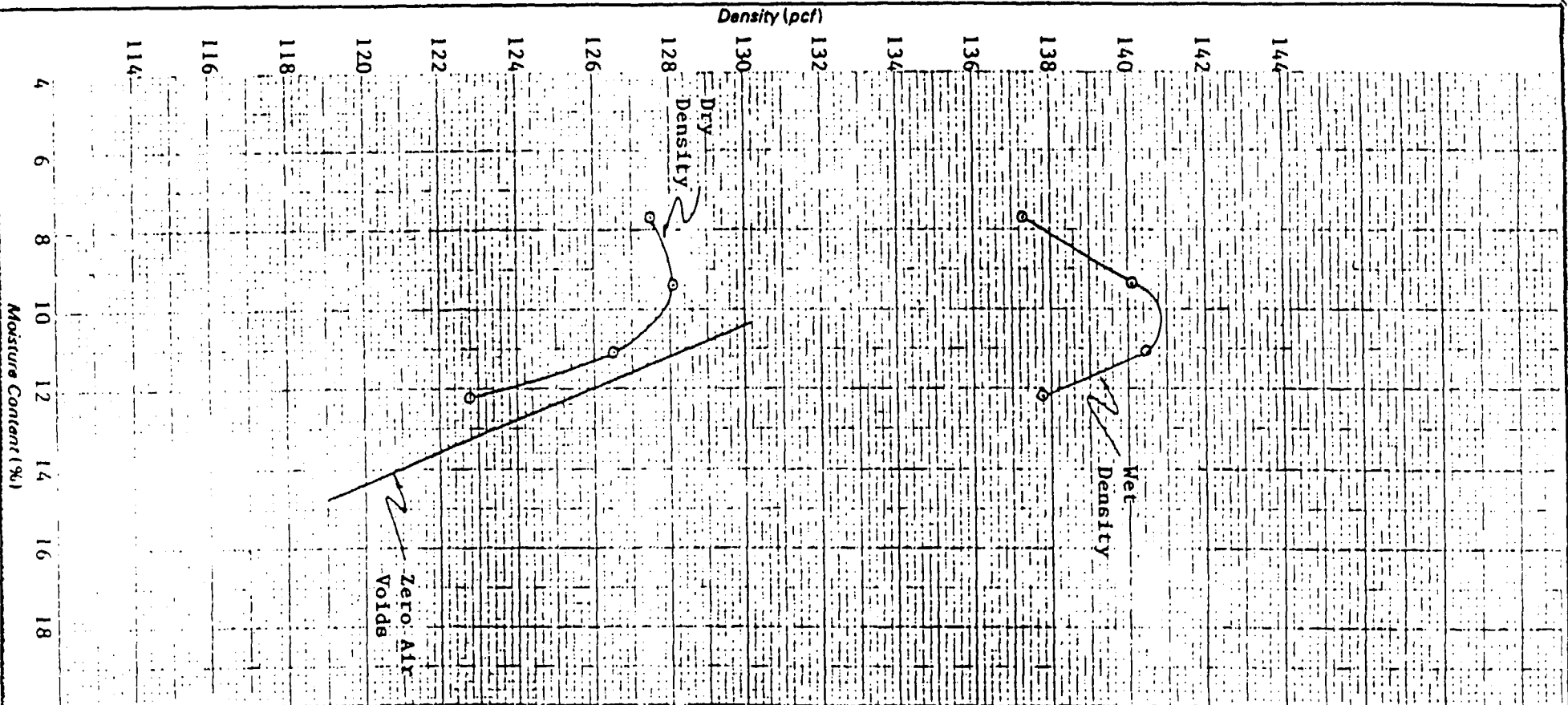

Mark Weritz
Civil Engineer, BSCE.


Paul D. de Verteuil, P.E.
Civil Engineer, MSCE.

Each: Moisture-Density Relation Test Results
Summary of Compaction Test Data
Drawing Showing Fabric Stabilized Areas

Copies: Mr. Schmidt - 3
Mr. Eagon - 1
File - 1

MOISTURE-DENSITY RELATION TEST RESULTS



CURVE NO. 1

MAXIMUM DRY DENSITY 128.1 pcf
OPTIMUM MOISTURE 9.6 %

Sample Description: Gray Till

Sample Source: Stockpile
on barrel fill site

Date Sampled: August 28, 1985

Sample Data

Grain-Size Distribution	
Size	Description %
Larger than 2"	0
1 1/2" - 2"	0
1" - 1 1/2"	1
3/4" - 1"	1
0.187" - 3/4"	5
0.0787" - 0.187"	25
0.0165" - 0.0787"	7
0.0029" - 0.0165"	17
0.00020" - 0.0029"	29
Smaller than 0.00020"	15

Plasticity 22 %
Liquid Limit 13 %
Plastic Index 9 %

Natural Moisture Content 8.0 %

Specific Gravity 2.66

Standard Proctor
ASTM D-698 Method C

Hammer Weight 5.5 lbs.

Hammer Drop 12 inches.

Number of Blows per layer 56

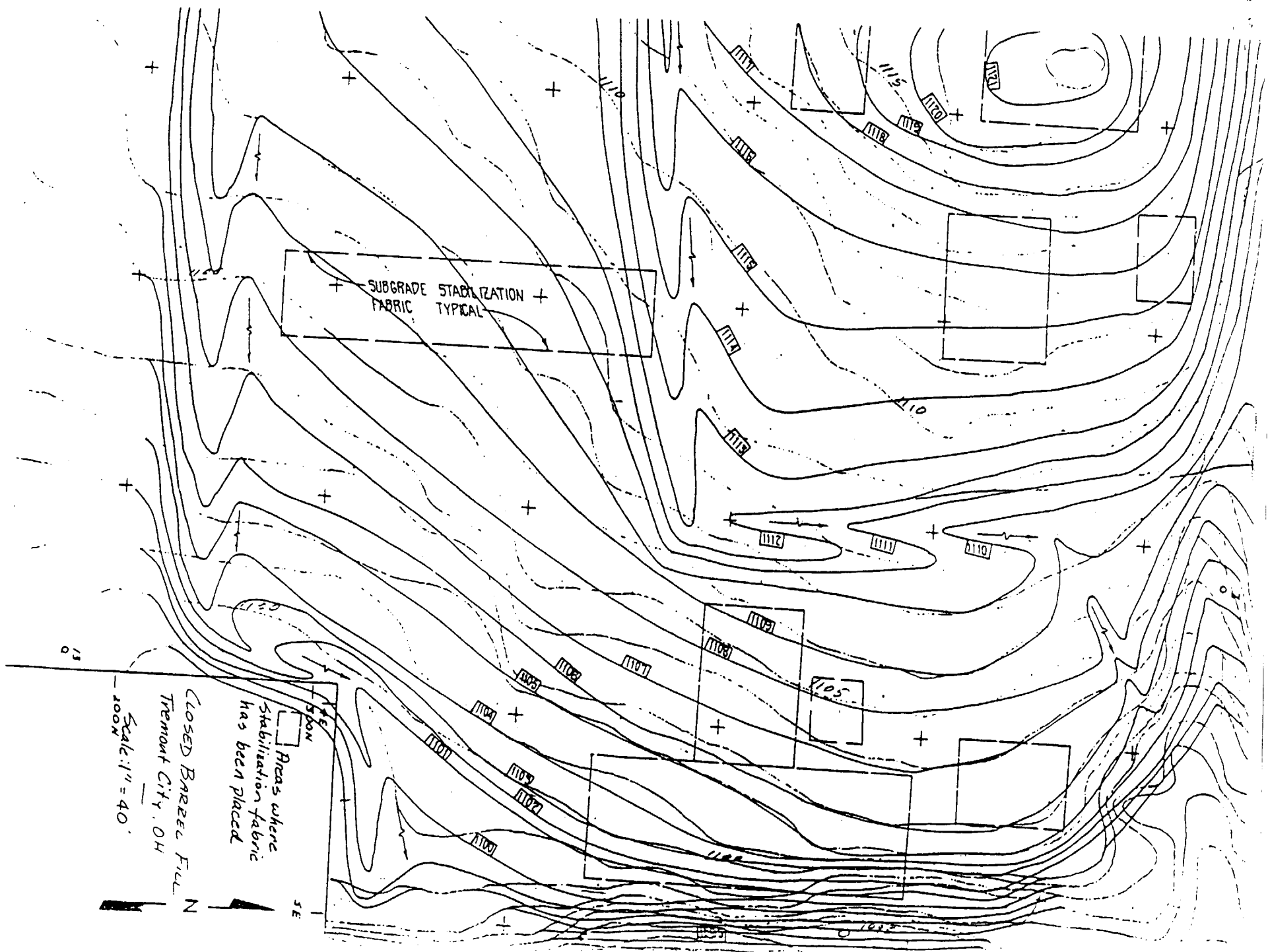
Number of Layers 3

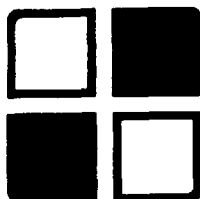
Mold Size 1/13 cubic feet

Test Performed on Material

Passing 3/4" Sieve

Remarks:





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CC: OSHA

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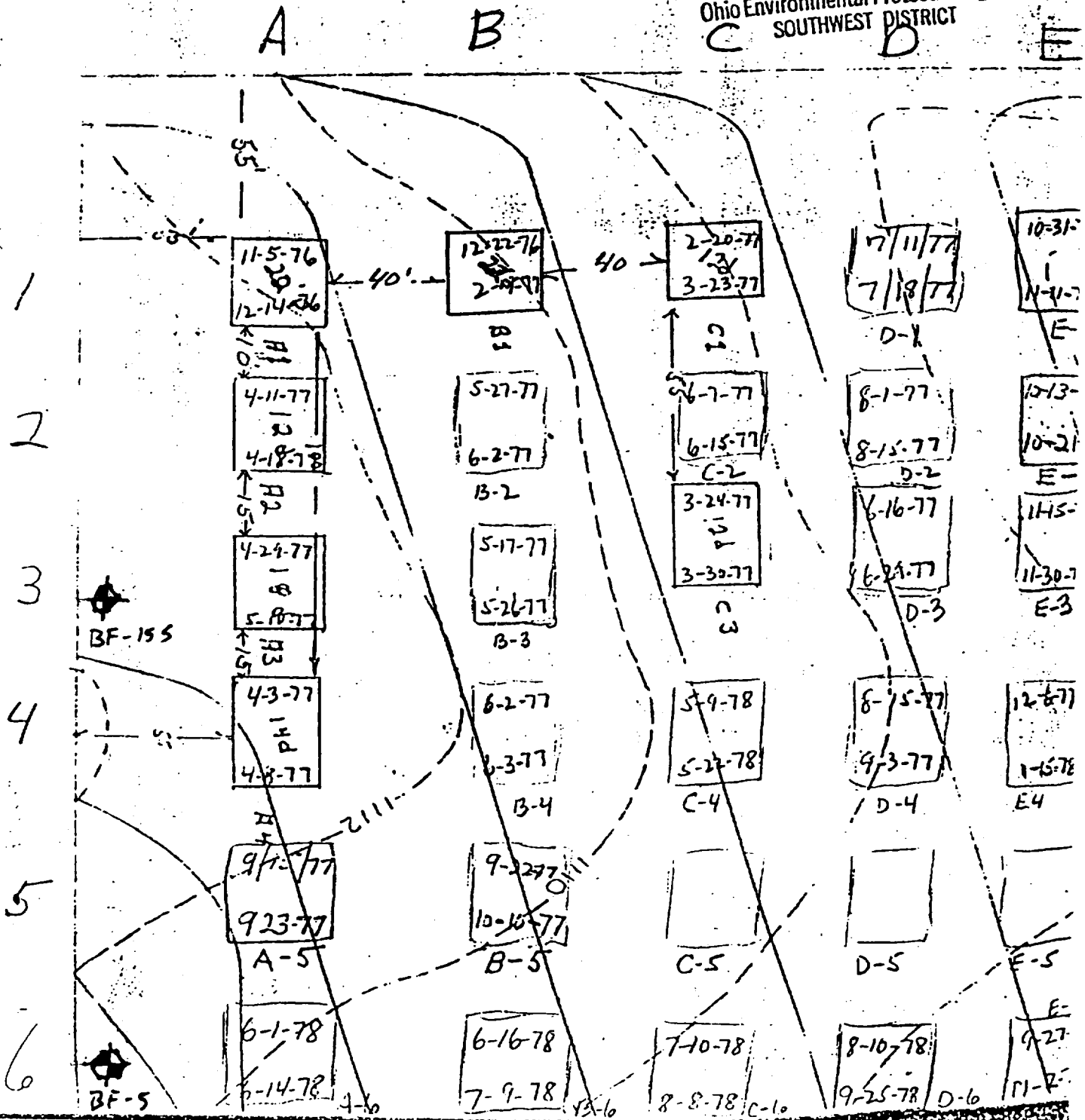
Barrel 1-1-1 DIST

NW Corner

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MAY 12 1977

Ohio Environmental Protection Agency
SOUTHWEST DISTRICT



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