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SUMMARY REPORT

Lancaster Sanitary Landfill

Closure Plan

prepared by

WEHRAN ENGINEERING, P.C.
2880 Grand Island Boulevard
Grand Island, New York

WE Proj. No.
01339035

March, 1984

March 7, 1984

SUMMARY REPORT

Lancaster Sanitary Landfill
Closure Plan
WE Project No. 01339035

This Report has been prepared to summarize our findings with regard to determining the adequacy of the quantity and quality of soils intended for use as final cover materials at Lancaster Sanitary Landfill. This Report is supported by two Figures and two Tables, which are attached, as well as an accompanying set of two plans, dated 3/1/84, entitled "Topsoil Stockpiles and Clay Borrow Locations." The Report is intended as a direct response to paragraph one of the January 3, 1984 letter written by Mr. Peter J. Burke of the New York State Department of Environmental Conservation to Daniel M. Darragh.

I. CLAY SOILS:

As outlined in previous correspondence with the Department, the remaining areas requiring final cover at Lancaster Sanitary Landfill will consume approximately 142,300 cubic yards of compacted clay (18 inches placed over 58.8 acres). The clay must have a maximum permeability of 1.0×10^{-5} cm/sec. Suitable clay soils do not exist on-site; therefore, the clay must be imported. The intended borrow source for the clay is as shown on the vicinity map (Figure 1), and is further illustrated on Sheet No. 2 of the accompanying plans. The borrow source is located on Peppermint Road -- at the intersection of Pavement Road -- in the Town of Lancaster, New York. The borrow site is approximately 1.5 miles from the Landfill.

Soil from the subject borrow site has been used previously as final cover on the Landfill. In September of 1981, Wehran Engineering obtained five (5) "undisturbed" (Shelby tube or block) samples from completed portions of the landfill's cap and had each sample tested for permeability, as well as soil indexing properties (water content, percent fines, Atterburg limits). Table No. 1 (attached) summarizes the results of this testing. Four (4) of the five (5) tests indicated permeabilities less than 1.0×10^{-5} cm/sec. The fifth test, Sample ST-8, rendered a permeability slightly above the specified maximum. It is noted that Sample ST-8 was considerably more coarse than the other four samples, and was also

determined to be non-plastic. A review of the indexing properties reveals wide ranges in the material's grain size and plasticity. Due to the rather limited sampling and broad range of results, we do not believe this testing is conclusive with regard to the in-situ permeability of the completed portions of the final cover, but we do believe it provides an indication that soil from the borrow area is capable of yielding the specified maximum permeability.

To further investigate the subject borrow area for the purposes of attempting to qualify the material for use as a landfill cover, a sample of the borrow material was recently obtained by Wehran personnel and index testing was performed. The results of this testing are contained in the attached Figure No. 2. This testing again indicated a rather high percentage of fine-grained material (-200 sieve), but limited plasticity (Plasticity Index - 4).

We believe all of the testing to date, while limited in both scope and breadth, does indicate that soil from the subject borrow area has the potential to yield 1.0×10^{-5} cm/sec maximum permeabilities. We also believe the soil varies randomly and significantly. We recommend alternate sources be considered. However, should this source ultimately be the only source economically viable in terms of completing the final cover prior to the total depletion of available funds, we recommend the following be implemented:

(1) Compaction curve(s) be developed and permeability at various combinations of moisture and density be determined (for each curve, if necessary) based upon laboratory recompacted specimens.

(2) Quality control be exercised during the placement and compaction of these soils. Field moisture and density determinations should be performed and compared to the compaction curves/permeability testing (from number 1 above).

(3) Prior to topsoiling, random samples should be obtained for confirmatory permeability testing.

(4) The NYSDEC should be advised of the results of all of the testing specified above.

Assuming the Department accepts the above findings and recommendations relevant to the quality of the intended borrow material, and further assuming that a more suitable, economically viable source is not discovered, we provide the following with regard to the quantity of soil available for borrow at the subject site:

The clay was previously excavated from a bank with the cut variable in depth from the existing grade. Topsoil and overburden layer of gravel is stripped, then the clay is excavated. Approximately fourteen (14) acres remain for use at the borrow site. A cut nine (9') feet deep will yield the required 142,300 cubic yards of clay. Based on the currently exposed face of the excavation, the clay deposit runs approximately fifteen (15') feet deep; therefore, the site has ample clay to complete the final cover of the landfill.

II. TOPSOIL:

To complete the final cover of Lancaster Sanitary Landfill, approximately ninety (90) acres will require six (6") inches of topsoil; a total of 72,600 cubic yards.

To determine the quantity and location of topsoil to be used in the final cover, Wehran Engineering recently performed a field survey of various stockpiles of topsoil (as designated by Lancaster Sanitary Landfill, Inc.). Field cross-sections of each stockpile were obtained and the corresponding volume in each pile was determined using the End-Area Method. The locations of the stockpiles are shown on the accompanying plans and the quantities are summarized in Table No. 2 (attached). All the stockpiles are located on or near the landfill site or on the property designated above for clay soil borrow. The survey yielded a total of 57,400 cubic yards. This total is 15,200 cubic yards short of 72,600 cubic yards required. The remaining topsoil could be obtained from further stripping operations at the clay borrow area. Assuming an average depth of topsoil of eight (8") inches, stripping the fourteen (14) acres would yield an adequate quantity to complete the final cover. Also, when the various topsoil stockpiles were placed on waste, some settlement probably occurred. Based on the past experience of the landfill's operator, settlement occurred under previously removed stockpiles at depths in excess of ten (10') feet. The quantity of soil that exists below grade, is, of course, extremely difficult to

quantify. However, topsoil does exist below grade and will be utilized to cover the landfill. Therefore, we conclude that, in conjunction with the topsoil yet to be stripped at the clay borrow source, adequate topsoil does exist within the stockpiles depicted on the accompanying plans to complete the final cover at Lancaster Sanitary Landfill. Based on the heavy vegetation that is currently on the stockpiles, the soil is certainly capable of supporting vegetation.

FIGURE NO. 1

VICINITY MAP

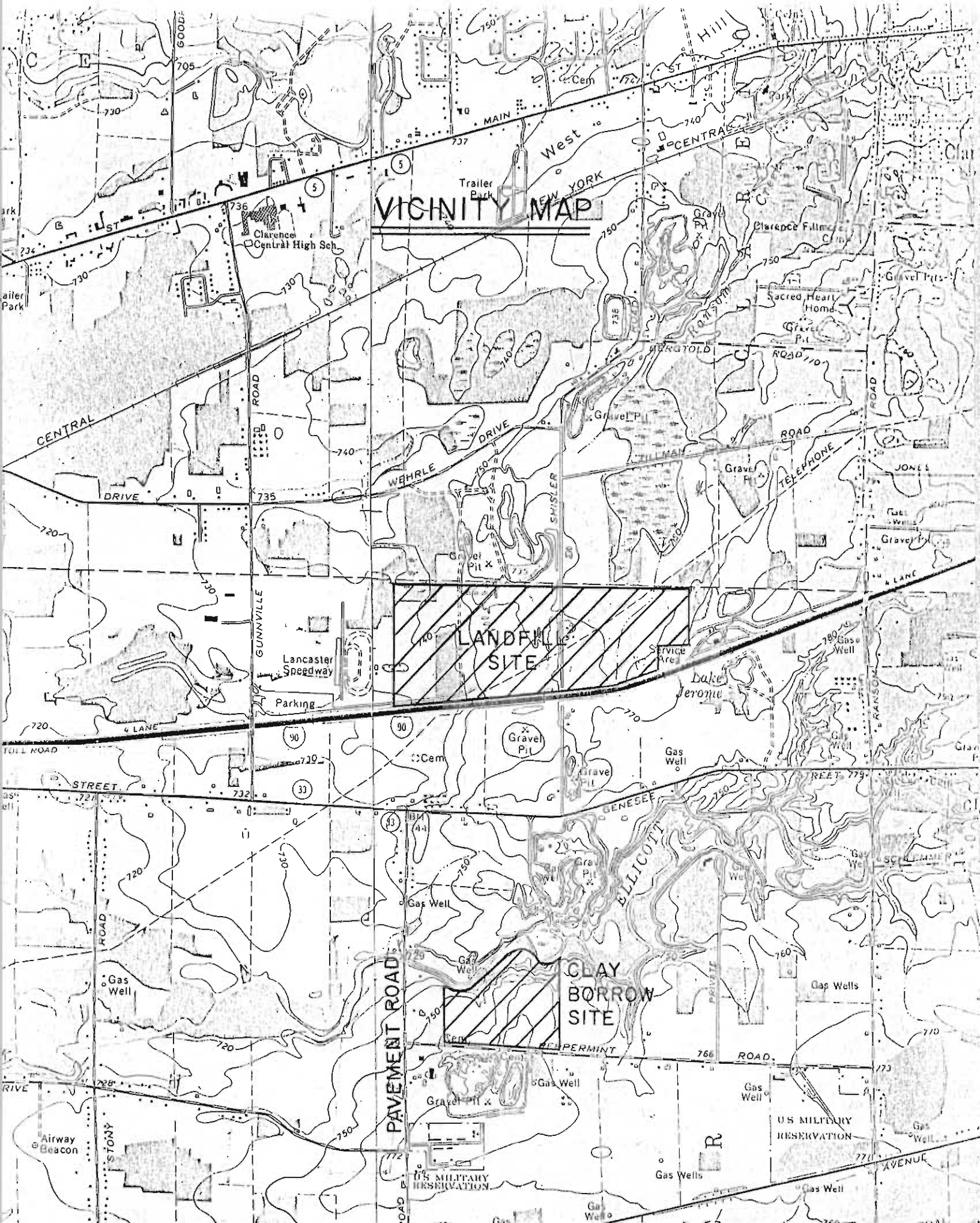
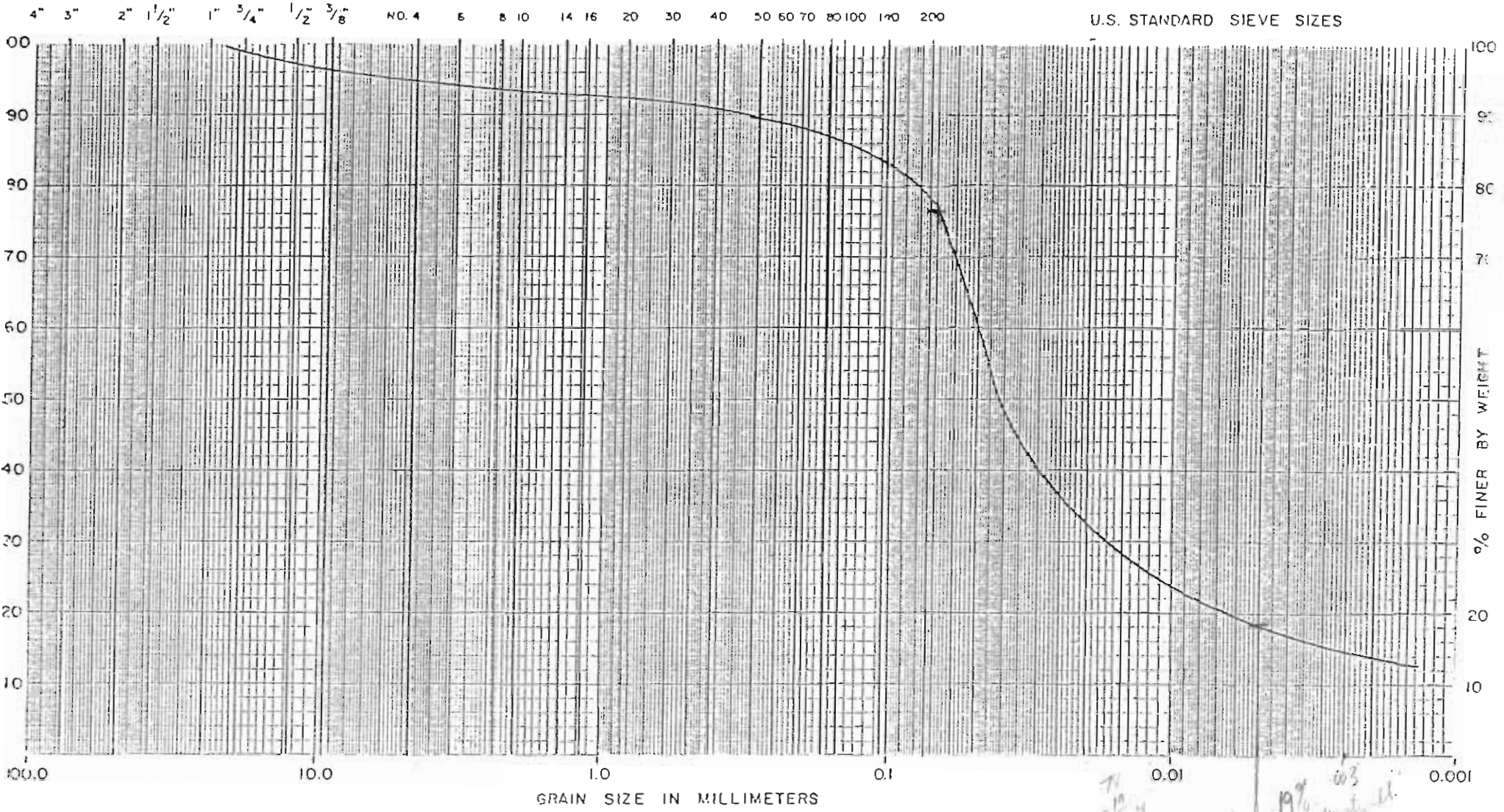

VICINITY MAP
LANDFILL SITE
CLAY BORROW SITE
PAVEMENT ROAD
MAIN
CENTRAL
NEW YORK
Trailer Park
Clarence Central High Sch
Cem
Gravel Pit
Sacred Heart Home
BURGTOLD ROAD
CENTRAL DRIVE
WEHRLE DRIVE
GUNNVILLE ROAD
SHISLER
TELEPHONE ROAD
Lancaster Speedway
Parking
4 LANE
TOLL ROAD
Service Area
Lake Jerome
Gas Well
Gas Wells
GENESEE STREET
BLICOTT
PEPPERMINT ROAD
PRIVATE
US MILITARY RESERVATION
Airway Beacon
STONY
AVENUE

FIGURE NO. 2

SOIL TESTING RESULTS

BULK SAMPLE OBTAINED FROM BORROW AREA IN FEBRUARY, 1984



3"		1"		3/8"		2.0mm		0.60		0.25		0.74		0.005	
BBLES	COARSE		MEDIUM		FINE		COARSE		MEDIUM		FINE		SILT		CLAY
	GRAVEL						SAND								

BORING NO. SAMPLE NO.	DEPTH	ELEV.	IDENTIFICATION	MOIST. CONT.	L.L. %	P.L. %	P.I.
BULK SAMPLE			Light brown Clayey SILT,	5.5	18	14	4
			little coarse to fine Sand,				
			trace fine to medium Gravel				
			specific gravity = 2.57				

MECHANICAL ANALYSIS

Client: LANCASTER L.F.

Project: LANCASTER SANITARY LANDFILL

Project Number: 0133903S

Date: 2-26-84 Figure No.: 1

WEHRAN ENGINEERING
CONSULTING ENGINEERS

TABLE NO. 1

SUMMARY OF PREVIOUS PERMEABILITY TESTING

Sample No.	Depth (ft.)	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	% Passing 200 Sieve	Coefficient of Permeability (cm/sec)
ST-2	0.4	12.2	16	13	81.8	2.4×10^{-6}
ST-3	1.3	8.2	16	13	63.1	8.5×10^{-6}
ST-5	0.8	11.1	23	12	72.9	1.1×10^{-7}
ST-7	0.7	11.5	23	14	99.4	8.7×10^{-7}
ST-8	0.8	7.2	Nonplastic		32.0	2.5×10^{-5}

TABLE NO. 2

TOPSOIL STOCKPILE QUANTITIES

Stockpile	Quantity (cy)	General Location *
1	9,942	On-site
2	4,003	On-site
3	247	On-site
4	1,182	Adjacent Property North of Site
5	2,615	On-site
6	21,064	Adjacent Property North of Site
7	6,171	Adjacent Property North of Site
8	3,941	Peppermint Road Borrow Site
9	5,916	Peppermint Road Borrow Site
10	2,323	Peppermint Road Borrow Site

* - See accompanying maps for more exact locations.

FIGURE NO. 1

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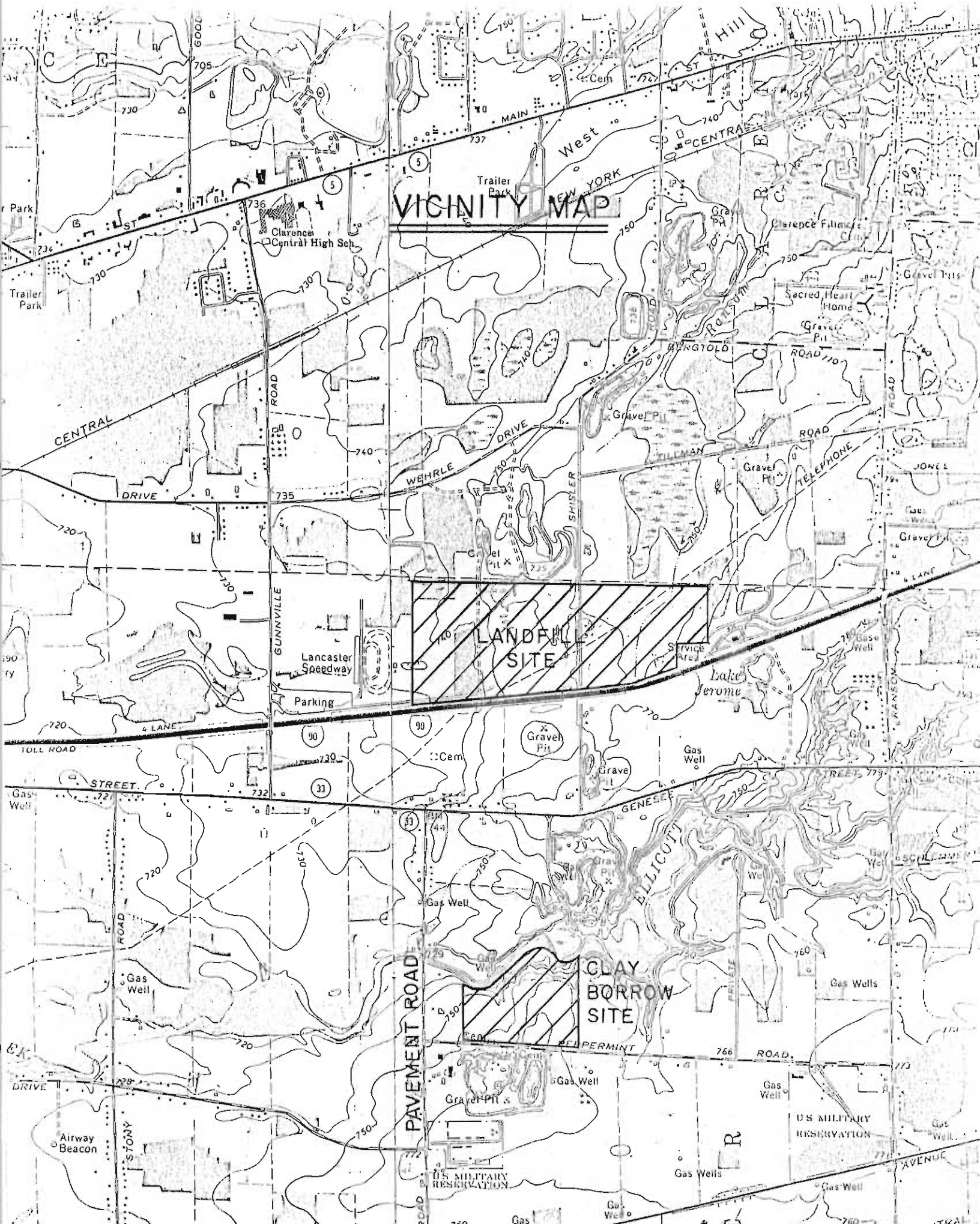
VICINITY MAP
LANDFILL SITE
CLAY BORROW SITE
PAVEMENT ROAD
Clarence Central High Sch
Trailer Park
Lancaster Speedway
Parking
Airway Beacon
US MILITARY RESERVATION
Gravel Pit
Gas Well
Gas Wells
Lake Jerome
MAIN
CENTRAL
DRIVE
ROAD
STREET
AVENUE
TOLL ROAD
4 LANE
GUNNVILLE
STONY
SHISLER
WEHRLE
TILLMAN
BURGTOLD
TELEPHONE
GENESEE
BLICUIT
PERMINT
Sacred Heart Home
Clarence Fillmore
West
NEW YORK
Hill
ST
Cem

FIGURE NO. 2

SOIL TESTING RESULTS

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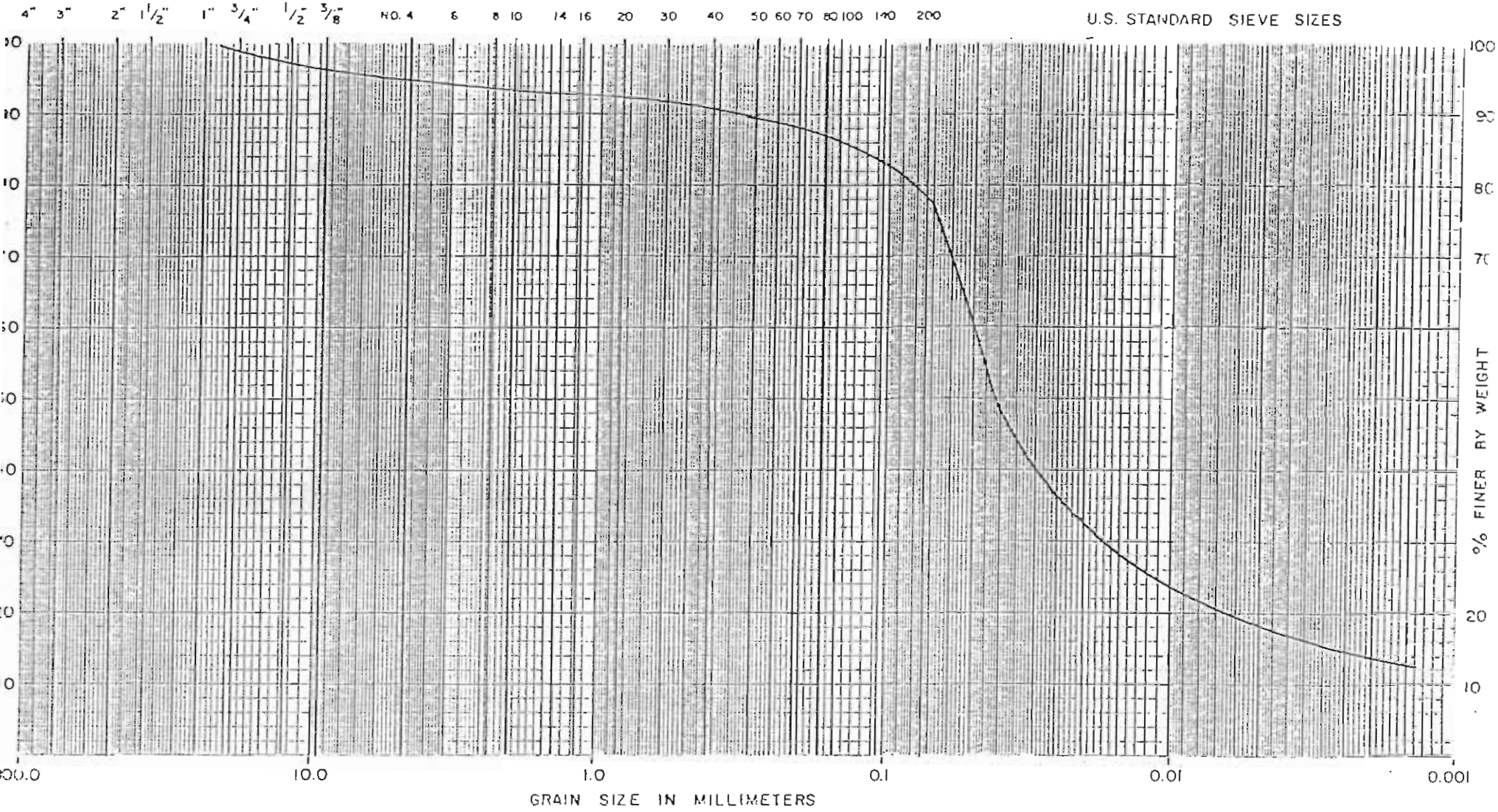

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BLES	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	SILT / CLAY
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