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ENGINEERING AND ANALYTICAL
REPORT
ON
MERCURY CONTAMINATION

TAYLOR INSTRUMENT COMPANY
DIVISION OF SYBRON CORPORATION
ROCHESTER, NEW YORK 14601

JANUARY, 1982

LOZIER



ARCHITECTS/ENGINEERS

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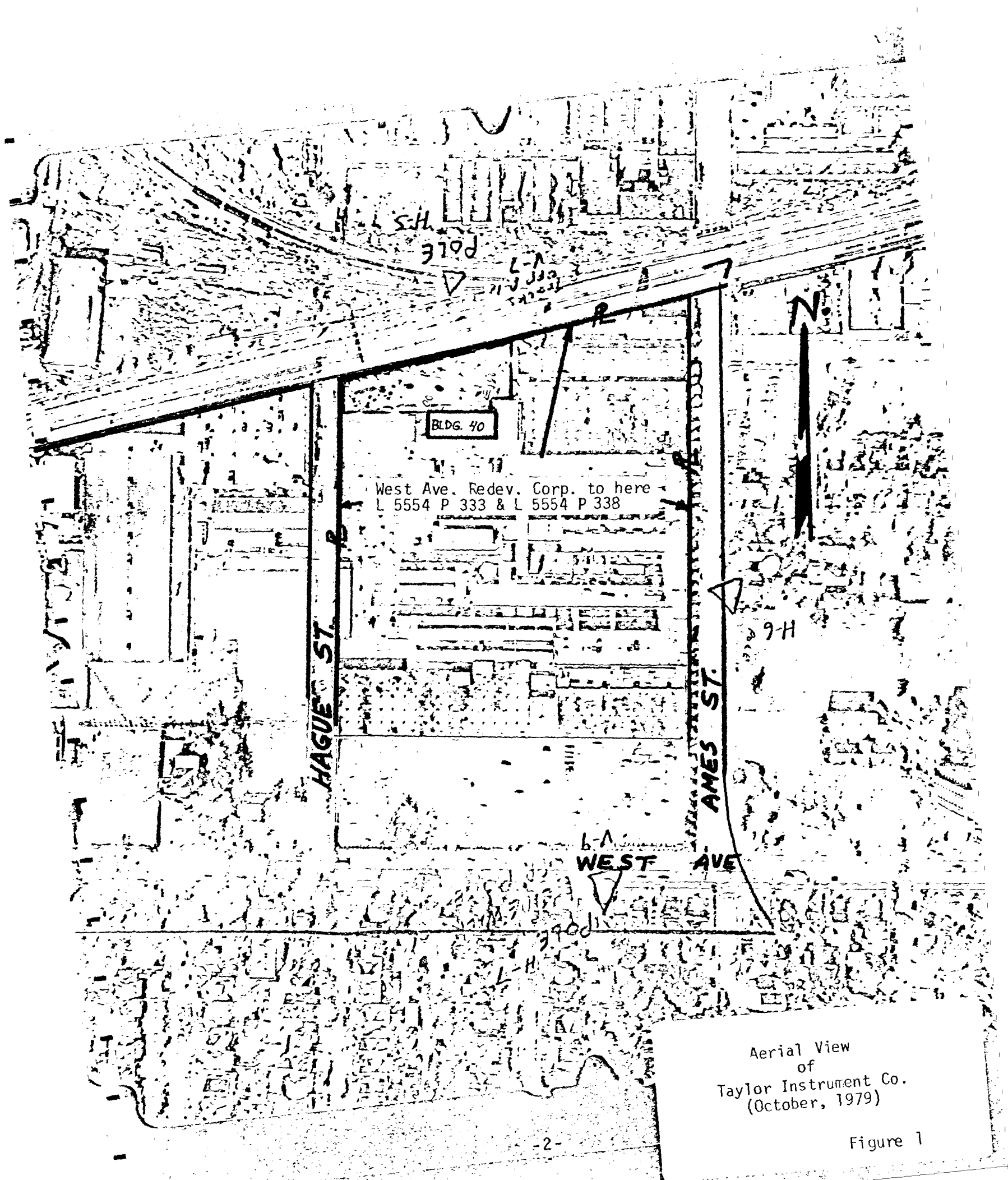
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SECTION I
BACKGROUND

Taylor Instrument, a division of Sybron is located at 95 Ames Street and engages in the manufacturing of various instrumentation items and systems. The Taylor Instrument Company is situated on land recently conveyed by it to, and leased back from the West Avenue Redevelopment Corporation, a subsidiary of the New York State Urban Development Corporation. An open area, outlined roughly in yellow in Figure 1, is to be included in the lease. We are informed that this area has been conveyed by the CSX Corporation (Chessie) to the City of Rochester and is to be conveyed shortly to the West Avenue Redevelopment Corporation. For the purposes of this report all this land, bounded on the east by Ames St., on the west by Hague St., on the south by West Ave., and on the north by property owned by the CSX Corporation (see Figure 1), is referred to as the Taylor Instrument Site. On September 9, 1981, Taylor Instrument (Kevin Hylton) and Lozier, Inc. (Leonard Bower and Thomas Lawson) met at the Taylor facility and discussed the discovery of elemental mercury in the ground on the plant site. This mercury is apparently the outgrowth of a mercury reclamation operation which was used until approximately 1965. The exact circumstances by which the mercury was placed in the soil has not been established, although the site is strewn with broken thermometer glass and miscellaneous instrumentation hardware. This operation was located in the northwest portion of Building 40 at the extreme north end of the Taylor Instrument site. The area of concern, is basically that portion of land shown in Figure 1 which is outlined in yellow. Kevin Hylton indicated that the basis for his belief that there was a mercury



Aerial View
of
Taylor Instrument Co.
(October, 1979)

Figure 1

contamination problem was twofold:

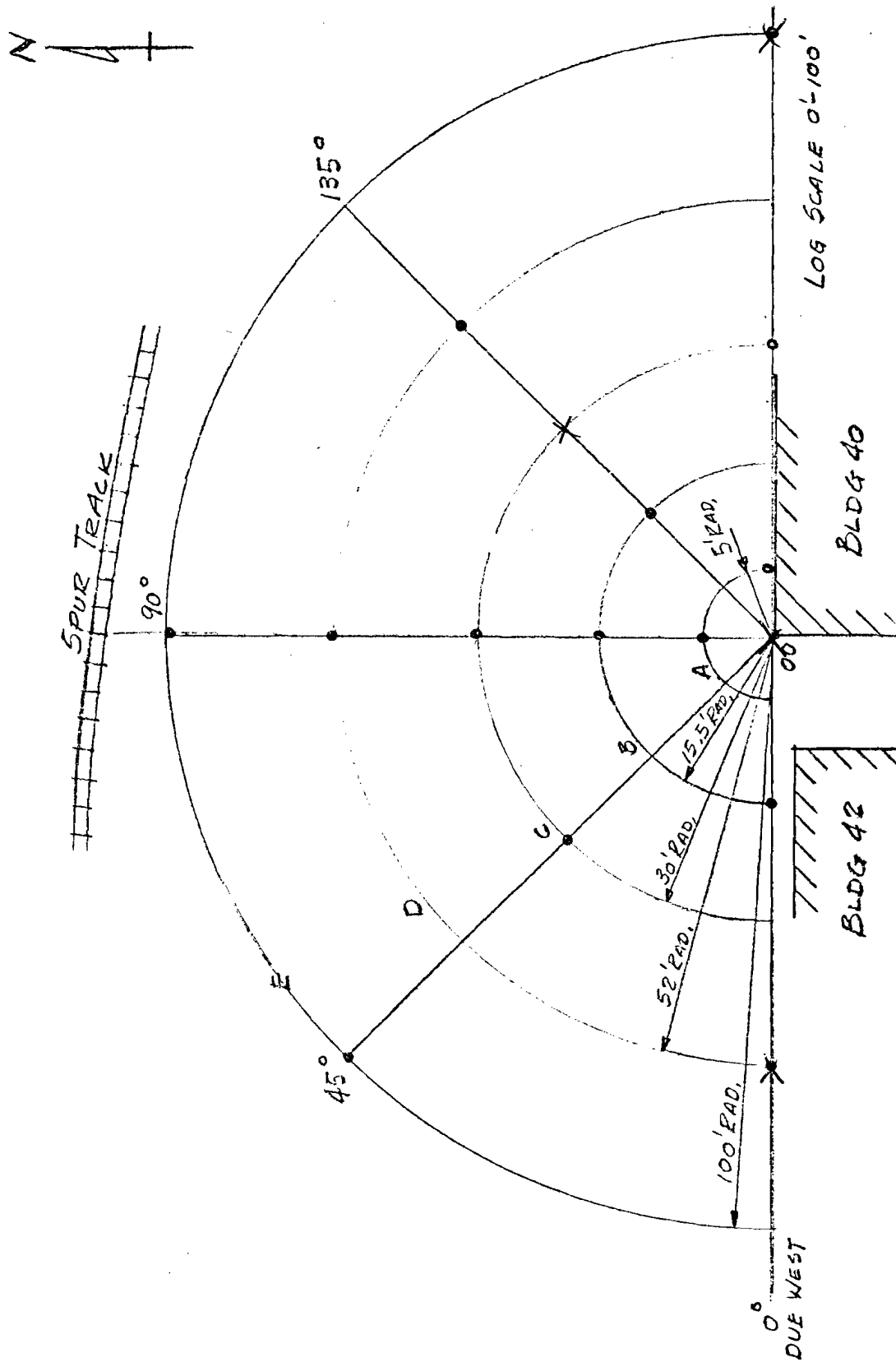
1. The discovery of broken thermometer glass shard and instrumentation pieces laying on the ground just outside the northwest corner of Building 40.
2. Grab sample soil testing for elemental mercury performed in the Taylor laboratory, which indicated a potential problem even allowing for a reasonable percentage of laboratory error.

Kevin Hylton then conducted a physical inspection for Thomas Lawson and Leonard Bower of the areas previously mentioned. The surface area just outside the fenceline north of Building 40 indicated broken glass shard in an east/west direction within the confines of the yellowed area previously indicated in Figure 1. Most of the glass shard was noticed at the northwest corner of Building 40.

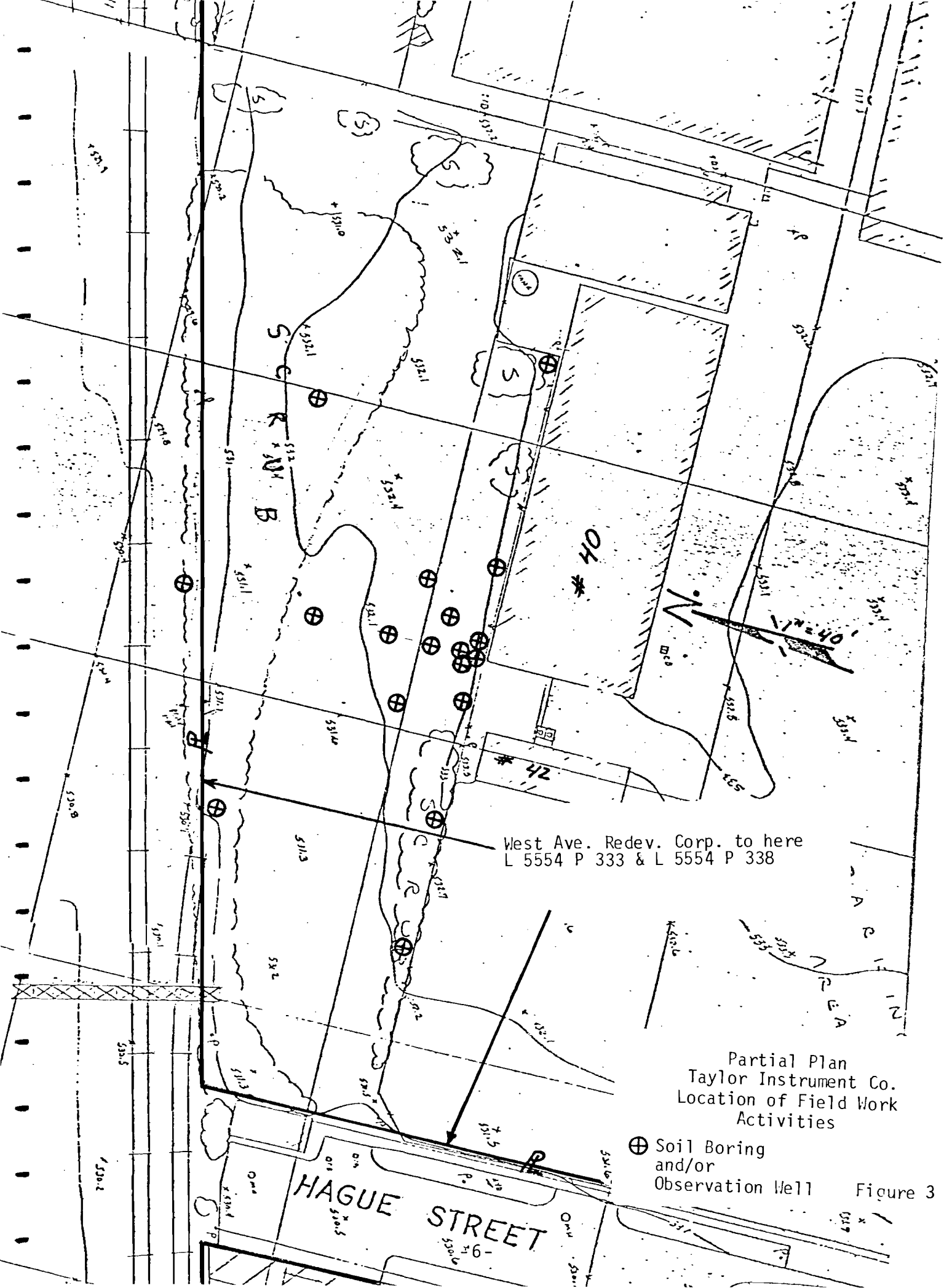
A few days after this meeting, Kevin Hylton transmitted, by telephone to Thomas Lawson of Lozier, Inc., the actual laboratory test results of the elemental mercury testing performed by Taylor Instrument. On Friday, September 18, 1981, Lozier, Inc. submitted a proposal for engineering and analytical service to Taylor Instrument Company. On September 29, 1981, Thomas Lawson was notified by Kevin Hylton that Lozier, Inc. and its subsidiary, Lozier/Camo Laboratories had been selected by Taylor Instrument Co. to do the work as outlined in the proposal.

SECTION II
PROJECT DEVELOPMENT

Empire Soils was contracted by Lozier, Inc. to do the field work at the Taylor Instrument site. This field work consisted of boring seventeen (17) holes. Soil samples were withdrawn from sixteen (16) of these holes along the guidelines of the initial proposal and four (4) groundwater observation wells were installed, three (3) of which were in holes from which soil samples were withdrawn. A more representative illustration of the expanse of the field investigations at the subject site can be found on Figures 2 & 3. The actual contract with Empire Soils, Inc. was signed on October 13, 1981 and the initial projection for the start of field work was Thursday, October 15, 1981. Available on-site power difficulties and some equipment difficulties impeded the actual start of the field work, and consequently no significant work began at the Taylor Instrument site until Monday, October 19, 1981. All positions at which Empire Soils conducted drilling work were staked by Lozier, Inc. personnel in the field on October 12, 1981. These positions were laid out logarithmically per the guidelines of the initial proposal and ground elevations were shot at each position where Empire Soils was to perform drilling work. All drilling, soil sample withdrawal and groundwater well installation work was finished by Empire Soils late in the afternoon on Tuesday, October 20, 1981. The drilling logs from the field work performed by Empire Soils can be found in Appendix A. All the soil samples withdrawn from the four (4) different elevations in each of the boring holes were split in the field at the time of withdrawal. Every split soil sample received by Taylor Instrument and Lozier/Camo consisted of



TAYLOR INSTRUMENT CO.
SAMPLING GRID PATTERN
FIGURE #2



approximately 100 grams. The Lozier/Camo soil samples were sent to the Camo Laboratory in Hyde Park, New York for a total mercury analysis. The four (4) groundwater observation wells were pumped dry with a peristaltic pump by Lozier/Camo personnel on October 23, 1981, October 26, 1981, and October 28, 1981. On November 2, 1981, two 1000 ml water samples were withdrawn by Lozier/Camo personnel from each of the four (4) groundwater observation wells. These water samples were also sent to the Camo laboratories in Hyde Park for total mercury analysis. The results of these tests can be found in Appendix B. The groundwater depths were also recorded on November 2, 1981. At position D-0° the depth was 5'-8 1/2", at O-0° it was 4'-7 1/2", at C-135° it was 3'-11" and at E-180° the water was at 3'-11".

Once the results of these tests was known, it was mutually decided between Kevin Hylton, of Taylor Instrument Company and Thomas Lawson of Lozier, Inc. to perform the three originally proposed EP Toxicity tests in three (3) locations. Position D-0°, E-180° and O-0° were selected for two different reasons. In an attempt to establish some correlation between the two different sets of tests, it was decided that the EP Toxicity tests should be run in the same positions where groundwater samples were withdrawn. Tests performed at these three (3) locations were basically representative of the data available to date. At that time it was still felt that O-0° was the center of the contamination, E-180° was a position of high mercury concentration, and D-0° appeared to be one of the positions of lesser mercury contamination. Also, at

D-0°, the groundwater sample indicated mercury contamination less than the State groundwater limit (.002 mg/l), whereas at position 0-0° and E-180° the water samples indicated mercury contamination in excess of the State groundwater limits. Results of the EP Toxicity tests can also be found in Appendix B.

SECTION III
PROJECT SUMMARY

Based on all the preceeding information which has been presented in this report, the following statements basically summarize the status of the project and all related data to date. These statements are not in any particular order of significance.

1. Any pieces of rock and glass that were in some of the soil samples from the sixteen (16) drilling locations were withdrawn and consequently not tested, i.e., they were taken out prior to the mercury testing by the Lozier/Camo Laboratory. This was done since Lozier/Camo wished to test a true soil sample, and the feeling was that those hard items present were heterogeneous in nature. Those soil samples which contained pieces of glass are noted in Appendix A.
2. Generally speaking, mercury concentrations in the soil are higher toward Building 40 and within the first three feet of overburden. Based on an analysis of the driller's log the majority of the area appears to have been filled with an ash/cinder mixture to varying depths. The present data also indicates higher mercury concentrations in those portions of the site where glass shard deposits were noted.
3. There is a general decrease in mercury concentrations laterally outward from the presently presumed center (0-0°) of the contamination and vertically downward within the soil profile, except as noted in number 4 below.
4. Field operations within the project area have revealed other areas of broken glassware on the ground and thus possibly high mercury concentrations. This relationship is based on the findings to date at positions 0-0° and E-180° where areas

of high glass concentration have also been high in elemental mercury.

5. The breadth and depth of the mercury contamination problem at the Taylor Instrument site has not yet been analytically defined. However, information to date indicates that:
 - a. There is mercury contamination in both the soil and water, and
 - b. The EP Toxicity test results indicate that at least some of the in place soil and mercury material can be considered a hazardous waste, if it is ever removed from the site.
6. Tests for pH were run at the Lozier/Camo Laboratory on four (4) separate soil samples. These test results indicated a pH ranging from 6.8 to 7.2.
7. Analytical data does not indicate mercury in the groundwater in excess of the State groundwater limits any great distance from the two presently known high mercury concentration positions, i.e., water samples withdrawn from positions C-135° and D-0° were not in excess of the State standard.
8. It appears that the worst concentrations of mercury in the soil are above the groundwater table. However, conclusive information on the seasonal fluctuations in the groundwater table is not available, and this could have an impact on any mercury migration.
9. Groundwater data is still insufficient to conclusively determine the flow direction, depth and condition of the groundwater. In addition, there is no firm data indicating

whether or not the groundwater is part of a moving aquifer or is perched groundwater.

10. It is probable, in the opinion of the testing laboratory, that the mercury present on the site consists of three forms:

- A. metallic mercury
- B. inorganic divalent mercury
- C. methyl or phenyl mercury

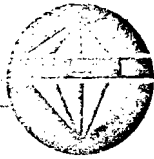
APPENDIX A
EMPIRE SOILS - DRILLING LOGS

SUBSURFACE EXPLORATION

MEMBER AMERICAN SOCIETY FOR TESTING & MATERIALS

SOIL
AND
CONCRETE
TESTING

EQUAL OPPORTUNITY EMPLOYER



EMPIRE SOILS INVESTIGATIONS, INC.

GROTON ■ BUFFALO ■ ROCHESTER ■ SYRACUSE ■ ALBANY
BUFFALO AREA OFFICE

5-3858 SHELDON ROAD / P.O. BOX 229, ORCHARD PARK, NEW YORK 14127

AREA CODE 716 649-8110

SITE OF INVESTIGATION
TAYLOR INSTRUMENT
ROCHESTER, NEW YORK

for

UNRECORDED

Lozier Architects/Engineers
600 Perinton Hills
Fairport, NY 14450

81-BD-96
November, 1981

SITE OF INVESTIGATION,
TAYLOR INSTRUMENT
ROCHESTER, NEW YORK

CONFIDENTIAL

The following is a summary of our firm's subsurface investigation, conducted at Taylor Instrument, Rochester, New York. The testing was requested and authorized by Leonard Bower of Lozier Architects, 600 Perinton Hills, Fairport, New York 14450. This work was accomplished on October 19th thru 20th, 1981.

Standard drilling and sampling techniques were employed to advance borings through overburden soils. Data on compactness and consistency of the soils, were obtained by measuring penetrating resistance of a two-inch sample spoon, in accordance with ASTM D-1586.

It should be noted that the subsurface logs have been prepared from the information recorded in the field by the Drill Foreman. No samples were available for laboratory classification.

EMPIRE SOILS INVESTIGATIONS, INC.

Mark E. Gaudy
Mark E. Gaudy
Geoscientist

mp

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller while at the site, supplemented by classification of the materials removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Subsurface Logs together with the recovered samples will provide a basis for evaluating the character of the subsurface conditions relative to the proposed construction. The evaluation must consider all the recorded details and their significance relative to each other. Often analyses of standard boring data indicate the need for additional testing and sampling procedures to more accurately evaluate the subsurface conditions. Any evaluations of the contents of this report and the recovered samples must be performed by Professionals having experience in Soil Mechanics and Foundation Engineering. The information presented in the following defines some of the procedures and terms used on the Subsurface Logs to describe the conditions encountered.

- The figures in the Depth column defines the scale of the Subsurface Log.
- The Sample column shows, graphically, the exact depth range from which a sample was recovered. See Table I for a description of the symbols used to signify the various types of samples.
- The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.
- Blows on Sampler - shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil beneath the casing. The number of blows required for each six inches penetration is recorded. The total number of blows required for the last 12 inches of penetration are summarized in the "N" column. The outside diameter of the sampler, the hammer weight and the length of drop are noted at the bottom of the Subsurface Log.
- Blows on Casing - shows the number of blows required to advance the casing a distance of 12 inches. The casing size, the hammer weight and the length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under Method of Investigation at the bottom of the Subsurface Log.
- All recovered soil samples are reviewed in the laboratory by technicians. The visual descriptions are made on basis of the sample as recovered and in accordance with the Unified Classification System. Guide Lines for the terms used in descriptions are presented in Tables II and III. The description of the relative soil compactness or consistency is based upon the penetration records as defined in Table IV. The description of the soil moisture is based upon the condition of the sample as recovered. The moisture condition is described as dry, damp, moist or wet. Water used to advance the boring may have affected the in-situ moisture content of the sample. Special terms are used as required to describe materials in greater detail; several such terms are listed in Table V. When sampling gravelly soils with a standard two-inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.
- The description of rock shown is based upon the recovered rock core. Terms frequently used in the description are included in Table VI.
- Miscellaneous observation and procedures noted by the driller are shown in this column, including water level observations. It is important to realize that the reliability of the water level observations depend upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that drill water used to advance the borings may have influenced the observations. The ground water level typically will fluctuate seasonally. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or water observation installations.
- The length of core run is defined as length of penetration between retrievals of the core barrel from the bore hole, expressed in feet and tenths of feet. The core recovery expresses the length of core recovered from the core barrel per core run, in percent. The size core barrel used is also noted. The more commonly used sizes of core barrels are denoted "AX" and "NX". The "NX" core, being larger in diameter than "AX" core, often produces better recovery, and is frequently utilized where accurate information regarding the geologic conditions and engineering properties is needed. The "NX" core barrel requires the use of four inch diameter casing.

DATE STARTED 5-1-70 FINISHED 5-1-70 WELL 1-1-1		 EMPIRE SOILS INVESTIGATIONS, INC. SUBSURFACE LOG		LOCATION 11-175 375 6 See Note #1																				
PROJECT XXX		LOCATION YYY																						
<table border="1"> <tr> <th>DEPTH (FEET)</th> <th>SOIL OR ROCK CLASSIFICATION</th> <th>NOTES</th> </tr> <tr> <td>0</td> <td>TOP SOIL</td> <td></td> </tr> <tr> <td>1</td> <td>Brown SILT, some Sand, trace clay (Moist - Loose)</td> <td></td> </tr> <tr> <td>2</td> <td>Gray SHALE, medium hard weathered, thin bedded some fractures</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> </tr> </table>		DEPTH (FEET)	SOIL OR ROCK CLASSIFICATION	NOTES	0	TOP SOIL		1	Brown SILT, some Sand, trace clay (Moist - Loose)		2	Gray SHALE, medium hard weathered, thin bedded some fractures		3			4			5			Note #1 GW at 2.0' completion GW at 2.2' 24 hrs after completion Cored 2.5' - 5.0', Run 1 95% Recovery 1X Core	
DEPTH (FEET)	SOIL OR ROCK CLASSIFICATION	NOTES																						
0	TOP SOIL																							
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2	Gray SHALE, medium hard weathered, thin bedded some fractures																							
3																								
4																								
5																								

TABLE I

	Split Spoon Samples
	Shelly Tube Samples
	Auger or Pit Samples
	Rock Core

TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	> 12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel - Coarse	3/8" - 3/4"	
- Fine	3/4" - #4	
Sand - Coarse	#4 - #10	Fine Grained
- Medium	#10 - #40	
- Fine	#40 - #200	
Silt - Non Plastic (Granular)	< #200	Fine Grained
Clay - Plastic (Cohesive)	< #200	

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of later sample.

Term	Percent of Total Sample
"and"	35 - 50
"some"	20 - 35
"little"	10 - 20
"trace"	less than 10

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accord with the following terms:

Term	Granular Soils (Blows per Foot, N)	Term	Cohesive Soils (Blows per Foot, N)
Loose	< 10	Very Soft	< 2
Fun	11 - 30	Soft	3 - 5
Compact	31 - 50	Medium	6 - 15
Very Compact	> 51	Stiff	16 - 25
		Hard	> 26

(Large particles in the soils will often significantly influence the blows per foot recorded during the Penetration Test.)

TABLE V

Various - Alternating layers, seams, and partings of soils.

Layer -	Soil deposit more than 6" thick
Seam -	Soil deposit less than 6" thick
Parting -	Soil deposit less than 1/8" thick
Uniform -	All grains are of about the same diameter

TABLE VI

Rock Classification Terms		Description	
Hardness	Soft	Scratched by fingernail	
	Medium Hard	Scratched easily by penknife	
Weathering	Very Hard	Scratched with difficulty by penknife	
	Unweathered	Cannot be scratched by penknife	
Bedding	Very weathered	Judged from the relative amounts of disintegrating iron staining, core recovery, clay seams, etc.	
	Unweathered		
Bedding	Laminated	Natural breaks in Rock Layers	(1" - 4")
	Thin bedded		(4" - 12")
Bedding	Block bedded		(12" - 36")
	Massive		> 36"

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers.)

$$\{ \cdot \} \Delta_{\text{eff}}$$

STARTED 10/20/81

FINISHED 10/26/31

SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. 10

SURF ELEV

C W DEPTH See Note

SUBSURFACE LOG

PROJECT Taylor Instrument

LOCATION Rochester, New York

[illegible]

N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow CLASSIFICATION Visual by
C = No. blows to drive _____ " casing _____ " with _____ lb. weight falling _____ " per blow Drill Foreman
METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE			EMPIRE SOILS INVESTIGATIONS INC.	HOLE NO. <u>D-1</u>
STARTED	<u>10/18/81</u>			SURF. ELEV. _____
FINISHED	<u>10/20/81</u>			G. W. DEPTH <u>See Note</u>
SHEET <u>1</u> OF <u>1</u>	SUBSURFACE LOG			

PROJECT Taylor Instrument LOCATION Rochester, New York

[illegible]

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual by
C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow Drill Foreman
METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE	STARTED	10/20 81		EMPIRE SOILS INVESTIGATIONS, INC.	HOLE NO	0-0
	FINISHED	10/20/81			SURF ELEV	
	SHEET	1 OF 1			G W DEPTH	See Note
				SUBSURFACE LOG		

PROJECT	Taylor Instrument	LOCATION	Rochester, New York
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[illegible]

N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow CLASSIFICATION Visual C.
C = No. blows to drive _____ " casing _____ " with _____ lb. weight falling _____ " per blow Drill Foreman
METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE 10/20/81  **EMPIRE SOILS INVESTIGATIONS, INC.** HOLE NO. A-45
 STARTED 10/20/81
 FINISHED 10/20/81
 SHEET 1 OF 1 **SUBSURFACE LOG** SURF. ELEV. _____
 G. W. DEPTH See Note

PROJECT Taylor Instrument LOCATION Rochester, New York

DEPTH	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			a 6	b 12	c 18	N				
0		1	3	6					Cinders, Ash, Glass, some Silt, some fine Sand (Fill)	
			6	8		12				
		2	6	6				Brown Silt, fine Sand, some fine Gravel		
5			8	8		14				
								Fine brown Sand, some Silt, some fine-medium Gravel		
		3	10	18						
			28	40		46		Boring Complete at 9.0 feet.	1. No free standing water encountered at completion.	
10										

N = No. blows to drive 2 "spoon 12 " with 140 lb. pin wt. falling 30 "per blow CLASSIFICATION Visual by _____
 C = No. blows to drive _____ " casing _____ with _____ lb. weight falling _____ "per blow _____ Drill Foreman _____
 METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE _____

STARTED 10/20/81

FINISHED 10/20/81

SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

FILE NO. C-25

SURF ELEV

C W DEPTH	See Note
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PROJECT Taylor Instrument

LOCATION Rochester, New York

[illegible]

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual by

C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow _____ Drill Foreman

METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE		EMPIRE SOILS INVESTIGATIONS, INC.	HOLE NO. E-45
STARTED 10/19/81			SURF. LEV. _____
FINISHED 10/19/81			G.W. DEPTH See Note
SHEET 1 OF 1		SUBSURFACE LOG	

PROJECT Taylor Instrument LOCATION Rochester, New York

[illegible]

N = No blows to drive 2 spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual by
C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow Drill Foreman
METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE:

STARTED 10/20/81

FINISHED 10/20/81

SHEET 1 Of 1



EMPIRE SOILS INVESTIGATIONS, INC.

HOLE NO. A-95

SURF ELEV

G W DEPTH See Note

SUBSURFACE LOG

PROJECT Taylor Instrument

LOCATION Rochester, New York

[illegible]

N = No. blows to drive 2 " spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual by

C = No blows to drive _____" casing _____" with _____lb weight falling _____" per blow _____ Drill Foreman

METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE _____

STARTED 10/20/81

FINISHED 10/20/81

SHEET 1 OF 1



EMPIRE SOILS INVESTIGATIONS, INC.

SUBSURFACE LOG

HOLE NO. B-90

SURF ELEV

G. W. DEPTH See Note

PROJECT Taylor Instrument

LOCATION Rochester, New York

[illegible]

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt. falling 30 " per blow CLASSIFICATION Visual by

C = No blows to drive _____" casing _____" with _____lb weight falling _____' per blow Drill Force

METHOD OF INVESTIGATION

ASTM D-1586, Using Drilled-In Casing.

DATE STARTED <u>10/20/81</u> FINISHED <u>10/20/81</u> SHEET <u>1</u> OF <u>1</u>	 EMPIRE SOILS INVESTIGATIONS INC. SUBSURFACE LOG	HOLE NO. <u>C-90</u> SURF. ELEV. _____ G.W. DEPTH <u>See Note</u>
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PROJECT Taylor Instrument LOCATION Rochester, New York

DEPTH	SAMPLES	SAMPLE NO.	BLOWS ON SAMPLER					BLOW ON CASING, C	SOIL OR ROCK CLASSIFICATION	NOTES
			0	6	12	18	N			
0		1	20	22					Cinders, Ashes, some Glass	1. Driller notes change at 2.0 feet.
			12	15			34			
		2	4	8					Silt, Sand, Gravel	
5			12	12			20			
		3	28	35					Silt, Sand, Gravel	2. No free standing water encountered at completion.
			50	85			85			
10									Boring Complete-at 9.0 feet.	

N = No blows to drive 2 spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual by Drill Foreman
 C = No blows to drive _____ casing _____ " with _____ lb weight falling _____ " per blow
 METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE STARTED <u>10/19/81</u> FINISHED <u>10/19/81</u> SHEET <u>1</u> OF <u>1</u>	 EMPIRE SOILS INVESTIGATIONS, INC. SUBSURFACE LOG	HOLE NO. <u>D-40</u> SURF. ELEV. _____ C W DEPTH <u>See Note</u>
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PROJECT Taylor Instrument LOCATION Rochester, New York

DEPTH	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	18-24	N			
0	1	5	12					Black Ash, Cinders, Glass (Fill)	
		6	6			18			
	2	5	14					Brown fine Silty Sand	
5		16	11			30			
	3	17	33					Fine Silty Sand, fine-medium Gravel	
		70	45			103			
10								Boring Complete at 9.0 feet.	1. No free standing water encountered at completion.

N = No blows to drive 2 spoon 12 " with 140 lb pin wt falling 30 " per blow. CLASSIFICATION Visual by _____
 C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow. _____ Drill Foreman
 METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DS-4

DATE STARTED <u>10/19/81</u> FINISHED <u>10/19/81</u> SHEET <u>1</u> OF <u>1</u>	 EMPIRE SOILS INVESTIGATIONS, INC. SUBSURFACE LOG	HOLE NO. <u>E-30</u> SURF. ELEV. _____ G.W. DEPTH <u>See Note</u>
---	--	---

PROJECT Taylor Instrument LOCATION Rochester, New York

DEPTH	SAMPLE NO.	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6	6-12	12-18	18-24	N			
0	1	2	2					Ash, Cinders, brown Silt, fine Sand	1. Driller notes change at 1.5 feet.
		4	9			6			
	2	6	12					Brown Silt, some fine Sand	
5		12	12			24			
	3	17	41					Fine brown Silty Sand, some fine-medium Gravel	2. No free standing water encountered at completion.
		40	85			81			
10								Boring Complete at 9:0 feet.	

N = No. blows to drive 2 " spoon 12 " with 140 lb pin wt. falling 30 " per blow CLASSIFICATION Visual by Drill Foreman
 C = No. blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow
 METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

9-501

DATE STARTED <u>10/20/81</u> FINISHED <u>10/20/81</u> SHEET <u>1</u> of <u>1</u>	 EMPIRE SOILS INVESTIGATIONS, INC.	HOLE NO. <u>B-117</u> SURF. ELEV. _____ G.W. DEPTH <u>See Note</u>
SUBSURFACE LOG		

PROJECT Taylor Instrument LOCATION Rochester, New York

DEPTH	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
		U	6	12	18	N			
0	1	1	3					Silt, fine Sand, trace coarse gravel	1. Driller notes change at 6".
		7	7			10			
	2	7	9					Silt, Sand, fine-coarse Gravel	
		21	13			30			
5									
	3	12	19					Fine-coarse Sand, fine-coarse Gravel, some Silt	
		22	41			41			
10								Boring Complete-at 9.0 feet.	2. No free standing water encountered at completion.

N = No. blows to drive 2 " spoon 12 " with 140 lb. pin wt. falling 30 " per blow CLASSIFICATION Visual by Drill Foreman
 C = No. blows to drive _____ " casing _____ " with _____ lb. weight falling _____ " per blow.
 METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE		EMPIRE SOILS INVESTIGATIONS, INC.	HOLE NO. C-135
STARTED 10/20/81			SURF. ELEV. _____
FINISHED 10/20/81		SUBSURFACE LOG	G. W. DEPTH See Note
SHEET 1 OF 1			

PROJECT	Taylor Instrument	LOCATION	Rochester, New York
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DEPTH 0	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING C	SOIL OR ROCK CLASSIFICATION	NOTES
			10 5	6 12	12 18	2	3			
0										
5									Augered to Install Well.	
10									Boring Complete at 10.0 feet.	1. Installed well at 10.0 feet consisting of: 5' screen 7.5' solid 1 bag sand 1 bag grout 25# bentonite 1 protective pipe. 2. No free standing water encountered at completion.

N = No. blows to drive 2 " spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual
C = No. blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow Geoscientist
METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

DATE	10/20/81		HOLE NO.	0-135
STARTED	10/20/81		SURF. ELEV.	
FINISHED	10/20/81		G.W. DEPTH	See Note
SHEET 1 OF 1		SUBSURFACE LOG		

PROJECT Taylor Instrument LOCATION Rochester, New York

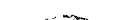
[illegible]

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt falling 30 " per blow. CLASSIFICATION Visual

(= No blows to drive _____" casing _____" with _____lb weight falling _____" per blow _____ Drill Foreman

METHOD OF INVESTIGATION

ASTM D-1586, Using Drilled-In Casing.

DATE		EMPIRE SOILS INVESTIGATIONS, INC.	HOLE NO. <u>A-100</u>
STARTED <u>10/20/81</u>			SURF. ELEV. _____
FINISHED <u>10/20/81</u>			G. W. DEPTH <u>See Note</u>
SHEET <u>1</u> OF <u>1</u>		SUBSURFACE LOG	

PROJECT Taylor Instrument LOCATION Rochester, New York

[illegible]

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual 3.
C = No blows to drive _____ " casing _____ " with _____ lb. weight falling _____ " per blow Drill Foreman
METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

9-501

DATE STARTED <u>10/20/81</u> FINISHED <u>10/20/81</u> SHEET <u>1</u> OF <u>1</u>	 EMPIRE SOILS INVESTIGATIONS, INC.	HOLE NO. <u>C-30</u> SURF. ELEV. _____ G.W. DEPTH <u>See Note</u>
SUBSURFACE LOG		

PROJECT Taylor Instrument LOCATION Rochester, New York

DEPTH (ft)	SAMPLE NO	BLOWS ON SAMPLER					BLOW ON CASING (C)	SOIL OR ROCK CLASSIFICATION	NOTES
		0-6 in	6-12 in	12-18 in	18-24 in	N			
0	1	3	7					Ash, Cinders, Silt, fine Sand, trace glass (Fill)	1. Driller notes change at 2.0 feet.
	3	7				10			
	2	3	4					Brown Silt, fine-coarse Sand	
5	4	6				8			
	3	10	12					Moist brown Silt, fine Sand, fine-coarse Gravel	2. No free standing water encountered at completion.
		12	17			24			
10								Boring Complete at 9.0 feet.	

RECEIVED

N = No blows to drive 2 spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual by
 C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow Drill Foreman
 METHOD OF INVESTIGATION ASTM D-1586, U.C. Drilled-In Casing.

DATE	STARTED <u>10/20/81</u>	 EMPIRE SOILS INVESTIGATIONS, INC.	HOLE NO. <u>E-100</u>
	FINISHED <u>10/20/81</u>		SURF ELEV. _____
SHEET <u>1</u> OF <u>1</u>	SUBSURFACE LOG		G. W. DEPTH <u>See Note</u>

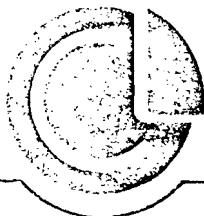
PROJECT Taylor InstrumentLOCATION Rochester, New York

DEPTH-FT	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER						BLOW ON CASING	SOIL OR ROCK CLASSIFICATION	NOTES
			0	6	12	18	N				
			6	12	18	N					
0		1	2	4						Glass, Ashes, Silt, and Sand (Fill)	1. Driller notes change at 3.0 feet.
			12	9			16				
		2	4	2						Brown Silt, some fine Sand	
			1	1			3				
5											
		3	4	12						Brown Silt, some fine Sand, fine-medium Gravel	
10			37	38			49				
15										Augered	
20										Boring Complete at 20.0 feet.	

N = No blows to drive 2 " spoon 12 " with 140 lb pin wt falling 30 " per blow CLASSIFICATION Visual by
 C = No blows to drive _____ " casing _____ " with _____ lb weight falling _____ " per blow Drill Foreman
 METHOD OF INVESTIGATION ASTM D-1586, Using Drilled-In Casing.

APPENDIX B

LOZIER/CAMO - ANALYTICAL TEST RESULTS



ANALYTICAL SERVICES REPORT

TAYLOR INSTRUMENT COMPANY
ROCHESTER, NEW YORK

CAMO Job No.: 81-11-9435

INTRODUCTION

Lozier, Inc. and their subsidiary, Lozier/Camo Laboratories, was hired to assist Taylor Instrument Company by assessing the impact of a recently discovered presumed mercury contamination problem on the plant site in Rochester, New York. Lozier, Inc. subcontracted the boring work and well installation work to Empire Soils, Inc. Seventeen boring holes were done and four groundwater observation wells were installed. From sixteen of the boring holes, soil samples were withdrawn using a split spoon sampler at depths of approximately 1, 2, 4 and 8 feet. Three of the four observation wells were installed in boring holes from which soil samples were withdrawn. These wells were at positions D-0°, O-0°, and E-180°. The last observation well was installed at position C-135° from which no soil samples were withdrawn. Both the soil and water samples were collected and analyzed for total mercury to determine the possible extent of the mercury contamination within both environments. Three boring holes were selected as sites to composite the various depth soil samples and perform EP Toxicity tests to determine if the soil qualified as a hazardous material with respect to EPA (hazardous wastes and consolidated permit regulations) May, 1980. The three boring holes selected were at positions D-0°, O-0°, and E-180°, which were also positions for three of the four groundwater observation wells. This was done to hopefully gain some correlation between the various pieces of data at those three positions. The positions for the EP Toxicity tests were decided between Kevin Hylton, of Taylor Instrument Co., and Thomas J. Lawson, of Lozier, Inc.

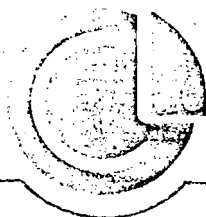
The data for all soil mercury tests is provided on Tables 1-4. The data for the groundwater samples can be found on Table 5. The results of the EP Toxicity tests can be found in Table 6.

METHODOLOGIES

All soil samples were air dried (ambient) overnight, prior to being ground with a mortar and pestle until a fine granular material resulted. The ground soil was rather homogeneous at this stage. All pieces of glass or small rocks were removed prior to grinding.

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LOZIER ARCHITECTS/ENGINEERS • 600 PERINTON HILLS • FAIRPORT, NEW YORK 14450 • 716-223-7610
CAMO LABORATORIES • 25 ALBANY POST ROAD • HYDE PARK, NEW YORK 12538 • 914-229-8337



Analytical Report
Taylor Instrument Co.
CAMO Job. No. 81-11-9435

The soil was then analyzed for total mercury as per "Methods for chemical Analysis of Water and Wastes", 1979, Method No. 345.5, Manual Cold Vapor Technique. The water samples were analyzed in accordance with the above mentioned text, Method No. 245.1.

RESULTS AND DISCUSSION

The data presented in Tables 1 through 4 indicate that mercury was found at all boring locations. The concentrations present at approximately one (1) foot depth range from 1.4 ppm to 52,000 ppm as total mercury. The concentrations present at the approximate depth of eight (8) foot depth range from <0.10 ppm (at only two locations) to 190 ppm as total mercury.

The groundwater data on Table 5 indicates that total mercury is present at position 0-0° and position E-180°. The other two locations, position C-135° and D-0°, show no detectable levels of mercury.

The investigations of both the soil and water were performed via a method that presented a result as total mercury. This allowed the lab to evaluate both inorganic forms of mercury present. The probable forms of mercury present in this environment are metallic mercury, Hg^0 , inorganic divalent mercury, Hg^{+2} , methyl or phenyl mercury, CH_3-Hg^+ or $C_6H_5-Hg^+$.

The data to date indicates that the total extent of mercury contamination has not been established, i.e., defined with respect to breadth and depth of the mercury contamination in both the soil and water environments.

ANALYTICAL REPORT - TAYLOR INSTRUMENT CO.

Table 1

One-Foot Depth Concentrations of Mercury in Soil

<u>SAMPLE I.D.</u>	<u>DEPTH</u>	<u>CODE</u>	<u>MERCURY (ppm)</u>
S-1 00	1'	S-1	52,000
S-1 A45	1'	S-1	9,500
S-1 A90	1'	S-1	11,000
S-1 A180	1'	S-1	191
S-1 B0	1'	S-1	743
S-1 B90	1'	S-1	9.7
S-1 B135	1'	S-1	1.4
S-1 C45	1'	S-1	64
S-1 C90	1'	S-1	134
S-1 C180	1'	S-1	322
S-1 D0	1'	S-1	7.0
S-1 D90	1'	S-1	14
S-1 D135	1'	S-1	8.1
S-1 E45	1'	S-1	62
S-1 E90	1'	S-1	38
S-1 E180	1'	S-1	17,700

See figure 1 for schematic representation of data

C O N F I D E N T I A L

Table 2

Two-Foot Depth Concentrations of Mercury in Soil

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<u>SAMPLE I.D.</u>	<u>DEPTH</u>	<u>CODE</u>	<u>MERCURY (ppm)</u>
S-2 00	2'	S-2	12,600
S-2 A45	2'	S-2	11,000
S-2 A90	2'	S-2	2.7
S-2 A180	2'	S-2	2,600
S-2 B0	2'	S-2	2.8
S-2 B90	2'	S-2	1.1
S-2 B135	2'	S-2	1.7
S-2 C45	2'	S-2	0.33
S-2 C90	2'	S-2	17
S-2 C180	2'	S-2	1,200
S-2 D0	2'	S-2	11
S-2 D90	2'	S-2	0.22
S-2 D135	2'	S-2	0.11
S-2 E45	2'	S-2	3.1
S-2 E90	2'	S-2	7.9
S-2 E180	2'	S-2	708

See figure 2 for schematic representation of data

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Table 3

Four-Foot Depth Concentrations of Mercury in Soil

<u>SAMPLE I.D.</u>	<u>DEPTH</u>	<u>CODE</u>	<u>MERCURY (ppm)</u>
S-3 00	4'	S-3	7.0
S-3 A45	4'	S-3	0.61
S-3 A90	4'	S-3	9.5
S-3 A180	4'	S-3	2.0
S-3 B0	4'	S-3	0.44
S-3 B90	4'	S-3	0.50
S-3 B135	4'	S-3	0.77
S-3 C45	4'	S-3	0.36
S-3 C90	4'	S-3	0.71
S-3 C180	4'	S-3	0.43
S-3 D0	4'	S-3	0.53
S-3 D90	4'	S-3	0.24
S-3 D135	4'	S-3	2.1
S-3 E45	4'	S-3	15
S-3 E90	4'	S-3	<0.10
S-3 E180	4'	S-3	17

See Figure 3 for schematic representation of data

C O N F I D E N T I A L

Table 4

Eight-Foot Depth Concentrations of Mercury in Soil

<u>SAMPLE I.D.</u>	<u>DEPTH</u>	<u>CODE</u>	<u>MERCURY (ppm)</u>
S-4 00	8'	S-4	2.1
S-4 A45	8'	S-4	0.87
S-4 A90	8'	S-4	0.64
S-4 A180	8'	S-4	0.64
S-4 B0	8'	S-4	0.10
S-4 B90	8'	S-4	0.23
S-4 B135	8'	S-4	0.15
S-4 C45	8'	S-4	<0.10
S-4 C90	8'	S-4	0.28
S-4 C180	8'	S-4	0.19
S-4 D0	8'	S-4	0.10
S-4 D90	8'	S-4	0.76
S-4 D135	8'	S-4	<0.10
S-4 E45	8'	S-4	0.33
S-4 E90	8'	S-4	0.42
S-4 E180	8'	S-4	190

See Figure 4 for schematic representation of data

C O N F I D E N T I A L
ANALYSIS OF GROUND WATER FOR MERCURY CONTENT

Table 5

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SAMPLE IDENTIFICATION

PARAMETER

Mercury (ppb)

00

8.6

E 180

19.5

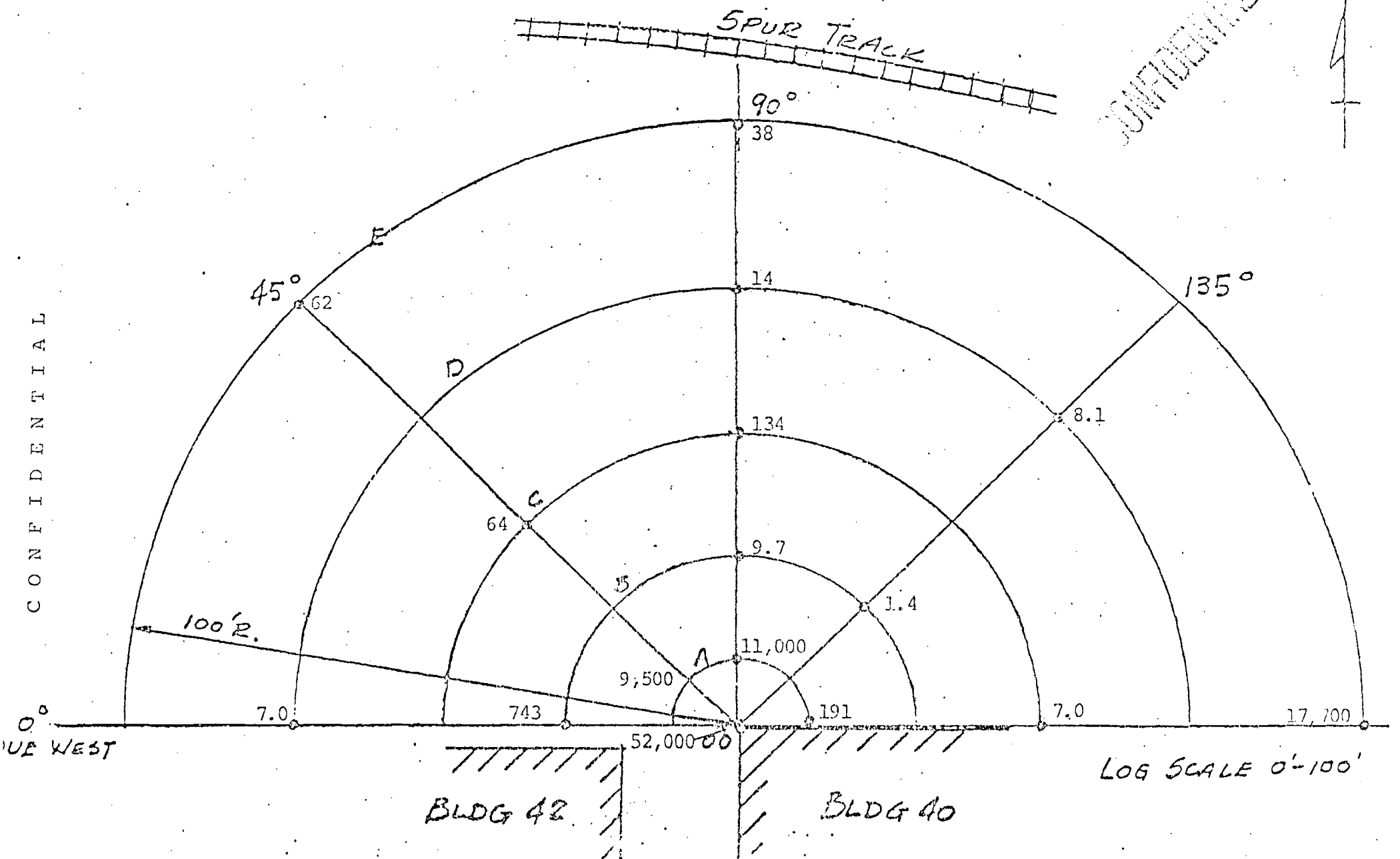
C 135

<0.2

D0

<0.2

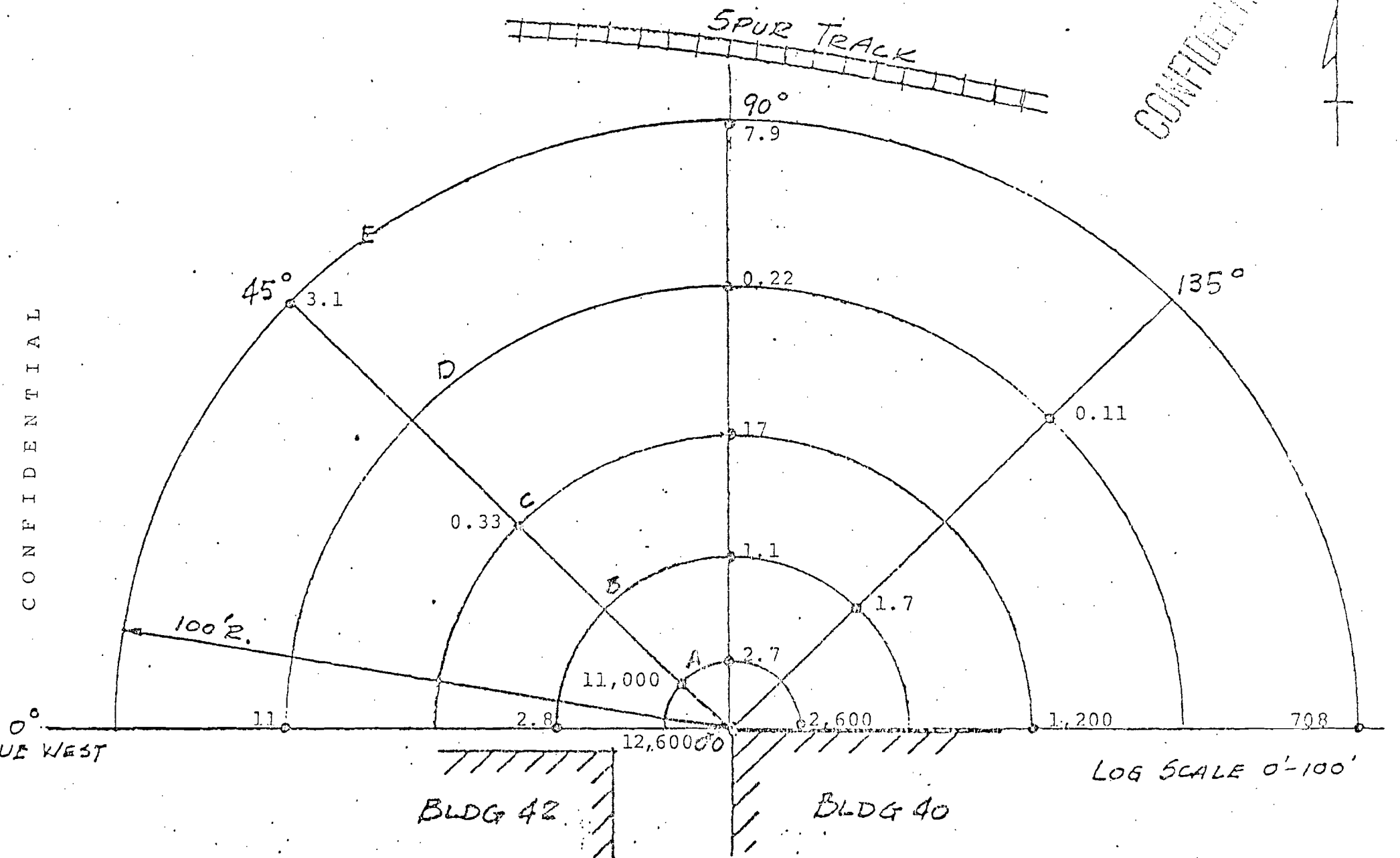
ONE-FOOT DEPTH CONCENTRATIONS OF MERCURY IN SOIL



All results expressed in ppm.

SAMPLING GRID PATTERN

TWO-FOOT DEPTH CONCENTRATIONS OF MERCURY IN SOIL

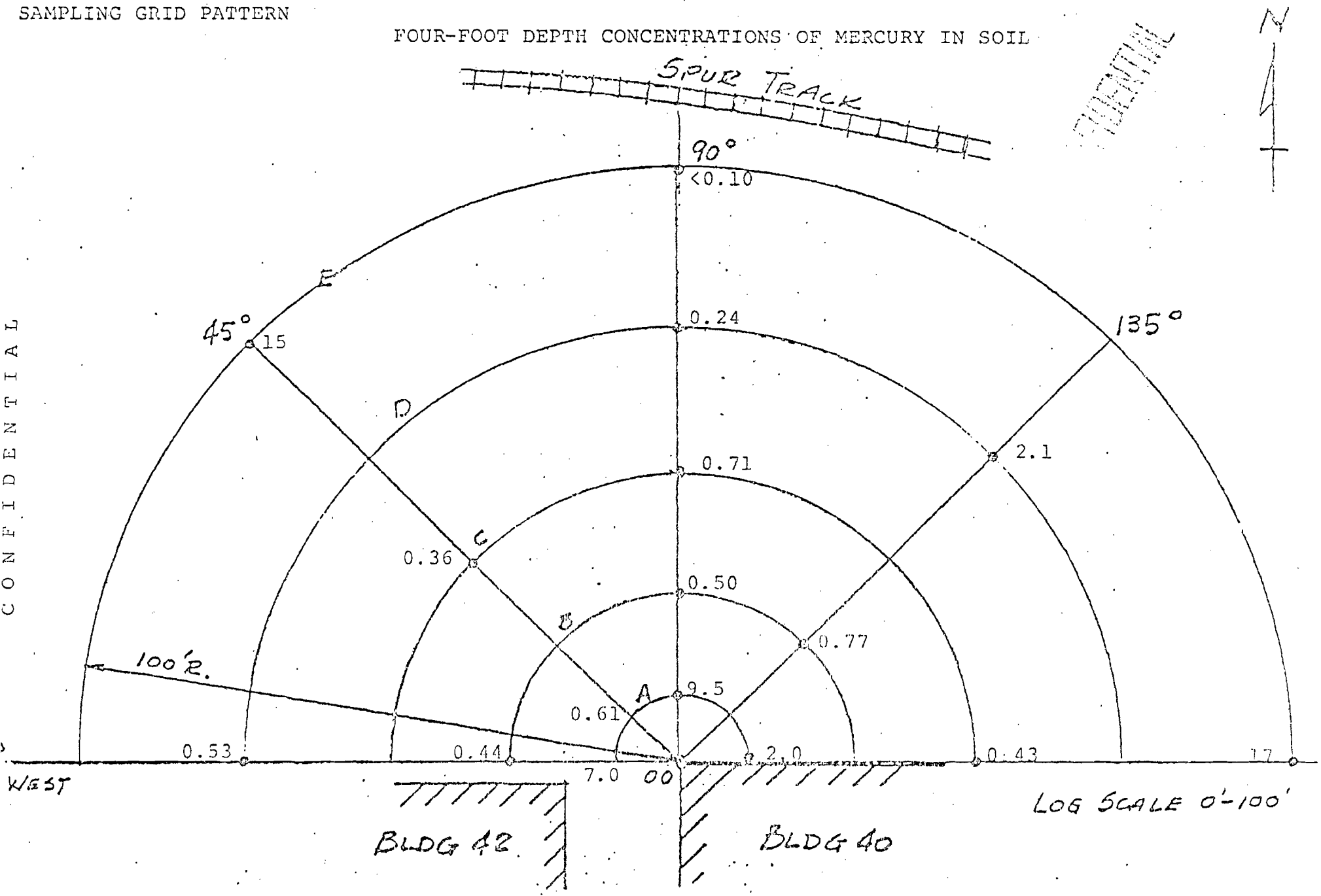


All results expressed in ppm.

FIGURE 3

FOUR-FOOT DEPTH CONCENTRATIONS OF MERCURY IN SOIL

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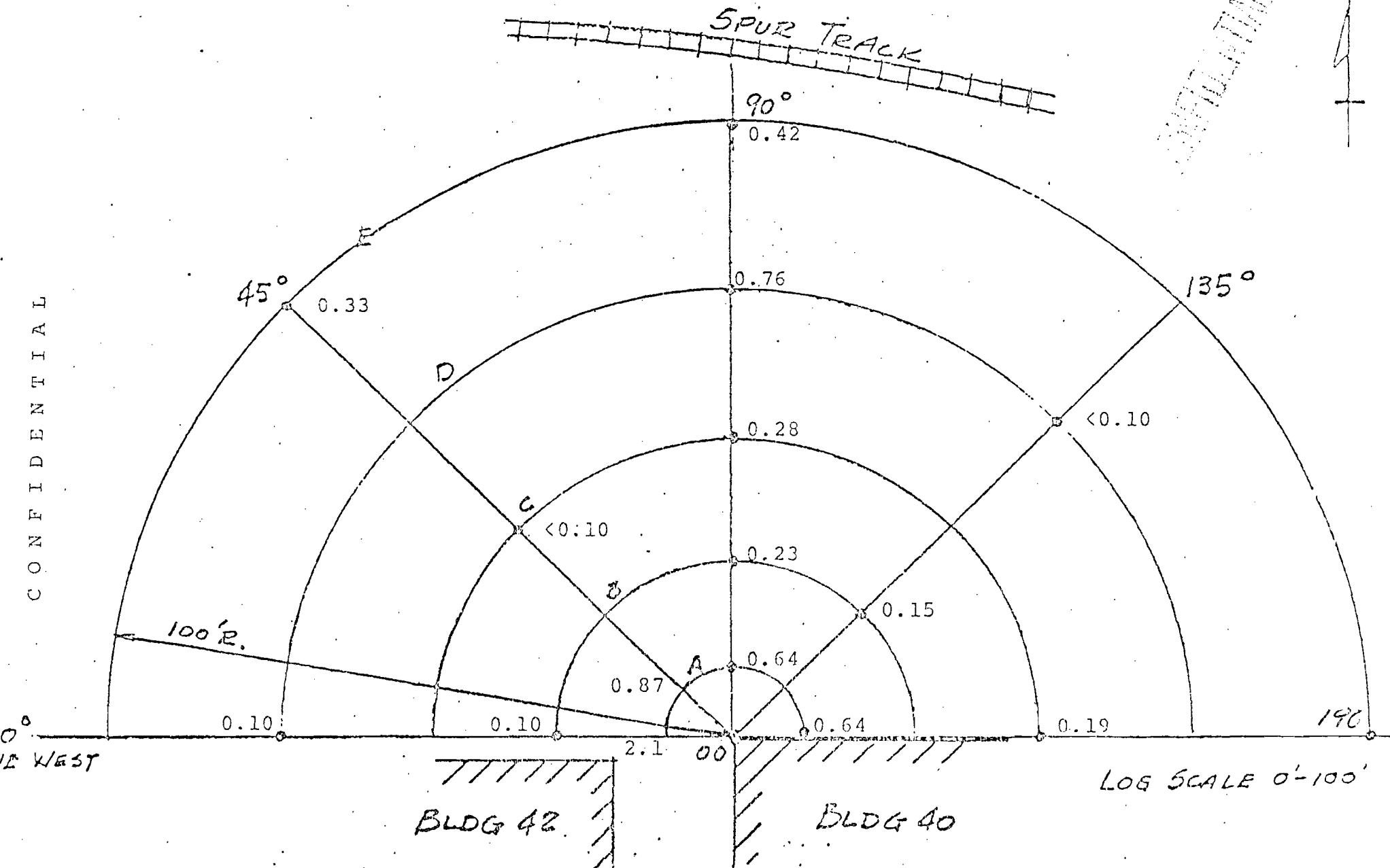


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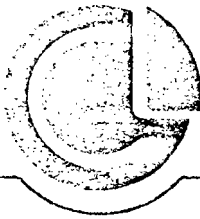


All results expressed in ppm.

EIGHT-FOOT DEPTH CONCENTRATIONS OF MERCURY IN SOIL



All results expressed in ppm.



Analytical Report

Taylor Instrument Company - Confidential

CAMO Job No. 81-11-9357

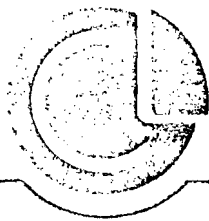
INTRODUCTION

This report will complete our assessment phase of the investigation of Taylor Instrument Company in accordance with the original Lozier proposal dated September 18, 1981. This report specifically deals with the determination of specific soils on the Taylor Instrument Company property as being hazardous material or not with respect to the Resource and Conservation Recovery Act. Sites 0-0°, E-180° and D-0° were the boring locations selected to composite the different depth soil samples and perform an EP Toxicity extraction followed by a mercury analysis. These locations were selected for the following reasons:

- a. Position 0-0° was the location with the highest mercury concentration content in the soil.
- b. Position E-180° was also very high in mercury concentration in the soil and was at that time presumably down gradient from position 0-0°.
- c. Position D-0° showed very little mercury concentration in the soil and was presumably up gradient from Position 0-0°.
- d. Positions 0-0°, E-180° and D-0° have groundwater monitoring wells. Water sample analysis of these three (3) wells for mercury have indicated the presence of mercury in wells 0-0° and E-180°, but no detectable mercury in wells D-0°. A correlation between the EP Toxicity data and the groundwater data would be investigated. The EP Toxicity extraction procedure would indicate what concentrations of mercury are available to be extracted from the contaminated soil.

METHODOLOGY

All three samples were analyzed as per Federal Register, May 19, 1980, EPA Hazardous Waste and Consolidated Permit Regulations, EP Toxicity Procedure.



Analytical Report

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The initial data from the investigation was reviewed by Camo as well as each step in the procedure. The review indicated that the vacuum pump employed in the filtration step was not reaching proper pressure as per method specifications. The pump was unable to be repaired satisfactorily for the re-running of all three (3) samples. It was then decided by Camo that due to the turnaround requirements, data samples at positions E-180° and 0-0° (both of which tested positive during initial testing) would be sent to an approved laboratory that Camo had dealt with in the past to re-run the EP Toxicity test. The data presented for 0-0° and E-180° in Table 6 for EP Toxicity was provided by New York Testing Laboratories, Inc., Westbury, Long Island, New York. The sub-contracted lab was not provided with any other information other than the sample identification (0-0°, E-180°) and our analysis request.

All other analysis provided in this report, or prior report, were performed at CAMO Laboratories, Hyde Park, New York.

RESULTS AND DISCUSSION

The data is presented in Table 6. The composited soil samples from positions 0-0° and E-180° have mercury concentrations that exceed the allowable concentration for a non-hazardous material, therefore, the soils are toxic with respect to mercury content and are hazardous materials. The composited soil sample from position D-0° was found to have no detectable mercury content after performing the EP Toxicity extraction and analysis. Therefore, the soil from position D-0° is a non-hazardous material. The groundwater data from these three sites is also presented in Table 6. The position D-0° groundwater data matches the EP Toxicity extraction data. Sites 0-0° and E-180° indicate the groundwater sample mercury content is much lower than the EP Toxicity data, as expected. The EP Toxicity extraction procedure subjects the sample to an acidic aqueous environment for a 24 hour period in an attempt to leach out the heavy metal contaminant.

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Table 6

Taylor Instrument Company

EP Toxicity Data for Sites 00, DO, and E-180
and Corresponding Groundwater Data

Mercury Concentrations - Ug/L

<u>Site</u>	<u>EP Toxicity (soil)</u>	<u>Groundwater</u>	<u>RCRA threshold level for non-haz. waste</u>
DO	<0.2	<0.2	200
00	476	8.6	200
E-180	238	19.5	200