ROY F. WESTON, INC.

REVISED DRAFT
Environmental Assessment Report on Subsurface PCB Contamination at the Heat Treat Building

The Gleason Works
Rochester, New York

WESTON

CLIENT ATTORNEY PRIVILEGED AND CONFIDENTIAL

REVISED DRAFT
Environmental Assessment Report on Subsurface PCB Contamination at the Heat Treat Building

The Gleason Works
Rochester, New York

Prepared for: The Gleason Works
Rochester, New York

Prepared by: Roy F. Weston, Inc.
Rocky Hill, Connecticut

January 11, 1993

DRAFT

Table of Contents

Section	Contents	Page
1.0	Executive Summary	1
2.0	Objective	3
3.0	Site Description	3
4.0	Technical Approach	4
	4.1 Soil Borings	4
	4.2 Groundwater Samples	5
	4.3 Sewer Line Sediments	5
	4.4 Analytical Methods	5
5.0	Surficial Geology	6
	6.1 Bedrock Geology	6
	6.2 Hydrogeology	6
6.0	Data Evaluation	11

Appendix A - Boring Logs

DRAFT

List of Tables

Section	Contents	Page
7.0	Table 1 - Summary of PCB Soil and Water Sample Results	13

List of Figures

Section	Description	Page
1.0	Figure 1 - Site Location Map	2
6.0	Figure 2 - Test Boring Locations	7
6.0	Figure 3 - South/North Cross Section	8
6.0	Figure 4 - West/East Cross Section	9
6.0	Figure 5 - Southwest/Northeast Cross Section	10
7.0	Figure 6 - Southwest/Northeast PCBs in Soils Cross Section	16
7.0	Figure 7 - West/East PCBs in Soils Cross Section	17
7.0	Figure 8 - South/North PCBs in Soils Cross Section	18

DRAFT

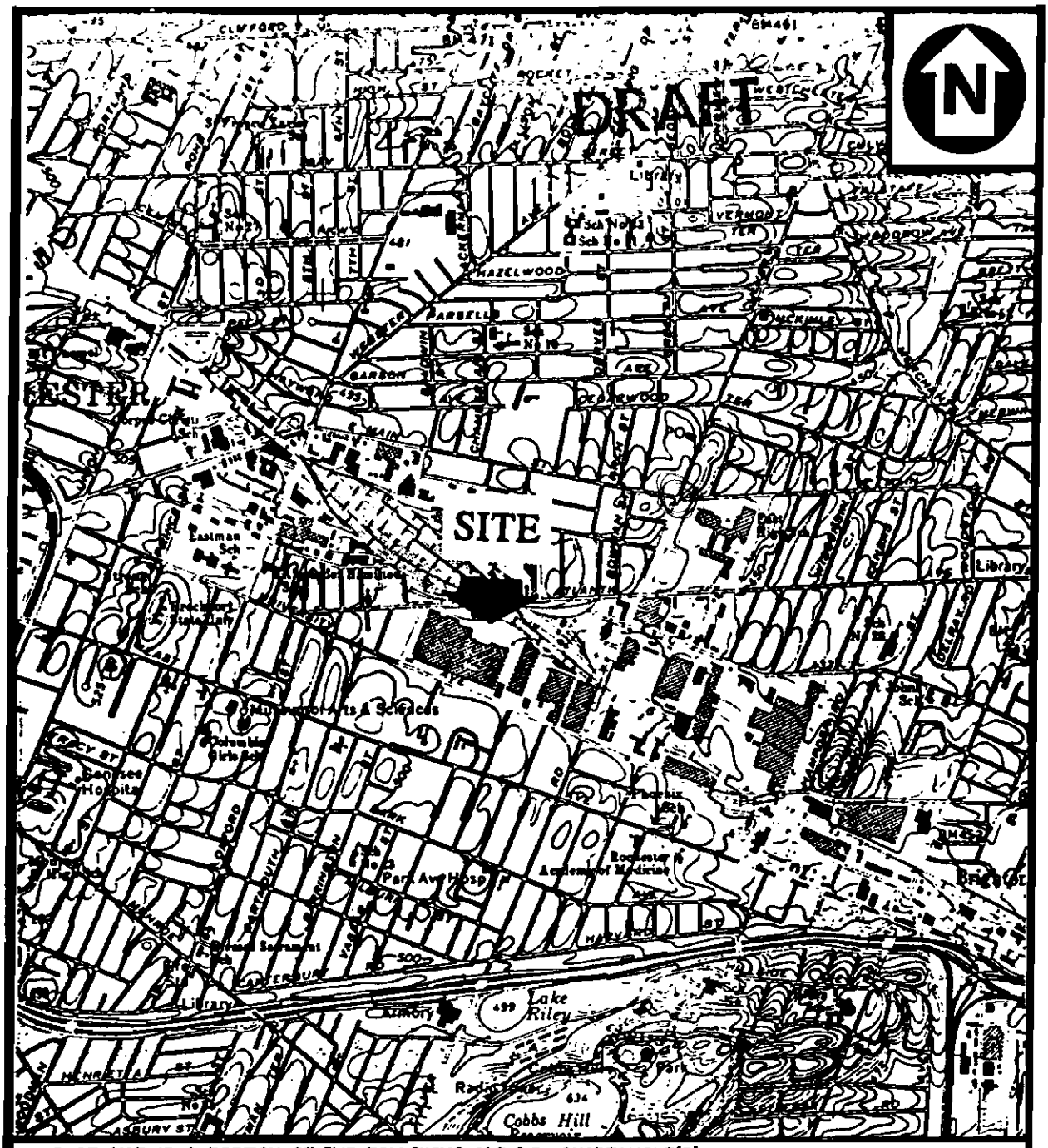
1.0 Executive Summary

The Gleason Works in Rochester, New York, manufactures precision gear cutting equipment for the automotive industry. Polychlorinated Biphenyl (PCBs) were discovered in still bottoms in the Heat Treat Building in 1990, further investigative sampling indicated the source of the PCB to be quench oil used in the heat treat process. The quench oil system and surrounding building and equipment surfaces were decontaminated in 1992. Concrete floor sampling in the heat treat building revealed the presence of PCB contamination in soils beneath the building, prompting this additional assessment of potential PCB contamination in subsurface soils and groundwater.

The soil and groundwater investigation included samples beneath the building, as well as samples outside the building perimeter. The following key observations were made based upon the results of our field sampling and analysis:

- Measurable PCBs released from the quench oil system appear to be limited to the area beneath the building, and included areas with visible oil staining.
- Groundwater sampling beneath the building revealed no measurable PCB contamination, and there was no evidence of free oil product.
- Soil samples taken on the property but away from the building revealed only limited PCB contamination in one sample at a depth of 3 ft, indicating no obvious connection between the contamination beneath the building.

The report also contains detailed characterization of unconsolidated geologic materials identified during the drilling program effecting the potential for migration of PCBs in the subsurface.



BASE MAP IS A PORTION OF THE FOLLOWING U.S.G.S. QUADRANGLE(S):
ROCHESTER (EAST), NEW YORK 1978 1:24,000

1 MILE 0.5 0 1

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

LOCATION MAP
THE GLEASON WORKS
ROCHESTER, NEW YORK

WESTON

FIGURE 1

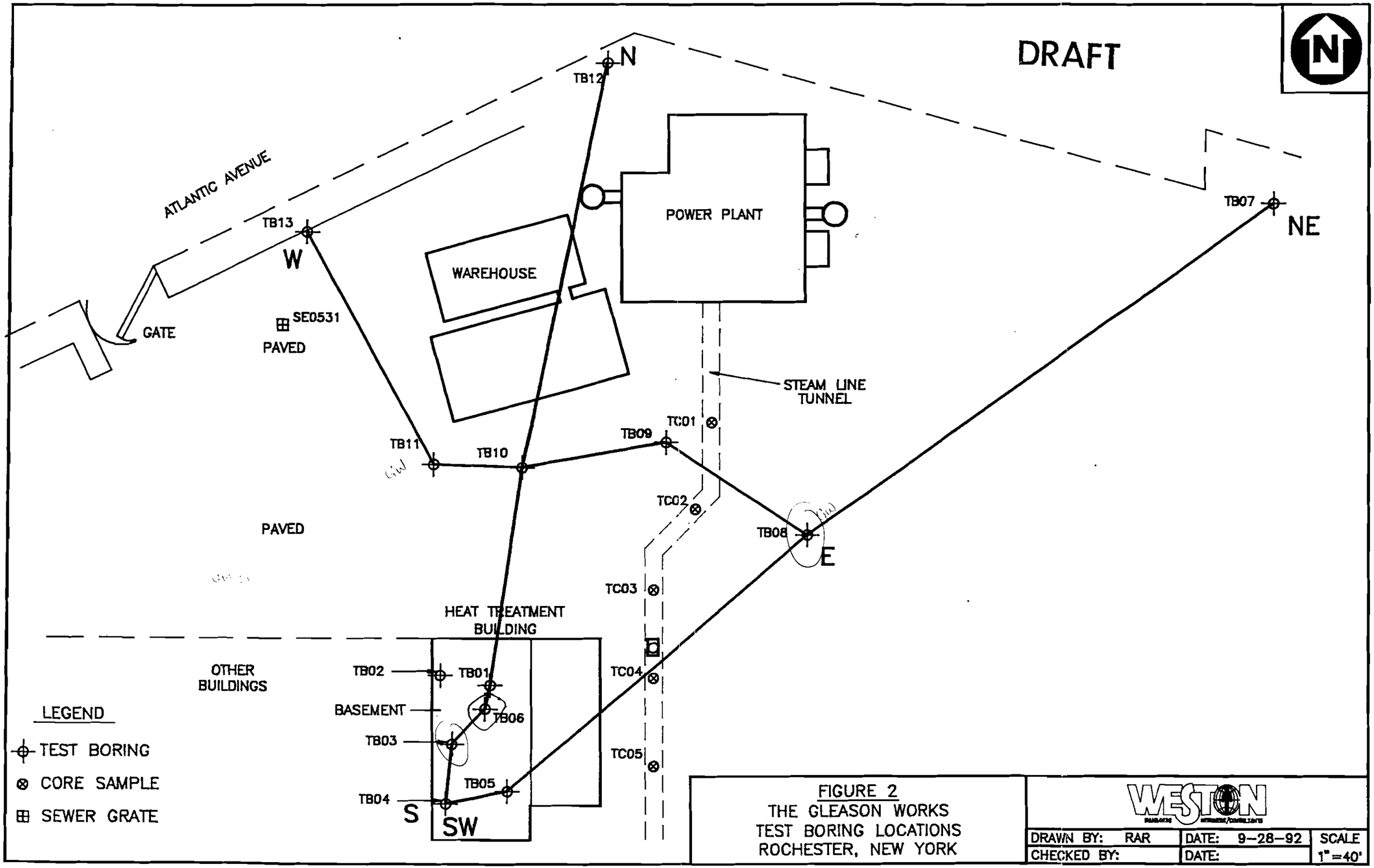
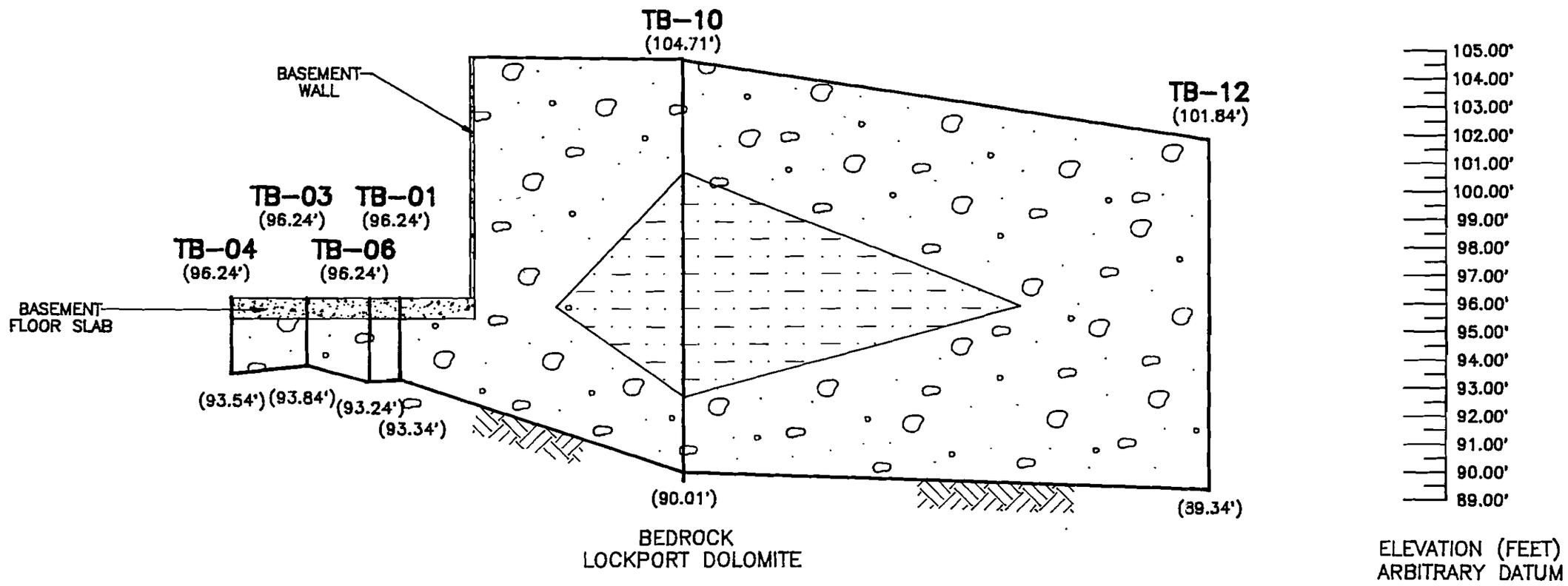


FIGURE 2
THE GLEASON WORKS
TEST BORING LOCATIONS
ROCHESTER, NEW YORK

DRAWN BY: RAR	DATE: 9-28-92	SCALE
CHECKED BY:	DATE:	1"=40'

DRAFT

SOUTH – NORTH CROSS–SECTION SHOWING SURFICIAL GEOLOGY



LEGEND

TB–01 – TEST BORING
(92.24') – ELEVATION (FEET)
– SAND AND GRAVEL
– SILTS AND CLAYS

SCALE

HORIZONTAL – 1"=40'
VERTICAL – 1"=4'

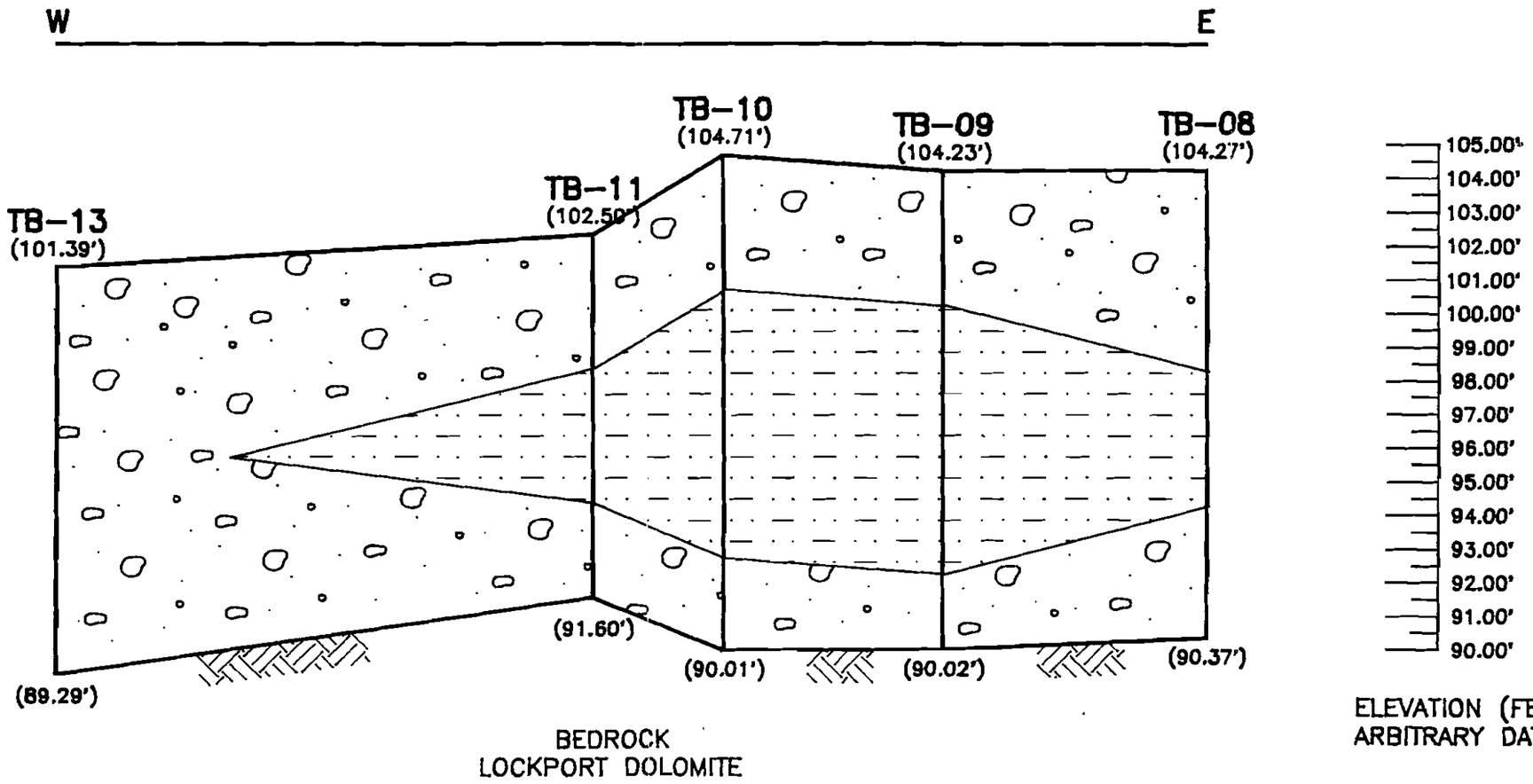
FIGURE 3
THE GLEASON WORKS
CROSS SECTION – SURFICIAL GEOLOGY
ROCHESTER, NEW YORK

WESTON

DRAWN BY: WMF	DATE: 10–8–92	SCALE
CHECKED BY:	DATE:	AS NOTED

DRAFT

WEST – EAST CROSS–SECTION SHOWING SURFICIAL GEOLOGY



LEGEND

TB–01 – TEST BORING
(92.24') – ELEVATION (FEET)
– SAND AND GRAVEL
– SILTS AND CLAYS

SCALE

HORIZONTAL – 1"=40'
VERTICAL – 1"=4'

FIGURE 4
THE GLEASON WORKS
CROSS SECTION – SURFICIAL GEOLOGY
ROCHESTER, NEW YORK

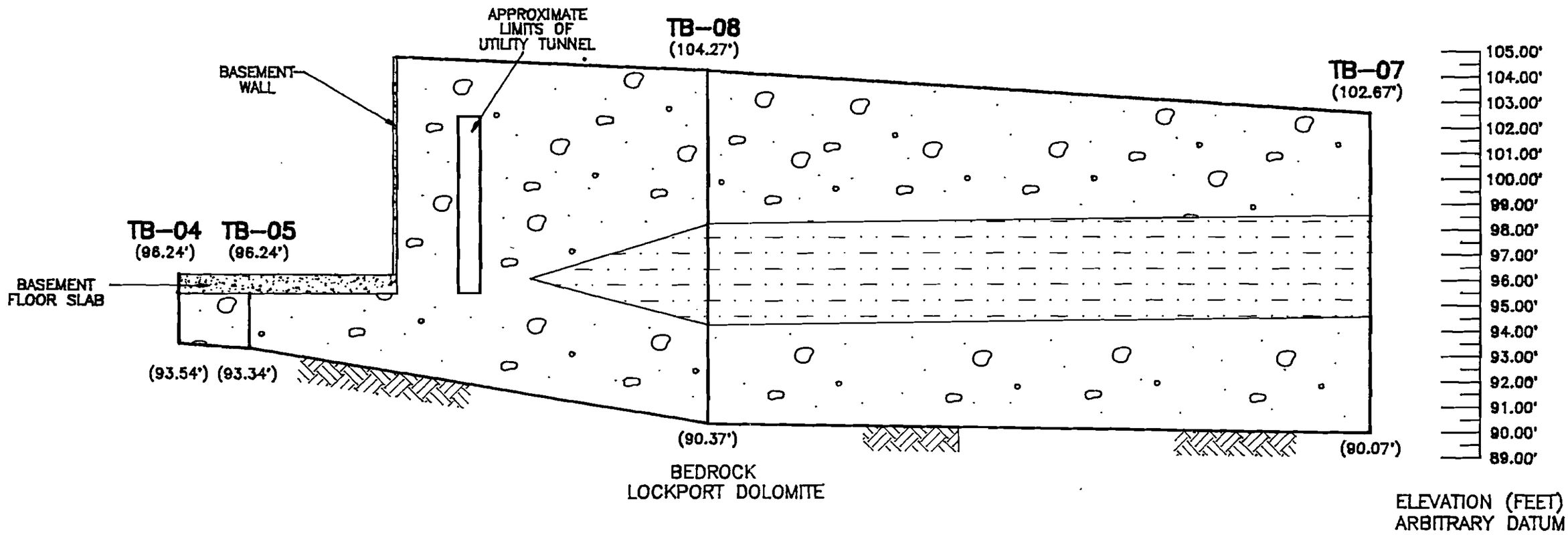
WESTON

DRAWN BY: WMF	DATE: 10–8–92	SCALE
CHECKED BY:	DATE:	AS NOTED

DRAFT

SOUTHWEST – NORTHEAST CROSS–SECTION SHOWING SURFICIAL GEOLOGY

SW NE



LEGEND

TB–01 – TEST BORING
(92.24') – ELEVATION (FEET)
– SAND AND GRAVEL
– SILTS AND CLAYS

SCALE

HORIZONTAL – 1"=40'
VERTICAL – 1"=4'

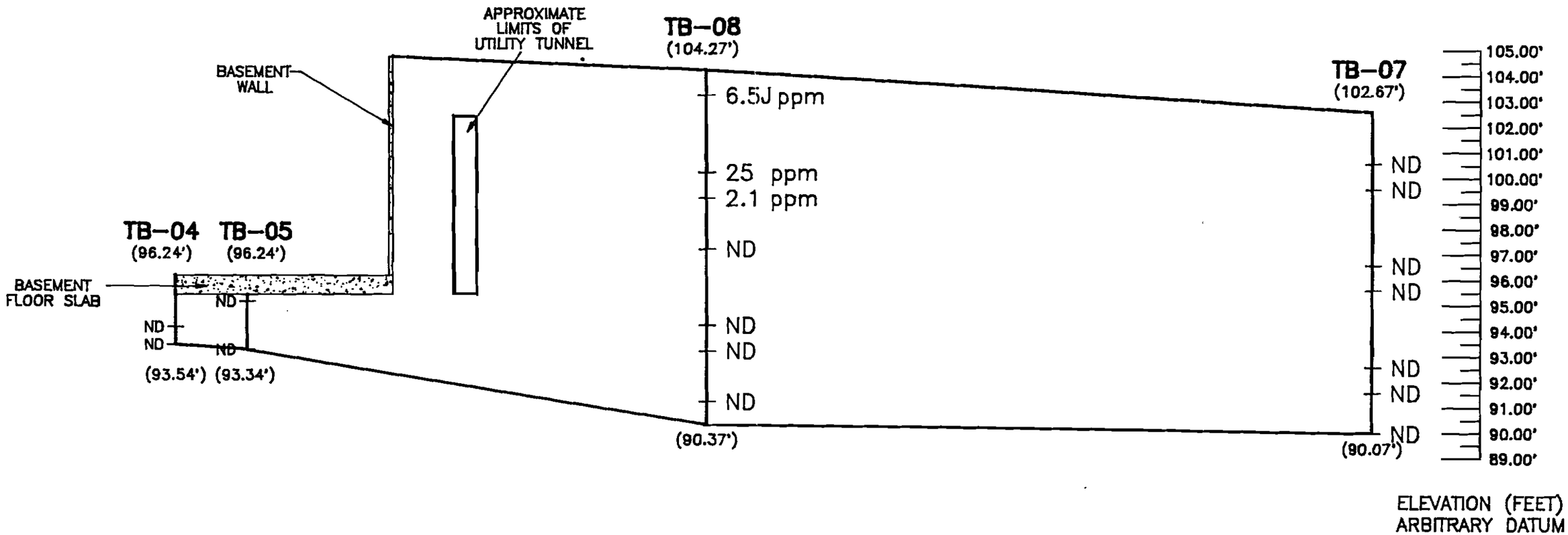
FIGURE 5
THE GLEASON WORKS
CROSS SECTION – SURFICIAL GEOLOGY
ROCHESTER, NEW YORK

WESTON

DRAWN BY: WMF	DATE: 10–8–92	SCALE
CHECKED BY:	DATE:	AS NOTED

DRAFT

SOUTHWEST – NORTHEAST CROSS–SECTION SHOWING PCBs IN SOILS



LEGEND

TB–01 – TEST BORING
(92.24') – ELEVATION (FEET)
450 – DETECTED LEVEL OF PCBs (mg/kg)
ND – NONE DETECTED
J – ESTIMATED QUANTITY BELOW DETECTION LIMIT

SCALE

HORIZONTAL – 1"=40'
VERTICAL – 1"=4'

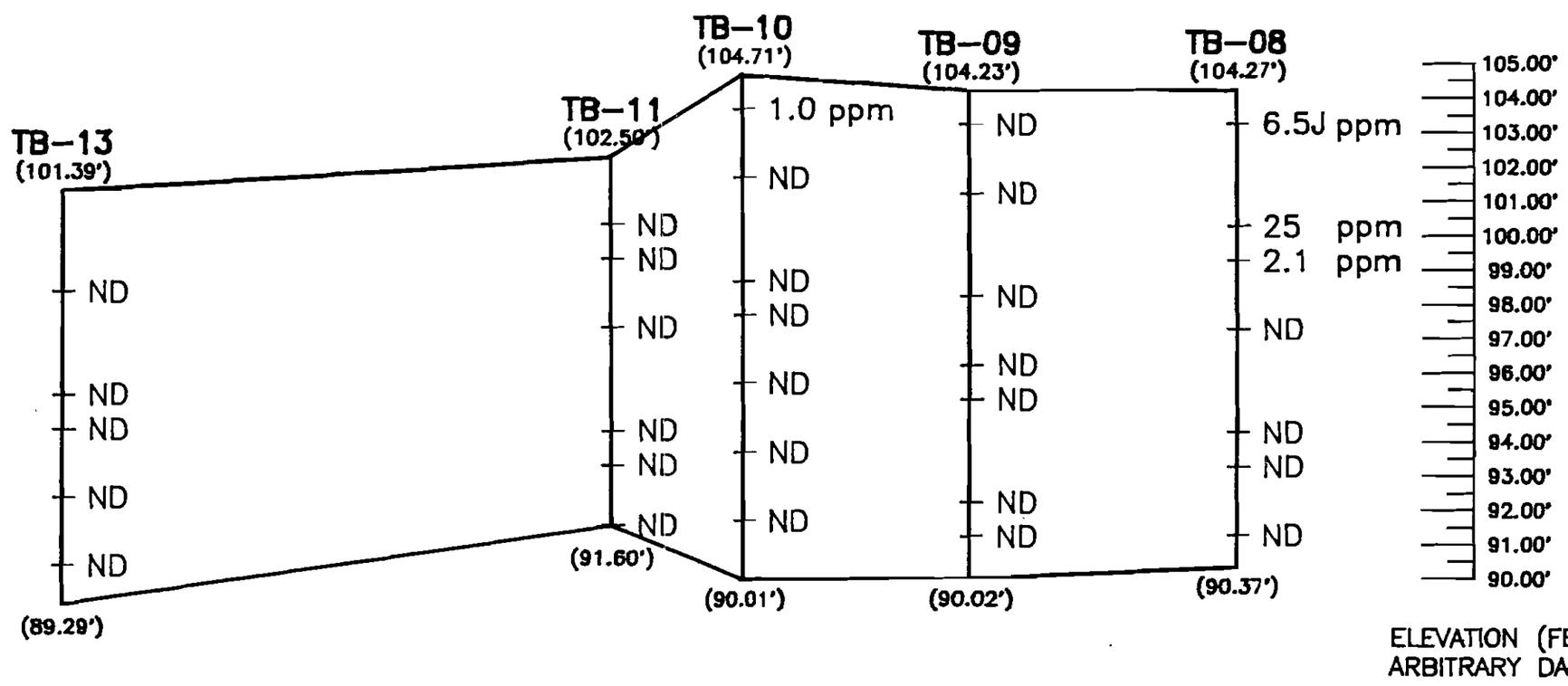
FIGURE 6
THE GLEASON WORKS
CROSS SECTION SHOWING PCBs IN SOILS
ROCHESTER, NEW YORK

WESTON

DRAWN BY: WMF	DATE: 10–8–92	SCALE AS NOTED
CHECKED BY:	DATE:	

DRAFT

WEST – EAST CROSS–SECTION SHOWING PCBs IN SOILS



LEGEND

TB–01 – TEST BORING
(92.24') – ELEVATION (FEET)
450 – DETECTED LEVEL OF PCBs (mg/kg)
ND – NONE DETECTED
J – ESTIMATED QUANTITY BELOW DETECTION LIMIT

SCALE

HORIZONTAL – 1"=40'
VERTICAL – 1"=4'

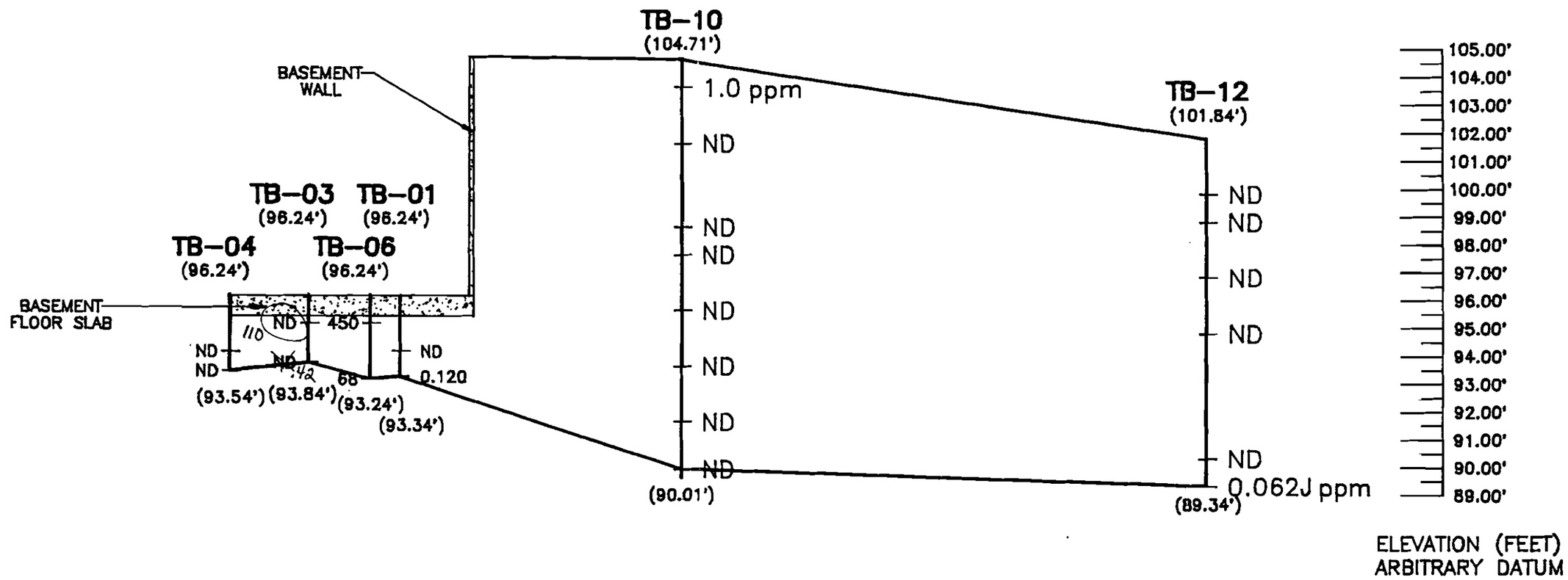
FIGURE 7
THE GLEASON WORKS
CROSS SECTION SHOWING PCBs IN SOILS
ROCHESTER, NEW YORK

WESTON

DRAWN BY: WMF	DATE: 10–8–92	SCALE
CHECKED BY:	DATE:	AS NOTED

SOUTH – NORTH CROSS–SECTION SHOWING PCBs IN SOILS

DRAFT



LEGEND

TB–01 – TEST BORING
(92.24') – ELEVATION (FEET)
450 – DETECTED LEVEL OF PCBs (mg/kg)
ND – NONE DETECTED
J – ESTIMATED QUANTITY BELOW DETECTION LIMIT

SCALE

HORIZONTAL – 1"=40'
VERTICAL – 1"=4'

FIGURE 8
THE GLEASON WORKS
CROSS SECTION SHOWING PCBs IN SOILS
ROCHESTER, NEW YORK

WESTON

DRAWN BY: WMF	DATE: 10–8–92	SCALE
CHECKED BY:	DATE:	AS NOTED

2.0 Objective

The objective of the study conducted by WESTON for The Gleason Works was to:

- Quickly determine if public health and the environment could be affected by PCBs in soils beneath and surrounding the Heat Treat Building,
- identify potential groundwater contaminant migration pathways,
- and, in light of the results or conclusions of the first two objectives, assess the need for further investigation.

This involved stratigraphic characterization of the soils and bedrock, and evaluation of their physical attributes. The vertical and horizontal extent of PCBs in subsurface soils and PCB levels in groundwater were also investigated in the study area.

3.0 Site Description

The Gleason Works (Gleason) manufactures precision gear cutting equipment for the automotive industry. The original plant was built in the early 1900's on approximately 30 acres that is currently zoned for industrial and commercial use. The heat treat building was constructed in the late 1940s. Approximately 900 people work at this location, ten of these people work in the Heat Treat Building during the day shift and 4-5 people during each of two night shifts.

Surface elevations over the site range between 490 to 495 feet above mean sea level. The topography is generally flat with a gradual slope toward the northeast. Most of the site is covered by buildings or asphalt pavement and surface water runoff is channeled into several catch basins which are connected to the sanitary sewer. The closest surface water bodies are Cobbs Hill Reservoir and Lake Riley located approximately 5,000 feet to the south. The elevation of these lakes are approximately 10 and 140 feet higher than The Gleason Works property. Irondequoit Bay is located approximately 2 miles to the northeast.

The Heat Treat Building houses a process wherein metal is heated to approximately 1,500 ^{0}F and is subsequently quenched in an oil bath. In 1991, PCBs were discovered in the quench oil, the New York State Department of Environmental Conservation (NYSDEC) and U.S. Environmental Protection Agency (US EPA) Office of Toxic Substances were immediately notified of this finding. The Gleason Works retained the services of an environmental consultant to conduct an investigation into the source and extent of PCB contamination, and to design a remediation strategy to reduce worker exposure to PCB on building surfaces.

4.0 Technical Approach

PCB contamination was identified on building surfaces and determined to be spilled contaminated quench oil used in the heat treat process. A cleanup plan focusing on decontamination of building and equipment surfaces was developed and submitted to the EPA in September 1991. In March 1992, decontamination of building surfaces was started using an environmental cleanup contractor under the consultant's oversight. The building decontamination activities were completed in September 1992.

In April 1992, during the consultant's building contamination assessment, a soil sample collected from beneath the basement floor was analyzed and found to contain 3,300 mg/kg PCB. This finding was immediately reported to NYSDEC and US EPA. As a result of this finding, The Gleason Works retained WESTON to evaluate the extent of PCB contamination in the subsurface soils. Concurrent with this activity, the soil stratigraphy and hydrogeologic conditions affecting the potential for PCB migration were characterized.

The investigation focused on identification of PCBs in subsurface soils and characterization of the unconsolidated geologic materials affecting the potential for PCBs to migrate in the subsurface. A work plan outlining drilling methods, sampling methods, and analytical methods is presented in Appendix B. Soil borings were completed in soils beneath the Heat Treat Building and outside the building from which soil and unfiltered groundwater samples were collected for PCB analysis. Soil and groundwater samples were also collected beneath a subsurface tunnel running from the steam generation plant to the main production facilities as shown on Figure 2.

4.1 Soil Borings

In the basement of the Heat Treat Building, six soil borings were advanced through the overburden to the bedrock surface. A coring machine was used to make a hole in the four inch thick concrete floor. A tripod mounted CAT-Head with a 140 pound weight was then used to drive split-spoon soil samplers into the soil to obtain samples. Grab soil samples were collected at each two foot interval focusing on soils with evidence of contamination.

These borings were completed using four inch hollow-stem augers in which split-spoon soil samplers were advanced ahead of the augers with a 140 pound weight. Outside the Heat Treat Building, seven soil borings were advanced through the overburden to the bedrock surface. The bedrock surface was confirmed by cores advanced three to four feet into the bedrock.

The soil samples were collected on a continuous basis from a two foot long split-spoon sampler until bedrock was encountered. All soil samples were classified in accordance with the Burmeister Soil Classification System and were logged into a Geologic Logging and Information System (GEOLIS®). Information in these logs includes blow counts, soil type, soil color, moisture content, strength, and the occurrence of groundwater in the boreholes. The borehole

logs are presented in Appendix A. The geologic cross sections presented in Section 5.0 were prepared to illustrate the various types of soils and depth to bedrock in the vicinity of the Heat Treat Building which may affect the potential for PCBs to migrate in the subsurface.

Confirmation of the bedrock surface was made at two locations (TB-07 and TB-13), using 2-inch diameter bedrock cores advanced from three to four feet into the bedrock.

4.2 Groundwater Samples

Groundwater samples were collected using a HYDROPUNCH™ in the previously advanced boreholes made for soil sampling purposes at TB-08 and TB-11. This sampling technique consists of stainless steel screen driven into the groundwater infiltration zone where a teflon bailer was used to extract the groundwater from inside the screen. These boreholes were selected for sampling because they were the only boreholes with sufficient quantity of infiltrating groundwater available for sampling purposes. These sample locations are shown on Figure 2.

In addition to the test borings, soils and groundwater beneath the concrete floor of the steam utility tunnel were sampled at five locations (TC-01 through TC-05). Due to the limited headroom in the tunnel, soil borings were not possible. Soils beneath the concrete floor were sampled by coring through the concrete floor, and collecting the underlying soils with a hand trowel. Groundwater was also sampled at these locations using dedicated glass pipettes.

4.3 Sewer Line Sediment Samples

A sediment sample (SE0531) was also collected from a common stormwater conduit for PCB analysis. This conduit receives stormwater from the Heat Treat Building roof and yard drains.

4.4 Analytical Methods

Both soil and groundwater samples were analyzed for PCBs using SW-846 method 8080 for PCB analysis in accordance with the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) revised December 1991. The data quality objectives, sampling procedures, and analytical methods used are outlined in a work plan presented in Appendix A. A summary of the data is presented in Table 1, and complete ASP data packages were delivered to The Gleason Works under separate cover.

5.0 Surficial Geology

The site lies on the west wall of a deep, preglacial bedrock valley that underlies Irondequoit Bay (Waller, R.M., 1982. Irondogenesee area: in Waller, R.M. and Finch, A. J., Atlas of Eleven Selected Aquifers in New York: United State Geological survey, Water Resources Investigations, Open-File Report 82-553; pp 83-103). The valley is filled with glacial deposits.

The surficial deposits under the site consist of three units: (1) a poorly-sorted, silty sand and gravel, (2) a fine-grained silt and clay, (3) a well-sorted sand and gravel. The surficial silty sand and gravel contains manmade materials (brick, etc.). Based on the long industrial history of the site, this unit has probably been reworked for construction purposes. The silt and clay unit underlying the surficial material is glacial lacustrine silt and clay deposited in the quiet waters of glacial Lake Iroquois. This unit ranges from 4 to 8 feet thick and is discontinuous on The Gleason Works property. These silts and clays were not present beneath the basement of the building nor in the outlying areas of the site near TB-12 and TB-13. The basal sand and gravel is glacial outwash that was deposited along the retreating glacial margin (Dineen, R.J., Hanson, E.L., Waller, R., 1983. Bedrock Topography and Glacial Deposits of the Colonie Channel between Saratoga Lake and Coeymans, New York: New York State Museum Map and Chart Series No. 37). This undisturbed unit underlies the silts and clays and ranges from 3 to 6 feet thick. The combined thickness of these three units is between 10 and 15 feet thick in the area to the north of the Heat Treat Building. The basal sand and gravel overlying the bedrock is 3 feet thick under the basement of the building (Figures 2 through 5).

5.1 Bedrock Geology

Bedrock under the site consists of the Lockport Dolomite of Silurian age (Rickard, L.V. and Fisher, D.W., 1970. Geologic Map of New York-Finger Lakes Sheet: New York State Museum Map and Chart Series No. 15). The Lockport Dolomite dips gently towards the south. The Lockport was encountered in the bedrock cores, and is comprised of alternating thin-bedded dark gray units alternating with thick-bedded dark bluish gray units with laminae of shale. Locally the Lockport Dolomite ranges up to 60 feet thick. Cores drilled three feet into the bedrock under the site were moderately fractured (3 per foot).

5.2 Hydrogeology

The site is on the west side of the Irondogenesee Area aquifer, an aquifer that supplies water to over 47,000 people (Waller, R.M., 1982. Irondogenesee area: in Waller, R.M. and Finch, A.J., Atlas of Eleven Selected Aquifers in New York: United States Geological Survey, Water-Resources Investigations, Open-File Report 82-553; pp 83-103). The aquifer includes gravelly beds in the glacial deposits that fill the preglacial valley of Irondoquoit Bay. Regional groundwater flow in the area of the site is to the northeast towards Irondoquoit Creek.

Groundwater was evident at approximately 10 feet below the ground surface in nine of the thirteen borholes advanced to the bedrock during this investigation in July 1992. In general, an estimated two feet of the unconsolidated geologic material overlying the bedrock was saturated with groundwater. The sand and gravel under the lacustrine silt and clay is a local source of groundwater in areas that are underlain by glacial lake deposits (Randall, A.D., Francis, R.M., Frimpter, M.H., Emery, J.M., 1988. Region 19, Northeastern Appalacians: in Back, Rosenshein, J.S., Seaber, P.R., Hydrogeology: The Geology of North America, Volume O-2, Geological Society of America, pp 177-188; Dineen, R.J., Hanson, E.L., Waller, R., 1983. Bedrock Topography and Glacial Deposits of the Colonie Channel Between Saratoga Lake and Coeymans, New York: New York State Museum Map and Chart Series No. 37).

The hydraulic conductivity of the unconsolidated materials was not measured as part of this study but can be estimated between 10^{-2} and 10^{-5} cm/sec based on typical literature values for these materials. As noted previously, the uppermost three feet of the bedrock was moderately fractured which most likely controls the flow of groundwater in this zone. The direction of groundwater flow and hydraulic conductivity in the lower bedrock aquifer were not investigated as part of this study.

6.0 Data Evaluation

A summary of the PCB results and respective sample depths is presented in Table 1. PCBs were detected in soil collected from beneath the Heat Treat Building and to the northeast of the Heat Treat Building. No PCBs were detected in soil and groundwater collected from beneath the steam utility tunnel. PCBs were not detected in any of five groundwater samples or the sediment from the sewer line.

PCBs concentrations in soil were highest below the Heat Treat Building at 450 mg/kg. (TB-06, one foot below grade). Six borings were advanced beneath the basement floor through approximately three feet of sand and fine gravel before the bedrock was encountered. The concentration of PCBs from these borings ranged from non-detect to 450 mg/kg.

In the areas outside the building elevated levels of PCBs were detected at only one location (TB-08) to the northeast of the building. At this location PCBs were detected at a concentration of 25 mg/kg (TB-08, four feet below grade). Soils in the one to three foot zone above this location were not analyzed because soil was not recovered in the split-spoon sampler at this horizon. Soil staining noted in the boring logs at this location and at TB-10, and TB-11 appear to be remnants of a former coal pile.

The horizontal extent of PCB soil contamination appears to be confined to two areas: (1) below the Heat Treat Building, (2) in the vicinity of TB-08 to the northeast of the building. A level of 1 mg/kg PCBs was also detected near the surface at TB-10, and trace amounts (0.062, 0.026 mg/kg) were detected at TB-12 and TB-13 respectively located to the northeast of the building.

The vertical extent of PCB contamination extends to the bedrock surface and can be seen at three borings located beneath the building (TB-01, TB-03, TB-06). Attenuation of PCBs in soils at these locations is evident in the higher concentrations reported near the surface when compared to the lower concentrations reported at greater depths in the same location. For example, in borehole TB-03, PCB concentrations of 110 mg/kg exist in the upper one foot, and 0.420 mg/kg at three feet below the surface.

In the outside areas (TB-08 and TB-10), PCBs were absent in the soils at the deeper horizons. For example, at TB-08 there were no PCBs detected at depths greater than five feet below the ground surface (BGS), and at TB-10 there were none below 1 foot BGS. Figures 6 through 8 illustrate the vertical distribution of PCBs found in each of the boreholes.

DRAFT

The Gleason Works
Environmental Assessment
7/8/92 – 7/10/92

Table 1
Summary of PCB Soil and
Groundwater Results

Analyzed by:
Roy F. Weston, Inc.

Sample Number	TB01-01-002	TB01-01-003
Units	mg/kg	mg/kg
Aroclor-1016	0.087 U	0.087 U
Aroclor-1221	0.087 U	0.087 U
Aroclor-1232	0.087 U	0.087 U
Aroclor-1242	0.087 U	0.087 U
Aroclor-1248	0.087 U	0.12
Aroclor-1254	0.17 U	0.17 U
Aroclor-1260	0.17 U	0.17 U
Sample Number	TB02-01-001	TB02-01-003
Units	mg/kg	mg/kg
Aroclor-1016	0.18 U	0.09 U
Aroclor-1221	0.18 U	0.09 U
Aroclor-1232	0.18 U	0.09 U
Aroclor-1242	0.18 U	0.09 U
Aroclor-1248	0.18 U	0.09 U
Aroclor-1254	0.36 U	0.18 U
Aroclor-1260	0.36 U	0.18 U
Sample Number	TB03-01-001	TB03-01-003
Units	mg/kg	mg/kg
Aroclor-1016	17.0 U	0.18 U
Aroclor 1221	17.0 U	0.18 U
Aroclor-1232	17.0 U	0.18 U
Aroclor-1242	17.0 U	0.18 U
Aroclor-1248	110	0.42
Aroclor-1254	35.0 U	0.36 U
Aroclor-1260	35.0 U	0.36 U
Sample Number	TB04-01-002	TB04-01-003
Units	mg/kg	mg/kg
Aroclor-1016	0.090 U	0.088 U
Aroclor-1221	0.090 U	0.088 U
Aroclor-1232	0.090 U	0.088 U
Aroclor-1242	0.090 U	0.088 U
Aroclor-1248	0.090 U	0.088 U
Aroclor-1254	0.180 U	0.180 U
Aroclor-1260	0.180 U	0.180 U
Sample Number	TB05-01-001	TB05-01-003
Units	mg/kg	mg/kg
Aroclor-1016	0.087 U	0.091 U
Aroclor-1221	0.087 U	0.091 U
Aroclor-1232	0.087 U	0.091 U
Aroclor-1242	0.087 U	0.091 U
Aroclor-1248	0.087 U	0.091 U
Aroclor-1254	0.170 U	0.180 U
Aroclor-1260	0.170 U	0.180 U

Sample Numbering Protocol:

TB0X-0X-00X
TB0X = Test Boring Number
0X = Sample Matrix
01 = Soil
02 = Water
00X = Depth in Feet Below Ground Surface
TB = Test Boring. TC = Tunnel Core. EB = Equip. Blank.

U = Analyzed, not detected. J = Present below detection limit.

DRAFT

Sample Number	TB06-01-001	TB06-01-003
Units	mg/kg	mg/kg
Aroclor-1016	89.0 U	8.80 U
Aroclor-1221	89.0 U	8.80 U
Aroclor-1232	89.0 U	8.80 U
Aroclor-1242	89.0 U	8.80 U
Aroclor-1248	450	68.0
Aroclor-1254	180 U	18.0 U
Aroclor-1260	180 U	18.0 U

Sample Number	TB07-01-002	TB07-01-003	TB07-01-006	TB07-01-07	TB07-01-010	TB07-01-011	TB07-01-013
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor-1016	0.480 U	0.520 U	0.10 U	0.096 U	0.110 U	0.086 U	0.160 U
Aroclor-1221	0.480 U	0.520 U	0.10 U	0.096 U	0.110 U	0.086 U	0.160 U
Aroclor-1232	0.480 U	0.520 U	0.10 U	0.096 U	0.110 U	0.086 U	0.160 U
Aroclor-1242	0.480 U	0.520 U	0.10 U	0.096 U	0.110 U	0.086 U	0.160 U
Aroclor-1248	0.480 U	0.520 U	0.10 U	0.096 U	0.110 U	0.086 U	0.160 U
Aroclor-1254	0.950 U	1.0 U	0.20 U	0.190 U	0.210 U	0.170 U	0.320 U
Aroclor-1260	0.950 U	1.0 U	0.20 U	0.190 U	0.210 U	0.170 U	0.320 U

Sample Number	TB08-01-001	TB08-01-004	TB08-01-005	TB08-01-007	TB08-01-010	TB08-01-011	TB08-01-013	TB08-02-013
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l
Aroclor-1016	8.6 U	9.40 U	0.450 U	0.099 U	0.096 U	0.088 U	0.087 U	1.2 U
Aroclor-1221	8.6 U	9.40 U	0.450 U	0.099 U	0.096 U	0.088 U	0.087 U	1.2 U
Aroclor-1232	8.6 U	9.40 U	0.450 U	0.099 U	0.096 U	0.088 U	0.087 U	1.2 U
Aroclor-1242	8.6 U	9.40 U	0.450 U	0.099 U	0.096 U	0.088 U	0.087 U	1.2 U
Aroclor-1248	6.5 J	25.0	2.10	0.099 U	0.096 U	0.088 U	0.087 U	1.2 U
Aroclor-1254	17.0 U	19.0 U	0.90 U	0.20 U	0.190 U	0.180 U	0.170 U	2.4 U
Aroclor-1260	17.0 U	19.0 U	0.90 U	0.20 U	0.190 U	0.180 U	0.170 U	2.4 U

Sample Number	TB09-01-001	TB09-01-003	TB09-01-006	TB09-01-008	TB09-01-009	TB09-01-012	TB09-01-013
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor-1016	0.093 U	1.0 U	0.30 U	0.30 U	0.280 U	0.092 U	0.079 U
Aroclor-1221	0.093 U	1.0 U	0.30 U	0.30 U	0.280 U	0.092 U	0.079 U
Aroclor-1232	0.093 U	1.0 U	0.30 U	0.30 U	0.260 U	0.092 U	0.079 U
Aroclor-1242	0.093 U	1.0 U	0.30 U	0.30 U	0.280 U	0.092 U	0.079 U
Aroclor-1248	0.093 U	1.0 U	0.30 U	0.30 U	0.260 U	0.092 U	0.079 U
Aroclor-1254	0.190 U	2.0 U	0.590 U	0.590 U	0.560 U	0.180 U	0.180 U
Aroclor-1260	0.190 U	2.0 U	0.590 U	0.590 U	0.560 U	0.180 U	0.160 U

Sample Number	TB10-01-001	TB10-01-003	TB10-01-006	TB10-01-007	TB10-01-009	TB10-01-011	TB10-01-013	TB10-01-015
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor-1016	0.50 U	0.270 U	0.290 U	0.30 U	0.099 U	0.086 U	0.090 U	0.093 U
Aroclor-1221	0.50 U	0.270 U	0.290 U	0.30 U	0.099 U	0.086 U	0.090 U	0.093 U
Aroclor-1232	0.50 U	0.270 U	0.290 U	0.30 U	0.099 U	0.086 U	0.090 U	0.093 U
Aroclor-1242	0.50 U	0.270 U	0.290 U	0.30 U	0.099 U	0.086 U	0.090 U	0.093 U
Aroclor-1248	0.50 U	0.270 U	0.290 U	0.30 U	0.099 U	0.086 U	0.090 U	0.093 U
Aroclor-1254	1.0	0.550 U	0.580 U	0.590 U	0.20 U	0.170 U	0.180 U	0.190 U
Aroclor-1260	1.0 U	0.550 U	0.580 U	0.590 U	0.20 U	0.170 U	0.180 U	0.190 U

U = Analyzed, not detected. J = Present below detection limit.

DRAFT

Sample Number	TB11-01-002	TB11-01-003	TB11-01-005	TB11-01-008	TB11-01-009	TB11-02-011
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l
Aroclor-1016	0.470 U	0.190 U	0.10 U	0.099 U	0.092 U	1.2 U
Aroclor-1221	0.470 U	0.190 U	0.10 U	0.099 U	0.092 U	1.2 U
Aroclor-1232	0.470 U	0.190 U	0.10 U	0.099 U	0.092 U	1.2 U
Aroclor-1242	0.470 U	0.190 U	0.10 U	0.099 U	0.092 U	1.2 U
Aroclor-1248	0.470 U	0.190 U	0.10 U	0.099 U	0.092 U	1.2 U
Aroclor-1254	0.930 U	0.370 U	0.20 U	0.20 U	0.180 U	2.4 U
Aroclor-1260	0.930 U	0.370 U	0.20 U	0.20 U	0.180 U	2.4 U

Sample Number	TB12-01-002	TB12-01-003	TB12-01-005	TB12-01-007	TB12-01-012	TB12-01-013
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor-1016	0.087 U	0.440 U	0.042 U	0.087 U	0.086 U	0.086 U
Aroclor-1221	0.087 U	0.440 U	0.042 U	0.087 U	0.086 U	0.086 U
Aroclor-1232	0.087 U	0.440 U	0.042 U	0.087 U	0.086 U	0.086 U
Aroclor-1242	0.087 U	0.440 U	0.042 U	0.087 U	0.086 U	0.086 U
Aroclor-1248	0.087 U	0.440 U	0.042 U	0.087 U	0.086 U	0.062 J
Aroclor-1254	0.170 U	0.890 U	0.083 U	0.170 U	0.170 U	0.170 U
Aroclor-1260	0.170 U	0.890 U	0.083 U	0.170 U	0.170 U	0.170 U

Sample Number	TB13-01-003	TB13-01-006	TB13-01-007	TB13-01-009	TB13-01-011
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor-1016	0.10 U	0.085 U	0.084 U	0.089 U	0.090 U
Aroclor-1221	0.10 U	0.085 U	0.084 U	0.089 U	0.090 U
Aroclor-1232	0.10 U	0.085 U	0.084 U	0.089 U	0.090 U
Aroclor-1242	0.10 U	0.085 U	0.084 U	0.089 U	0.090 U
Aroclor-1248	0.10 U	0.026 J	0.084 U	0.089 U	0.090 U
Aroclor-1254	0.20 U	0.170 U	0.170 U	0.90 U	0.180 U
Aroclor-1260	0.20 U	0.170 U	0.170 U	0.90 U	0.180 U

Sample Number	TC01-01	TC01-02	TC02-01	TC02-02	TC03-01	TC03-02	TC04-01	TC04-02	TC05-01
Units	mg/kg	ug/l	mg/kg	ug/l	mg/kg	ug/l	mg/kg	ug/l	mg/kg
Aroclor-1016	0.560 U	0.52 U	0.250 U	0.58 U	0.270 U	0.58 U	0.230 U	0.58 U	0.480 U
Aroclor-1221	0.560 U	0.52 U	0.250 U	0.58 U	0.270 U	0.56 U	0.230 U	0.58 U	0.480 U
Aroclor-1232	0.560 U	0.52 U	0.250 U	0.58 U	0.270 U	0.56 U	0.230 U	0.58 U	0.480 U
Aroclor-1242	0.560 U	0.52 U	0.250 U	0.58 U	0.270 U	0.58 U	0.230 U	0.58 U	0.480 U
Aroclor-1248	0.560 U	0.52 U	0.250 U	0.58 U	0.270 U	0.56 U	0.230 U	0.58 U	0.480 U
Aroclor-1254	1.10 U	1.0 U	0.510 U	1.2 U	0.540 U	1.1 U	0.460 U	1.2 U	0.960 U
Aroclor-1260	1.10 U	1.0 U	0.510 U	1.2 U	0.540 U	1.1 U	0.460 U	1.2 U	0.960 U

Sample Number	EB01-10	EB02-10	EB03-10	EB04-20	EB05-10	SE0531
Units	ug/l	ug/l	ug/l	ug/l	ug/l	mg/kg
Aroclor-1016	0.59 U	0.57 U	0.50 U	0.50 U	0.50 U	0.94 U
Aroclor-1221	0.59 U	0.57 U	0.50 U	0.50 U	0.50 U	0.94 U
Aroclor-1232	0.59 U	0.57 U	0.50 U	0.50 U	0.50 U	0.94 U
Aroclor-1242	0.59 U	0.57 U	0.50 U	0.50 U	0.50 U	0.94 U
Aroclor-1248	0.59 U	0.57 U	0.50 U	0.50 U	1.3	0.94 U
Aroclor-1254	1.2 U	1.1 U	1.0 U	1.0 U	1.0 U	1.90 U
Aroclor-1260	1.2 U	1.1 U	1.0 U	1.0 U	1.0 U	1.90 U

DRAFT

APPENDIX A

BORING LOGS

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 2.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-01	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: -94.7500 estimated	DRILLING RIG	: TRIPOD/CATHEAD
EASTING	: 55.0000 estimated	DATE STARTED	: 07/09/92
ELEVATION	: 100.000 estimated	DATE COMPLETED	: 07/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			100	SAND, sm SILT, lt GRAVEL	DK GRAYISHBROWN	SFT	MST	19 60 22 40		Trace clay from 1.0-1.5 feet BGS (<5%), staining (black) noted in spoon.
99	1									
98	2		50	Sand, sm SILT, lt GRAVEL	DK GRAY BROWN	LSE	MA	31 100 0 0		1.5 inch rock fragment in head of spoon. Bedrock at 2.9 feet BGS
97	3									
96	4									
95	5									
94	6									
93	7									
92	8									
91	9									
90	10									

DRAFT

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 2.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-02	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: -87.0900 estimated	DRILLING RIG	: TRIPOD/CATHEAD
EASTING	: 31.0000 estimated	DATE STARTED	: 07/09/92
ELEVATION	: 100.000 estimated	DATE COMPLETED	: 07/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			60	SAND and SILT, sm GRAVEL	BROWN	SFT	MST	19 15 22 30		
99	1									
98	2		25	SAND and SILT, lt GRAVEL	DK GRYSH BROWN	SFT	WET	39 100 0 0		
97	3									
96	4									
95	5									
94	6									
93	7									
92	8									
91	9									
90	10									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 2.40
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-03	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: -119.5900 estimated	DRILLING RIG	: TRIPOD/CATHEAD
EASTING	: 37.6700 estimated	DATE STARTED	: 07/10/92
ELEVATION	: 100.000 estimated	DATE COMPLETED	: 07/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			50	SAND, sm SILT, lt CLAY, tr GRAVEL	VERY DARK GREY	SFT	MST	20 26 22 24		
99	1									
98	2		15	SAND, sm SILT, lt GRAVEL	DK BROWN	SFT	WET	100 0 0 0		Water entry at 2.3 BGS
97	3									
96	4									
95	5									
94	6									
93	7									
92	8									
91	9									
90	10									

DRAFT

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 2.70
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-04	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: -146.5900 estimated	DRILLING RIG	: TRIPOD/CATHEAD
EASTING	: 33.5000 estimated	DATE STARTED	: 07/10/92
ELEVATION	: 100.000 estimated	DATE COMPLETED	: 07/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	SAND, sm SILT, lt GRAVEL, tr CLAY	BROWN	SFT	DMP	17 20 20 28		
99	1									
98	2		15	SAND, sm GRAVEL, sm SILT	BROWN	SFT	WET	37 100 0 0		Bedrock at 2.7 feet BGS. Water entry at 2.5 BGS. One inch of water noted in borehole.
97	3									
96	4									
95	5									
94	6									
93	7									
92	8									
91	9									
90	10									

DRAFT

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 2.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-05	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: -137.9200 estimated	DRILLING RIG	: TRIPOD/CATHEAD
EASTING	: 60.5000 estimated	DATE STARTED	: 07/10/92
ELEVATION	: 100.000 estimated	DATE COMPLETED	: 07/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			40	SAND, sm SILT, sm GRAVEL	DK GRAYISHBROWN	SFT	MST	14 5 33 7 49		
99	1									
98	2		25	SAND, sm SILT, lt CLAY, lt GRAVEL	DK GRAYISHBROWN	SFT	WET	23 100 0 0 0		
97	3									
96	4									
95	5									
94	6									
93	7									
92	8									
91	9									
90	10									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 3.00
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-06	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: -105.4200 estimated	DRILLING RIG	: TRIPOD/CATHEAD
EASTING	: 54.6700 estimated	DATE STARTED	: 07/10/92
ELEVATION	: 100.000 estimated	DATE COMPLETED	: 07/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			25	SAND and SILT, lt GRAVEL	VRY DK GRBROWN	LSE	WET	20 22 37 27 25		
99	1									
98	2		15	SAND and silt, little gravel.	DK YELLOWBROWN	LSE	WET	35 150 0 0		Bedrock at 3.0 feet BGS.
97	3									
96	4									
95	5									
94	6									
93	7									
92	8									
91	9									
90	10									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 12.60
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-07	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 173.1300 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 375.4700 estimated	DATE STARTED	: 07/13/92
ELEVATION	: 102.670 estimated	DATE COMPLETED	: 07/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
101	1		100	SAND, sm GRAVEL, lt SILT	BLACK	LSE	DMP	15 20 35 25 40		Coal fragments noted in sample. Sample stained black. No odor.
100	2		25	SAND, sm GRAVEL, lt SILT	BLACK	LSE	DMP	3 5 2 4 3		Photo 20. Same as 0-2 feet.
99	3									
98	4		60	SILT and CLAY, tr GRAVEL	OLIVE	FRM	DMP	2 3 3 3		
97	5									
96	6		50	SILT and CLAY, lt SAND, tr GRAVEL	LT OLIVE BROWN	FRM	DMP	5 12 23 30		Increasing sand as sample goes deeper.
95	7									
94	8		75	SILT and CLAY, tr SAND SAND, sm GRAVEL, lt SILT	DK OLIVE BROWN DK OLIVE BROWN	FRM LSE	DMP DMP	19 30 40 44		Black staining noted. May be fill. Red coloration noted, possible brick. Photo 23 .
93	9									
92	10		50	SAND, sm SILT, lt GRAVEL	DK GRAYISHBROWN	SFT	SAT	12 17 35 20		Decreasing sand with depth, trace clay at 10.7 to 11.0 feet. Water entry at 10.3 feet.

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 12.60
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-07	DRILLING COMPANY	: EMPIRE SOILS
NORTHING	: 173.1300 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 375.4700 estimated	DATE STARTED	: 07/13/92
ELEVATION	: 102.670 estimated	DATE COMPLETED	: 07/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND, sm SILT, lt GRAVEL	DK GRAYISHBROWN	SFT	SAT			Decreasing sand with depth, trace clay at 10.7 to 11.0 feet. Water entry at 10.3 feet.
91	11									
90	12		5	SAND, sm SILT, sm GRAVEL	GRAY	LSE	SAT	19 100 0 0		Bedrock at 12.6. May not be enough sample for analysis. No library sample.
89	13									
88	14									
87	15									
86	16									
85	17									
84	18									
83	19									
82	20									

DRAFT

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 13.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-08	DRILLING COMPANY	: EMIRE SOILS INVESTIGATIONS
NORTHING	: -6.7200 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 184.6500 estimated	DATE STARTED	: 07/14/92
ELEVATION	: 104.270 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
103	1		50	SAND, sm GRAVEL, sm SILT	BLACK	LSE	DMP	55 100 0 0		Petroleum hydrocarbon odor. Refuse at 1 foot. Move rig west 10 feet and auger to 2 feet.
102	2		50	SAND, sm GRAVEL, sm SILT	BLACK	LSE	MST	3 13 6 9 12		Heavily stained and petroleum odor.
101	3									
100	4		25	SAND, sm SILT, sm GRAVEL, lt CLAY	BLACK	LSE	MST	11 8 10 10		Staining. Petroleum hydrocarbon odor. Not enough recovery for library sample.
99	5									
98	6		50	SILT, sm CLAY, sm SAND	GRAYISH BROWN	SFT	MST	6 11 8 8		
97	7									
96	8		75	SILT, sm CLAY, sm SAND, lt GRAVEL	GRAY	SFT	MST	7 8 11 23		
95	9									
94	10		50	SAND, lt GRAVEL, lt SILT	YELLOWISH BROWN	LSE	MST	30 35 45 12		

Borehole Log **ROY F. WESTON, Inc.**

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 13.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-08	DRILLING COMPANY	: EMIRE SOILS INVESTIGATIONS
NORTHING	: -6.7200 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 184.6500 estimated	DATE STARTED	: 07/14/92
ELEVATION	: 104.270 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND, lt GRAVEL, lt SILT	YELLOWISH BROWN	LSE	MST			
93	11									
92	12		50	SAND, sm GRAVEL	GRAY BROWN	LSE	SAT	35 40 47 100		Groundwater Sample collected immediately above bedrock using hydropunch. BR = 13.9'BGS
91	13									
90	14									
89	15									
88	16									
87	17									
86	18									
85	19									
84	20									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 14.00
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-09	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 32.9300 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 116.9100 estimated	DATE STARTED	: 07/14/92
ELEVATION	: 104.230 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			50	SAND, sm SILT, sm GRAVEL	YELLOW	LSE	DMP	16 19 17 12		
103	1									
102	2		50	SAND, sm GRAVEL, sm SILT	YELLOW	LSE	DMP	4 7 4 5 9		
101	3									
100	4		75	SILT and SAND, lt GRAVEL	BLACK	SFT	DMP	5 5 7 8		2 inch sand zone at 5.0-5.2 feet. Heavy staining follows sand bed.
99	5									
98	6		75	SILT, sm SAND, sm CLAY	YELLOWISH BROWN	FRM	DMP	5 5 8 9		3 inch sand bed at 6.2-6.5 feet stained black.
97	7									
96	8		50	SAND and SILT, lt GRAVEL	YELLOWISH BROWN	SFT	DMP	5 10 15 15		Stained from 8.8 -9.0 feet.
95	9									
94	10		50	CLAY and SILT, sm GRAVEL	BROWN	FRM	DMP	10 13 30 16		

DRAFT

Borehole Log **ROY F. WESTON, Inc.**

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 14.00
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-09	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 32.9300 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 116.9100 estimated	DATE STARTED	: 07/14/92
ELEVATION	: 104.230 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CLAY and SILT, sm GRAVEL	BROWN	FRM	DMP			
93	11									
92	12		50	SAND, sm GRAVEL, sm SILT	GRAYISH BROWN	LSE	SAT	29 40 49 100		Bedrock at 14 feet below ground surface. Water entry at 12.0 feet below ground surface.
91	13									
90	14									
89	15									
88	16									
87	17									
86	18									
85	19									
84	20									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 14.70
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-10	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 5.9300 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 56.6900 estimated	DATE STARTED	: 07/14/92
ELEVATION	: 104.710 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND, sm GRAVEL, sm SILT	DK YELLOW BROWN	LSE	DMP	8 8 9 11		Staining from 0-0.7 feet below ground surface.
103	1									
102	2		50	SAND, sm SILT, sm GRAVEL	GRAY	LSE	DMP	8 8 6 5		Staining at 2.5-3.0 feet.
101	3									
100	4		75	SILT, sm GRAVEL, lt SAND, lt CLAY	GRAY	SFT	DMP	6 5 6 5		Staining.
99	5									
98	6		25	SILT, sm GRAVEL, sm SAND, lt CLAY	BLACK	LSE	DMP	4 6 5 6		Staining. Not enough recovery for library sample.
97	7									
96	8		50	CLAY and SILT, sm GRAVEL	GRAY	FRM	DMP	6 11 8 15		Sand from 8.8-9.0 feet.
95	9									
94	10		50	CLAY, sm SILT	GRAY BROWN	FRM	DMP	11 15 18 23		

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 14.70
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-10	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 5.9300 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 56.6900 estimated	DATE STARTED	: 07/14/92
ELEVATION	: 104.710 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CLAY, sm SILT	GRAY BROWN	FRM	DMP			
				SAND and GRAVEL	DK BROWN	LSE	MST			
				SILT, sm SAND	DK YELLOW BROWN	SFT	MST			
93	11									
92	12		50	SAND and GRAVEL		SFT	SAT	16 20 10 15 22		Water entry at 12.0 feet below ground surface.
91	13									
90	14		50	SAND and GRAVEL, lt SILT	GRAY	LSE	SAT	35 100 0 0		Bedrock at 14.7 feet.
89	15									
88	16									
87	17									
86	18									
85	19									
84	20									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 10.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-11	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 41.5400 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: -40.4700 estimated	DATE STARTED	: 07/13/92
ELEVATION	: 102.500 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	SAND, sm SILT, lt GRAVEL	BLACK	LSE	DMP	10 10 12 12 16		Drilled through 6 inch concrete. 0 to 1 foot black staining. 1 to 1.2 feet oxidation.
101	1									
100	2		50	SAND, sm GRAVEL, lt SILT	BLACK	LSE		5 5 7 7 16		Black staining noted in spoon.
99	3									
98	4		50	CLAY and SILT, tr GRAVEL	DK GRAY BROWN	FRM	MST	33 6 6 6		Sand bed from 4.5 to 4.7 feet BGS.
97	5									
96	6			SAND, lt GRAVEL, lt SILT SILT and CLAY	DK YELLOW BROWN YELLOWISH BROWN	SFT FRM	SAT SMP	5 5 9 9		Water entry at 6 to 6.5 feet BGS. Possible confining or semi-confining unit.
95	7									
94	8		50	SAND SAND and SILT	DK YELLOW BROWN YELLOWISH BROWN	LSE SFT	SAT SAT	7 16 19 22		Possible oxidation. Saturated.
93	9									
92	10			SAND				27 100 0 0		Bedrock at 10.9 feet BGS. Spoon Wet. No Recovery

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 10.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-11	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 41.5400 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: -40.4700 estimated	DATE STARTED	: 07/13/92
ELEVATION	: 102.500 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND						Bedrock at 10.9 feet BGS. Spoon Wet. No Recovery
91	11									
90	12									
89	13									
88	14									
87	15									
86	16									
85	17									
84	18									
83	19									
82	20									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 12.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-12	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 188.0800 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 102.9200 estimated	DATE STARTED	: 07/13/92
ELEVATION	: 101.840 estimated	DATE COMPLETED	: 07/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			75	SAND and GRAVEL	BROWN	LSE	DMP	25 60 14 11		0-6 inch asphalt, 6-8 inch white/gray staining, 8-12 inch sand/fill.
100	1									
99	2		50	GRAVEL, sm SAND, sm SILT	YELLOWISH RED	LSE	DMP	12 5 5 5		Staining photo number 4.
98	3									
97	4		50	GRAVEL, sm SAND	GRAY	LSE	DMP	25 60 32 100		4.0-4.5 feet mixture of fragmented concrete and sand, 4.5-5.0 feet fragmented masonry brick.
96	5									
95	6		25	SAND, sm GRAVEL, lt SILT	DK YELLOWISH BR	LSE	DMP	15 16 19 20		
94	7									
93	8			SAND, sm GRAVEL, lt SILT						No Recovery
92	9									
91	10		75	SAND, sm SILT, lt GRAVEL	GRAYISH BROWN	SFT	SAT	25 35 30 25		Water entry at 10.0 feet below ground surface.

DRAFT

Borehole Log — *ROY F. WESTON, Inc.*

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 12.90
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-12	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 188.0800 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: 102.9200 estimated	DATE STARTED	: 07/13/92
ELEVATION	: 101.840 estimated	DATE COMPLETED	: 07/13/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND, sm SILT, lt GRAVEL	GRAYISH BROWN	SFT	SAT			Water entry at 10.0 feet below ground surface.
90	11									
89	12		25	SAND, lt GRAVEL, lt SILT	DK GRAY BROWN	SFT	SAT	42 100 0 0		Bedrock at 12.9 feet BGS.
88	13									
87	14									
86	15									
85	16									
84	17									
83	18									
82	19									
81	20									

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 13.60
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-13	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 151.9700 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: -73.9200 estimated	DATE STARTED	: 07/13/00
ELEVATION	: 101.390 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
100	1		5	GRAVEL, sm SAND		LSE	DMP	2 3 5 4		Not enough recovery for sample. Vegetative matter noted in sample (wood etc).
99	2		10	SAND, sm SILT, lt CLAY, tr GRAVEL	YELLOW BROWN	FRM	DMP	4 6 6 5		No library sample collected. Plastic noted in spoon.
98	3									
97	4		75	SAND, sm SILT	VY DK YEL BRN	SFT	DMP	7 77 10 13		Photo 3.
96	5			SAND	DK YELLOW BROWN	SHP	DMP	7 7 10 13		
95	6		50	SAND	BROWN	LSE	DMP	7 13 16 20		Interbedding from 6.2 to 6.3 feet. Iron-oxide staining 1/2 inch width. ironoxide also 7 feet BGS
94	7									
93	8		50	SAND, sm SILT, lt GRAVEL	DK GRAY BROWN	FRM	WET	8 10 12 17		Interbedding was oxidized . Possible iron-oxide.
92	9									
91	10		50	GRAVEL, sm SAND, lt SILT, tr CLAY	DK YELLOW BROWN	LSE	SAT	12 13 17 15		Fill like material noted. Contained steel wool, and various stone fragments. Water entry at 10.0 BGS.

DRAFT

Borehole Log

ROY F. WESTON, Inc.

CLIENT	: ENVIRONMENTAL ASSESSMENT	TOTAL DEPTH	: 13.60
SITE NAME	: GLEASON WORKS	LOGGER	: SCOTT HUBBARD/WESTON
WELL ID	: TB-13	DRILLING COMPANY	: EMPIRE SOILS INVESTIGATIONS
NORTHING	: 151.9700 estimated	DRILLING RIG	: SKID MOUNTED RIG
EASTING	: -73.9200 estimated	DATE STARTED	: 07/13/00
ELEVATION	: 101.390 estimated	DATE COMPLETED	: 07/14/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				GRAVEL, sm SAND, lt SILT, tr CLAY	DK YELLOW BROWN	LSE	SAT			Fill like material noted. Contained steel wool, and various stone fragments. Water entry at 10.0 BGS.
90	11									
89	12			Lockport Dolomite Bedrock				100 0 0 0		Refusal at 12.1 feet BGS. Bedrock Confirmed by 4' Core
88	13									
87	14									
86	15									
85	16									
84	17									
83	18									
82	19									
81	20									