SAMPLING, ANALYSIS AND MONITORING PLAN FOR SOILS ROWE INDUSTRIES GROUND-WATER CONTAMINATION SITE SAG HARBOR, NEW YORK

Prepared For

Nabisco Brands, Inc.

July 1993

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INTRODUCTION

The Record of Decision (ROD) for the Rowe Industries Site (Rowe Site) was issued by the United States Environmental Protection Agency (USEPA) on September 30, 1992. The specified remedy for the site includes excavation and offsite disposal of soils from the former drum storage area and from selected drywells, and ground-water remediation by the pump-and-treat method. The Remedial Investigation (RI) was sufficiently comprehensive to determine the probable and possible sources of volatile organic compounds (VOCs) to the ground water. However, the RI did not result in the density of data necessary to complete a detailed Remedial Design Work Plan (RDWP).

To accelerate the completion of the RDWP, a focused Sampling, Analysis and Monitoring Plan (SAMP) is being submitted to address additional soil samples that will be collected in and around the former drum storage area; adjacent to the drywells of concern (Drywells C, D and F); and in the vicinity of Well Cluster MW-28. The full RDWP will be submitted based on the normal schedule in the Consent Decree.

The additional borings will facilitate the delineation of the horizontal and vertical extent of the soil containing VOCs that will be excavated in the former drum storage area. The borings adjacent to the drywells of concern will quantify the soil quality to determine the extent, if any, of contamination outside the drywells. The borings near Well Cluster MW-28 will define the local geology in the area of the highest levels of VOCs in the ground water and will be used for a possible focused remedial design.

SAMPLING, ANALYSIS AND MONITORING WORK PLAN

I. Investigation of Unsaturated Soils in the Former Drum Storage Area

The primary goal of this investigation is to define the vertical and horizontal extent of VOCs in the soil to aid in planning the soil excavation in the former drum storage area.

Laboratory and screening results will delineate the area requiring excavation in order to meet the clean-up standards provided by the USEPA and specified in the ROD (see Appendix I). In addition to determining the extent of contamination, the laboratory analysis will determine if pre-treatment of the soil is necessary to meet the disposal requirements.

The approximate borehole locations are shown on figure 1. These locations were selected based on the soil-vapor survey and soil sample results from the RI. The RI results define a general area of unsaturated soil containing VOCs which will be more clearly defined from the proposed borings. Additional borings will be drilled as needed.

All boreholes will be drilled using 3 1/4-inch inside diameter hollow-stem augers. Soil samples will be collected continuously from grade to the top of the water table (approximately 18 ft bg (feet below grade)) utilizing 2-foot long by 3-inch diameter split-spoon samplers.

One set of sample containers will be filled for possible Target Compound List Volatile Organic Analysis (TCL VOA). These samples will be collected by opening the split spoon, splitting the sample in half longitudinally, and collecting the soil from the center of the split spoon using a stainless-steel spatula. The container will be filled completely to avoid any degassing of the VOCs into an open headspace. All containers holding samples for possible laboratory analysis will be stored on ice until a determination is made as to whether or not to analyze the samples (discussed below).

A second set of sample containers will be filled for possible Toxicity Characteristic Leaching Procedure (TCLP) analysis. These samples will be collected by completely filling the container with soil skimmed from the entire length of the sampler using a stainless-steel spatula. This will provide a representative composite sample for each 2-foot interval. All the samples for TCLP will be submitted to the laboratory and held for possible analysis.

A small portion of soil from each split spoon will be containerized in a clean glass jar and will be screened with a photoionization detector (PID) in the manner outlined in Appendix II. The PID will be calibrated daily in the manner described in Appendix II.

The criteria for submitting samples to the laboratory for TCL VOA analysis will be determined by the PID screening results. The goal is to avoid submitting samples that are clearly above the clean-up criteria. An analysis was performed to determine if there was a correlation between RI laboratory data and PID readings. In general, VOC concentrations exceed the EPA clean-up guidelines of 1.5 ppm (parts per million) for tetrachloroethylene at PID readings of 200 ppm and above. Therefore, to determine if the soil meets the clean-up objectives, samples that appear to be at the limit of the objective with a headspace reading of, or close to, 150 ppm will be submitted to the laboratory for TCL VOA analysis. These results will aid in planning the depth and horizontal extent of the excavation to meet the clean-up guidelines.

Based on the RI results, the unsaturated soil sample collected from the boring at B-10 had the highest concentrations of VOCs. A TCLP composite sample will be prepared from the samples collected from a boring near this location to provide the worst-case soil quality. The TCLP composite sample of the boring near B-10 will be prepared by the laboratory by obtaining a small amount of soil from the center of each VOA vial and placing it directly into the extraction process for TCLP analysis. A duplicate sample from this boring will be analyzed to verify the laboratory results.

If the results for the worst-case TCLP sample indicate the soil will require pre-treatment prior to disposal, additional samples will be analyzed by the TCLP method. These samples will originate from discrete intervals from individual borings, rather than composite samples of entire borings. Selection of additional samples for analysis will be based on the PID results and will be in sufficient number to define the areas most likely to need pretreatment. If results from the boring indicate pretreatment will not be necessary, it will be assumed that none of the excavated soils will require pretreatment, subject to final testing after excavation is complete.

A sample will be composited in the field from the borings near B-10, B-9 and B-12 for hazardous waste characterization, utilizing a portion of each split-spoon sample. The samples will provide additional data to assist with selection of a RCRA-permitted facility that will accept the soil.

All drilling and sampling equipment will be decontaminated before and between boreholes in the manner described in Appendix II. Each borehole will be backfilled with the cuttings upon drilling completion. The top foot of each borehole will be capped with a cement plug to minimize any vertical infiltration as a result of precipitation.

Throughout the drilling program, the ambient air quality will be monitored utilizing a PID. Levels of personal protection will be based upon these results, as outlined in the attached Health and Safety Plan (HSP).

II. Investigation of Unsaturated Soils Adjacent to Specified Dry Wells

Borings will be drilled adjacent to the drywells to determine the possible horizontal extent of contamination related to the activities of Drywells C, D and F. These borings will provide data to assist with the determination of the amount of soil which will require excavation.

One soil boring will be drilled adjacent to each of the drywells requiring remediation (Drywells C, D & F), as shown in figure 2. The borings will be advanced to the water table and continuous samples will be collected beginning at 5 ft bg, with the exception of the boring adjacent to Drywell C. This boring will be advanced to approximately 45 ft bg (further details are presented in Section III). All drilling and sample collection will follow the methods outlined in Section I. Based on PID readings, a minimum of one soil sample from each drywell will be submitted to the laboratory for TCL VOA analysis. If the field data indicate high concentrations of VOCs adjacent to the drywells, additional borings will be drilled and samples will be collected. Locations of the additional borings will be determined by the supervising hydrogeologist. Samples will not be analyzed for TCLP analysis because the RI data indicated that the depth of contamination is limited. However, if PID readings reveal unexpectedly high VOCs in the borings, TCLP samples will be considered.

After drilling has been completed, each borehole will be backfilled with the drill cuttings to approximately 1 ft bg and the remaining annular space will be filled with a cement seal.

All drilling and sampling equipment will be decontaminated prior and between uses as outlined in Appendix II.

III. Geologic and Ground-Water Investigation

Borings will be drilled to determine the local geology of the area around Wells N-26, N-27 and N-28. The highest concentrations of onsite solvents in the ground water have been detected in this area. In particular, the goal is to define the vertical and horizontal extent of clay layers observed during the RI in MW-28B between 23 and 29 ft bg and indicated at a similar depth in wells installed by the Suffolk County Department of Health Services (SCDHS). Geologic well logs from previous SCDHS studies indicate sandy clay layers at approximately 23 ft bg at Wells N-26 and N-28. Moving further downgradient, this clay was not observed in Wells N-24, N-25 or N-31 (Well Cluster MW-44).

Laboratory results of ground-water samples collected from the wells at various depths during the different studies indicate the highest VOC concentrations were detected where the well screen was placed above the 23-foot clay layer and the concentrations sharply decreased at a 45-foot sampling depth at the N-26, N-27 and N-28 area. Downgradient from this area at N-24 where the 23-foot clay is not evident, the contamination is evenly distributed between the 23-foot and 45-foot sampling zones, and is highest in the middle zone (39 ft to 49 ft bg) at Cluster MW-45. The clay, if it is locally extensive in the area of N-26, N-27 and N-28, could prevent natural flushing of the solvents and could keep the area somewhat isolated from the effects of a northern property line recovery well system. If this is the case, additional borings in the area will provide information to determine if focused ground-water remediation is required.

Six soil borings will be drilled in the vicinity of Well Cluster MW-28 at the approximate locations shown on figure 2. Split-spoon samples will be collected continuously from grade. All borings will be advanced to approximately 45 ft bg following the drilling methods outlined in Section I.

A gamma-ray geophysical log will be run at the completion of each borehole to confirm the underlying stratigraphy observed during drilling. Each borehole will be grouted to grade with a bentonite-cement slurry through a tremie pipe. All drill cuttings will be containerized in 55-gallon drums until proper disposal method are determined. All drilling and sampling equipment will be decontaminated following the method described in Appendix II.

QUALITY ASSURANCE PROJECT PLAN

The SAMP will be conducted following the methodology of the approved Quality Assurance Project Plan (QAPP) in Section 4 of the 1989 Projects Operation Plan (POP). An updated laboratory QAPP reflecting the current analytical methods has been included as an attachment to this plan. TCL VOA samples will be analyzed utilizing CLP (Contract Laboratory Program) methodology. The data will not be formally validated because the samples are being obtained for planning purposes.

HEALTH AND SAFETY PLAN

The HSP has been included as an attachment to this Plan. The 1989 POP HSP has been revised to reflect only the work being performed during the SAMP. A more detailed HSP will be submitted with the RDWP.

SITE MANAGEMENT PLAN

Laboratory work will be performed by an EPA Contract Laboratory that is also certified by the New York State Department of Environmental Conservation. The EPA will be notified when a drilling contractor is selected.

Below is a list of personnel involved in this phase of the investigation:

Sampling Operations: Karen Billick/Eva Szigeti (LBG)

Sampling QC: Jeffrey Lennox (LBG)

Data Processing Activities: Karen Billick (LBG)

Data Processing QC: Jeffrey Lennox (LBG)

Data Quality Review: Robert Lamonica (LBG)

Overall QA: Robert Lamonica (LBG)

Overall Project Coordination: Jeffrey Lennox (LBG)

Telephone Numbers:

LBG: (203) 762-1207

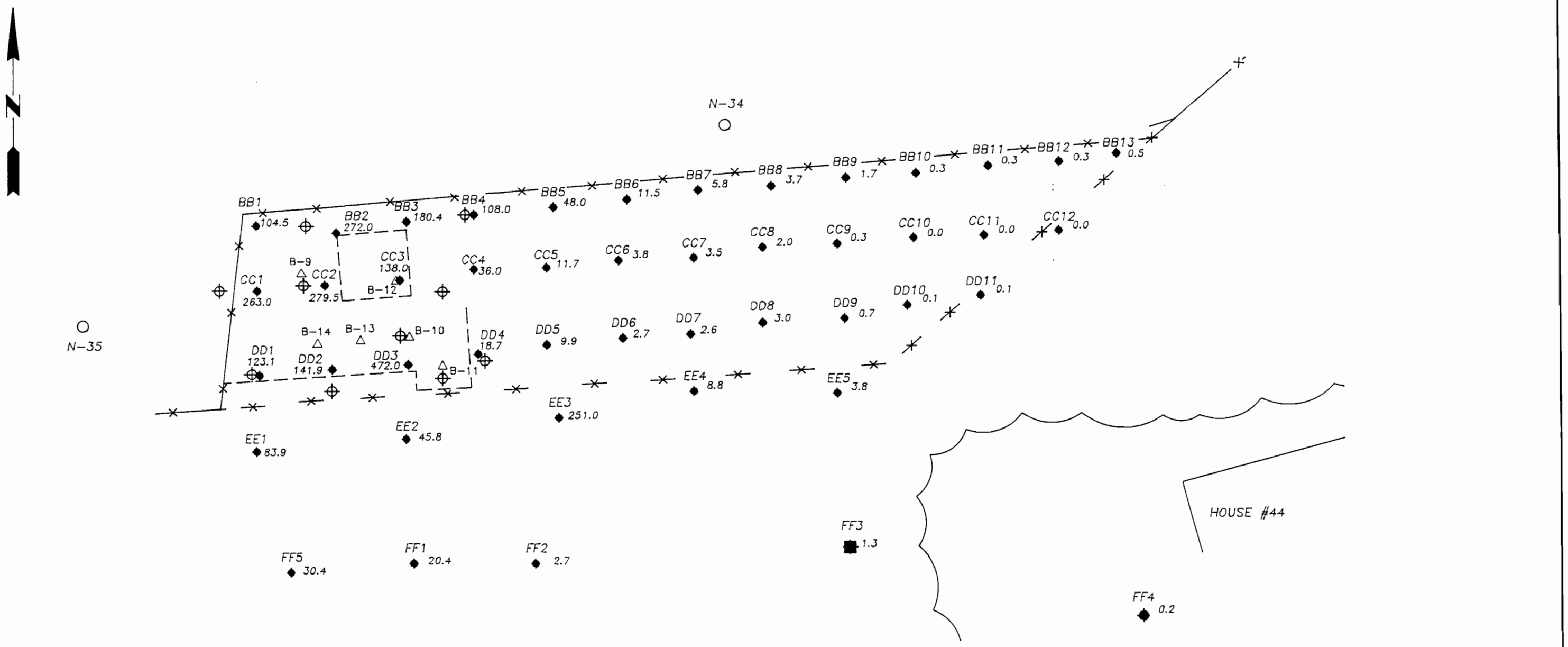
EPA: (212) 264-8585

ACCESS AGREEMENTS AND ADMINISTRATIVE PERMITS

Prior to drilling in the former drum storage area, written permission from the owners of the property (Mr. and Mrs. Richard Hagerman, Jr. of Lily Pond Road) will be obtained. This access agreement will only pertain to SAMP activities covered in this plan. Any additional permission for remedial activities, including drilling and construction, will be obtained at the appropriate time. All other drilling covered in this SAMP will occur on the Sag Harbor Industries property.

skd
July 8, 1993
nabsag.pln/93-27

FIGURES



LEGEND

EE2 ◆	SOIL–VAPOR SAMPLING LOCATION
FF3 ■	APPROXIMATE SOIL–VAPOR SAMPLING LOATION
30.4	PID CONCENTRATION
△ B–10	RI BORING LOCATION
⊕	PROPOSED BORING LOCATION
○ N–35	APPROXIMATE LOCATION OF UNLOCATED SCDHS WELL
–×– ×–	OLD FENCE LOCATION
– – – –	CONCRETE WALL AND CONCRETE DRUM PAD LOCATION

ALL CONCENTRATIONS IN PARTS PER MILLION (ppm)
EXPRESSED AS CALIBRATION GAS EQUIVALENTS

0 15
SCALE IN FEET

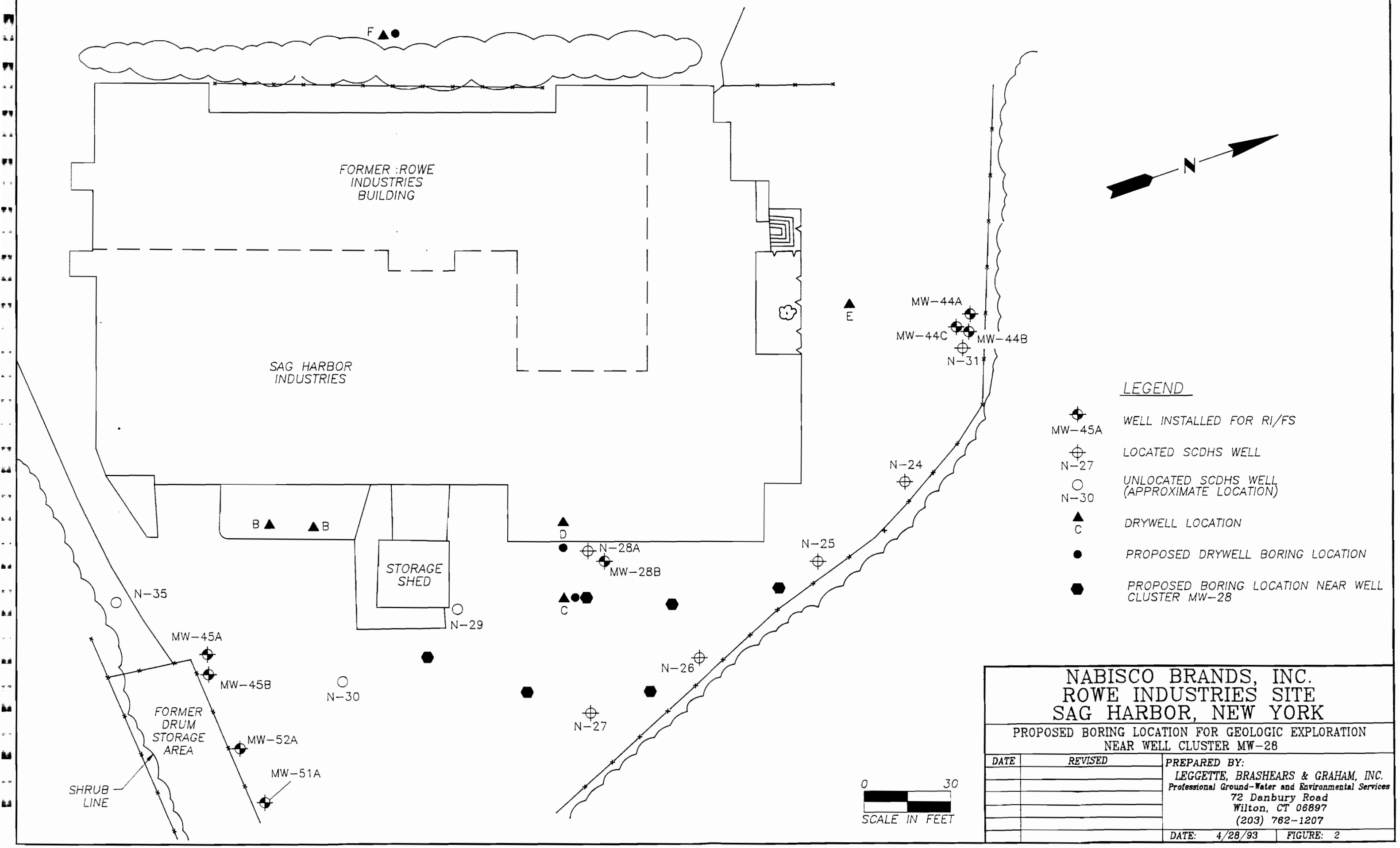
NABISCO BRANDS, INC.
ROWE INDUSTRIES SITE
SAG HARBOR, NEW YORK

PROPOSED BORING LOCATIONS AT THE FORMER DRUM STORAGE AREA

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground–Water and Environmental Services
72 Danbury Road
Wilton, CT 06897
(203) 762–1207

DATE: 4/28/93 FIGURE: 1



NABISCO BRANDS, INC.
ROWE INDUSTRIES SITE
SAG HARBOR, NEW YORK

PROPOSED BORING LOCATION FOR GEOLOGIC EXPLORATION
NEAR WELL CLUSTER MW-28

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
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(203) 762-1207

DATE: 4/28/93 FIGURE: 2

APPENDIX I

SOIL CLEANUP OBJECTIVES

Table 13

Soil Cleanup Objectives

Contaminant	Cleanup Objective (in ppm)
Benzene	0.05
Xylenes	1.2
Ethylbenzene	5.5
Toluene	1.5
PCE	1.5
TCE	1.0
1,1-Dichloroethane	0.2
TCA	1.0
1,1-DCE	0.5
1,2-DCE	0.5

APPENDIX II

STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE

SCREENING SOIL SAMPLES FOR VOCs

Equipment:

PID

Sample jars with lids (approximately 250 milliliter)

Aluminum foil

Procedures:

1. Transfer a representative portion of the sample into the sample jar and fill it approximately halfway.

2. Seal the jar with a piece of aluminum foil.

3. Store the sample for at least one hour in a warm area.

4. In order to take a measurement, push the intake probe of the PID instrument through the foil, taking care not to allow soil or water to enter the intake.

5. Record the highest reading, which usually occurs within 5 seconds of puncturing the seal. Record measurement on log. Allow meter to return to background before next measurement.

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May 19, 1993
sops/93-25

STANDARD OPERATING PROCEDURE

DECONTAMINATION

Sampling Equipment

The decontamination procedure for all sampling equipment will be as follows:

a. wash and scrub with Alconox detergent (pH 9-9.5);

b. tap water rinse;

c. deionized water rinse (demonstrated analyte free);

d. air dry; and

e. wrap in aluminum foil, shiny side out, for transport or storage.

Drilling Equipment

All drilling equipment will be steam cleaned before use and between boreholes. Augers will be placed on wood planks prior to cleaning. Split-spoon samples will be decontaminated as follows:

a. brush off excess soil;

b. wash and scrub with Alconox detergent (ph 9-9.5);

c. tap water rinse;

d. deionized water rinse (demonstrated analyte free);

e. air dry; and

f. wrap in aluminum foil, shiny side out, for transport or storage.

Analyte-free deionized water used onsite will be provided by an LBG in-house system. The system is a Milli-Q Plus purification system by Millipore.

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STANDARD OPERATING PROCEDURE

OVM 580B

Turn power on by inserting the power plug into the power port of the OVM. Turn pump and lamp on by pressing the ON/OFF switch.

Calibration Procedure

1. Be sure a flashing B symbol does not appear in the upper left corner of display. This indicate the batteries are low and need to be recharged before use.

2. Fill Tedlar bags 1/2-full with 100 ppm isobutylene span gas by attaching calibrant gas bottle to a regulator.

3. Press mode button, display will read "Log this value?"
   Depress the negative (-) button

4. Display will read "R/comm -/PARAM
   +/ACCESS 5/CLOCK"
   Depress the negative (-) button

5. Meter will display "Conc meter
   "Reset" to Chg"
   Depress the positive (+) button

6. Meter will display "Auto Logging
   Off"
   Depress the positive (+) button

7. Meter will display "Average = 0:01
   Reset to Charge"
   Depress the positive (+) button

8. Meter will display "ALM at 2000"
   Depress the positive (+) button

9. Meter will display "Lamp 10.0ev"
   (Serial # of Lamp)
   Depress the positive (+) button

10. Meter will display "RF = 1.00"
    Depress the positive (+) button

11. Display will read "Reset" to Calibrate"
    Press the reset button

12. Display will read "Restore Back-up"
    Press the negative (-) button

13. Display will read "zero gas"
    "Reset" when Ready"
    Hit "Reset" button

14. The 580B will then zero the instrument. The meter will display
    "MODEL 580B
    Zeroing"
    Once the 580B has zeroed the meter will display
    "SPAN PPM = 100"
    Hit the positive (+) button

15. The meter will display

"SPAN GAS

Reset when Ready"

Attach the Tedlar bag to the meter and press reset button.

The display will read

"MODEL 580B

Calibrating"

16. When the OVM displays

"Reset to Calibrate"

Press the Mode/Store button and it will display the calibration measurement in parts per million. The reading should be within 10 percent of the 100 ppm isobutylene span gas. If the value is off by more than 10 percent, recalibrate the OVM again.

17. The OVM is now ready for use. It is best to collect as many soil samples as practical for the job, turn the OVM on to test those samples and then turn it off. Do not unplug the OVM between uses or the instrument will lose the calibration.

18. Refer to instrument manual for trouble-shooting guide if machine is not responding to calibration procedures.

* The parameters (i.e., type of lamp, RF value, etc.) may be changed by hitting the reset button and entering the new parameter settings.

skd
May 19, 1993
OVM.sop/93-23

STANDARD OPERATING PROCEDURE

HNU HW-101

Attach the probe to the probe extension and then connect the probe to the key interface.

Turn the control knob to the battery position to be sure the instrument is charged. If this indicates that the batteries are low, the instrument should be recharged before use.

Calibration Procedure:

1. Set span dial to 9.8.
2. Turn control knob to the 0-20 scale and use the zero knob to zero the needle.
3. Turn knob to the 0-200 position.
4. Attach a regulator to a canister of 100 ppm isobutylene calibrant gas.
5. With a small piece of tubing attach the regulator to the probe extension tip and open the regulator valve.
6. The Hnu needle should display 56 ppm. The span may be changed to move the needle to the desired concentration level. The span should be recorded in a field log book. If the span is below 5.0, then the lamp should be cleaned following the manufacturers specifications and the instrument recalibrated.
7. The Hnu is now ready for use. It is best to collect as many soil samples as practical for the job, turn the HNu on to test those samples and then turn it off.
8. Refer to instrument manual for trouble-shooting, if the machine is not responding to the calibration procedures.

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May 19, 1993
sops./93-25