FINAL
OFF-SITE GROUNDWATER INVESTIGATION WORK PLAN

FOR RITE-OFF, INC.
1545 FIFTH INDUSTRIAL COURT
BAY SHORE, NEW YORK
SUFFOLK COUNTY

NYSDEC SITE #1-52-129

OCTOBER 1995

Project Requested By: New York State Department of Environmental Conservation

Project Manager: Richard J. Baldwin, C.P.G.

Project Quality Assurance Officer: George W. Edwards for Susan F. Bianchetti, C.P.G.

Officer-in-Charge at H2M: Gary J. Miller, P.E., Vice President

H2M GROUP

Engineers • Architects • Scientists • Planners

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TABLE OF CONTENTS

		PAGE NO.
1.0	INTRODUCTION	1-1
2.0	SUMMARY OF CONTAMINATION AND HYDROGEOLOGY	2-1
2.1	Nature and Extent of Groundwater Contamination	2-1
2.2	Hydrogeology	2-2
3.0	FIELD SAMPLING PLAN	3-1
3.1	Temporary Sampling Point Investigation	3-1
3.2	Permanent Groundwater Monitoring Well Investigation	3-2
4.0	INVESTIGATION PROCEDURES AND METHODOLOGIES	4-1
4.1	Temporary Point Groundwater Sampling	4-1
4.2	Permanent Well Installation and Sampling	4-2
5.0	ANALYTICAL PROCEDURES AND LABORATORY TESTING	5-1
6.0	QUALITY ASSURANCE/QUALITY CONTROL PLAN	6-1
7.0	HEALTH AND SAFETY PLAN	7-1

LIST OF FIGURES

Figure 1.1 Rite-Off Site Location Map

Figure 1.2 Potentiometric Surface Map of the Shallow Upper Glacial Aquifer

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OCTOBER 1995

TABLE OF CONTENTS (CONT.)

Figure 2.2.1 Site Vicinity Map with Proposed Sampling Locations

LIST OF TABLES

Table 6.1 QA/QC Samples

LIST OF REFERENCES

H2M, 1989. Phase II Investigation Report, Rite-Off, Inc. Site, Bay Shore, New York, Suffolk County.

H2M, 1994. Remedial Investigation/Feasibility Study Work Plan, Rite-Off, Inc. Site, Bay Shore, New York, Suffolk County.

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H2M, 1995b. De-Listing Petition to the NYSDEC, Rite-Off, Inc. Site, 1555 Fifth Industrial Court, Bay Shore, New York, Suffolk County, February 28, 1995.

H2M 1995c. Interim Remedial Measures Report, Rite-Off, Inc. Site, 1545 Fifth Industrial Court, Bay Shore, New York, Suffolk County.

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1.0 INTRODUCTION

Holzmacher, McLendon & Murrell, P.C. (H2M) has conducted a Remedial Investigation (RI) at the Rite-Off, Inc. (Rite-Off) property located at 1545 and 1555 Fifth Industrial Court, Bay Shore, New York (see Figures 1.1 and 1.2). The Rite-Off property was listed by the New York State Department of Environmental Conservation (NYSDEC) in the Registry of Inactive Hazardous Waste Disposal sites (the Registry) in New York State (Site Number 1-52-129) as a Classification "2" (Class 2 Site) due to volatile organic contamination at the property.

H2M conducted all field, quality assurance/quality control (QA/QC), laboratory, and reporting phases of the RI following the NYSDEC-approved Remedial Investigation/Feasibility Study (RI/FS) Work Plan (H2M, 1994). H2M has prepared and submitted to the NYSDEC the Draft RI Report detailing the results of the investigation (H2M, 1995a). Additionally, H2M submitted a petition to the NYSDEC requesting the removal of the 1555 Fifth Industrial Court property from the Registry based on the data collected and analyzed during the RI (H2M, 1995b). The NYSDEC approved the de-listing petition and the 1555 Fifth Industrial Court property has been removed from the Registry (NYSDEC, 1995).

The NYSDEC has requested that an off-site groundwater investigation be conducted south southeast of the Rite-Off site (1545 Fifth Industrial Court) to evaluate the nature and extent

of halogenated solvents dissolved in the groundwater. This Off-Site Groundwater Investigation (OSGI) Work Plan has been prepared as a guidance document for conducting the requested investigation. The majority of the field, QA/QC, and laboratory procedures which will be utilized during the OSGI are presented the NYSDEC-approved RI/FS Work Plan (H2M, 1994). Therefore, any duplicate text and procedures will not be presented in this Work Plan and the reader is referred to the RI/FS Work Plan.

The overall objectives of the OSGI are to evaluate the vertical and lateral extent of halogenated solvents dissolved in the groundwater downgradient of the Rite-Off site. The information gathered during the investigation will be presented to NYSDEC and used to initiate remedial measures, if and where appropriate. Analytical data will be collected to achieve these objectives using methods in accordance with NYSDEC protocols and analyzed by approved methods subject to NYSDEC Analytical Services Protocol (ASP) Contract Laboratory Protocol (CLP) procedures.

2.0 SUMMARY OF CONTAMINATION AND HYDROGEOLOGY

This section of the OSGI Work Plan provides a brief summary of the known nature and extent of groundwater contamination and site-specific hydrogeology. For a more detailed and comprehensive discussion, refer to the H2M Phase II Report (H2M, 1989) and Draft RI Report (H2M, 1995a).

2.1 Nature and Extent of Groundwater Contamination

As part of 1989 Phase II Investigation, H2M installed and sampled five shallow groundwater monitoring wells (MW-1, MW-2, MW-3S, MW-4S, and MW-5) (See Figure 1.2). The analytical results indicated significant concentrations of 1,1,-dichloroethene (1,1-DCE) (1,200 micrograms per milliliter (ug/l)), 1,1-dichloroethane (1,1-DCA) (1,200 ug/l), 1,1,1-trichloroethane (TCA) (23,000 ug/l), trichloroethene (TCE) (330 ug/l), and tetrachloroehtene (PCE) (1,500 ug/l) in the groundwater samples collected from the downgradient Well MW-4S. Lower concentrations of halogenated solvents were also present in the groundwater samples collected from MW-3S.

As part of the 1994 RI, H2M installed and sampled two additional shallow groundwater monitoring wells (MW-6S and MW-7) which were designed to further evaluate the conditions in the shallow Upper Glacial aquifer. Three deep wells (MW-3D, MW-4D, and MW-6D) were installed to evaluate the conditions in the deep Upper Glacial aquifer. Similar halogenated solvents to those found in 1989 were detected in the groundwater samples collected from MW-3S and MW-4S; however, their respective concentrations had decreased, on the average, by an order of magnitude. These data indicated the continued presence of a source of halogenated solvents on the subject property although one with much reduced concentrations. The groundwater

samples collected from the deep Upper Glacial aquifer contained low concentrations of halogenated solvents; however, the contaminants were present in the samples from the upgradient well (MW-6D) indicating the presence of a source of halogenated solvents north northwest of the Rite-Off site.

Based upon the soil and groundwater analytical data collected during the RI, H2M conducted an Interim Remedial Measure (IRM) which consisted of removing and disposing of the contaminated bottom sediments from storm-drain structures SD-4, SD-5, SD-6, and SD-7 (see Figure 1.2). As presented in the H2M IRM Report, the IRM was successful in removing the contaminated sediments from the drywells (H2M, 1995c). Therefore, all known vadose-zone source areas on the Rite-Off site have been remediated.

2.2 Hydrogeology

A detailed description of the Rite-Off site's hydrogeology is presented in the Draft RI Report (H2M, 1995a). In summary, the site is underlain to a depth of approximately 110 feet below ground surface (bgs) by sand and gravely sand. At 110 feet bgs, a silt/clay unit (Gardeners clay) was encountered in the borings for MW-4D and MW-6D. The clay was not encountered in the boring for MW-3D; however, a silty sand of similar color to the clay was encountered at approximately the same stratigraphic interval. This silty sand probably represents a channel deposit cut into the clay's upper surface.

Potentiometric surface maps were prepared for both the shallow and deep Upper Glacial aquifers (see Figure 1.2 for the shallow Upper Glacial aquifer). A similar groundwater flow direction to the south southeast was observed for both stratigraphic intervals. Additionally, a minimal vertical flow component was noted between the two stratigraphic intervals. This indicates that the vicinity of the Rite-Off site was dominated by a horizontal flow regime.

In support of preparing the health-based risk assessment, H2M prepared a three-dimensional finite-difference and solute-transport groundwater model for the Rite-Off area. The model was extended in the downgradient direction (south southeast) to include the Suffolk County Water Authority's (SCWA) Thomas Avenue Well Field. The various hydrogeologic parameters used to prepare this model were determined during the aquifer-testing stage of the RI. A complete description of the model is presented in the Draft RI Report (H2M, 1995a).

Two additional model runs were conducted to evaluate the extent of the potential off-site halogenated solvent plume located downgradient of Rite-Off. The first run assumed an initial PCE concentration of 1,500 ug/l in the Upper Glacial aquifer as determined during the H2M 1989 investigation. The model assumed a start date of February 16, 1989 and an ending date of November 1, 1995 (the proposed starting date of the OSGI field work). The results of the model run are presented in Figure 2.2.1. A second model run was conducted assuming a 1,500 ug/l PCE release which occurred in September 1983 (the date of the original solvent release due to vandalism) and an ending date of November 1, 1995. The results of the second model run are also presented in Figure 2.2.1. The three-dimensional groundwater modeling conducted for the site indicate that the contaminant plume potentially extends south southeast of the site along the vector shown on Figure 2.2.1. Based on the groundwater model, the leading edge of the September 1983 plume appears to be approaching East 3rd Avenue.

3.0 FIELD SAMPLING PLAN

To evaluate both the vertical and lateral extent of groundwater contamination downgradient of the Rite-Off site, a two-phased investigation approach has been designed. The first phase will consist of installing and sampling seven to eight temporary groundwater sampling points downgradient of the site. At each sampling location, groundwater samples will be collected from three distinct horizontal levels. Once the initial data from the first phase have been evaluated, the second phase of the investigation will consist of the installation and sampling of two off-site permanent groundwater monitoring wells to provide confirmatory data for the first-phase results. Additionally, two on-site monitoring wells will be sampled. To ensure access, all drilling locations will be located in public right-of-ways. Appropriate Town of Islip, New York State Department of Transportation, and/or Long Island State Parks permits will be acquired.

3.1 Temporary Sampling Point Investigation

Based upon the results of the groundwater modeling, seven to eight temporary groundwater sampling point locations have been selected (see Figure 2.2.1). The sampling procedures are presented in Section 4.0. TW-1 to TW-7 should be completed within the planned duration of the investigation. TW-8 will be drilled and sampled if time allows. The sampling points have been selected to provide coverage of the modeled plume both along and adjacent to the center-line axis. To evaluate the vertical distribution of halogenated solvents in the groundwater, discrete groundwater samples will be collected from approximately 30, 50, and 80 feet bgs. The 30-foot sampling interval was selected to be comparable with the shallow-screened wells on the Rite-Off site. The 50- and 80-foot interval were selected to evaluate potential vertical migration of the contaminant plume as it migrates south southeast.

The 21 to 24 groundwater samples and appropriate QA/QC samples (discussed in Section 5.0) will be submitted to H2M Labs for Target Compound List (TCL) Volatile Organic Compounds (VOC) analyses. The initial analytical results from the groundwater samples will be available for review within one week of sample submission to the laboratory. To evaluate the data, H2M will prepare isoconcentration maps of the 30, 50, and 80 foot bgs horizons.

3.2 Permanent Groundwater Monitoring Well Investigation

Based upon the analytical results of the first-phase of groundwater sampling and consultation with Rite-Off and the NYSDEC, H2M will install and sample two permanent off-site groundwater monitoring wells. The wells are expected to be screened at 30 and 80 feet bgs; however, different screened intervals may be selected based on the initial-phase analytical results. The location of the wells will be selected to confirm the results of the temporary sampling points and provide future sampling locations, if required. To provide an on-site baseline, Wells MW-4S and MW-4D will also be sampled. All groundwater and appropriate QA/QC samples will be analyzed for TCL VOCs.

4.0 INVESTIGATION PROCEDURES AND METHODOLOGIES

This section of the OSGI Work Plan will outline the procedures and methodologies used to collect the groundwater samples from the temporary sampling points. The procedures and methodologies for the drilling, installation, and sampling of the two permanent off-site groundwater monitoring wells have been presented in the NYSDEC-approved RI/FS Work Plan. Prior to all drilling activities, markouts will the conducted to ensure that no subsurface utilities are encountered or damaged.

4.1 Temporary Point Groundwater Sampling

The temporary groundwater sampling points will be conducted using the Geoprobe drilling method. In order to collect groundwater samples, a decontaminated Geoprobe screen sampler will be driven to 80 feet bgs and then retracted approximately 2 feet upwards. The decontaminated stainless steel screen will then be extended using decontaminated chase rods from the surface into the resulting void. The design of the groundwater sampler allows the stainless steel screen to remain retracted within the probe rods until it is driven to the selected sampling depth. The screen is held in place by an expendable point fitted with a watertight "O" ring seal. Once the desired depth is reached, chase rods are inserted down the inside of the probe rod and the screen is pushed out of the protective sheath. Once the screen has been exposed and the chase rods have been removed, a one-time-use factory-decontaminated section of 3/8 inch polyethylene tubing is fitted with a decontaminated stainless steel bottom check valve and inserted down the probe rod to the desired sampling depth. The polyethylene tubing is then oscillated up and down to drive the column of water to the surface. Approximately one gallon of groundwater will be purged prior to sampling to ensure that a representative sample is collected.

Once a 80 foot bgs groundwater sample has been collected, the polyethylene tubing will be removed and disposed. The screen will then be withdrawn to a depth of 50 feet bgs (due to the design of the sampling system, the deepest sample must be collected first). Another factory-decontaminated section of poly tubing will be inserted into the rods, one gallon of groundwater will be purged, and a groundwater sample will be collected. The procedure will be repeated at the 30 foot bgs sample interval. After collecting the groundwater sample from each sample depth, the polyethylene tubing will be removed and a decontaminated electronic water level indicator (WLI) will be used to record the depth to groundwater from a ground surface datum. These data will be used to evaluate head differences within the Upper Glacial aquifer at each sampling location. The approximately 1 1/4-inch bore holes will be backfilled with sand and the surface repaired with appropriate material (i.e., asphalt patch, concrete, etc.).

All non-disposable sampling and drilling equipment will be decontaminated by steam cleaning prior to each use. The WLI will be decontaminated prior to each use either by steam cleaning or by the triple rinse procedure detailed in the RI/FS Work Plan (H2M, 1994). All decontamination water will be containerized and staged on the Rite-Off site pending disposal.

4.2 Permanent Well Installation and Sampling

As discussed, two permanent off-site groundwater monitoring wells will be drilled, installed, developed, and sampled following the procedures and design specifications presented in the RI/FS Work Plan (H2M, 1994). For lithologic logging purposes, split-spoon soil samples will be collected at nominal 10-foot intervals during the drilling of the well borings. The wells will be constructed with 4-inch diameter polyvinyl chloride materials. All drill cuttings will be staged on the Rite-Off site and placed on and covered by polyethylene plastic sheeting. All decontamination

and well-purge water will be containerized in 55-gallon drums and staged on the Rite-Off site pending disposal.

5.0 ANALYTICAL PROCEDURES AND LABORATORY TESTING

The groundwater and QA/QC samples will be analyzed at H2M Labs, Inc. in Melville, New York. H2M Labs, Inc. is a NYSDOH-ELAP-CLP certified laboratory, proficient in all aspects of the 1991 Analytical Services Protocol including the ability to perform continuous liquid-liquid extraction. All groundwater and QA/QC groundwater samples will be analyzed for TCL VOCs. All appropriate laboratory procedures including the specific parameters, laboratory procedures, analytical methods, laboratory data processing and reporting, and laboratory QA/QC procedures are presented in the RI/FS Work Plan (H2M, 1994).

6.0 QUALITY ASSURANCE/QUALITY CONTROL PLAN

The overall QA/QC Plan objective is to produce data at the highest quality level to provide direct support for preparing a focused Feasibility Study. All laboratory and field QA/QC procedures (including independent data validation) presented in the RI/FS Work Plan will be implemented for the OSGI.

Table 6.1 presents the types and frequency of QA/QC samples which be utilized during the investigation. The purpose of the QA/QC samples is to ensure that the analytical data are precise, accurate, representative, complete, and comparable.

During the temporary sampling point phase of the OSGI, one field blank will be collected by pouring analyte-free water through a decontaminated drill rod. During the sampling of the four permanent groundwater monitoring wells, one field blank will be collected by pouring analyte-free water through an unused disposable bailer.

7.0 HEALTH AND SAFETY PLAN

The primary health and safety concerns while conducting the OSGI are inhalation or dermal-contact exposure to hazardous materials and physical hazards. H2M has prepared a site-specific Health and Safety Plan (HASP) as part of the RI/FS Work Plan (H2M, 1994). All field personnel (including subcontractors) shall abide by the H2M HASP during all phases of the OSGI.

Most of the work associated with this investigation will be conducted along roads within public right-of-ways. To ensure field personnel and public safety, all work areas will be blocked by high-visibility traffic cones and caution tape where appropriate.

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FIGURES

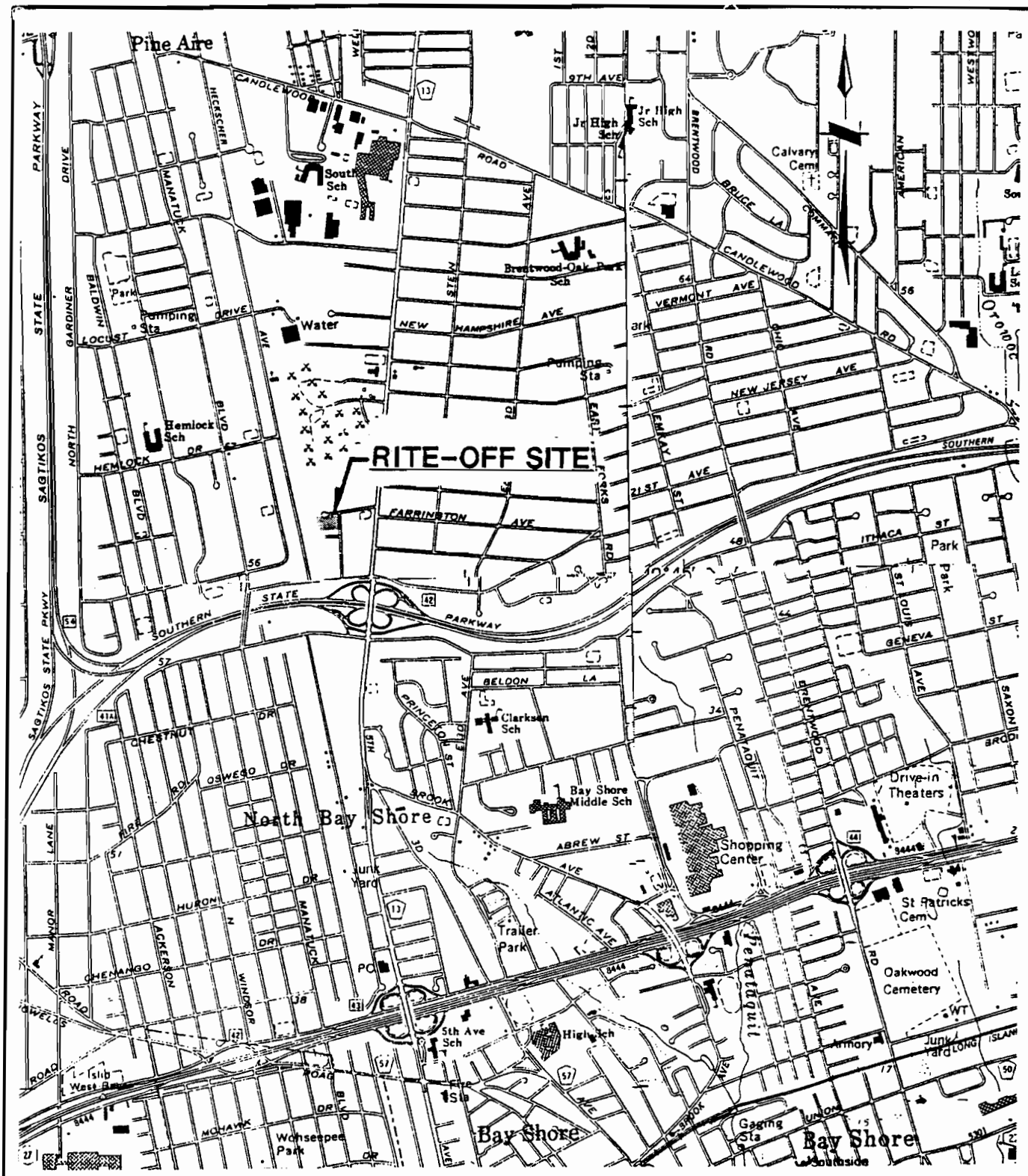
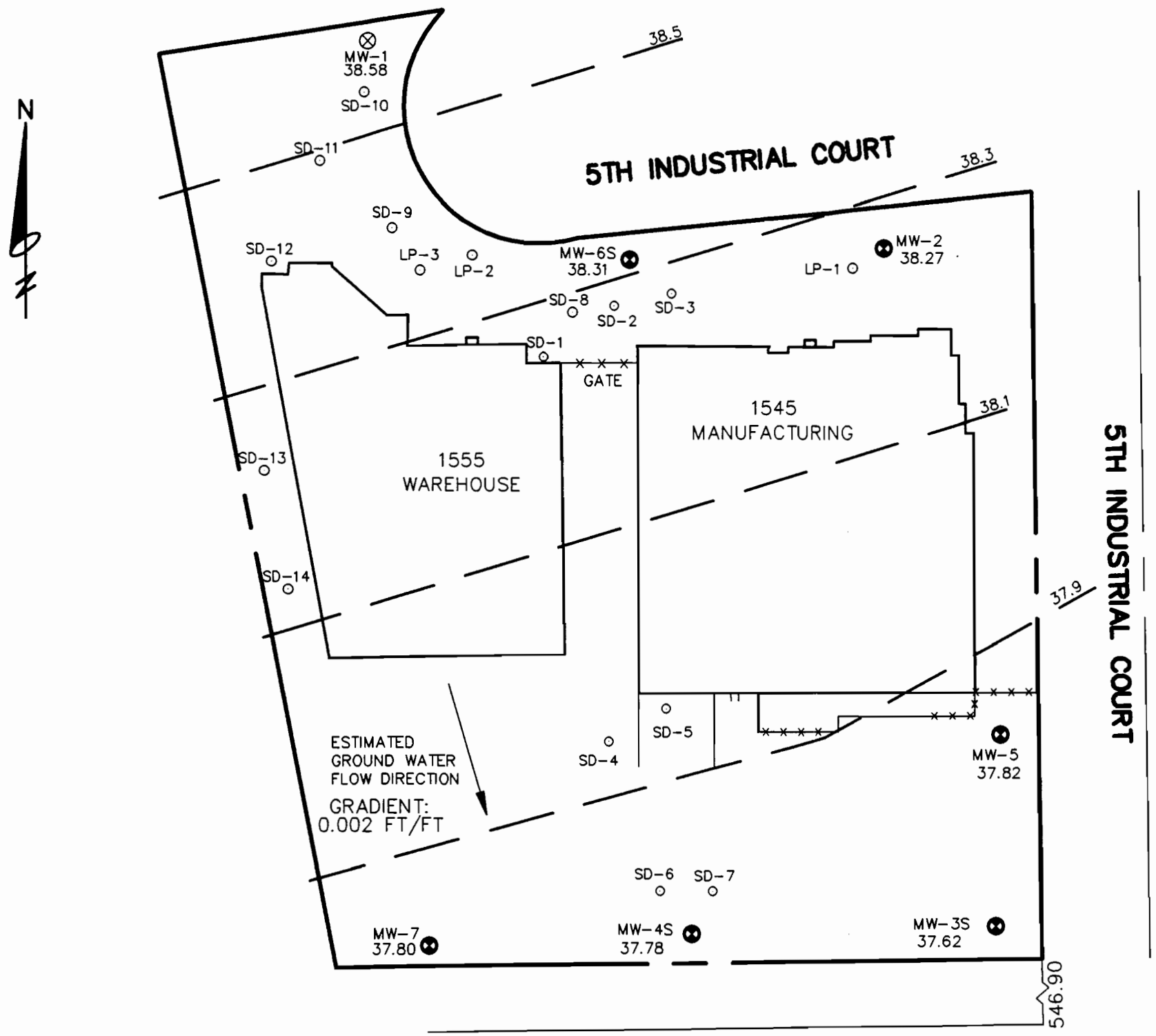

RITE-OFF SITE
Pine Aire
North Bay Shore
Bay Shore
Bay Shore
Brentwood-Oak Park Sch
Clarkson Sch
Bay Shore Middle Sch
5th Ave Sch
Hemlock Sch
South Sch
Jr High Sch
Jr High Sch
Calvary Cem
Drive-in Theaters
Shopping Center
St Patricks Cem
Oakwood Cemetery
Trailer Park
Junk Yard
Junk Yard
Armory
Pumping Sta
Water
Pumping Sta
Gaging Sta
Wohsepee Park
Park
Park
Park
Sagtikos State Pkwy
State Parkway
Southern State Parkway
Southern State Parkway
Sagtikos State Pkwy
Gardiner Manor
Manatuck Blvd
Hemlock Blvd
Hemlock Blvd
Locust Ave
Hecksher Drive
Baldwin Road
Candlewood Road
Candlewood Road
9th Ave
Brentwood Road
Bruce La
Vermont Ave
New Hampshire Ave
New Jersey Ave
Stein Ave
Earl Ave
Emjay Blvd
Farrington Ave
Beloon La
Princeton Blvd
Chestnut Dr
Oswego Dr
Huron Dr
Manatuck Dr
Ackerson Dr
Winsor Dr
Mohawk Dr
Mohawk Blvd
Chenango Road
Lowell Road
Manor Lane
Abrew St
Atlantic Ave
Penataquit
Penataquit
Penataquit Ave
Brentwood Rd
Saxon Ave
Geneva St
Ithaca St
St Louis Ave
21st St
Southern State Pkwy
Southern State Pkwy
Sagtikos State Pkwy
Sagtikos State Pkwy
Long Island
Southside
Union
Broadway
Broadway
Broadway

FIGURE 1.2
RITE-OFF
OSGI WORK PLAN
1545 FIFTH INDUSTRIAL COURT
BAYSHORE, NEW YORK
POTENTIOMETRIC SURFACE MAP OF THE SHALLOW UPPER GLACIAL AQUIFER ON AUGUST 30, 1994



LEGEND

- SD-5 – STORM DRAIN
- LP-1 – LEACHING POOL
- 37.82 – MONITORING WELLS WITH GROUNDWATER ELEVATION DATUM
- 37.9 – POTENTIOMETRIC SURFACE LINE

60 0 30 60

SCALE: 1" = 60'

M:\CADD\RITE\9501\AQU-8-94 10-10-95 1:12:50 pm

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TABLES

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TABLE 6.1
RITE-OFF OSGI WORK PLAN
QA/QC SAMPLES

Task Identification	Field Samples	Trip Blanks	Field Blanks	Blind Duplicates	Matrix Spikes	Matrix Spike Duplicates
Collection of groundwater samples from eight temporary sampling points.	24	3	1	1	2	2
Collection of groundwater samples from two off-site Wells, MW-4S, and MW-4S.	4	1	1	1	1	1