1992–1993 ANNUAL SUMMARY REPORT

INITIAL YEAR OF GROUNDWATER TREATMENT FACILITY OPERATION

VOLUME 1 of 2

SUBMITTED TO:

TOWN OF OYSTER BAY
DEPARTMENT OF PUBLIC WORKS

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ANNUAL SUMMARY REPORT

INITIAL YEAR

OF

GROUNDWATER TREATMENT FACILITY OPERATION

TOWN OF OYSTER BAY
DEPARTMENT OF PUBLIC WORKS

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SECTION 1.0

INTRODUCTION

1.1 Purpose of this Document

The initial year of operation for the Groundwater Treatment Facility (GTF) located at the Oyster Bay Solid Waste Disposal Complex (OBSWDC) in Old Bethpage commenced on April 1, 1992. Pursuant to the terms of the Town of Oyster Bay's Consent Decree (83 CIV 5357) with the State of New York, the Town is required to submit quarterly operating and annual summary reports to the NYSDEC. These reports shall contain sufficient operating data to demonstrate compliance with the terms of the Consent Decree. This document is the annual summary report submitted in satisfaction of this requirement, and covers the period from April 1, 1992 through March 31, 1993.

1.2 Scope of this Document

This document provides a summary review of the various monitoring programs that have been undertaken at OBSWDC during the 1992-93 operational year in satisfaction of the Town's responsibilities outlined on Pages 22-23 in Appendix A of the Consent Decree. This document is divided into five sections and four appendices.

The sections are informational in nature and discuss the observations noted in the data collected and the facility's performance during the intial operating year. The appendices contain fourth quarter reports not previously submitted as well as the subconsultants annual reports.

SECTION 2.0

BACKGROUND INFORMATION

2.1 Site History

The OBSWDC is located in eastern Nassau County on Long Island, N.Y. The complex, which had been in operation since 1958, was used for the processing and disposal of all non-hazardous waste generated in the Town of Oyster Bay. Those wastes were burned in two on-site incinerators, and excess materials were compacted and baled for disposal in the adjacent landfill. The landfill also accepted incinerator ash and residue, as well as raw MSW bypassed around the incinerators during periods of maintenance downtime. In April, 1986 all landfilling and incineration activities ceased, and the Town began to ship, off site, all solid wastes collected and not recycled. Presently, the site operations largely consist of operating the Town's scalehouse, solid waste transfer station, recycling program, clean fill disposal site, gas control system, power generating facility, leachate and groundwater treatment systems, and a vehicle maintenance garage.

In June 1988, the Town entered into a Consent Decree (83 CIV 5357) with the State of New York. That document requires the Town to perform the following actions:

- Design, construct and operate a groundwater treatment facility in order to contain, recover and remediate the off-site groundwater plume associated with the OBSWDC.

- Design and construct an acceptable landfill cap.

- Continue to operate the leachate treatment facility.

- Continue to operate the landfill gas migration control system.

- Perform various monitoring functions designed to assess the adequacy of the remediation efforts.

This document concerns the operations of the Groundwater Treatment Facility (GTF), which is located in the northeast corner of the site off Winding Road. The GTF began normal operations on April 1, 1992. In early 1992, the final capping activities at the top of the closed landfill were initiated. The Town is also continuing to maintain the operation of its leachate treatment and landfill gas collection facilities.

2.2 Consent Decree Requirements Pertaining to Plume Remediation

2.2.1 Requirements for Groundwater Monitoring

The nature and extent of the area to be remediated (the 'plume') under the terms and conditions of the Consent Decree was defined in the report "OBSWDC Offsite Groundwater Monitoring Program, Old Bethpage, Long Island, New York", Geraghty & Miller, Inc., September 1986.

In order to verify hydraulic containment of the plume by the recovery well system, and to assess the progress of the cleanup, a Groundwater Monitoring Program has been implemented by the Town according to the requirements as set forth in the Consent Decree. Accordingly, the Groundwater Monitoring Program must consist of the following elements:

Hydraulic Monitoring Monthly (operational) rounds of water level measurements in the required monitoring wells until equilibrium and appropriate drawdown has been established; and quarterly water level monitoring thereafter so long as hydraulic control of the plume is maintained.

Groundwater Quality Monitoring A baseline comprehensive First Round monitoring in the required wells prior to start up of the treatment system; followed by Quarterly Monitoring of groundwater quality until the Termination Criteria, as defined in the Consent Decree, has been attained; and Termination Monitoring thereafter for a minimum of five full years (20 quarters).

To fulfill the requirements of the Consent Decree, the following hydraulic monitoring and groundwater quality sampling was accomplished during the initial operational year at the OBSWDC: 1) ten rounds of monthly water level measurements, and 2) three rounds of groundwater quality sampling performed during July and October, 1992 and January 1993.

Analytical protocols for the above quarterly sampling round consisted of Volatile Organic Compound (VOC) analyses (EPA Method 601 and 602), dissolved metals and other parameters (EPA-40 CFR Part 136.3 for Individual Analyses), plus additional parameters, as per Table 6 of the Consent Decree. As required by the Consent Decree, a total of 16 monitoring wells were sampled, including one landfill well (LF-1) sampled for leachate parameters only, according to the above required EPA protocol.

2.2.2 Treatment Facility Discharge Limitations and Monitoring Requirements

The Town's Consent Decree placed certain limitations on the water discharges from the GTF, and are tabulated in that document. Some water effluent discharge VOC limitations were modified in a letter to the Town from the New York State Department of Law. That modified list is reproduced here as Table 1. Effluent discharge limitations pertaining to this facility concerning inorganic and other physical parameters are listed in Table 2. The Town began monthly SPDES monitoring of the air stripper effluent in April, 1992 for the parameters in Tables 1 and 2 and

TABLE 1

TOWN OF OYSTER BAY

DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

EFFLUENT LIMITATIONS*
VOLATILE ORGANIC COMPOUNDS

CHEMICAL CONSTITUENT	ALLOWABLE EFFLUENT CONCENTRATION (ug/l)
TOTAL VOCs	100
BENZENE	ND
BROMODICHLOROMETHANE	50 **
BROMOFORM	50 **
CARBON TETRACHLORIDE	5
CHLOROBENZENE	5
CHLORODIBROMOMETHANE	50 **
CHLOROETHANE	5
CHLOROFORM	100 **
DICHLOROBENZENE o&p	4.7
DICHLORBENZENE o,m&p	50
1,1 DICHLOROETHANE	5
1,2 DICHLOROETHANE	5
1,1 DICHLOROETHENE	0.07
1,2 DICHLOROETHENE cis	5
1,2 DICHLOROETHENE trans	5
1,2 DICHLOROPROPANE	5
ETHYLBENZENE	50
METHYLENE CHLORIDE	5
TETRACHLOROETHENE	0.7
TOLUENE	5
1,1,1 TRICHLOROETHANE	5
TRICHLOROETHYLENE	5
VINYL CHLORIDE	2
XYLENE o	5
XYLENE m	5
XYLENE p	5
XYLENE o,m&p	50

* REGULATORY EFFLUENT DISCHARGE STANDARDS AS SPECIFIED IN THE CONSENT DECREE AND AS MODIFIED BY 11/10/88 LETTER TO THE TOWN.

** TOTAL CONCENTRATION OF THESE FOUR TRIHALOMETHANES SHALL NOT EXCEED 100 ug/l.

TABLE 2

TOWN OF OYSTER BAY

DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

EFFLUENT LIMITATIONS*
INORGANICS

CHEMICAL CONSTITUENT	ALLOWABLE EFFLUENT CONCENTRATION (mg/l)
BARIUM	1
CADMIUM	0.01
CHLORIDE	250
CHROMIUM (hex)	0.05
COPPER	1
CYANIDE	0.2
IRON	0.3
LEAD	0.025
MAGNESIUM	35
MANGANESE	0.3
MERCURY	0.002
SILVER	0.05
ZINC	5
TOTAL DISSOLVED SOLIDS	500
NITRATE	10
SULFATE	250
PHENOLS (total)	0.001

* REGULATORY EFFLUENT DISCHARGE STANDARDS AS SPECIFIED IN THE CONSENT DECREE AND AS MODIFIED BY 11/10/88 LETTER TO THE TOWN.

continued during this reporting period. This testing was peformed by a New York State certified laboratory. The Consent Decree also placed limitations on the air stripper discharges from the GTF. That list, as it appears in the Consent Decree, is reproduced here as Table 3.

The Town began quarterly monitoring of the air stripper stack emissions on May 28, 1992. The second and third quarterly emissions monitoring took place on September 23, 1992 and December 14, 1992, respectively. The fourth and final quarterly test in the initial operating year was conducted on March 25, 1993. All analyses were performed by a New York State certified laboratory, and the results compared to the limitations stipulated in the Consent Decree and the most recent revision of NYSDEC Air Guide No. 1, effective June 1991.

In April 1993, after numerous discussions between the Town and NYSDEC, the Town was advised that the ambient air guideline for tetrachloroethane (PCE), published in the 1991 edition of NYSDEC Air Guide No. 1, was in error. The Town was further advised that the correct guideline was some fifteen times higher than the previously published number. Lastly, the Town was advised that NYSDEC will apply the ambient air guidelines at the OBSWDC property line to determine if the air stripper stack discharge is acceptable.

In addition to the above requirements, the Town is also required to perform certain self-monitoring functions, relating to recording comprehensive flow measurements through the plant and maintaining a record of downtime. The Town has enhanced its self-monitoring abilities with the installation of an onsite laboratory. This laboratory monitors the groundwater in the vicinity of each recovery well on a weekly basis, as well as the day-to-day treatment system performance, allowing plant personnel to make process adjustments when necessary. Daily monitoring may also warn the operator of equipment malfunction or the need for

TABLE 3

APPLICABLE AIR DISCHARGE
REQUIREMENTS FOR AIR STRIPPING
TREATMENT SYSTEM*

Constituent	-Ambient Air Concentrations- NYSDEC Annual Guideline (ug/m3)
Vinyl Chloride	4.00E-01
Freon 13	3.00E-02
Methylene Chloride	1.17E+03
1,1-Dichloroethane	2.70E+03
1,2-Dichloroethene	2.63E+03
Chloroform	1.67E+02
1,1,1,-Trichloroethane	3.80E+04
Carbon Tetrachloride	1.00E+02
1,2-Dichloroethane	2.00E+01
Trichloroethylene	9.00E+02
1,2,-Dichloropropane	1.17E+03
Bromodichloromethane	3.00E-02
Tetrachloroethene	1.12E+03
Chlorodibromomethane	3.00E-02
Bromoform	1.67E+01
Benzene	1.00E+02
Toluene	7.50E+03
Ethyl Benzene	1.45E+03
(m) Xylene	1.45E+03
(o&p) Xylene	1.45E+03
(m) Dichlorobenzene	3.00E-02
(o) Dichlorobenzene	1.00E+03
(p) Dichlorobenzene	1.50E+03
Chloroethane	5.20E+04
1,1,-Dichloroethylene	6.67E+01
Chlorobenzene	1.17E+03
Ammonia	3.60E+02

* Established per New York State Department of Environmental Conservation Air Guide No. 1 for Toxic Air Contaminants. If any federal National Ambient Air Quality Standards or National Emission Standards for Hazardous Air Pollutants are promulgated which are more stringent than these State guidelines, the more stringent standard shall apply.

maintenance. Weekly monitoring of the recovery wellfield will assist the Town in establishing the initiation of Termination Monitoring as proscribed in the Consent Decree.

SECTION 3.0

GROUNDWATER TREATMENT FACILITY OPERATIONS

3.1 Theory of Operation

A system of five (5) groundwater recovery wells was installed by the Town at the leading edge of the volatile organic compunds (VOC) plume, located in the Bethpage State Park. The location of the recovery wells/recharge basin are shown on the site plan in Appendix A of this report.

The combined flow from all the recovery wells is directed through common transmission piping to the air stripper wet well. A triplex pump arrangement delivers the collected groundwater to the top of the air stripper containing proprietary packing media. As the groundwater passes through and wets the packing, it is contacted with air directed into the bottom of the air stripper. Dissolved VOC's pass from the liquid phase (groundwater) into the gas phase (air) and exit the stripper through a stack. The treated groundwater is directed into a receiving wet well where another triplex pump arrangement delivers it to a combination of eight (8) diffusion wells in a recharge basin (Recharge Basin No. 1), located hydraulically upgradient of the landfill on the west perimeter of the site.

3.2 Physical Plant

The Groundwater Treatment Facility (GTF) consists of the following major components:

- five (5) recovery wells delivering a combined maximum design flow of approximately 1.5 MGD.

- treatment plant building housing the control room, laboratory, wet wells, pumps, acid rinse system, and chemical holding tanks.

- air stripper and proprietary media.

- recharge basin/diffusion wells.

- transmission piping.

3.3 Operating Conditions

On April 1, 1992, the facility pumped approximately 1.5 MGD of groundwater from the five (5) recovery wells located in the Bethpage State Park. This flow was processed through the air stripper operating at a nominal 1050 GPM forward hydraulic flow and approximately 10,400 SCFM of atmospheric air. The treatment plant design and the initial operating conditions are based on continuous twenty-four hours, seven days per week operation. Adjustments to water and air flows were made during the initial year of operation to optimize treatment.

3.4 Monitoring Functions

3.4.1 Daily Operations Reports

The control console located at the GTF provides continuous readouts to the operating personnel of pumpage rates from each production well through the plant. Hourly, the operating personnel transfer these readings onto a "Daily Operations Report". One report is completed each shift. A box is provided for the written observations made by those personnel concerning plant operations. All operating reports have been previously submitted in the quarterly reports.

3.4.2 Organic Analyses Reports

The Town installed a gas chromatograph at the facility laboratory to self-monitor the day to day treatment efficiency of the facility. To assure compliance, influent and effluent samples were taken regularly at the facility and analyzed for VOC's. Originally the sampling and analysis schedule operated daily, Monday through Friday, but was adjusted to three days per week near the end of the second quarter, as it became apparent that treatment efficiency remained high under varying inlet conditions. This procedure was continued during the remainder of the initial operating year, and is expected to remain in place indefinitely. In addition, weekly samples from the recovery wellfield were also analyzed for VOC's. All VOC self-monitoring data has been previously submitted in the quarterly reports.

3.4.3 Inorganic Analyses Reports

The Town also installed at the facility laboratory, equipment to self-monitor other water quality parameters. These measurements are generally taken to forewarn the operating personnel of changes in the influent or effluent possibly signaling potential equipment problems requiring maintenance. Therefore, soluble iron is occasionally monitored through the air stripper to quantify the potential for iron fouling of the packing media. Dissolved oxygen is measured in the effluent to assure proper blower operation and that the influent has been thoroughly aerated. All inorganic self-monitoring data has been previously submitted in the quarterly reports.

3.4.4 State Pollution Discharge Elimination System (SPDES) Reports

In addition to self-monitoring, the Town sends monthly facility effluent samples to a New York State certified laboratory for organic and inorganic analyses. The analyses performed are those required by the Consent Decree, reproduced here as Table 4 as it appears in that document. The monthly SPDES reports from the

TABLE 4

Analytical Methods

Parameter	Analytical Method	Sample Preservation	Holding Time
Chloride	SM 407 A	None	28 Days
Ammonia	SM 417B, EPA 350.2	Cool to 4°C pH 2 w/H_2SO_4	28 Days
Iron	SM 303B, EPA 236.1	Field filter, Cool to 4°C, pH 2 w/HNO_3	6 Months
Hardness	SM 314B, EPA 130.2	Cool to 4°C	6 Months
Alkalinity	SM 403, EPA 310.1	Cool to 4°C	14 Days
pH (measured in field)	SM 423	None	Analyze Immediately
Specific Conductance (measured in field)	SM 205	Cool to 4°C	28 Days
VOCs	EPA 601 and 602	Cool to 4°C	14 Days
Metals and others*	EPA 40 CFR 136.3 (Individual Analyses)	As per Individual method	As per Individual method

*Aluminum, Copper, Lead, Manganese, Nickel, Sodium, Zinc, Chromium (VI), Chromium, Mercury, Potassium, Magnesium, Calcium, Total Dissolved Solids, Nitrate, Sulfate, Carbonate, Total Kjeldahl Nitrogen, Bicarbonate Alkalinity, Cyanide, Phenols, and Barium.

certified laboratory have been previously reported in Appendix E of the quarterly reports.

3.4.5 Air Stripper Emissions Testing

The fourth quarterly emissions test of the air stripper was performed on March 25, 1993. The testing procedure involves obtaining twelve gas samples from the air stripper stack, and to obtain meaningful results, the test is performed during normal facility operations. Hydraulic data is collected in the normal manner. (See Section 3.4.1). The data contained in the "Daily Operations Report" spanning the test period is used to establish the mass quantities of materials emitted by the treatment process per unit of time. The subcontractors report of his findings is reproduced in this document as Appendix B. the findings from the first, second and third quarterly tests have been previously submitted in the quarterly reports. The first quarterly sampling of the second operational year was performed on June 10, 1993, the results of which will be reported in the next quarterly report. The subcontractor's annual summary report is reproduced in this document as Appendix C.

SECTION 4.0

GROUNDWATER MONITORING PROGRAM

4.1 General

In compliance with the Consent Decree for the Old Bethpage Landfill, the following groundwater monitoring related activities were performed during the first, second, third and fourth operational quarters (from April 1, 1992 through March 31, 1993) of the first operational year of the Groundwater Treatment Facility (GTF):

1) Three rounds of quarterly groundwater quality samples collected from July 7-10, 1992; October 5-8, 1992; and January 5-8, 1993; and

2) Ten rounds of monthly (operational) water level measurements collected on April 30, June 12, July 6, September 14, October 5, November 2, and December 1, 1992, and January 5, February 5 and March 8, 1993.

Geraghty & Miller, Inc. (G&M), Plainview, Long Island, performed all of the hydraulic monitoring and groundwater quality sampling at the site and summarized/evaluated the data in their quarterly monitoring reports for the Old Bethpage Landfill. These reports were included, in their entirety, in Appendix G of the Town's First, Second, Third and Fourth Quarterly Monitoring Reports (LKB September 1992; LKB January 1993; LKB April 1993; LKB July 1993).

Summary water level monitoring and groundwater quality sampling data collected during the 1992-1993 operational year of the GTF is presented in Appendix E and F of this report.

4.1.1 Field Sampling Protocols

Except as noted in the Town's Quarterly Monitoring Reports, groundwater sampling procedures used throughout the first operating year were those that were previously submitted to NYSDEC in July 1991 by the Town of Oyster Bay entitled, "Protocols for Sampling Groundwater Under the Old Bethpage Solid Waste Disposal Complex Remedial Action Plan." A copy of those sampling protocols are included in Appendix G for reference. Field QA/QC procedures utilized during the first operating year were in conformance with Sections IVA, IVB and IVC of the Consent Decree.

4.2 Hydraulic Monitoring

The hydraulic monitoring part of the program commenced 30 days after the Town's official startup of the Groundwater Treatment Facility on April 1, 1992. The purpose of the hydraulic monitoring is twofold: 1) to delineate the effective capture zone of the groundwater recovery system so that hydraulic containment of the VOC plume can be demonstrated; and 2) to determine the extent of mounding in the recharge basin area, and the effect of the mounding, if any, on the local groundwater flow regime. As required by the Consent Decree, the following wells were incorporated into the monthly hydraulic monitoring:

- all 23 off-site wells (i.e., 5A, 5B, 6A, 6B, etc.)
- existing Phase I, II and III wells (LF-1 through LF-4)
- the well at Melville Road (N9980)
- Farmingdale Public Supply Wells 1-3 and 2-2
- Pump Test Observation Wells OBS-1 and OBS-2
- Groundwater Remediation Wells RW-1 through RW-5
- Wells upgradient of the recharge basin (29A, B and 30A, B)

In addition, wells TW-1, TW-2 and TW-3 in the Phase II pit area (see Location Plan Appendix A) were monitored to supplement the water table mapping in the landfill area. Water level measurements in the Farmingdale Public Supply Wells 1-3 and 2-2 were obtained by water district personnel to the nearest 0.5 foot. Water levels were not collected during August 1992 because operation of the groundwater remediation system was intermittent and at least one week of continuous operation is necessary prior to conducting a water level monitoring round.

The elevations of the monitoring well screen intervals, in feet above and below Mean Sea Level (MSL), are summarized in Table 20 of Appendix E. These well screen intervals were assigned to three distinct aquifer zones for water table/potentiometric surface mapping:

1. Water table zone: 77 to 43 feet above MSL
2. Shallow potentiometric zone: 30 to -36 feet MSL
3. Deep potentiometric zone: -65 to -128 feet MSL (excluding Well #11B located near Melville Road).

The top and bottom of the recovery well screens are included in the shallow and deep potentiometric zones respectively.

It should be noted that only wells screened within each of these aquifer zones were used for contouring the water table and potentiometric surfaces, as shown on the maps in Appendix F. This is because the water level or hydraulic head in a well is not only dependent upon the elevation of the well screen but also on the hydrostatic pressure at the well screen, which increases with depth in the aquifer.

Groundwater flow lines were drawn perpendicular to the water table and potentiometric surface contours to determine the directions of horizontal groundwater flow in the three aquifer zones. These streamlines were then used to estimate the extent of mounding in the groundwater remediation recharge basin area and the approximate location of the line of stagnation downgradient of the capture zone. Limiting flow lines were drawn through the capture zone area to evaluate the extent of the drawdown and the size and configuration of the capture zone for each monitoring round. Both the horizontal and vertical components of (limiting) flow were compared with the VOC plume lines as shown in Appendix A and F to demonstrate that hydraulic control of the plume has been maintained throughout the reporting period.

Because of the resolution of the monitoring well spacings, localized lines of stagnation between recovery wells RW-1 and RW-5 were not delineated on the contour maps. Where the well spacings are less than optimum, groundwater contours are dashed and limiting flow lines through these contoured areas are approximate.

4.2.1 Monthly Water Level Measurements - April 1992 through March 1993

The monthly (operational) water level data collected during the initial year of operation at the GTF are summarized in Appendix E, Tables 1 through 10. The water table, shallow potentiometric and deep potentiometric surface maps derived from the water level data are shown in Appendix F, Plates 1-6 for the first quarter, Figures 7-12 for the second quarter, Figures 16-24 for the third quarter, and Figures 29-36 for the fourth quarter. Water level data and groundwater contour maps have been described in detail for each monitoring round in the Town's Quarterly Reports and, therefore, these analyses will focus on annual variations and significant trends in the data.

4.2.1.1 Water Table Elevations

Based upon the groundwater monitoring well data, elevations on the water table ranged from approximately 67.2 to 74.3 feet above MSL in the remediation system recharge basin area (upgradient of the landfill) to a minimum of 54.8 feet MSL (downgradient of the site) near Melville Road. Mean water table elevations in the capture zone area fluctuated between approximately 64.1 and 62.4 feet MSL during the first operating year. Water level elevations upgradient in the recharge basin area varied by approximately seven feet, and apparently, were affected by recharge from the groundwater remediation system operations. Water table elevations in the capture zone and farther downgradient of the landfill site showed relatively small annual variations (approximately 1.5 feet), most likely because of seasonal recharge of the water table. This interpretation is supported by the water table elevation data which showed the highest groundwater level in April during the annual spring recharge period. The small variations in water table elevations in the capture zone indicate that potentiometric surface drawdown in the recovery wells (which are screened a minimum of 50 feet below the water table) have had little apparent effect on the water table surface.

Groundwater flow directions on the water table surface were to the southeast across the study area, with some localized radially outward flow patterns to the north, east and west of the groundwater remediation recharge basin (for example, see Appendix F, Figure 7). As shown on the water table map, the mounding under the basin was restricted to the northeast corner of the landfill site. Furthermore, the radial pattern, as shown, is typical of mounding conditions underlying recharge basins where infiltration is greater in the basin than in the surrounding areas. The increased vertical component of groundwater flow associated with the mounding has affected only the water table zone at the landfill (i.e., less that about 25 feet below the water table). This mounding will actually have a beneficial effect on the remediation process because it increases the rate of flow of non-contaminated recharge water towards the recovery wells. In general, groundwater flow directions on the water table surface were compatible with the regional flow directions, as reported by the United States Geological Survey (U.S.G.S.).

4.2.1.2 Shallow and Deep Potentiometric Elevations

When the recovery well system is fully operational, the shallow and deep potentiometric elevations ranged from approximately 68 to 70 feet MSL upgradient of the landfill site to a low of 50.8 to 52.2 feet MSL in Well RW-3 in the capture zone. Potentiometric elevations south of the location of the line of stagnation (which delineates the southern boundary of the capture zone) averaged approximately 59 feet MSL near the southern edge of the capture zone, to 56 feet MSL in Well #9980 near the southern limit of the study area. The difference in potentiometric elevations (heads) between the shallow and deep aquifer zones were minimal within the capture zone where groundwater flow is mostly horizontal and toward the recovery well screens. Downgradient of the capture zone area potentiometric elevations were generally .5 to 1 foot lower in the deep aquifer zones. This moderate vertical gradient is similar to that determined for the 1991 baseline data, indicating that natural flow conditions prevail in this area.

Groundwater flow patterns in the shallow and deep potentiometric zones were generally to the southeast (compatible with the regional flow direction), except within the capture zone area where flow is directed toward the pumping centers (for example, see Appendix F, Figures 8 and 9). During the annual reporting period, total drawdown for the potentiometric surface ranged from approximately five to ten feet (average 7.5 feet), being greatest in Well RW-3 because it is located at the pumping center of the recovery well system.

The potentiometric surface elevations were used to define the effective capture zone by choosing a minimal drawdown from the static (non-pumping) potentiometric surface within which groundwater will flow toward a recovery well. For example, a one-foot drawdown from the static potentiometric surface (61 feet MSL according to the 1991 hydraulic baseline data) will be delineated by the 60 feet MSL contour line on the shallow/deep potentiometric maps. Analysis of the potentiometric surface maps revealed that the capture zone area is smaller in the deeper aquifer zone than in the shallow zone. Therefore, to be conservative, data from the deep potentiometric zone was used to evaluate the capture zone areas and hydraulic control of the VOC plume.

Measurement by a planimeter of the area within the 60 foot MSL closed contour line has indicated that after the system had reached equilibrium, the horizontal extent of the deep capture zone had fluctuated by about 40 percent (from 3,430-5,890 square feet) during the first operating year of the facility. These spatial measurements and system pumpage data were used in a regression analysis to determine whether a minimum pumpage could be estimated which would maintain hydraulic control of the VOC plume. The results of this analyses is reported in Section 5.2.2.

4.3 Groundwater Quality and Quarterly Sampling

In accordance with the requirements of the Consent Decree, three rounds of quarterly groundwater samples were collected during the second, third and fourth quarter of the initial year of operation at the GTF. Quarterly sampling commenced three months after the official startup of the groundwater remediation system on April 1, 1992. Wells sampled as part of the quarterly groundwater quality monitoring program, as specified in Section IIB.3 of the Consent Decree, are as follows:

Offsite Wells:	5B
	6A, 6B, 6C, 6E, 6F
	7B
	8A, 8B
	9B, 9C
	11A, 11B
Observation Well:	OBS-1
Upgradient Well:	M-30B or M-29B
Landfill Well:	LF-1

Except for Landfill Well LF-1 which was analyzed for leachate parameters only (as per Table 6 in the Consent Decree), all groundwater samples collected were analyzed for Volatile Organic Compounds (VOC's); dissolved (filtered) Metals; total (unfiltered) Metals; and leachate parameters, as required by Table 6 in the Consent Decree.

The analytical results of the quarterly sampling rounds for the first operating year, 1992-1993, are summarized in Tables 11 through 19 in Appendix E. This data was used to map the approximate aerial distribution of the different groupings of VOC's that were identified in the vicinity of the Old Bethpage Landfill (i.e., halogenated, aromatics and tetrachloroethene). These maps are provided in Appendix F, Figures 13, 14 and 15 for the second quarter; Figures 25, 26 and 27 for the third quarter; and Figures 37, 38 and 39 for the fourth operating quarter. Reference should be made to Appendix G of the town's Quarterly Reports for the certified laboratory data reports (from EcoTest Laboratories, Inc.) for each analysis.

With regard to the quality control samples that were collected during the reporting period, only one field blank was found to contain VOC contamination (10 ug/l of chloroform in FB-18B during the January 1993 sampling), but no chloroform was found in the well samples during that round. No VOC's were detected in any of the daily trip blanks that were analyzed. Results of the duplicate sampling were within acceptable limits, except for the VOC analysis during the October sampling round. During that round, three aromatic compounds (chlorobenzene, 1,2-dichlorobenzene and benzene) were found in the original well sample (6C) but not in the duplicate sample (6C Rep). No artifact compounds currently recognized by the Consent Decree were found in the sample analyses.

In general, because the groundwater recovery well system was designed to capture and treat the VOC portion of the landfill plume, the data analysis focuses on the annual variations and trends in the VOC contamination. For reference, all groundwater quality data collected during the first operating year was compared to data from the July/August 1991 comprehensive baseline sampling round (LKB September 1992).

4.3.1 Analyses of Volatile Organic Compound(VOC) Data - April 1992 through March 1993

As described in the Town's Quarterly Reports, three groupings of VOC's were identified within different parts of the study area: 1) volatile halogenated organics (VHOs) except tetrachloroethene; 2) volatile aromatic hydrocarbons; and 3) tetrachloroethene. Since each of these groups are characterized by distinct physical and chemical properties, they will tend to be distributed in separate plumes downgradient from their source(s) of contamination. Significant annual variations and trends in the data as well as the distribution of these VOC compounds in the aquifer are discussed below.

4.3.1.1 Volatile Halogenated Compounds

The most dominant halogenated compounds detected in the first grouping were 1, 2-dichloroethene and trichloroethylene, at concentrations ranging from 0-250 ug/l and 0-25 ug/l, respectively, during the first operational year. Other VHO's were detected at lower concentrations, including vinyl chloride (0-8 ug/l), 1, 1-dichloroethane (0-10 ug/l), 1,1,1-trichloroethane (0-13 ug/l) and 1, 2-dichloroethane (0-8 ug/l). Well 8A had the highest concentrations of VHO's, followed by Well 7B, OBS-1, 8B and 6E. Except for Well OBS-1 which showed a 90 percent increase in total VHO's in the fourth quarter over the third quarter, the concentration of total VHO's showed a general decreasing trend in the groundwater samples (see Appendix F, Tables 11, 13 and 17).

Figures 13, 25 and 37 in Appendix F illustrate the approximate lateral extent of VHO's in the aquifer during the 1992-1993 operating year. A comparison of these maps with maps compiled from the July/August 1991 baseline data indicated that the lateral extent of VHO's had increased somewhat on the southwestern side of the plume but apparently, had remained stable along the southern and eastern parts of the plume. This finding was in part based on sampling data from well OBS-1 which is located downgradient of the Fireman's Training Center. The distribution of 1,2 dichloroethene in the aquifer downgradient of the landfill site clearly shows that VHO's are concentrated in the following areas: 1) the shallow aquifer in the vicinity of well MW-8A; 2) the deep aquifer near MW-7B; 3) the intermediate and deep aquifer near well cluster #6; and 4) the deep aquifer in the vicinity of OBS-1. If contaminant flow paths are traced back to their sources from these areas, three separate sources of VHO contamination are indicated.

The Town's quarterly groundwater sampling data is supported by data from the weekly recovery well sampling program, both of which indicate the presence of a VHO concentrated plume in the vicinity of monitoring well 7B and recovery well RW-3. It should also be noted that the highest concentrations of VHO's found during the quarterly monitoring (307 ug/l in well 8A) are outside of the zone of influence of remediation wells RW-4 or RW-5 and have not yet been captured by the recovery well system. Well 8A is screened in the shallow part of the aquifer and is located hydraulically downgradient and adjacent to the former Claremont Polychemical facility.

4.3.1.2 Aromatic Hydrocarbons

The second important VOC grouping is aromatic hydrocarbons, which consists of benzene, ethylbenzene, chlorobenzene, p-dichlorobenzene and o-dichlorobenzene. VOC compounds in this grouping were detected in the groundwater samples in a more limited area than the halogenated compounds, as illustrated in Appendix F, Figures 14, 26 and 38. The smaller length of the aromatic plume may be in response to the generally lower solubilities, higher biodegradability, and greater sorbtive capacities associated with these compounds, which would result in greater retardation of the aromatic plume.

The highest concentrations of aromatic hydrocarbons found during the first operational year were detected in Well OBS-1 (55 to 110 ug/l), Well 6B (26-38 ug/l), 9C (12-34 ug/l), 6E (18-33 ug/l), 6C (7-27 ug/l) and Well 5B (12-15 ug/l). Benzene was the dominant aromatic compound detected having a maximum value of 110 ug/l in Well OBS-1. Since benzene was the only aromatic compound detected in OBS-1, and benzene was always found in association with chlorobenzene and dichlorobenzene in the other monitoring wells, a separate source upgradient of OBS-1 is implied. The other aromatic compounds commonly detected in association with benzene were chlorobenzene (0-6 ug/l), 1, 2-dichlorobenzene (0-14 ug/l) and 1, 4- dichlorobenzene (0-16 ug/l), with the highest concentrations typically found in well cluster 6, well 9C and well 5B.

In general, trends in aromatic hydrocarbons over the annual reporting period showed a downward bias in wells 6B/6E (downgradient of the landfill site), or were relatively stable as in wells 6C, 9C, and 5B. Only Well OBS-1 showed an increase in the concentration of aromatics (a 50 percent increase in benzene), supporting the interpretation that the contamination may be from a source other than the landfill. Furthermore, evaluation of the Town's groundwater sampling data indicated a bi-modal distribution of total aromatic hydrocarbons in the aquifer. These areas of concentrated aromatic compounds were located downgradient of the Old Bethpage Landfill and the Nassau County Firemen's Training Center.

A comparison of the lateral extent of the aromatic hydrocarbon plume during the 1992-1993 reporting period and the July/August 1991 baseline sampling period (LKB September 1992) showed an apparent decrease in aromatics on the northeastern side of the plume. Based upon the monitoring well sampling data, the eastern edge of the aromatics plume is approximately 200 feet west of monitoring well cluster #8 (see Appendix F, Figure 38). This represents approximately a 400 foot narrowing of the aromatic plume since the baseline data, which showed the eastern edge of the plume to be 200 feet east of well cluster #8. The average concentration of benzene detected in weekly groundwater samples from recovery well RW-5 (approximately 20 ug/l) revealed benzene concentrations which could not be accounted for in the monitoring well data. This implies that a previously unrecognized concentrated part of the benzene/aromatic plume exists upgradient of recovery wells RW-5, indicating the need for additional monitoring well clusters in this area. Potential locations for monitoring well clusters are between well clusters 6 and 10, and well cluster 6 and RW-4. Additional data from wells at these locations would more clearly delineate the aromatic hydrocarbons plume in the aquifer downgradient of the former Claremont Polychemical site.

4.3.1.3 Tetrachloroethene

The third grouping of VOC compounds consists solely of tetrachloroethene (PCE) and exhibits a significantly different distribution than the other groupings. Referring to Figures 15, 27 and 39 in Appendix F, tetrachloroethene also shows a bimodal distribution pattern in the aquifer across the landfill area, with distinct plumes apparently located downgradient of the Nassau County Firemen's Training Center and the Claremont Polychemical site. The highest concentrations of PCE detected in the groundwater samples during the 1992-1993 operational year ranged from 250 to 360 ug/l in well 8A, 110 to 340 ug/l in 7B, and 12 to 27 ug/l in OBS-1; in addition; trace quantities of PCE (2-3 ug/l) were detected throughout well cluster 6.

The highest concentrations of tetrachloroethene were found downgradient of the Claremont Polychemical site in wells 8A and 7B. Apparently, this distribution of PCE would result from contaminant flow paths beginning in the vicinity of shallow well 8A, then traveling southeasterly, and downward in the aquifer, toward recovery wells RW-5 and RW-4 and monitoring well 7B. In general, the concentrations of PCE in monitoring wells 8A and 7B has remained relatively stable throughout the annual reporting period. The quarterly monitoring data is supported by sampling data from the five recovery wells, which shows a dramatic increase in the average concentration of PCE as you go from recovery well RW-3 toward RW-5 (from approximately 40 ug/l to 425 ug/l). Since the average concentrations of PCE from recovery well RW-5 is greater than the highest concentration of PCE found in the monitoring wells, the most highly concentrated part of the plume must be within or close to the zone of influence around well RW-5. This finding again supports the need for additional monitoring wells upgradient of well RW-5 so that trends in wellfield tetrachloroethene concentrations can be more easily predicted.

The concentration of tetrachloroethene in Well OBS-1 (which is downgradient of the Firemen's Training Center) was found to be less that 1/10 the concentration of PCE found in either well 8A and 7B. Furthermore, it appears that based upon the Town's quarterly sampling data, the PCE plume in this area is of more limited aerial extent than the eastern PCE plume. (See Appendix A, Line of Section). In addition, weekly sampling data from recovery well RW-1 indicated that the PCE (and other VOC) concentrations contributed by this well are very minor compared to the total VOC's being captured and treated by the remediaton system. In fact, total VOC's captured by RW-1 averaged less than 20 ug/l during the annual reporting period, indicating that no relatively minor concentrations of tetrachloroethene/VOC's are present in the vicinity of that recovery well RW-1.

4.3.2 Delineation of the VOC Plume

The position of the total Volatile Organic Compound (VOC) plume, which includes a composite of the three VOC groupings as described above, has been delineated on the water table and potentiometric surface maps in Appendix F. The outlines (hatched area) represents the approximate maximum lateral extent of the VOC plume within the aquifer during the July and October, 1992, and January 1993 Quarterly Sampling Rounds. A review of VOC plume outlines suggests that the approximate length of the plume downgradient of the landfill and adjoining areas is slightly less than 4,000 feet and the maximum width of the plume less than about 3,000 feet. A comparison of the current lateral extent of the composite VOC plume with previous quarterly and baseline mapping efforts indicates that despite overall reductions in concentrations of the individual VOC groupings, apparently little change in the position of the VOC plume has occurred.

However, since groundwater in the capture zone has been moving towards the recovery wells for approximately one year (i.e., within approximately a 750 foot radius), theoretically, the southernmost extent of the VOC plume should have been reduced. This apparent discrepancy points to the need for the installation of at least one additional monitoring well cluster downgradient of the currently recognized southern extent of the plume. A well proposed cluster located approximately 1,000 feet southeast of Well RW-4 would help delineate the southern extent of the VOC/tetrachloroethene plume. In addition, hydraulic data from a well cluster at this location would more clearly define the downgradient extent of capture of the well system.

The vertical distribution of total VOC's within the aquifer was evaluated by contouring lines of equal total volatile organic concentrations on a hydrochemical profile of the aquifer, as shown in Appendix A. The line of section for the hydrochemical profile is also shown in Appendix A, which includes the currently recognized aerial extent of tetrachloroethene and volatile aromatic hydrocarbons downgradient of the OBSWDC site. The maps were compiled using representative data from the town's groundwater monitoring program during October and November, 1992.

Referring to the hydrochemical profile in Appendix A, the approximate distribution of total VOCs in the aquifer clearly shows three distinct areas of highly concentrated VOC's, as delineated by total VOC concentrations greater than 25 ug/l. These concentrated areas are noted as slugs #1, 2, and 3 in the profile. Based upon the October 1992 sampling data (see Table insets on the profile), slugs #1 and 2 were dominated by tetrachloroethene (PCE), 1,2 Dichloroethene and Trichloroethene, in approximately the same proportions, in monitoring wells 8A and 7B. Therefore, it appears that these contaminants originated from the same source area in the vicinity of shallow monitoring well 8A (near the southern boundary of the Claremont Polychenical site) and traveled downward through the aquifer to the vicinity deep well #7B.

A comparison of the aerial and subsurface maps in Appendix A reveals that slugs #1 and 2 comprise the highly concentrated areas of what has been identified as the easternmost tetrachloroethene plume at the site. The horizontal and vertical components of groundwater flow shown on the maps trace the paths which VOC contaminants (i.e., the slugs) will travel during groundwater remediation of the plume.

As shown on the profile, slug #3 is composed of a wide variety of VOC contaminants which historically have been dominated by aromatic hydrocarbons and halogenated VOC compounds. The chemical composition as well as the contaminant concentrations in slug #3 has been shown to vary significantly from that of slugs #1 and #2. Furthermore, the distribution of VOC's within the aquifer (i.e., concentrated in deep well #6E) suggests a contaminant flow path which may be traced back to the northern part of the landfill site. These findings indicate that slug #3 was derived from a different source area than slugs #1 and #2, and traveled along separate contaminant flow paths in the aquifer. It should be noted that the approximate area of the landfill plume, as delineated by the aromatic hydrocarbon plume in Appendix A, overlaps with the PCE plume identified downgradient of the former Claremont Polychenical site. This grey area, as shown, represents the estimated area of mixing betwen these two VOC plumes.

Differentiation of the VOC plume downgradient of the western portion of the OBSWDC site is more difficult because of the low concentrations of VOC's detected in that area. Nevertheless, a tetrachloroethene plume has been identified in the aquifer downgradient of the Fireman's Training Center as shown by the plumeline in Appendix A. In addition, relatively high concentrations of both 1, 2, dichloroethene and benzene in deep well OBS-1 suggest a separate slug in this area. Thus, the chemical composition and distribition of VOC's, as well as the contaminant flow paths, appear to indicate a separate source for these contaminants upgradient of well OBS-1.

4.3.3 Analysis of Inorganic Compound Data-April 1992 to March 1993

The inorganic data collected during the first operating year are summarized in Appendix E, Tables 12 and 13 for the Second Quarter; Table 15 and 16 for the Third Quarter, and Tables 18 and 19 for the Fourth Operating Quarter at the Groundwater Treatment Facility. In general, the distribution of leachate indicators in the aquifer has remained relatively stable throughout the annual reporting period and in comparison to the 1991 baseline sampling data.

Based upon total dissolved solids, the greatest concentration of inorganic compounds were found in monitoring wells #5B (1100 to 1200 mg/l), #9C (1000 to 1100 mg/l), wells 6B/6C (460-810 mg/l), and landfill well LF-1 (370-470 mg/l). According to the inorganic sampling data, the landfill leachate plume is concentrated in the shallow aquifer (0 to 25 ft. MSL) along the broad front of the OBSWDC site, and downgradient in the deeper aquifer (± 70 ft. below MSL) in the vicinity of well #9C. The landfill leachate plume shows a distinctly different distribution pattern than that of the VOC plume, being highly concentrated in wells 5B, 6B, 6C, and 9C as opposed to well 8A, 7B and OBS-1. Apparently, inorganic contaminants traced flow paths originating upgradient of shallow well LF-3 (or LF-1) to intermediate wells MW-6B/C (or 5B), and then to the vicinity of well 9C in the deeper aquifer zone. The different organic and inorganic contaminant flow paths that have been defined in this report imply separate source areas for these contaminants.

Other important leachate indicators showed a distribution pattern in the aquifer similar to TDS during the first operating year. For example, the highest concentrations of ammonia, potassium, alkalinity, hardness, pH (5.5-6.5) and chloride were typically found in wells 5B, well cluster 6, 9C and LF-1. In addition, high concentrations of hardness, chloride and (field measured) specific conductivity were also found in wells 8B and upgradient Well M-30B. Concentrations of manganese, iron, and zinc were detected at their highest levels in monitoring wells M29A/M30B, OBS-1, LF-1 and well cluster 6. The concentrations of total iron varied in these wells during the reporting period, presumably in response to the spatial/temporal variations of iron in the aquifer. Ammonia, alkalinity, and potassium detected in samples from Wells 6C, LF-1 and M-30B decreased by approximately one-half over the third and fourth quarterly sampling periods.

4.4 Hydraulic Evaluation of the Groundwater Remediation System

4.4.1 Effective Capture Zone

The limiting flow lines drawn on the shallow and deep potentiometric contours in Appendix F delineate the effective capture zone of the groundwater recovery system. Evaluation of the horizontal and vertical extent of the effective capture zone verifies that during the first operational year of the Groundwater Treatment Facility, the full extent of the VOC plume had been captured.

Average water level elevations across the study area have decreased approximately three feet since the 1991 (pre-pumping) baseline water level rounds, and drawdown in the capture zone has ranged from approximately 10 to 12 feet since the start of pumping in April 1992. Mean water level elevations in the capture zone, as measured in the five recovery wells, have shown a steady decline over the first and second operational quarters (from 55.4 to 53.7 feet MSL), and have shown a fluctuating but generally increasing trend during the third and fourth quarters. These fluctuations (from 54.0 to 55.8 feet MSL) are mostly due to Wells RW-1 and RW-2 being off-line during the January and February, 1993 monitoring rounds, whereas the trends in water levels elevations may be due to the seasonal effects.

Based upon the limiting flow lines, hydraulic control of the VOC plume has been demonstrated during each of the first four operating quarters, where average system flow during the hydraulic monitoring rounds varied from approximately 798 gpm to 1,074 gpm. Furthermore, hydraulic control of the VOC plume had been maintained throughout the operating year regardless of the seasonal effects. Therefore, the frequency of hydraulic monitoring can be safely reduced from monthly to quarterly.

4.4.2 Effects of Mounding Due to Recharge

The water table contour maps in Appendix E show the configuration of the water table in the remediation system recharge basin area during 1992-1993 hydraulic monitoring rounds. Data presented in these figures indicate localized mounding of the water table immediately adjacent to the recharge basin, resulting in a radially outward flow pattern. The elevation of the top of the mound was estimated to range from approximately 70-72 feet above MSL during the first operating year. Modification of the local groundwater flow pattern from the mounding was largely restricted to the northwest corner of the landfill property.

Standing water in the remediation recharge basin ranged from 118.5 ft. MSL in September 1992 to approximately 128 ft. MSL in March 1993 (18 to 28 feet of standing water). The staff gauge was submerged during the January 1993 monitoring round indicating a minimum of 28 feet of standing water in the basin at that time. The standing water in the basin presumably represents the equilibruim water level for the groundwater remediation recharge basin. This standing water is apparently the result of slow seepage of effluent (and landfill runoff waters) through the leaching wells/recharge basins and underlying soils.

This increasing trend of standing water observed in the recharge basin indicates that routine maintenance may be required for the recharge basin system. Routine maintenance can consist of dredging the bottom of the basin for silt and clay fines (which will slow down infiltration of recharge waters) and/or the flushing out and redevelopment of the leaching basin wells. However, hydraulic monitoring in the recharge basin area has indicated that the standing water in the basin does not significantly add to the groundwater mounding that was observed.

4.4.3 Evaluation of System Pumpage

Daily Operating Reports for the Groundwater Treatment Facility were reviewed for the period January 1 through March 31, 1993 to estimate 1) average daily well flows for the individual recovery wells; and 2) total operating system flow or system pumpage. Data on well flows and system flow were estimated from data contained in the first six columns of the Daily Operating Reports under the heading "Wellfield Operation, Gallons per Minute". The Daily Operating Reports were presented in Appendix B of the Town's Quarterly Monitoring Reports.

The groundwater recovery system was fully operational for approximately 221 days of the 365 day annual reporting period. On a quarterly basis, the system was fully operational as follows:

1st Quarter - 69 of 76 days
2nd Quarter - 67 of 107 days
3rd Quarter - 32 of 92 days
4th Quarter - 53 of 90 days.

A summary of the pumpage records and estimated average daily operating flows for the 1992-1993 operating year is presented in Appendix D.

Estimated flow rates in Appendix D do not include days where an individual recovery well was off-line, and therefore, represent the average operating flow rates. When the system was fully operational, the total average system flow calculated from the pumpage data was about 10 percent greater than that determined from the air stripper effluent flows. For example, during the fourth operating quarter, total system flows estimated from the pumpage data were 1.46 gpm, while the air stripper effluent flows were 1.32 gpm. This discrepancy results from the normal intermittent operation of the recovery well pumps which are designed to maintain a relatively constant system flow.

Referring to the table in Appendix D, the average monthly flows varied within a range of 23 to 34 gpm in wells RW-4, RW-1, and RW-3 and from 42 to 46 gpm in wells RW-5 and RW-2. On an annual basis, the average daily flows varied within a range of 201-206 gpm in wells RW-1, RW-3, RW-4 and RW-5, indicating good operating efficiencies for those wells. The larger fluctuations in monthly flow rates in well RW-2 (average 225 gpm) were the result of operating problems in that well during the second quarter period.

SECTION 5.0

FINDINGS AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Facility Operations

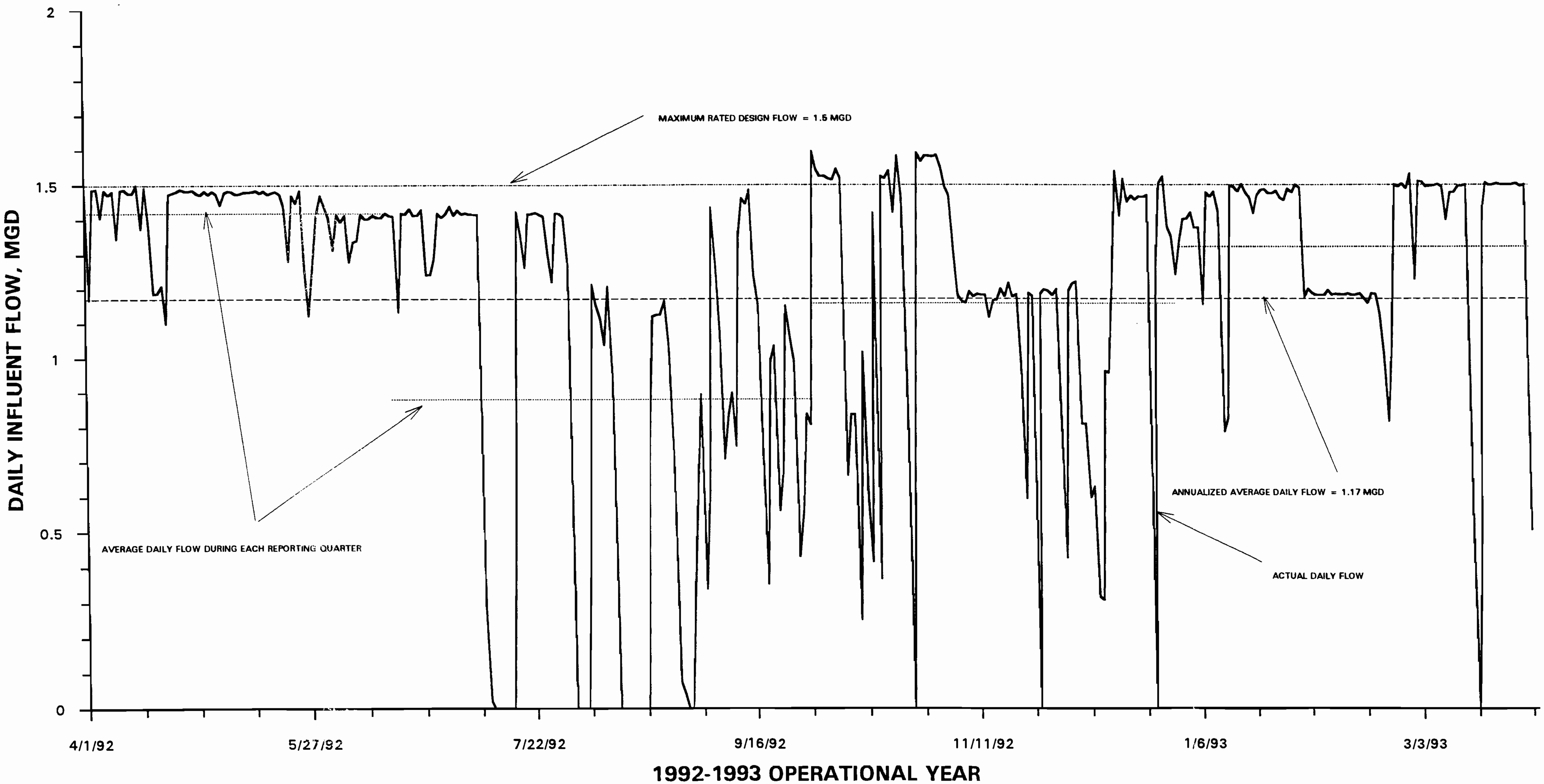
A review of the facility's hydraulic performance (Figure 1) during each operational quarter revealed the following:

Period	On-line Performance (%)	Avg. Daily Flow (MGD)	Total Flow (MG)
1st Quarter (4-1 to 6-16, 1992)	98	1.38	105
2nd Quarter (6-17 to 9-30, 1992)	60	0.88	94
3rd Quarter 10-1 to 12-31, 1992	88	1.16	107
4th Quarter 1-1 to 3-31, 1993	95	1.32	119
Average	83.6	1.17	-
Total	-	-	428

The on-line performance of the facility was severely impacted by unusual thunderstorm activity during the summer months of 1992. The residual damage from these events, and the subsequent need to make repairs and install protective devices accounted for most of the downtime recorded. In addition, the Town instituted a program of planned shutdowns during imminent thunderstorm activity. This action effectively protected the facility's electronics from lightning damage. Despite the installation of surge suppressor equipment, the Town has elected to make planned shutdowns a permanent operating procedure.

LKB 8086-12, I9293FLO.XLC,ANN REP, FIG 1, 4/23/93, REV 8/11/93

VARIATION IN FACILITY INFLUENT FLOW DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 1

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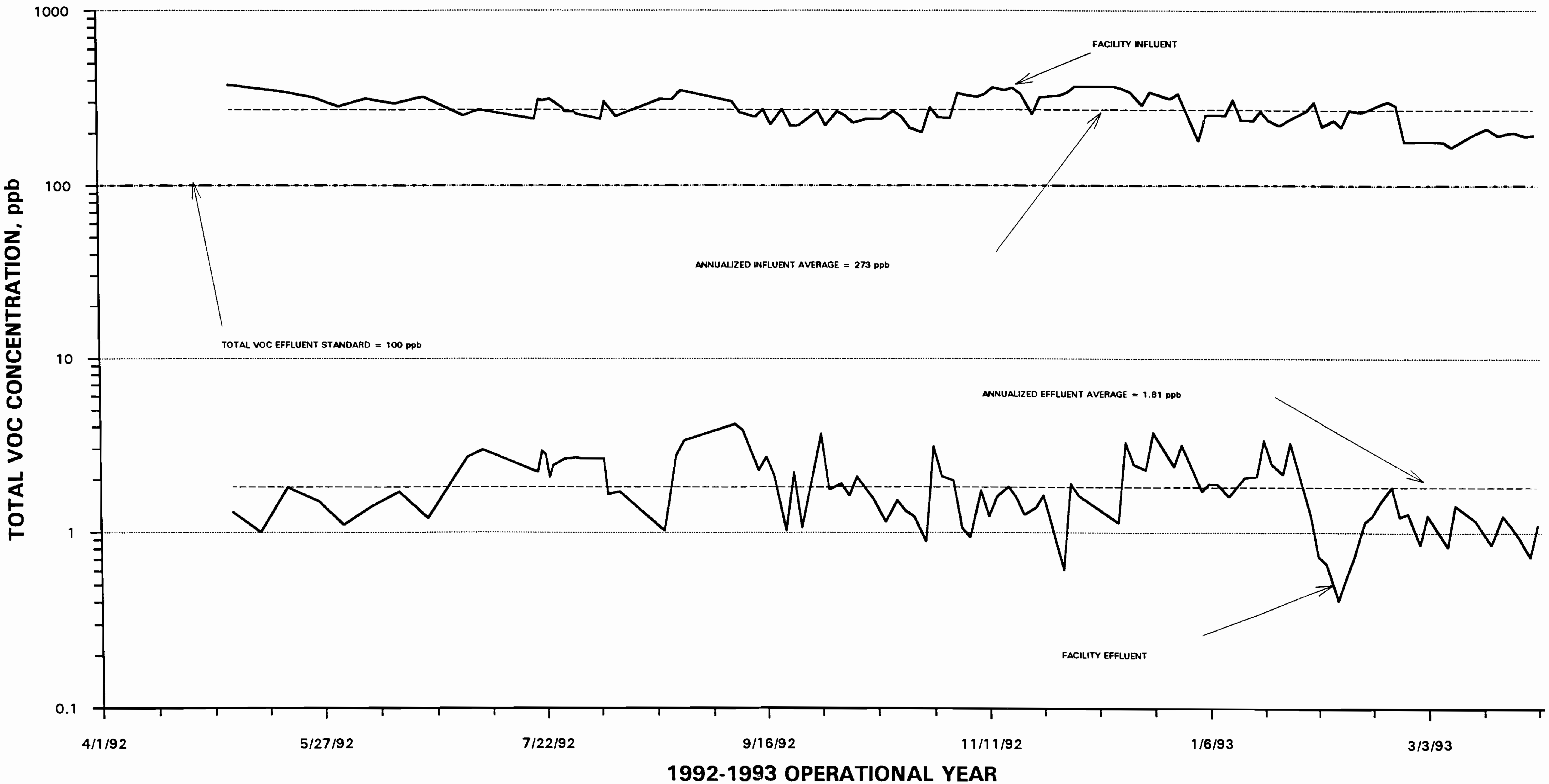
COMPARISON OF INFLUENT/EFFLUENT TOTAL VOC CONCENTRATIONS DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 2

LKB
LOCKWOOD, KESSLER & BARTLETT, INC
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

Based on previously reported certified laboratory and self-monitoring data, total influent VOC's during the year averaged 273 ppb, and total effluent VOC's for the same period average 1.81 ppb (Figure 2). The influent analyses showed a wide variation in total VOC's (low-166 ppb, high - 378 ppb) during the operating year, and demonstrated a general downward trend (Figure 3). This downward trend has been due mainly to the decrease in 1, 2-dichloroethene, a known landfill contaminant. More recently, a drop in tetrachloroethene level has also contributed to the overall decrease in total VOC levels.

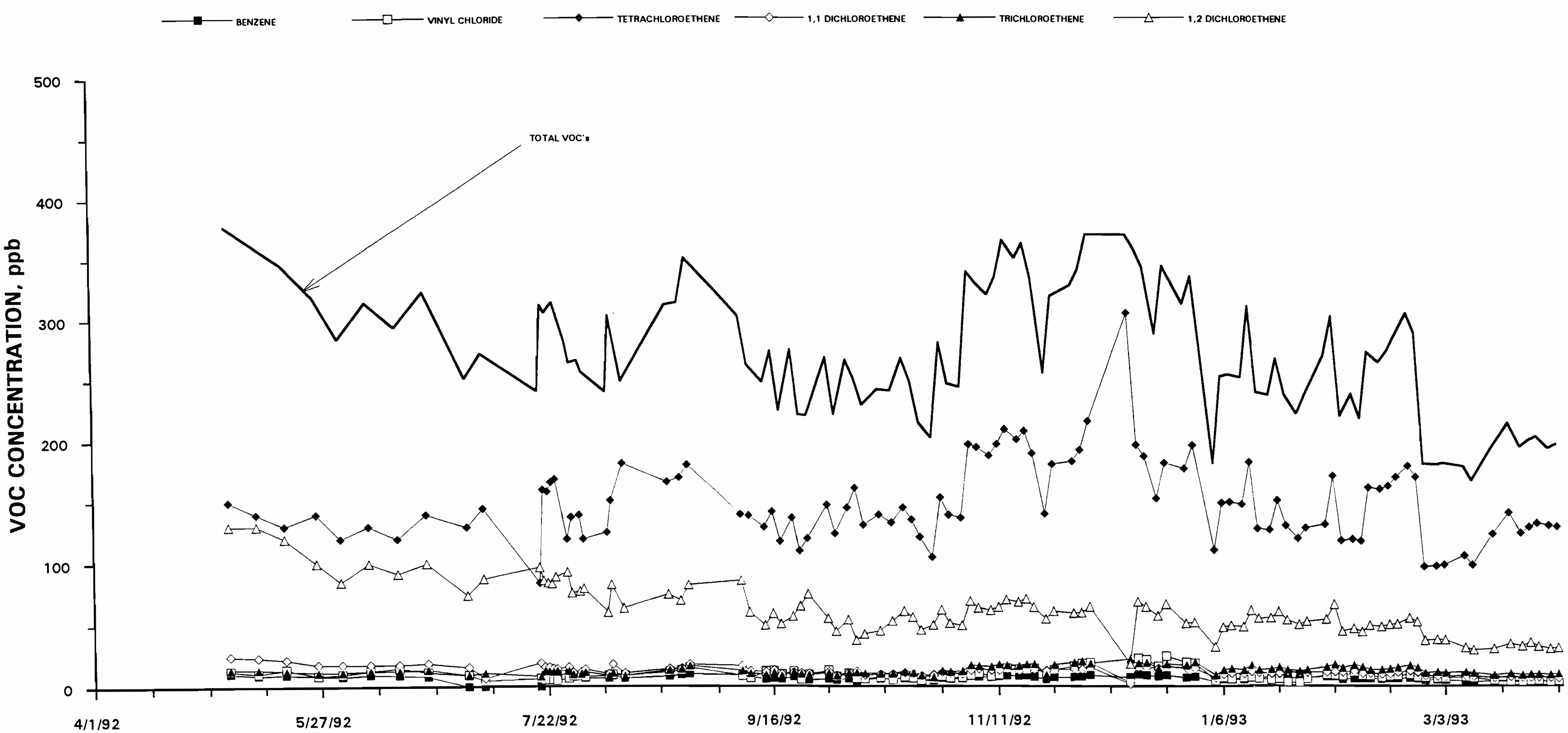
Although the average total VOC influent loading fell during the year, overall average treatment efficiency remained fairly constant and averaged about 99.33 percent over the entire year (Figure 4). On the basis of twelve SPDES effluent analytical reports by a certified laboratory, only one parameter was found to be above guideline concentrations during the operating year. Tetrachloroethene was found to be at or above the guideline values in two effluent samples.

Removal efficiencies have remained high during the operating year for three reasons. First, as shown in Figure 5, a five well recovery system tends to dampen out large variations in influent VOC concentrations to the air stripper. Although very large concentration variations occur in specific VOC's at individual production wells over time, the overall influent total VOC concentration to the facility never varied by more than plus/minus 40 percent of the average.

Secondly, the air/water ratio has been maintained higher than the 60/1 called for in the manufacturer's design literature. Higher air/water ratios typically will improve air stripper efficiency to a degree, simply by contacting greater volumes of air with the stripper influent. Occasionally, additional efficiency can be gained as greater air volumes force the downward flow more evenly

LKB 8086-12,I 9293VOC.XLC, ANN REP, FIG3, 5/10/93, REV 8/11/93

VARIATION IN FACILITY INFLUENT VOC CONCENTRATIONS DURING THE INITIAL OPERATIONAL YEAR



1992-1993 OPERATIONAL YEAR

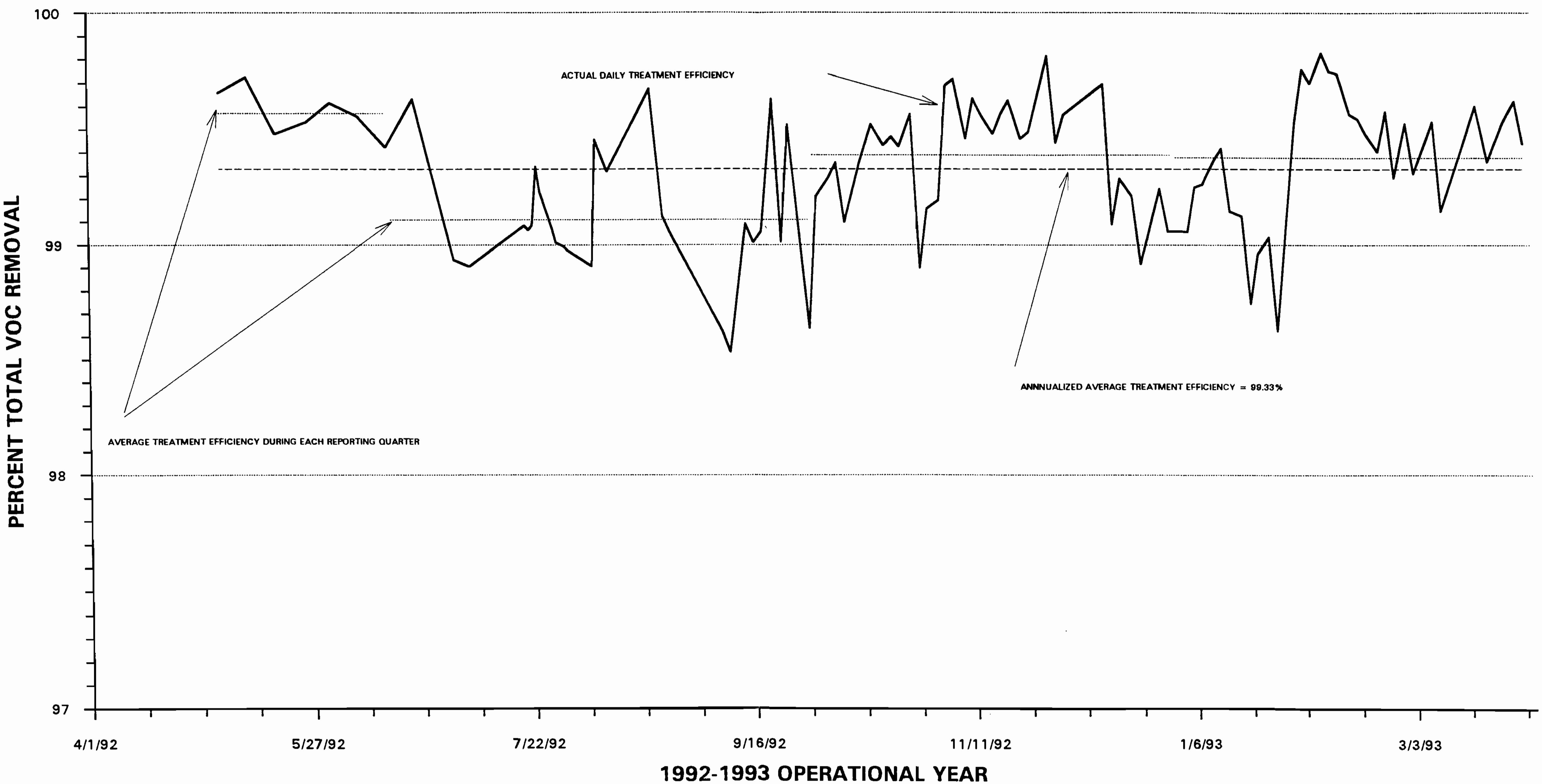
TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 3

LKB
LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

LKB 8086-12.I 9293%RE.XLC, ANN REP, FIG 4, 4/27/93, REV 8/11/93

VARIATION IN TREATMENT EFFICIENCY DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 4

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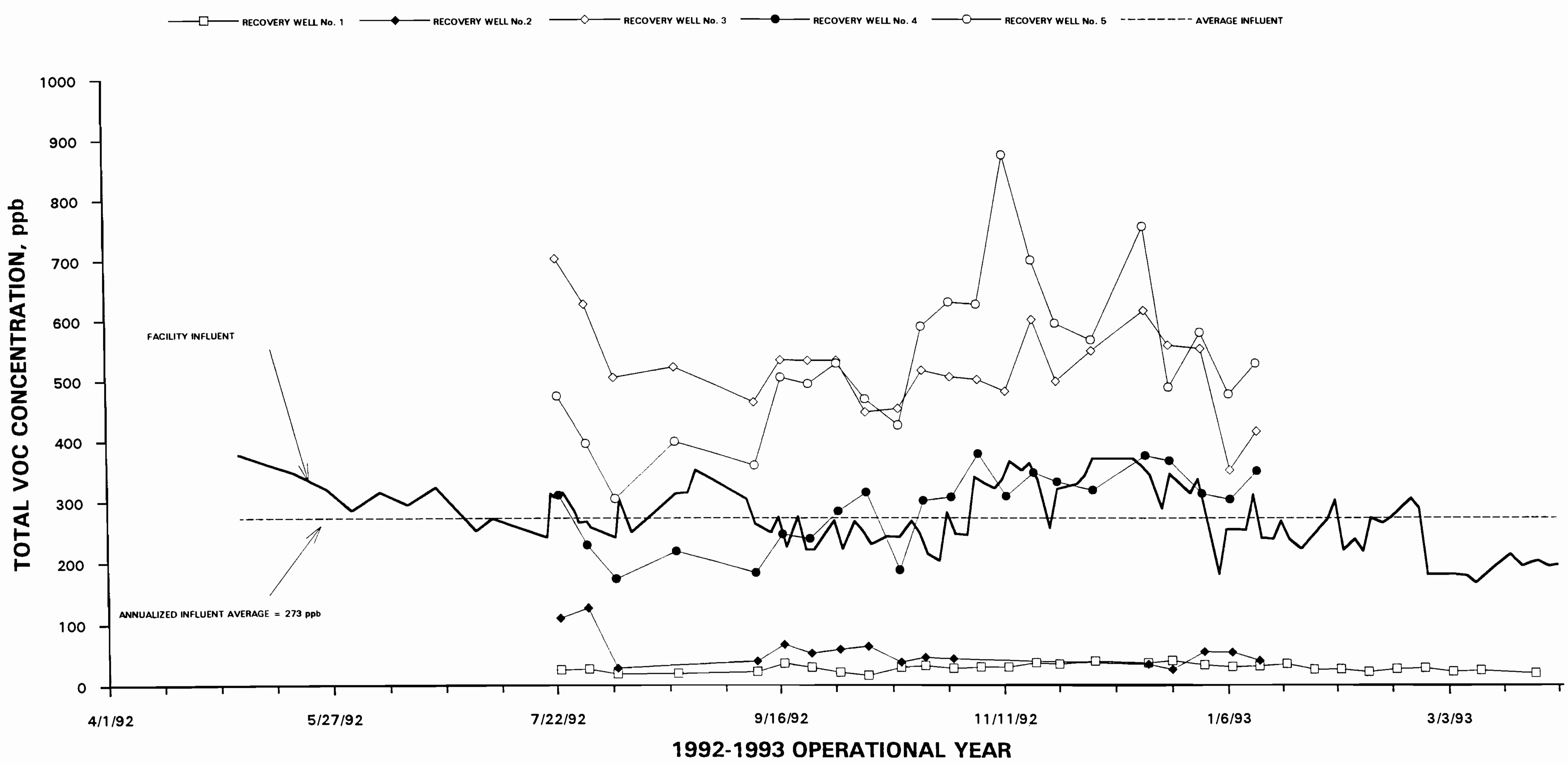
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

LKB 6086-12, 19293PWS.XLC, ANNREP, FIG 5, 4/29/93, REV 8/11/93

VARIATION IN WELLFIELD TOTAL VOC CONCENTRATIONS DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 5

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CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

across the diameter of the vessel, thus minimizing channeling and "dead" spots in the packing. Some evidence of channeling was evident during an inspection made in February 1993.

Lastly, a high awareness exists among operating personnel regarding maintenance of the stripper internals through observation of the tower packing, where iron deposit fouling can cause a drop in process efficiency. The initial acid washing of the tower internals was performed on March 14, 1992 and removed all visible signs of deposits.

On the basis of the analytical work performed during the first operational year, all applicable guideline values have been consistently satisfied. Therefore, no additional treatment units are required to remove VOC's from the groundwater.

On the basis of twelve analytical reports from a certified laboratory and monitoring performed at the Town laboratory, only one inorganic parameter, iron, was were found to be above guideline concentrations. Air flow to the stripper tower was increased during the second quarter in anticipation of oxidizing additional soluble iron to a precipitate form on the packing media. Iron deposits on the packing are removed during scheduled acid washing of the stripper tower as described previously.

On the basis of the analytical work performed during the first operational year, all applicable guideline values pertaining to iron and other inorganic parameters have been consistently satisfied. Therefore, no additional treatment units are required to remove iron or other inorganic parameters from the groundwater.

A review of the fourth quarterly air stripper emissions data (Appendix B) indicates that after appropriate modeling to predict annual impacts at the property line using the measured emissions rates, no compound exceeded the NYSDEC Air Guide No. 1 limitations, as originally specified in the Consent Decree.

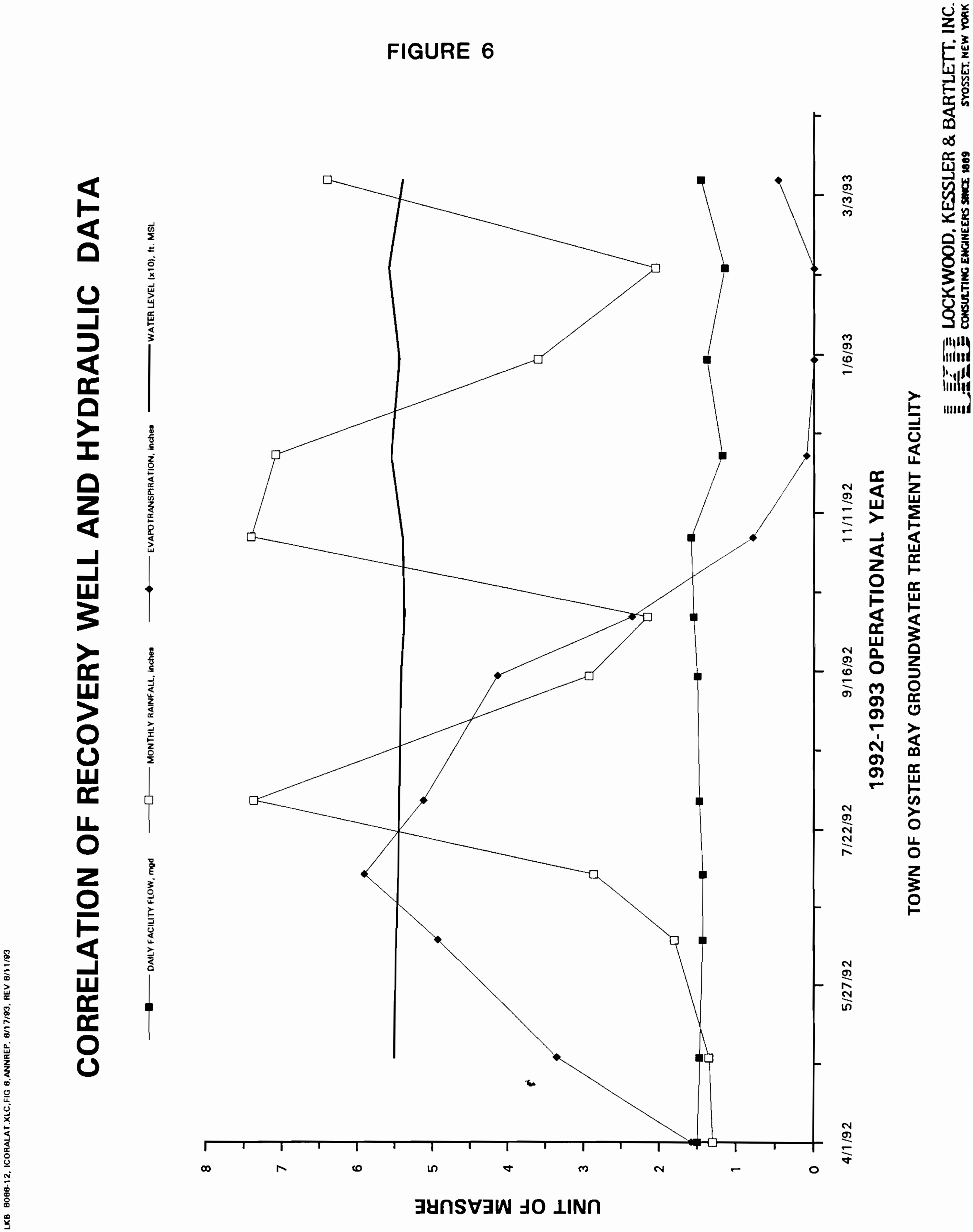
Since the Consent Decree was signed and construction began on the Groundwater Treatment Facility, the applicable air discharge limitations have been revised, effective June 1991. More recently, the Town has been advised by NYSDEC of certain clarifications to Air Guide No. 1 pertaining to tetrachloroethene (PCE). The results from this stack test indicate that after appropriate modeling to predict annual impacts at the property line using the measured emission rates, no compound exceeded these revised and clarified guidelines.

As noted in the annual summary report, Appendix C, on the basis of the analytical work and modeling performed during the first operational year, all applicable guideline values pertaining to VOC emissions have been satisfied. Therefore, no additional treatment units are required to remove VOC's from the air stripper stack exhaust.

5.1.2 Hydraulic Control of the VOC Plume

In order to evaluate the effect of changing system flow and seasonal variables on water levels in the capture zone, data on system pumpage, water level elevations, and hydrologic variables were compiled and analyzed by both graphical and statistical methods. Trends in facility flow, monthly rainfall, evapotranspiration, and water levels are presented in Figure 6 for the 1992-1993 operational year. Facility flow was compiled from daily pumpage records (i.e., daily operating reports) during the time when monthly water level monitoring rounds were being conducted. The water level data represents the mean water level elevation in the five recovery wells during the water level monitoring rounds. Precipitation data was obtained on a weekly/monthly basis from a rain gauging station located less than one mile from the OBSWDC; data on evapotranspiration was

FIGURE 6



CORRELATION OF RECOVERY WELL AND HYDRAULIC DATA
DAILY FACILITY FLOW, mgd
MONTHLY RAINFALL, inches
EVAPOTRANSPIRATION, inches
WATER LEVEL (x10), ft. MSL
UNIT OF MEASURE
0
1
2
3
4
5
6
7
8
4/1/92
5/27/92
7/22/92
9/16/92
11/11/92
1/6/93
3/3/93
1992-1993 OPERATIONAL YEAR
TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY
LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS SINCE 1889
SYOSSET, NEW YORK
LKB 8086-12, ICORALAT.XLC,FIG 6,ANNREP, 8/17/93, REV 8/11/93

taken from a standard curve that was part of a soil-moisture budget for New York City and vicinity.

Regression analysis of the above data indicated moderately good correlation (correlation coefficient R=0.74) between facility flow and water level elevations in the capture zone. During the fourth quarter, water elevations in the recovery wells decreased each time the total system flow increased. However, precipitation and evapotranspiration showed poor correlation with facility flow (R=0.21 to 0.29). Therefore, it appears that system pumpage is the main variable that exerts hydraulic control over the VOC plume. The seasonal effects (i.e., annual changes in groundwater levels) have had little, if any, influence on exerting hydraulic control of the VOC plume during the reporting period.

Using the method of analysis that was described in Section 4.2.1 of this report, regression analysis revealed a poor correlation between the area of the deep capture zone and the total system flow (correlation coefficient R=.30). Consequently, in order to determine the minimum system flow necessary to maintain hydraulic control over the VOC plume, a field program should be implemented to measure the actual response of the aquifer to scheduled changes in system pumpage. System pumpage data recorded during the monthly water level monitoring rounds suggest that a pumping rate as low as approximately 800 gpm (1.15 mgd of continuous flow) over the wellfield may be sufficient to capture the full extent of the VOC plume. Nevertheless, evaluation of the hydraulic data supports the recommendation that if the average system flow is maintained at Fourth Quarter operating levels, regardless of the seasonal effects, water level monitoring can safely be reduced from monthly to quarterly.

As discussed in Section 4.4.1, hydraulic control of the VOC plume had been maintained throughout the first operating year, although portions of the wellfield, primarily RW-1 and RW-2, were down for repair. The effect of this well-specific reduction in system pumpage on the extent and configuration of the capture zone can be evaluated by comparing the shallow potentiometric surface contours in Figures 29, 32 and 35 in Appendix F. Taking recovery Well RW-1 off line had apparently resulted in a reduction in area of the southwest side of the capture zone (with RW-1 now being outside the area of well-defined capture) and a shifting of the maximum drawdown approximately 500 feet to the southwest from Well RW-3 to RW-2. Analysis of the limiting flow lines under this pumping scenario indicates that contaminants within the far west side of the plume will still be captured (i.e., from potential sources upgradient of RW-1); however, they will now move toward recovery Well RW-2 at a lower velocity because of the overall reduction hydraulic gradients in the area of RW-1.

Referring to Figures 32 and 37 of Appendix F, the reduction in pumpage from Well RW-2 had not resulted in a noticeable decrease in the total area of the capture zone (compare potentiometric surface contour 59 feet MSL) but had resulted in a stronger easterly and westerly component of flow within the capture zone. Under this pumping scenario, groundwater and thus contaminant flow paths are traveling away from static Well RW-2 and toward Wells RW-3 and RW-1; the maximum drawdown was found to be bimodal and occurring in Wells RW-1 and RW-3. The width of the capture zone had apparently been reduced in the area of RW-2, presumably because of the tendency to form a line of stagnation between pumping Wells RW-1 and RW-3. For this reason, continuous downtime in recovery Well RW-2 should be kept to a minimum.

5.1.3 Remediation of Potential Groundwater Plumes from Other Sources

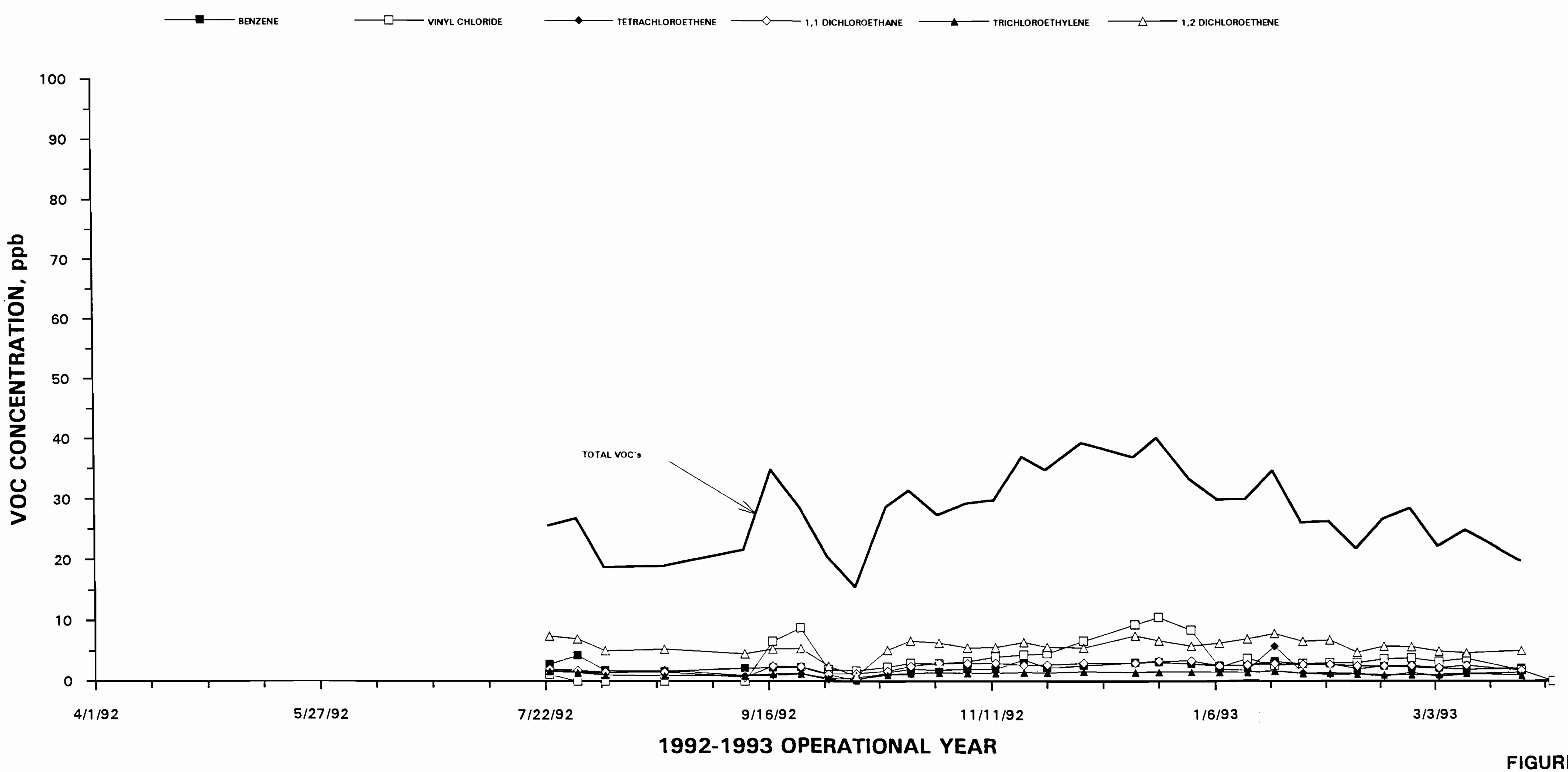
In addition to monitoring influent and effluent conditions at the facility, the Town regularly monitors VOC concentrations at each recovery well. The analytical data collected during the first operational year, previously submitted, shows an initial increase in total VOC loading followed by an overall decrease. Total VOC concentrations peaked in Wells 2 and 5 in October and November 1992, respectively. Total VOC concentrations peaked in Recovery Wells 1, 3 and 4 in early January 1993. Furthermore, water quality data collected from the groundwater monitoring wells also show a decrease in VOC's during the fourth quarter. Analysis of the water quality data appears to indicate that the decrease in VOC's may be the result of the recovery of less contaminated plume water in the vicinity of Well Cluster 7.

Close inspection of Figures 7 through 11 indicates that the groundwater composition around each recovery well exhibits a unique chemical "signature" defined both by chemical species and concentration. Recovery Wells 1, 2 and 3 are heavily influenced by VOC's (most notably 1, 2-dichloroethene) known to be associated with the plume from OBSWDC, whereas Recovery Wells 4 and 5 are mostly composed of tetrachloroethene, a compound previously noted only in trace amounts on and around the OBSWDC. In addition, analysis of groundwater sampling data from monitoring wells MW-8A and 7B (see Appendix A - hydrochemical profile) has indicated that a portion of the 1,2 dichloroethene detected in recovery well RW-3 appears to be from a source other than the landfill.

A known Superfund site, the Claremont Polychemical manufacturing and storage facility, lies to the northwest and directly upgradient of recovery wells RW-4 and RW-5 of the OBSWDC groundwater recovery wellfield (see Appendix A - Line of Section).Tetrachloroethene is a known major contaminant associated with that site, whereas it is only found in trace amounts in the plume associated with OBSWDC. Geographically, the Claremont Polychemical site is closest to Recovery Well No. 5, the distance increasing to Recovery Well No. 4, No. 3, etc., and the recorded concentration levels of tetrachloroethene decline with increasing distance from the site. This relationship is illustrated in Figure 12, and demonstrates the wide variations in

LKB 8086-12, 19293PW1.XLC, ANN REP, FIG 7, 5/7/93, REV 8/11/93

VARIATION IN VOC CONCENTRATIONS AT RECOVERY WELL No.1 DURING THE INITIAL OPERATIONAL YEAR



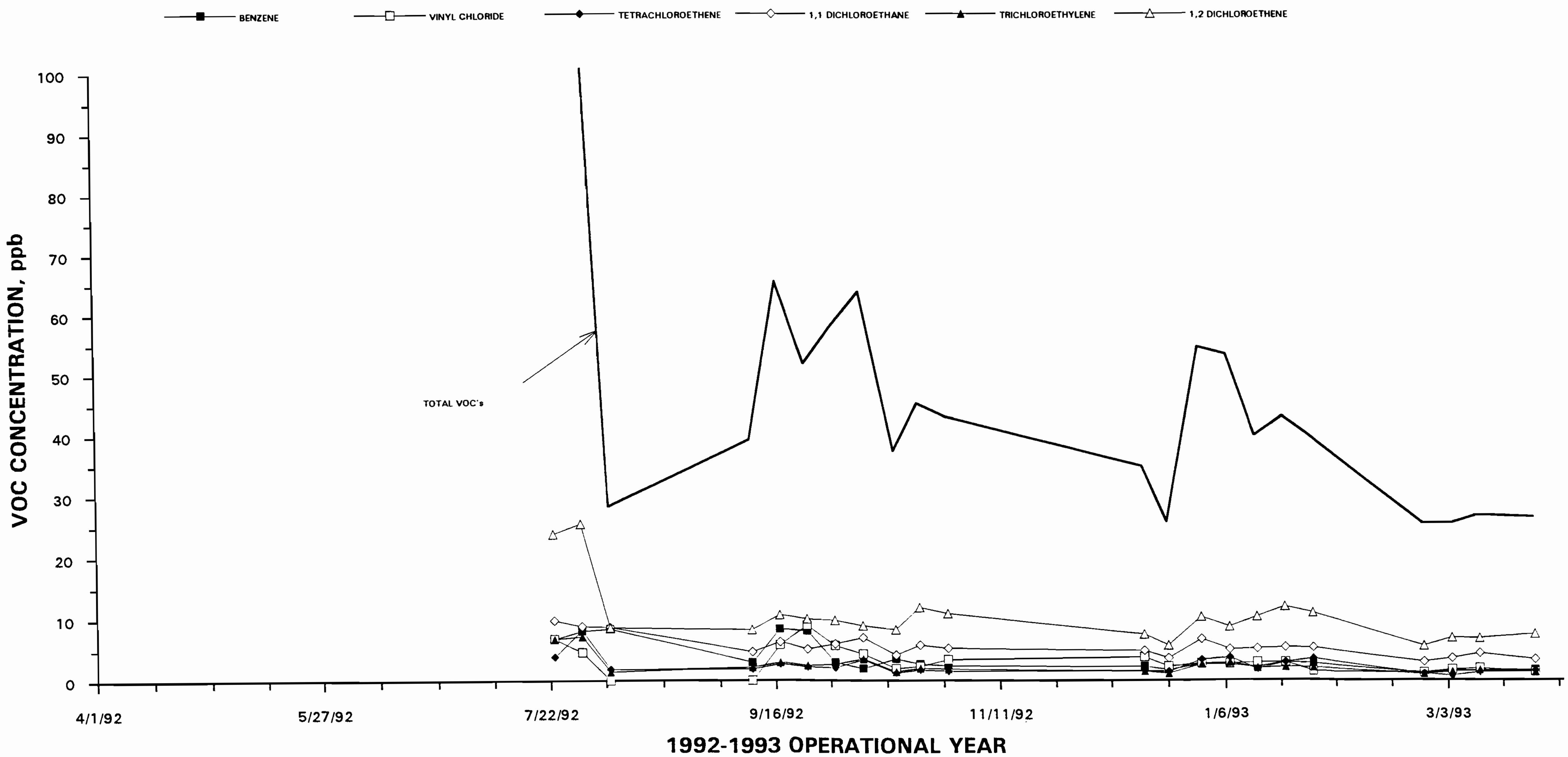
TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 7

LOCKWOOD, KESSLER & BARTLETT, I
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW Y

LKB 8086-12, I9293PW2.XLC, ANN REP, FIG 8, 5/10/93, REV 8/11/93

VARIATION IN VOC CONCENTRATIONS AT RECOVERY WELL No. 2 DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 8

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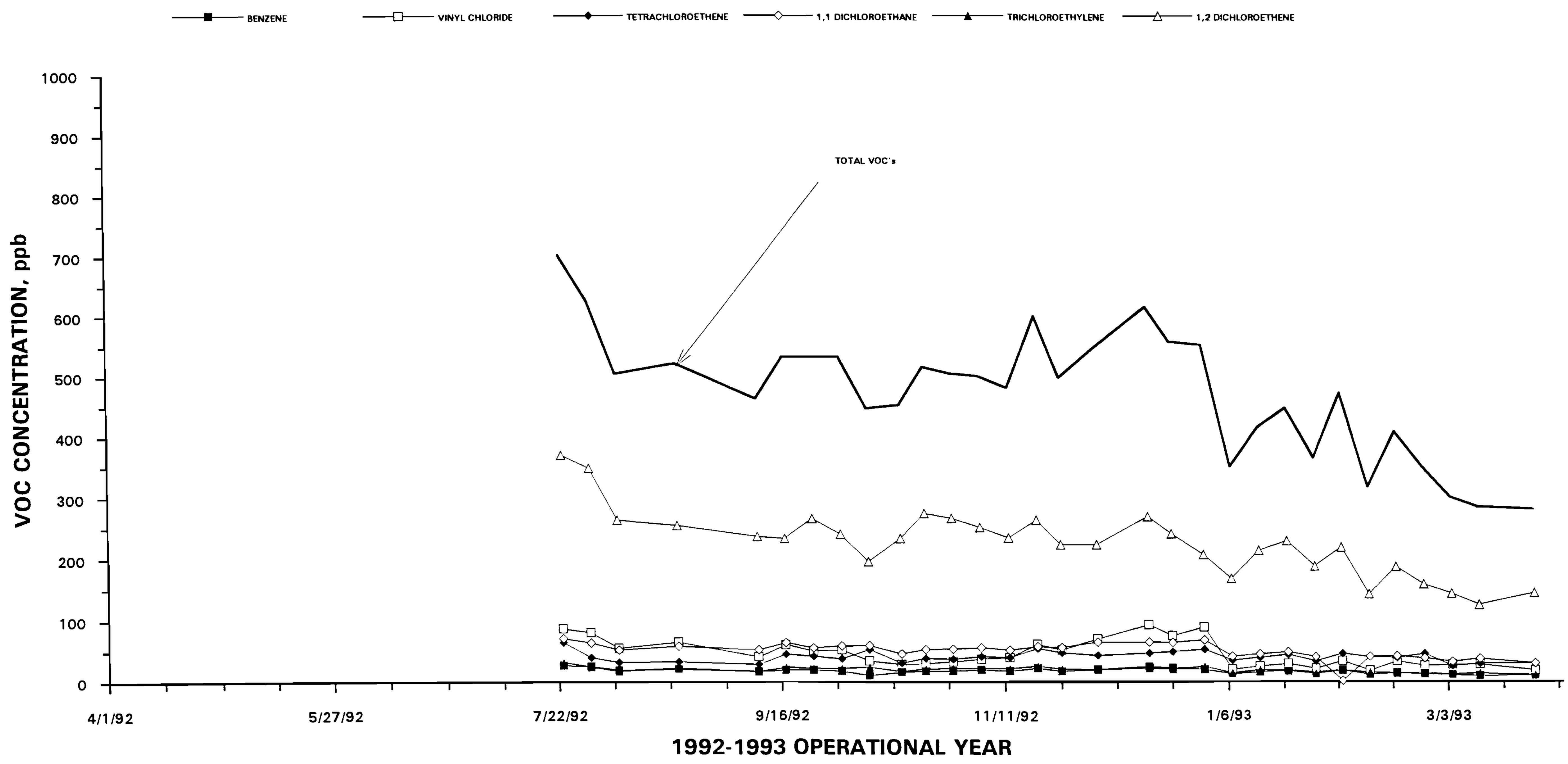
LOCKWOOD, KESSLER & BARTLETT, INC
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

LKB 8086-12, I9293PW3.XLC, ANN REP, FIG 9, 5/10/93, REV 8/11/93

VARIATION IN VOC CONCENTRATIONS AT RECOVERY WELL No.3 DURING THE INITIAL OPERATIONAL YEAR



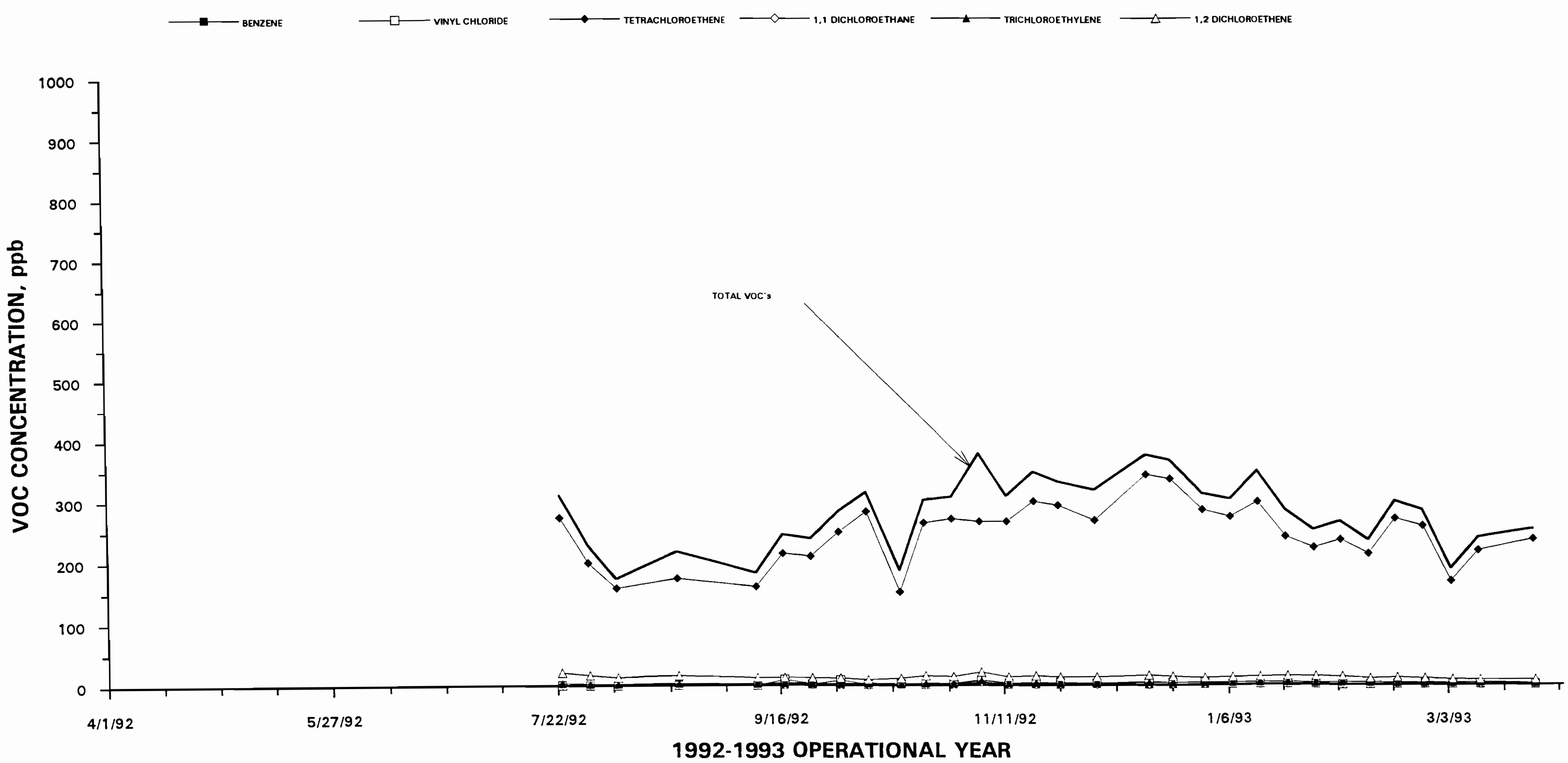
TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 9

LOCKWOOD, KESSLER & BARTLETT, INC
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

LKB 8086-12, I9293PW4.XLC, ANN REP, FIG 10, 5/10/93, REV 8/11/93

VARIATION IN VOC CONCENTRATIONS AT RECOVERY WELL No.4 DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 10

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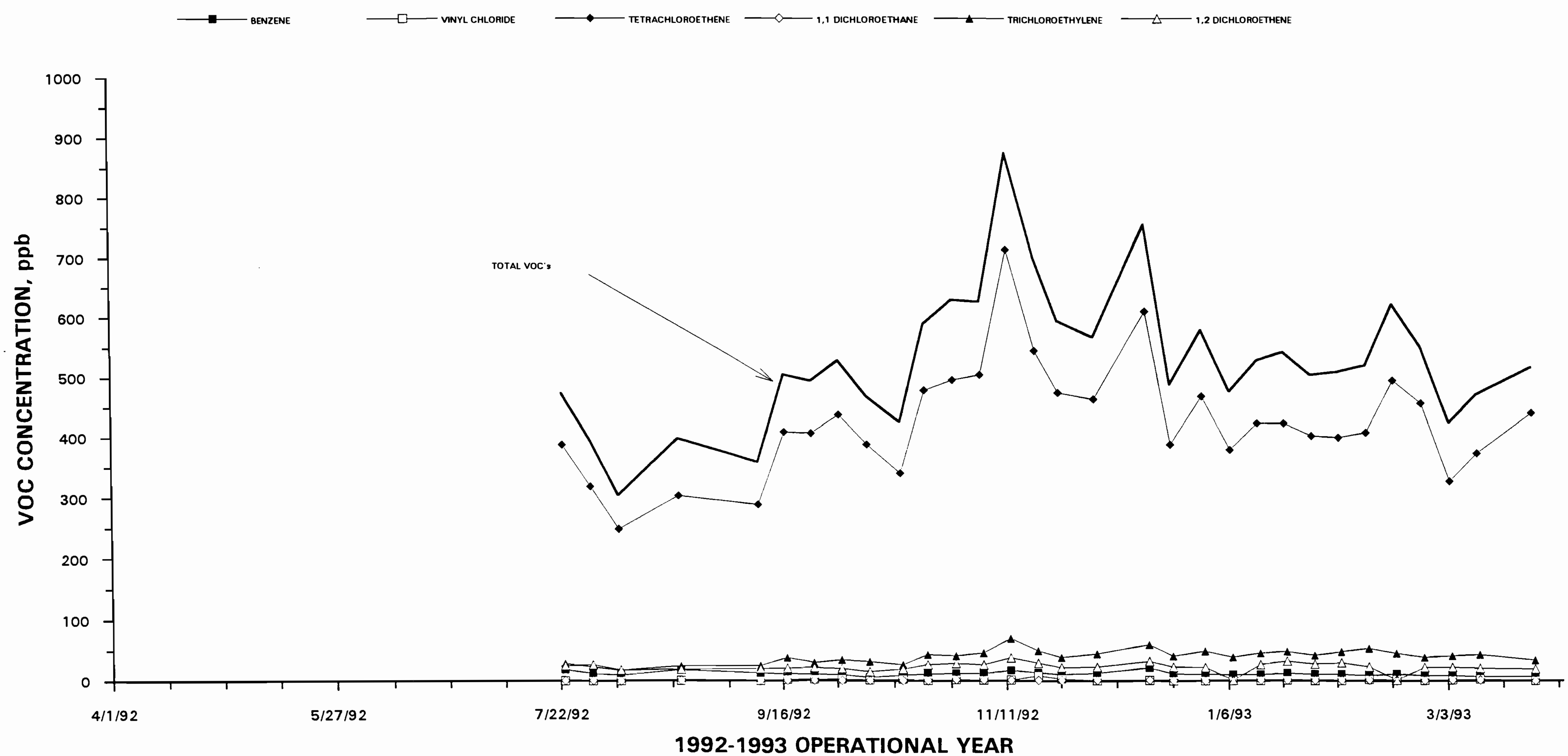
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

LKB 8086-12, 19293PW5.XLC, ANN REP, FIG 11, 5/10/93,REV 8/11/93

VARIATION IN VOC CONCENTRATIONS AT PRODUCTION WELL No.5 DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 11

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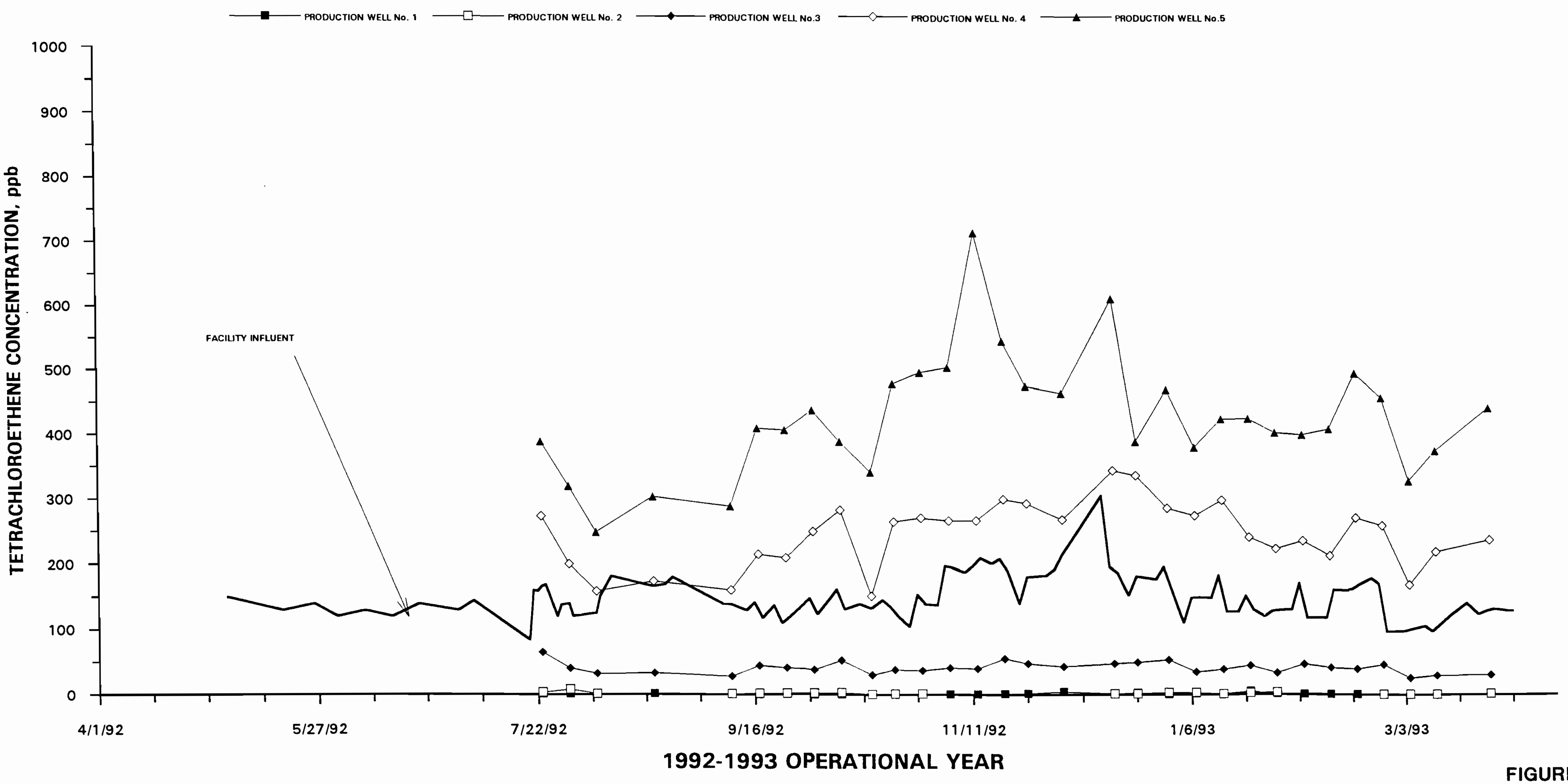
LOCKWOOD, KESSLER & BARTLETT, INC
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

LKB 6086-12, 19293PCE.XLC, ANN REP, FIG 12, 5/26/93, REV 8/27/93

VARIATION IN WELLFIELD TETRACHLOROETHENE CONCENTRATIONS DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

FIGURE 12

LKB
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CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

tetrachloroethene found at each recovery well during the reporting period. Figure 13 plots in cros-section the annualized average of VOC's at each recovery well, and clearly shows the unusual influence of tetrachloroethene extending northerly in the direction of the Claremont Polychemical site. When the influence of tetrachloroethene is removed from the cross-section, as illustrated in Figure 14, a total VOC distribution typical of the chemical constituents historically associated with the OBSWDC site is revealed.

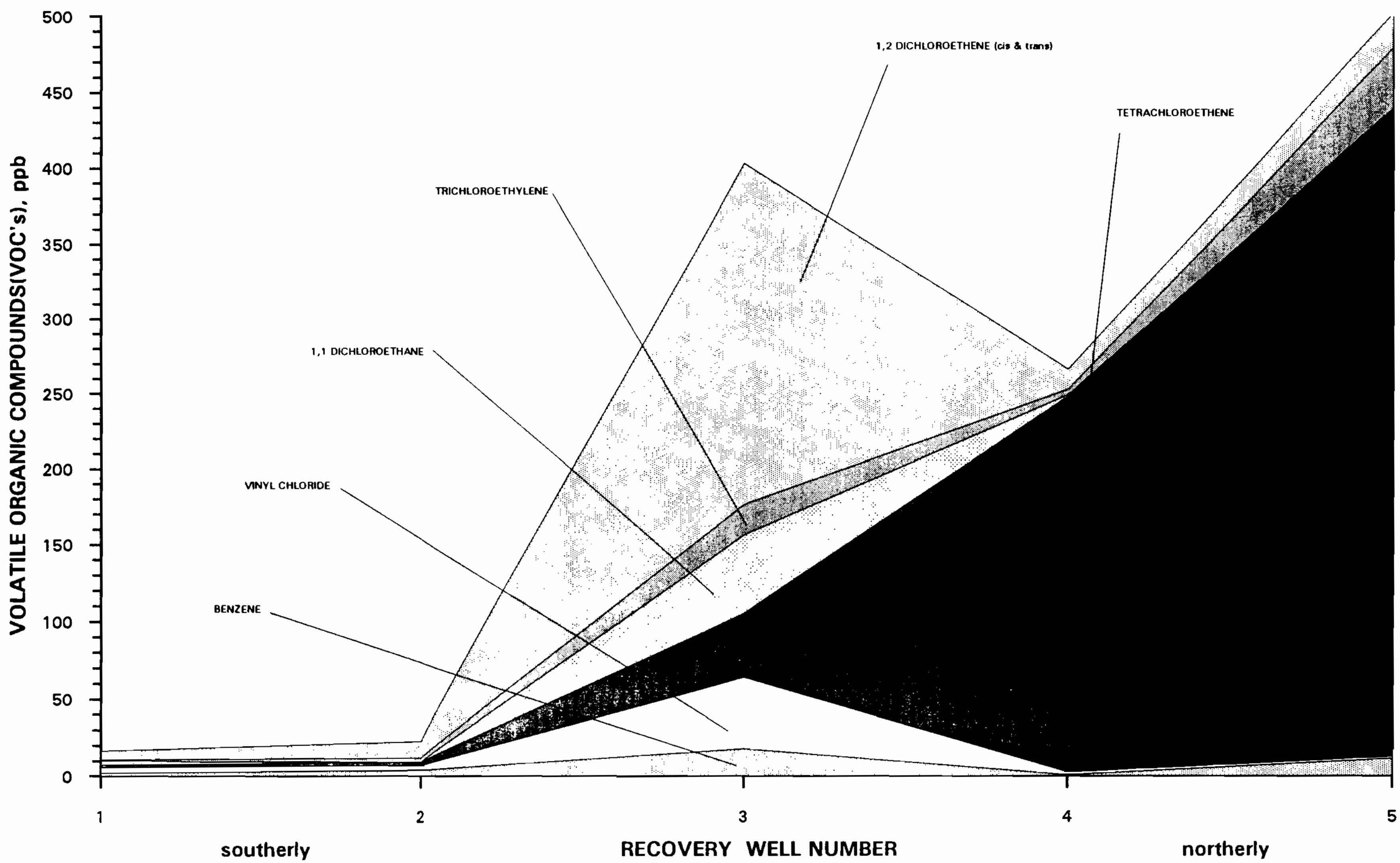
As shown in Tables 14 and 17 in Appendix E, total VOC concentrations in the groundwater monitoring well samples had decreased from the third to the fourth quarter, and had shown a decreasing trend in the remediation well samples since the third quarter (see Figures 7 through 10). Since the reduction in VOC concentrations were found to occur across the entire wellfield regardless of the type of VOC's being captured, this phenomenon in part may be related to the physical response of the aquifer to pumping. This interpretation is supported by recent U.S.G.S. studies of pump and treat systems at Superfund sites which have suggested that sorbtion/desorbtion of contaminants play an important role in determining influent concentrations. Apparently, according to the studies,influent concentrations at treatment facilities typically decrease after the initial desorbtion of contaminants from the aquifer skeleton.

However, the reduction in total VOC at monitoring well #7B (located downgradient of the Claremont Polychemical site) is clearly the result of a decrease in concentration of tetrachloroethene (PCE). Evaluation of the historic data from well 7B (see Appendix A - hydrochemical profile) showed a steadily increasing concentration of PCE (from 71 to 346 ug/l) up until the fourth quarter 1993 where the concentration of PCE decreased to 110 ug/l. This historically increasing trend is most likely the result of movement of a contaminant slug towards monitoring well 7B. Although further data evaluation is required

LKB 8086-12, IVOCSEC.XLC, ANNREP, FIG 13,6/25/93, REV 8/27/93

FIGURE 13

AVERAGE DISTRIBUTION OF VOC's ACROSS RECOVERY WELLFIELD DURING THE INITIAL OPERATIONAL YEAR



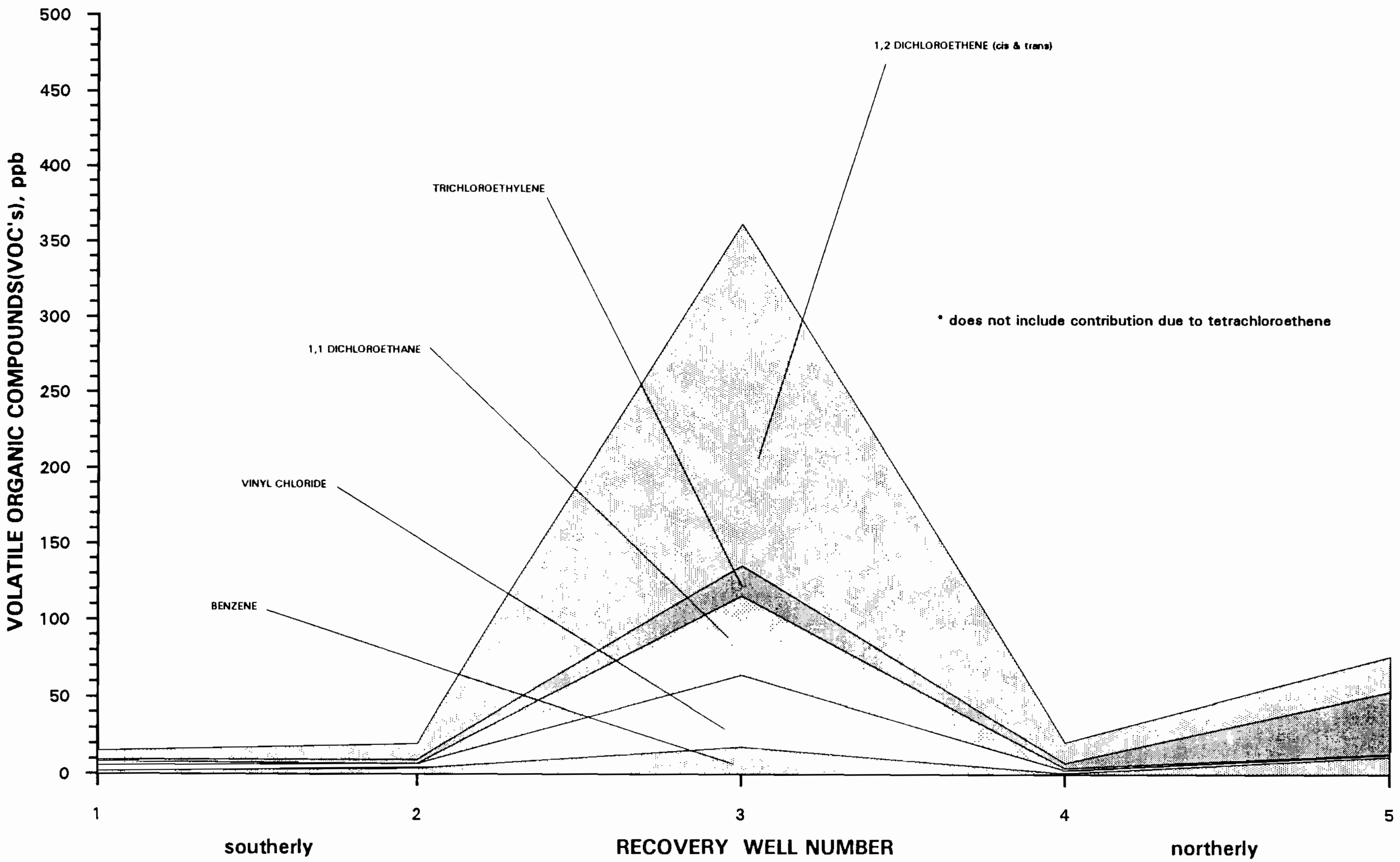
TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

LKB 8066-12, INEWSEC.XLC, ANNREP, FIG 14, 7/14/93, REV.8/27/93

FIGURE 14

AVERAGE DISTRIBUTION* OF VOC's ACROSS RECOVERY WELLFIELD DURING THE INITIAL OPERATIONAL YEAR



TOWN OF OYSTER BAY GROUNDWATER TREATMENT FACILITY

LOCKWOOD, KESSLER & BARTLETT, INC.
CONSULTING ENGINEERS SINCE 1889 SYOSSET, NEW YORK

to verify this trend, the fourth quarter decrease in tetrachloroethene appears to indicate the capture of slug #2 by the recovery well system. The removal and treatment of the highly concentrated part of the slug from the aquifer would reduce (i.e., dilute) wellfield VOC concentrations because progressively less contaminated groundwater would be captured.

With an estimated groundwater flow rate of approximately two feet per day in the capture zone, groundwater and thus VOC contamination has been captured within a distance of about 750 feet from the recovery wells since the start of pumping in April, 1992. With continued pumping and remediation of the plume in the vicinity of well 7B, the tetrachloroethene concentrated plume in the vicinity of well cluster #8 (located near the south side of the Claremont Polychemical site) should move closer to recovery wells RW-3, RW-4, and RW-5. Consequently, at some time in the future, concentrations of VOC's should begin to show an increasing trend in those recovery wells.

Representatives of the various regulatory agencies and other interested parties have been alerted to these findings. However, additional hydrogeological study is required to further establish the relationship that apparently exists between elevated VOC levels in certain recovery wells and the Claremont Polychemical site.

5.2 **Recommendations**

5.2.1 Groundwater Treatment Facility

Certain enhancements performed to the facility's control systems during the preceding year to correct extensive storm-related damage helped to increase on-line performance significantly. Continued preventative maintenance and facility improvements will be implemented as required.

Under the current operating conditions, the analytical results complied during the initial year of operation do not support the need for additional groundwater or air stripper exhaust treatment units at this time.

Continual "acid washes" of the air stripper internals is critical to maintain treatment facility performance. Experience has shown that, in addition to iron fouling, the air stripper packing also supports what appears to be biological growth. This growth has not been identified and could feed on oxidized iron and/or the trace organic contamination found in the groundwater. Presently, this condition is controlled by the "acid wash" procedures. In an effort to minimize chemical waste by-products, additional available control procedures have not yet been implemented . This may need to be readdressed if excessive foaming in the acid wash tank continues.

Periodic inspections of the air stripper internals should be continued as described in the operating manual for this facility. An inspection done in February 1993 revealed some evidence of channeling, as previously mentioned. Follow-up inspections should be scheduled and provisions made to correct this deficiency.

In addition to maintaining and enhancing the facility operation as previously discussed, the Town will continue the GTF monitoring programs put into place since startup. This data, collected from a variety of sources, will form the basis for future facility improvements or adjustments, as required.

5.2.2 Groundwater Monitoring Program

Data presented in Appendix F and analyzed in this report indicates that the average system flows during the first operational year were sufficient to maintain hydraulic control over the full extent of the VOC plume. Therefore, modification to the system pumpage is not required at this time and recovery wells can continue to be pumped at their current rates.

Furthermore, the frequency of hydraulic monitoring can be reduced from monthly to quarterly. To provide for efficient data collection, the quarterly hydraulic monitoring can be timed to coincide with the on-going quarterly groundwater sampling program. Any reduction in testing frequency will require concurrence of the regulatory agencies.

Some reduction in flow from the recovery wellfield may be possible without compromising hydraulic control of the VOC plume. Flow reduction may be accomplished by throttling flow from the wellfield or selective wells, taking one or more wells out of operation for some period of time or a combination of these techniques. Although some cost savings can be realized if flow reduction is implemented, the real benefit is in reducing the hydraulic loading on the facility recharge basin. To determine the minimum wellfield pumpage required to maintain proper containment, the flow time can be reduced incrementally (10 percent), and the frequency of hydraulic monitoring increased to weekly until a new capture zone is established.

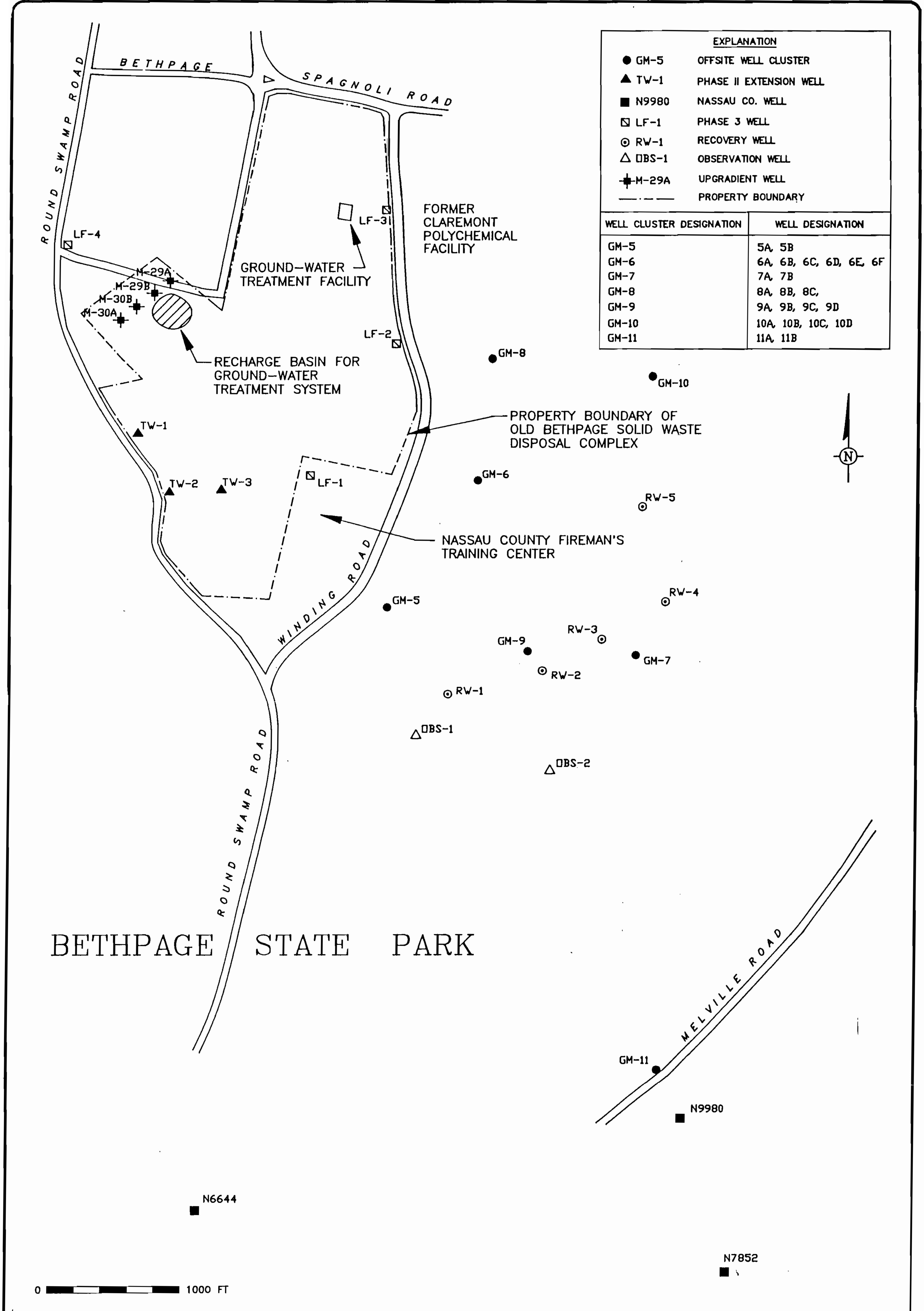
The quarterly groundwater sampling program should be continued without change. However, since a portion of the VOC contamination detected may be attributable to sources other than the landfill (i.e., the Claremont Polychemical site and the Fireman's Training Center), additional data is required to more fully establish the relationship and to develop an effective contaminant/treatment strategy.

Any further investigation should include the sampling of all existing wells at the landfill site and around the Claremont Polychemical site, as well as the installation and sampling of: 1) two additional well clusters between the Claremont Polychemical site and the recovery wellfield; and 2) one additional well cluster downgradient of the currently recognized southern extent of the VOC plume. In addition since well #9A was found damaged during the fourth quarter, that well should be repaired or replaced so that hydraulic monitoring can be continued in that well.

APPENDIX A

LOCATION PLAN
"LINE OF SECTION - HYDROCHEMICAL PROFILE"
OCTOBER, 1992

DWG DATE: 7-22-92	PRJCT NO.: NY02807	FILE NO.: 1492	DRAWING: LKB-BASE	CHECKED: BC	APPROVED: CSG	DRAFTER: GS



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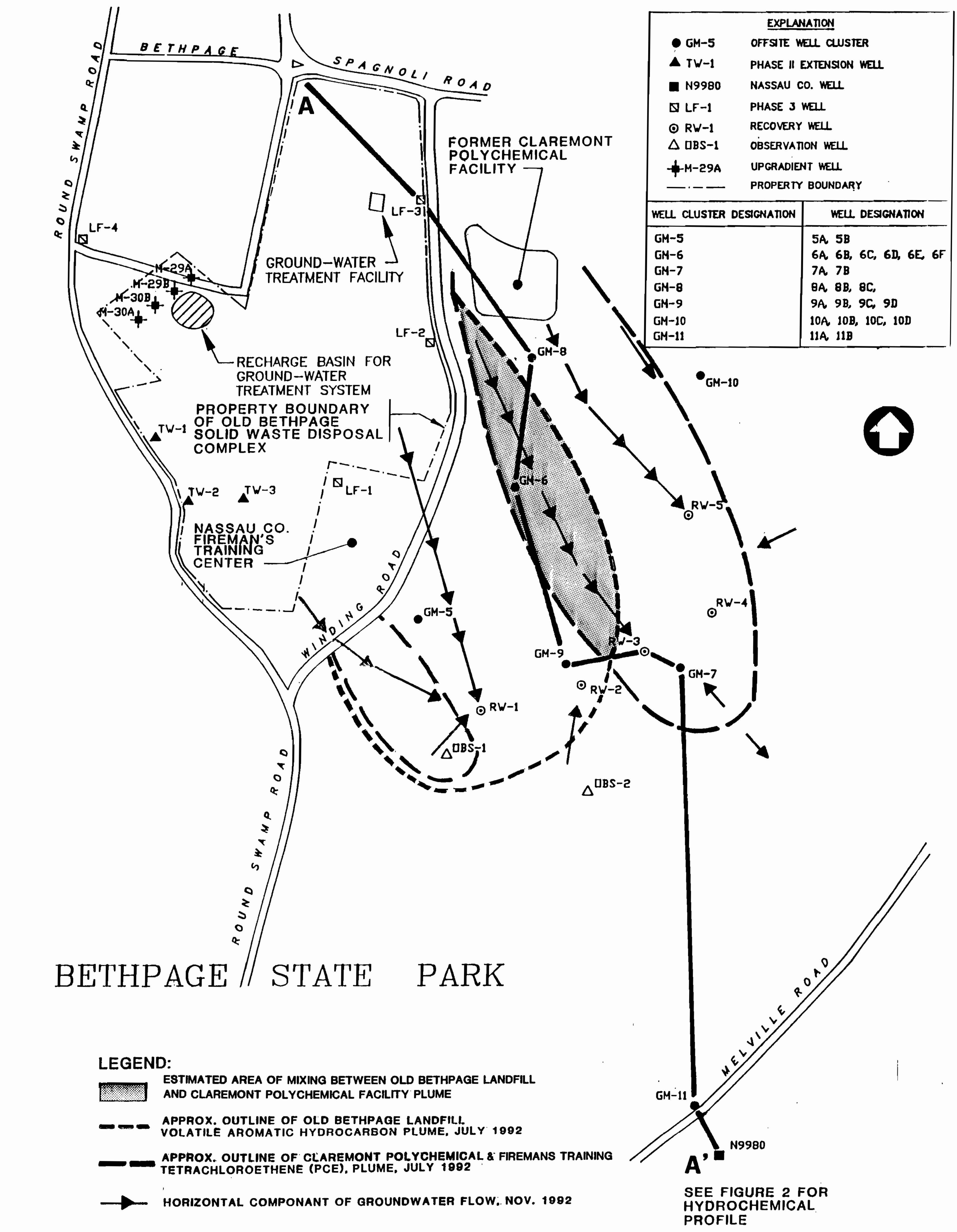
LOCATION PLAN

LOCKWOOD, KESSLER, AND BARTLETT, INC.
AND THE TOWN OF OYSTER BAY, OLD BETHPAGE, NEW YORK



SOURCE: GERAGHTY AND MILLER, INC. ENVIRONMENTAL SERVICES, 1992

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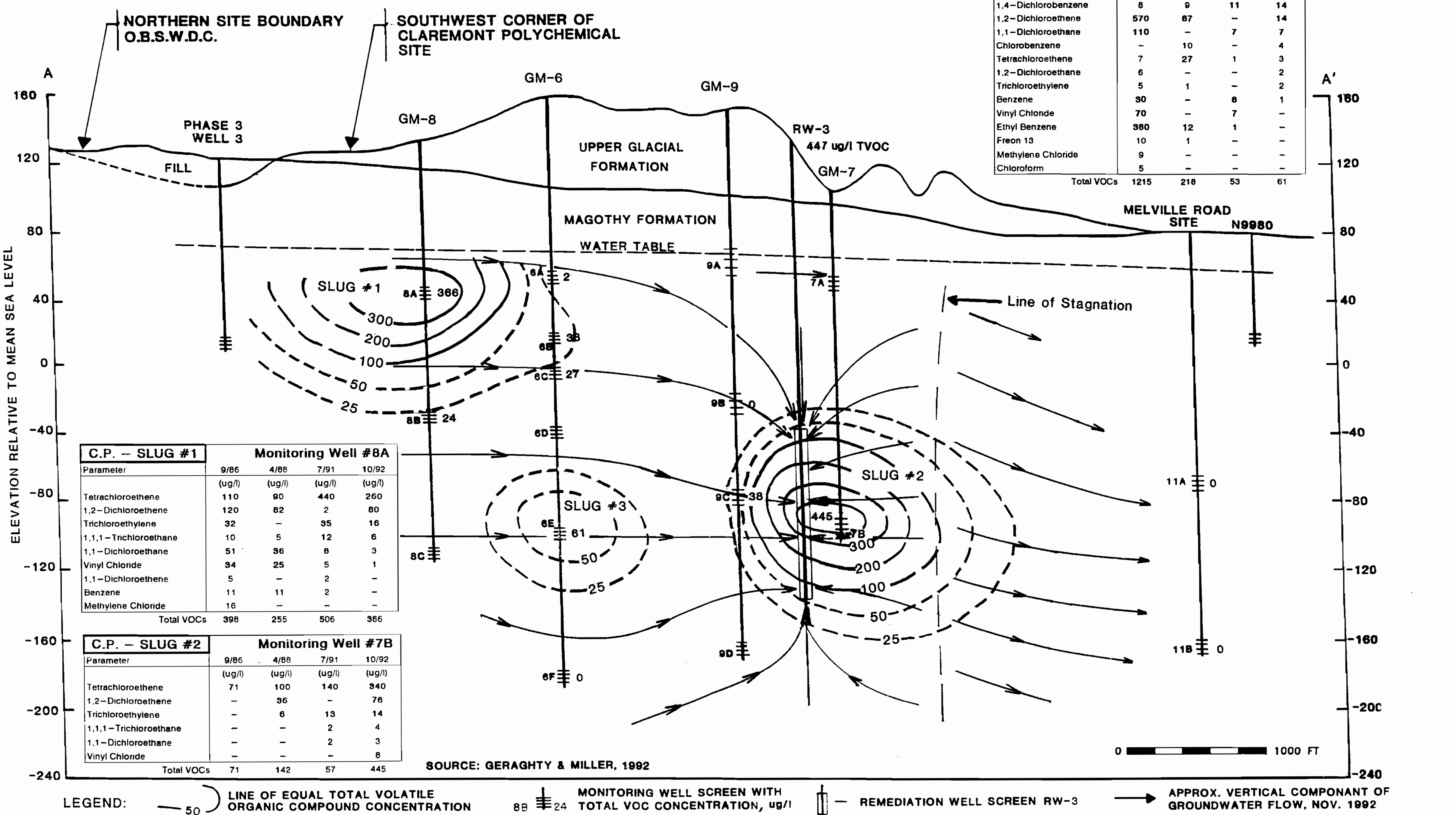
LINE OF SECTION-HYDROCHEMICAL PROFILE
OLD BETHPAGE LANDFILL AND VICINITY



O.B. – SLUG #3 — Monitoring Well #6E

Parameter	9/86 (ug/l)	4/88 (ug/l)	7/91 (ug/l)	10/92 (ug/l)
1,2- Dichlorobenzene	–		17	13
1,4-Dichlorobenzene	8	9	11	14
1,2-Dichloroethene	570	67	–	14
1,1-Dichloroethane	110	–	7	7
Chlorobenzene	–	10	–	4
Tetrachloroethene	7	27	1	3
1,2-Dichloroethane	6	–	–	2
Trichloroethylene	5	1	–	2
Benzene	30	–	8	1
Vinyl Chloride	70	–	7	–
Ethyl Benzene	380	12	1	–
Freon 13	10	1	–	–
Methylene Chloride	9	–	–	–
Chloroform	5	–	–	–
Total VOCs	1215	218	53	61

C.P. – SLUG #1 — Monitoring Well #8A

Parameter	9/86 (ug/l)	4/88 (ug/l)	7/91 (ug/l)	10/92 (ug/l)
Tetrachloroethene	110	90	440	260
1,2-Dichloroethene	120	82	2	80
Trichloroethylene	32	–	35	16
1,1,1-Trichloroethane	10	5	12	6
1,1-Dichloroethane	51	36	8	3
Vinyl Chloride	34	25	5	1
1,1-Dichloroethene	5	–	2	–
Benzene	11	11	2	–
Methylene Chloride	16	–	–	–
Total VOCs	398	255	506	366

C.P. – SLUG #2 — Monitoring Well #7B

Parameter	9/86 (ug/l)	4/88 (ug/l)	7/91 (ug/l)	10/92 (ug/l)
Tetrachloroethene	71	100	140	340
1,2-Dichloroethene	–	36	–	76
Trichloroethylene	–	6	13	14
1,1,1-Trichloroethane	–	–	2	4
1,1-Dichloroethane	–	–	2	3
Vinyl Chloride	–	–	–	8
Total VOCs	71	142	57	445

LKB

HYDROCHEMICAL PROFILE-OCTOBER 1992
IN THE VICINITY OF THE OLD BETHPAGE LANDFILL

APPENDIX B

"AIR STRIPPER STACK EMISSIONS SURVEY"
JULY, 1993
(FOURTH QUARTER RESULTS)

OLD BETHPAGE LANDFILL
OYSTER BAY SOLID WASTE DISPOSAL COMPLEX
AIR STRIPPER STACK EMISSIONS TEST PROGRAM

Initial Year of Operation

1992 - 1993 Fourth Quarterly Report

Prepared for:

Lockwood Kessler & Bartlett, Inc.
One Aerial Way
Syosset, New York 11791

Prepared by:

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, New York 11590

JULY 1993

INITIAL YEAR OF OPERATION
FOURTH QUARTERLY REPORT
OBSWDC AIR STRIPPER TEST PROGRAM

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FOURTH QUARTERLY REPORT
OBSWDC AIR STRIPPER TEST PROGRAM

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FOURTH QUARTERLY REPORT
OBSWDC AIR STRIPPER TEST PROGRAM

1.0 INTRODUCTION

The Town of Oyster Bay entered into a Consent Decree (83CIV5357) with the New York State Department of Law (DOL) regarding remediation efforts at the Oyster Bay Solid Waste Disposal Complex (OBSWDC). The Decree requires, among other items, quarterly stack emissions testing of the air stripper. The air stripper was constructed to remediate an offsite groundwater plume.

This report has been prepared by RTP Environmental Associates, Inc. (RTP), the subcontractor for conducting and evaluating the air stripper emissions tests. This report is the fourth in a series of quarterly reports that will provide data on the individual air emissions tests being performed by RTP. The report provides a brief summary of sampling procedures and analytical methods; a presentation of data collected during the test; an analysis of the data including comparisons to the Consent Decree emission limits used in facility design; and an air quality modeling analysis.

The tetrachloroethene Annual Guideline Concentration (AGC) value of 0.075 ug/m^3 stated in the latest draft Air Guide-1 document (NYSDEC, 1991a) has been changed by the New York State Department of Environmental Conservation (NYSDEC) to 1.2 ug/m^3 (NYSDEC,1991b). This change was first reflected in the third quarter report. The first and second quarter tetrachloroethene results will be reevaluated with the new AGC value and presented later in the annual air stripper monitoring summary report. The annual report will include an overall analysis of all tests combined for direct comparison to the applicable guidelines.

2.0 SAMPLING AND ANALYSIS PROCEDURES

Prior to initiating the stack testing, RTP developed and submitted a monitoring and analysis protocol (RTP, 1992) for the quarterly tests to the NYSDEC for approval. The specific sampling and analysis procedures are fully defined in a series of documents including the project scope of work and subsequent correspondence with the NYSDEC and Lockwood, Kessler & Bartlett, Inc. (LKB). NYSDEC gave formal protocol approval on May 14, 1992 (NYSDEC,1992a). The approved protocol detailed the following quarterly monitoring parameters:

- Monitor air stripper operations continuously. Monitor process parameters including all five individual recovery well flow rates in gallons per minute (GPM), system flow rate (well total/pump station tank influent - GPM), air stripper influent flow (GPM), pressure filter flow (final holding tank effluent flow - GPM), air stripper blower pressure (inches H_2O), air stripper blower flow rate in cubic feet per minute (CFM), and status of operation. Record the above mentioned process parameters every 10 minutes during the test program. Record air stripper groundwater inlet totalizer readings at the beginning and end of each VOST run to calculate the total system flow (gallons of groundwater processed) per VOST run.

- Determine air stripper exhaust concentrations of targeted Volatile Organic Compounds (VOCs) presented in Table 1 by utilizing the Volatile Organic Sampling Train (VOST) procedure as outlined in EPA SW846 Method 0030. Perform three (3) VOST tests consisting of four (4) 40-minute VOST runs (total of twelve (12) 40-minute VOST runs). Utilize VOST train flow rate of 0.1 Lpm and a probe temperature of $\geq$265°F. Analyze all VOST samples for targeted VOCs (Table 1) by Desorb Purge Trap Desorb Gas Chromatography Mass Spectrometry (DPTD GC/MS) in accordance with EPA SW846 Method 5040/8240.

- Determine air stripper exhaust ammonia mass flow rate via air stripper influent and effluent water ammonia content and influent and effluent water flow rates (mass balance). Collect one influent and one effluent air stripper water sample at the beginning and end of each VOST test for a total of two influent and two effluent samples per test and six samples of each per quarterly field effort. Analyze all water samples for ammonia in accordance with EPA Method 350.3. Ammonia was determined potentiometrically using an ion selective ammonia electrode and pH meter.

- Determine the air stripper volumetric flow rate in accordance with EPA Methods 1 and 2 before and after each VOST test (every four (4) VOST runs). Flow rate data is used to determine air stripper exhaust VOC mass emission rates and ammonia concentrations.

The NYSDEC also approved an RTP recommended change to the protocol used in the first quarterly test (NYSDEC, 1992b). The VOST sample run times were changed from 40 minutes to 20 minutes with an increase in the VOST sampling rate from 0.1 Lpm to 0.2 Lpm. This change was made because of the very low flow rates that must be maintained over the entire 40 minute sampling period by the flow control module. The new sampling rate and duration were first implemented during the second quarterly test program and have been used since. The air stripper stack sampling program was based on achieving a combined sampling and analytical method lower quantitation limit (ug/m^3) that, when modeled, is less than the lowest target compound ambient air AGC at the maximum point of impact.

The analytical laboratories selected for this project were Research Triangle Laboratories (RTL) and EcoTest Laboratories (EcoTest). RTL provided the required analytical gas chromatograph-mass spectrographic services to identify and quantify all substances listed on the Target Compound List (TCL) except ammonia. The TCL was based on the Consent Decree and is provided in Table 1. EcoTest provided ion specific electrode water analysis services to identify and quantify ammonia emissions.

All sampling equipment was calibrated before and after each quarterly field effort. Equipment pre and post calibrations are presented in Appendix A.

3.0 DISCUSSION OF RESULTS

The following section presents a discussion of results for the fourth quarterly stack test at the OBSWDC air stripper on March 25, 1993. Results of quarterly measured monitoring parameters (process operations, VOC and ammonia emissions) detailed in the test protocol and outlined in Section 2.0, will be presented in this section including supplemental ambient VOST data. A comparison of the following test results to Consent Decree limits and ambient air guideline concentrations will be presented in Section 4.0. In all, the testing was within the general parameters and conditions outlined in the test protocol and the results as discussed below are considered valid for this quarter.

3.1 Air Stripper Operational Data

The facility operations were monitored on a continuous basis during the performance of the stack test. Site personnel kept detailed records of well flows, air stripper flow, air blower flow and blower pressure.

Table 2 summarizes the operational data for the groundwater treatment facility on the day of the air stripper stack test. Operations data during each stack test performed by RTP are also provided in the table. All major unit processes were operating normally during the entire period of the test. Process data is presented in Appendix B. Air stripper exhaust flow rates measured at the stack in accordance with EPA Methods 1 and 2 are presented in Section 3.2 along with VOC concentration results.

3.2 Air Stripper VOST Results

Tables 3 through 5 provide the nanograms per liter (ng/l) air concentrations for each TCL constituent detected during the twelve (12) VOST runs performed by RTP at the air stripper exhaust stack. A test is comprised of four (4) individual 20-minute VOST runs. The test averages (J, K and L) are provided in Table 6 along with the average for all test runs. Several compounds were identified with the most prevalent being tetrachloroethene. There was no condensate in any of the test samples primarily because of the low (4 liter) total sample volume required for each test run. Field and trip blank samples were collected. There is no indication that contamination was present in the blank sample tubes. This is described in the RTL report presented in Appendix C. Field data sheets are presented in Appendix D.

In-stack measurements at the facility were made of pressure differential, temperature and dew point. This data was used to calculate the air stripper volumetric flow rate for each VOST test and to correct each individual VOST run sample volume to air stripper exhaust stack conditions. VOST test volumetric flow rates and corrected VOST run sample volumes are presented in Tables 3 through 6. EPA Method 2 field data sheets are presented in Appendix D.

Air stripper influent and effluent water samples were collected and analyzed for target VOC content. Table 7 provides a direct comparison between stack VOC concentrations (via mass balance) as determined by water analyses (water samples collected during VOST Run 37) and by VOST stack test (Run 37 VOC results). In general, the water analyses suggested lower concentrations of VOCs. Influent and effluent water VOC results are presented in Appendix E.

3.3 Air Stripper Ammonia Emission Results

Influent and effluent water samples were collected to evaluate the release of ammonia via a net difference (mass balance) method. A summary of the emission rates and other data are provided in Table 8. Tests 10, 11 and 12 correspond to stack gas emission test groups J, K and L, respectively. As seen in the first, second and third quarterly air stripper tests, negative ammonia mass emission rates were observed using only the proposed mass balance technique. Water ammonia analyses are presented in Appendix F. In addition to the mass balance technique, RTP measured ammonia emissions at the air stripper exhaust stack during the fourth quarterly sampling event in accordance with modified NIOSH P&CAM Method 205 (silica gel tubes impregnated with 0.1N sulfuric acid, analyzed by colorimetric methodology). The silica gel tubes were analyzed by Environmental Health Laboratories. Concurrent ammonia stack tests yielded the following results: < 135 ug/m^3 (Test 10), < 174 ug/m^3 (Test 11) and < 170 ug/m^3 (Test 12). For reporting purposes, RTP will use measured stack ammonia emissions data for comparison with discharge requirements and ambient air guideline values in section 4.0. Field data sheets are presented in Appendix D and rotameter calibrations are presented in Appendix A. Ammonia stack test analytical results are presented in Appendix G.

3.4 Ambient Air VOST Results

Ambient VOST samples were collected at two locations during the air stripper tower stack test. Sample 1-4U was collected upwind of the tower to provide background VOC concentrations in the air approaching or being drawn into the tower. The upwind sample location was 75 feet due north of the air stripper tower at the base elevation of the tower. Sample 1-4D2 was collected downwind of the tower to determine combined VOC impacts from background sources and the operation of the tower. The downwind site was 406 feet south southwest of the air stripper tower with an elevation of 16 feet above the air stripper tower base.

The analytical TCL results for the ambient VOST samples are presented in Table 9. Nine (9) VOCs were detected above the lower quantification limit in the downwind sample. The upwind sample included the same nine (9) VOCs.

VOCs detected at the downwind sampling location were also detected in the air stripper exhaust stack (see Table 6) with the exception of three VOCs: carbon tetrachloride, ethylbenzene and toluene. In addition, 1,1-dichloroethane, cis-1,2-dichloroethene and vinyl chloride were detected in the stack exhaust but were not detected in the ambient air. An ambient air field blank (A-FB(A)) and trip blank (S-TB4(A)) were collected and both were free of any quantifiable contamination. The respective upwind and downwind air samples with total air volumes of 299 and 203 liters did not contain sufficient moisture to have a collectable condensate sample. Rotameter calibrations are presented in Appendix A. Field data sheets are presented in Appendix D, and RTL ambient VOST results are presented in Appendix C.

4.0 COMPARISON OF EMISSION RATES TO CONSENT DECREE LIMITATIONS

The Consent Decree stipulates air stripper discharge concentration requirements which are provided in Table 10. A direct comparison of observed discharge concentrations to the limits tabulated in the Consent Decree, which is the first step in the analysis, indicates that potentially four (4) compounds (benzene, 1,2-dichloroethane, tetrachloroethene and vinyl chloride) exceed the specified limits. Several other targeted VOCs (bromodichloromethane, bromoform, dibromochloromethane, 1,3-dichlorobenzene, 1,2-dichloroethane, and/or freon 13) may have exceeded, but were not identified as exceeding Consent Decree discharge requirements since their individually assigned discharge limit (ranging from 0.03 to 20 ug/m^3) was lower than the combined sampling and analytical lower quantitation limit (57.3 ug/m^3). This limitation results from the combination of the wide range of concentrations observed in the tower outlet and the limited range of the analytical methods.

In Section 5.4, VOC and ammonia emissions observed during the fourth quarterly tests are modeled using a dispersion program. Modeled emission impacts are then compared to former and current AGCs.

This was the fourth and final quarterly stack test performed during the first year of testing at the air stripper. Future and past stack test data will be combined to evaluate facility operations on an annual basis.

5.0 AIR QUALITY MODELING

An air quality impact analysis using an approved USEPA model was prepared based on stack and ambient air VOST test data. Predicted model values were compared to observed ambient air VOST test data and NYSDEC ambient air annual guidelines as provided in Air Guide-1.

The analysis was performed to determine if the annual air quality impacts of the air stripper operation exceed ambient air quality guidelines. The ISCST2 Model was selected for this analysis. The air stripper emission rates and its associated source parameters, as tested in the first year fourth quarterly stack test, were used in the modeling analysis. Meteorological data used in the analysis are presented in Appendix H and the model results are presented in Appendix I.

5.1 Modeling Methodology

The ISCST2 Dispersion Model (EPA, 1992) is a restructured and reprogrammed version of the original ISCST Model. This model provides the ability to model emissions from a wide range of sources including elevated point source emissions. The basis of the model is the straight-line, steady-state Gaussian plume dispersion equation. It has the ability to take into account building downwash effects for different wind angles, incorporates local terrain information and accepts hourly meteorological data. The user can select various time period averages including annual average impacts. Since ISCST2 is best suited for this case, it has been selected for evaluating the air stripper tower air quality impacts on receptors surrounding the OBSWDC.

5.2 Model and Source Configuration

The ISCST2 Model has a variety of run options that are useful in customizing the model for a specific application. Prior to running the model for predicting annual impacts, a validation effort is prepared based on the data recorded during the quarterly test program. General model options, source/receptor configurations and meteorological data were then input into the model to predict the maximum annual average impacts for off-property receptors associated with the air stripper tower.

The following regulatory default options are applied in the simulation including:

- o stack-tip downwash,
- o buoyancy-induced dispersion,
- o calm wind speed processing routine,
- o upper bound concentration estimates for sources influenced by building downwash from a super-squat building,
- o regulatory default wind speed profile exponents and
- o regulatory default vertical potential temperature gradients.

The source parameters utilized in the model are based on first year fourth quarterly air stripper exhaust tests. The important parameters are air stripper base location and elevation, tower height, stack exit temperature, inner stack diameter of the exhaust section, exhaust volume flow rates and VOC emission rates. Since the air stripper building downwash is included, the building crosswind dimensions for various wind directions are also input into the model. The base elevation is 42.8 meters, the tower height is 16.7 meters, the stack diameter is 1.02 meters and other parameter values vary with the tower's operation.

Receptors used in the modeling analysis covered a four (4) kilometer square area around the air stripper. Two receptor grids with 200 meter and 100 meter spacing were used along with a separate series of property line receptors. The above surface height of each receptor was one (1) meter.

One year of onsite meteorological data is used in the annual modeling analysis. This data set was collected from atop the Oyster Bay Landfill by the Town of Oyster Bay Industrial Development Authority in 1985. The meteorological data included wind speed, wind direction, ambient air temperature, humidity and turbulence level. Mixing heights for this period were based on Holzworth seasonal mixing height data (EPA, 1972). These data, along with the model outputs for specific conditions, will be provided in the final report of the first year's test program for this project.

5.3 Modeling Validation

The objective of the model validation process is to verify that the model set-up and results compare favorably with available onsite ambient air sampling results.

Both upwind and downwind ambient air concentrations along with the onsite meteorological data were collected during the first year fourth quarterly test effort. These data were collected concurrent with the air stripper emissions test period described in Section 3.0. For this case, tetrachloroethene was selected as the appropriate compound for the model validation analysis. All other VOCs emitted from the air stripper had impacts that were at or below the sampling and analytical lower quantification limits established for the ambient air samples and therefore could not be applied to validate the model.

The background tetrachloroethene concentration represents the ambient level upwind of the air stripper. This sample was collected to the north of the air stripper tower under average north northeasterly wind conditions. As shown in Table 11 the measured upwind tetrachloroethene concentration is 0.635 micorgrams per cubic meter. The downwind tetrachloroethene sample was collected to the south southwest of the tower. The downwind concentration represents the summation of the background and the air stripper impact for tetrachloroethene. As indicated in Table 11, the measured downwind tetrachloroethene concentration is 1.53 micrograms per cubic meter. Thus, the contribution based on the observed data associated with the air stripper is 0.895 micrograms per cubic meter. The modeled impact for the testing period is 1.79 micrograms per cubic meter. This value is obtained by multiplying the normalized air stripper impact of 94.2 micrograms per cubic meter based on meteorological conditions and facility operations during the testing period by the observed tetrachloroethene emission rate. The ratio of the observed to the predicted concentration value during the test period is 0.500.

These observed versus predicted results indicate that there is reasonable correlation between the two methods of determining air stripper impacts for specific short-term periods. Similar modeling analyses have been performed during each quarterly test to determine compliance with ambient standards and then for all available data at the conclusion of the first year of the field study.

5.4 Modeling Results

The off-property maximum annual normalized impact predicted by the ISCST2 Model for the OBSWDC air stripper tower is 7.52 micrograms per cubic meter. This value is based on a one gram per second normalized emission rate and one year of onsite meteorological data as well as the stack parameters as tested in the first year fourth quarter test.

The impacts predicted for all compounds identified in the first year fourth quarterly air stripper emission tests are presented in Table 12. They are derived by converting the air stripper exhaust stack VOC concentrations shown in Table 10 to grams per second values using the average observed air stripper exhaust flow rate of 8,100 actual cubic feet per minute (see Table 6). These emission rates were then multiplied by the off-property maximum annual normalized impact (7.52 ug/m^3) shown above.

The modeled maximum annual impacts were compared to the New York State AGCs that were in place at the time the Consent Decree was developed and to the current (as of June 1991; November 1991 for tetrachloroethene) AGCs. As shown in Table 12, each compound specific annual impact is below the AGCs that were in effect at the time the Consent Decree was formalized and all current (as of 6/91 or 11/91 for tetrachloroethene) applied AGCs.

As mentioned earlier in Section 2.0, the air stripper stack sampling program was based on achieving a combined sampling and analytical method lower quantitation limit (LQL; fourth quarter LQL $\leq$ 57.3 ug/m^3) that, when modeled (modeled fourth quarter LQL $\leq$ 0.00165 ug/m^3), is less than the lowest target compound ambient air AGC (0.02 ug/m^3) at the maximum point of impact. Since the modeled LQL ($\leq$0.00165 ug/m^3) is less than the lowest target compound AGC (0.02 ug/m^3) all "non-detect" target VOC (see Section 4.0) impacts are considered insignificant. A review of all first year quarterly monitoring and modeling data is necessary to confirm or deny the potential for exceeding the current State guidelines. The first year air stripper monitoring summary report will be submitted after the final fourth quarter report.

6.0 CONCLUSIONS AND RECOMMENDATIONS

A comparison of the air quality impacts (see Table 12) at the worst-case off-property receptor was made with the NYSDEC ambient AGCs in effect at the time of the signing of the Consent Decree. The comparison indicates that the air stripper emissions do not exceed any of the AGCs in effect at that time. The stack test emission rates were used to predict expected annual air quality impacts using an approved USEPA model. The model results also indicate that none of the target compounds have an impact that exceeds the level of the current (as of June 1991; November 1991 for tetrachloroethene) AGCs.

REFERENCES

EPA, 1972. Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States, George C. Holzworth, Division of Meteorology, January 1972.

EPA, 1992. Users Guide for the Industrial Source Complex (ISC2) Dispersion Models, EPA-450/4-92-008a OAQPS, Research Triangle Park, North Carolina 27711

NYSDEC, 1991a. New York State Air Guide-1, Division of Air Resources, New York State Department of Environmental Conservation (NYSDEC), Albany, New York

NYSDEC,1991b, Letter submitted to NYSDEC Regional Air Pollution Control Engineers, Bureau Directors and Section Chiefs from Mr. Tom Allen (Director, Division of Air Resources) stating the new 1.2 ug/m^3 AGC for perchloroethylene (tetrachloroethene), November 22, 1991.

NYSDEC,1992a. Letter submitted to Mr. Karl J. Leupold (Commissioner of the Town of Oyster Bay) from Mr. Robert C. Knizek (NYSDEC) approving the March 1992 sampling protocol for the air stripper monitoring and assessment program, May 14, 1992.

NYSDEC,1992b. Letter submitted to Mr. Scott Mills (RTP) from Mr. Robert Waterfall (NYSDEC) approving sampling protocol changes resulting in a 20 minute VOST run sample time at a sampling rate of 0.25 Lpm (nominal), August 18, 1992.

RTP,1992. Sampling Protocol for the Air Stripper Monitoring and Assessment Program at the Old Bethpage Solid Waste Disposal Complex, RTP Environmental Associates, Inc., March 1992.

TABLE 1

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

PROGRAM TARGET COMPOUND LIST
AND NYSDEC AMBIENT GUIDELINES

VOC COMPOUND NAME	TOXICITY	CURRENT SGC (ug/m3)		CURRENT AGC (ug/m3)		FORMER AGC (ug/m3)	CONSENT DECREE LIMITS***
Benzene	H	30	(p)	0.12	(E,U)	100	100
Bromodichloromethane	H			0.02	(D)	0.03**	0.03
Bromoform	M	1,200	(t)	12	(T)	11.9**	16.7
Carbon Tetrachloride	H	1,300	(r)	0.07	(E,U)	100	100
Chlorobenzene	M	11,000	(p)	20	(E)	1,170	1,170
Chloroethane	L	630,000	(t)	63,000	(T)	52,000	52,000
Chloroform	M	980	(r)	23	(R)	167	167
Dibromochloromethane	M			0.1	(D)	0.03**	0.03
1,2-Dichlorobenzene (o)	M	30,000	(t)	200	(E)	1,000	1,000
1,3-Dichlorobenzene (m)	M	30,000	(a)	200	(A)	714**	0.03
1,4-Dichlorobenzene (p)	M**	110,000**		700**			1,500
1,1-Dichloroethane	L	190,000	(t)	500	(E)	9,524**	2,700
1,2-Dichloroethane	M	950	(r)	0.039	(E,U)	0.2	20
1,1-Dichloroethene	H	2,000	(t)	0.02	(E,U)	66.7	66.7
cis-1,2-Dichloroethene*	M	190,000	(a)	1,900	(A)	1,880**	2,630****
trans-1,2-Dichloroethene	M			360	(D)	360**	
1,2-Dichloropropane	M	83,000	(t)	0.15	(D)	833**	1,170
Ethylbenzene	M	100,000	(t)	1,000	(T)	1,450	1,450
Freon 13*	L	43,000	(a)	530	(A)	133,333**	0.03
Methylene Chloride	M	41,000	(t)	27	(D,U)	1,170	1,170
Tetrachloroethene	M	81,000	(t)	1.2*****	(D,U)	1,120	1,120
Toluene	L	89,000	(r)	2,000	(I)	7,500	7,500
1,1,1-Trichloroethane	L	450,000	(t)	1,000	(E)	38,000	38,000
Trichloroethene	M	33,000	(r)	0.45	(D,U)	900	900
Vinyl Chloride	H	1,300	(t)	0.02	(E,U)	0.4	0.4
Xylenes (Total)	M	100,000	(t)	300	(I)	1,450	1,450******
OTHER COMPOUNDS							
Ammonia	L	4,000	(t)	360	(E)	360	360

FOOTNOTES:
SGC - Short-term guideline concentration (current as of June 1991).
AGC - Annual guideline concentration (current as of June 1991, former as of 1986, 9/89 Edition).
* Tentatively Identified Compound (TIC) using EPA SW846 Method 8240.
** Proposed Value.
*** As per Table 1 of the Final Consent Decree. Reported in micrograms per cubic meter (ug/m3).
**** Total for cis and trans Isomers.
***** Tetrachloroethene AGC currrent as of November 22, 1991.
****** 1450 total for ortho and para xylene and 1450 total for meta xylene.
Toxicity - H for high; M for moderate; and L for low by NYSDEC.
(a) - SGC based on NYSDEC structure-activity analogy.
(p) - SGC dervied from proposed ACGIH TLV-TWA (1990-1991).
(r) - SGC derived from NIOSH REL-TWA (1988).
(t) - SGC derived from ACGIH TLV-TWA (1990-1991).
(A) - AGC based on NYSDEC structure-activity analogy.
(D) - AGC derived from NYSDEC, Divison of Air Resources, Bureau of Air Toxics, Toxics Assessment Section.
(E) - AGC based on derivation by USEPA.
(I) - AGC based on RFC developed by USEPA - Integrated Risk Information System (IRIS), input pending.
(R) - AGC derived from NIOSH REL-TWA (1988).
(T) - AGC derived from ACGIH TLV-TWA (1990-1991).
(U) - AGC is the ambient air concentration which corresponds to an excess cancer risk of one in one million after lifetime exposure.

TABLE 2

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

SUMMARY OF AIR STRIPPER OPERATIONAL DATA
Fourth Quarter Test Results

VOST RUN NUMBER	WELL 1 FLOW (GPM)	WELL 2 FLOW (GPM)	WELL 3 FLOW (GPM)	WELL 4 FLOW (GPM)	WELL 5 FLOW (GPM)	SYSTEM FLOW (GPM)	STRIPPER FLOW (GPM)	PRESSURE FILTER FLOW (GPM)	BLOWER AIR FLOW (CFM)	AIR PRESSURE (Inches H2O)	GROUNDWATER PROCESSED* (gallons)
S-37	199	261	202	216	199	1,020	1,020	1,060	10,300	NA	20,400**
S-38	200	261	200	216	200	1,020	1,020	1,060	10,600	NA	20,400**
S-39	200	261	200	216	200	1,020	1,020	1,060	10,600	NA	20,300
S-40	199	261	199	216	200	1,020	1,020	1,060	10,400	NA	20,400
S-41	198	261	200	216	200	1,020	1,020	1,060	10,200	NA	20,300
S-42	198	261	198	216	200	1,020	1,020	1,060	10,300	NA	20,400
S-43	199	261	199	216	200	1,020	1,020	1,080	10,600	NA	20,300
S-44	198	261	200	216	199	1,020	1,020	1,080	10,400	NA	20,400
S-45	199	262	201	217	200	1,020	1,020	1,080	10,200	NA	20,400
S-46	196	264	200	216	199	1,020	1,020	1,070	9,930	NA	20,300
S-47	198	262	200	216	198	1,020	1,020	1,070	9,580	NA	20,400
S-48	199	261	198	217	200	1,020	1,020	1,070	9,460	NA	20,400
AVERAGE	199	261	200	216	200	1,020	1,020	1,070	10,200	NA	20,400

NOTE:
NA-Air pressure measurements were not available.
* Values determined from the air stripper inlet flow totalizer recordings.
** Value not recorded during test. Estimate based on air stripper flow values.

TABLE 3

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

AIR STRIPPER VOST RESULTS - TEST J
Fourth Quarter Test Results

Sample ID	S-37	S-38	S-39	S-40	Condensate	Average
Sample Volume (L)*	4.16	4.09	4.07	4.13		4.11
Flow Rate (ACFM)	7,890			8,270		8,080
Stack Temperature (Deg.F)	52			54		53
Lower Quantitation Limit (ng/l)	67.3	58.7	63.9	58.1		62.0

TARGET COMPOUND	(ng/l)	(ng/l)	(ng/l)	(ng/l)	(ng)	(ng/l)
Benzene	135	147	145	131	NA	140
Bromodichloromethane					NA	
Bromoform					NA	
Carbon Tetrachloride					NA	
Chlorobenzene					NA	
Chloroethane					NA	
Chloroform					NA	
Dibromochloromethane					NA	
1,2-Dichlorobenzene (o)					NA	
1,3-Dichlorobenzene (m)					NA	
1,4-Dichlorobenzene (p)					NA	
1,1-Dichloroethane	240	244	231	237	NA	238
1,2-Dichloroethane					NA	
1,1-Dichloroethene					NA	
cis-1,2-Dichloroethene **	745	1,000	1,010	993	NA	937
trans-1,2-Dichloroethene					NA	
1,2-Dichloropropane					NA	
Ethylbenzene					NA	
Freon 13**					NA	
Methylene Chloride	67.3	73.3	68.8	67.8	NA	69.3
Tetrachloroethene	5,290	5,130	5,650	5,080	NA	5,290
Toluene					NA	
1,1,1-Trichloroethane		63.6			NA	<63.2
Trichloroethene	361	391	369	339	NA	365
Vinyl Chloride	98.6	97.8	95.8	94.4	NA	96.7
Xylenes (Total)	84.1	85.6	120	82.3	NA	93.0

NOTE:
- All blank values are below the Lower Quantitation Limit.
- < Values are used where the Lower Quantitation Limit is averaged with reported values.
- A condensate sample was not available (NA) for collection.

* Corrected to stack conditions.
** Tentatively Identified Compound (TIC).

TABLE 4

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

AIR STRIPPER VOST RESULTS - TEST K
Fourth Quarter Test Results

Sample ID	S-41	S-42	S-43	S-44	Condensate	Average
Sample Volume (L)*	4.16	4.09	4.06	4.03		4.09
Flow Rate (ACFM)	8,270			7,970		8,120
Stack Temperature (Deg.F)	54			54		54
Lower Quantitation Limit (ng/l)	52.9	58.7	54.2	59.6		56.4

TARGET COMPOUND	(ng/l)	(ng/l)	(ng/l)	(ng/l)	(ng)	(ng/l)
Benzene	132	137	128	164	NA	140
Bromodichloromethane					NA	
Bromoform					NA	
Carbon Tetrachloride					NA	
Chlorobenzene					NA	
Chloroethane					NA	
Chloroform					NA	
Dibromochloromethane					NA	
1,2-Dichlorobenzene (o)					NA	
1,3-Dichlorobenzene (m)					NA	
1,4-Dichlorobenzene (p)					NA	
1,1-Dichloroethane	231	237	239	248	NA	239
1,2-Dichloroethane			54.2		NA	<56.4
1,1-Dichloroethene					NA	
cis-1,2-Dichloroethene **	962	1,000	936	1,270	NA	1,040
trans-1,2-Dichloroethene					NA	
1,2-Dichloropropane					NA	
Ethylbenzene					NA	
Freon 13**					NA	
Methylene Chloride	67.3	68.5	61.6	62.0	NA	64.9
Tetrachloroethene	4,810	5,130	4,930	3,720	NA	4,650
Toluene					NA	
1,1,1-Trichloroethane		58.7	56.7		NA	<57.0
Trichloroethene	361	367	345	422	NA	374
Vinyl Chloride	88.9	92.9	93.6	81.9	NA	89.3
Xylenes (Total)	86.5	90.5	86.2	117	NA	95.1

NOTE:
- All blank values are below the Lower Quantitation Limit.
- < Values are used where the Lower Quantitation Limit is averaged with reported values.
- A condensate sample was not available (NA) for collection.

* Corrected to stack conditions.
** Tentatively Identified Compound (TIC).

TABLE 5

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

AIR STRIPPER VOST RESULTS - TEST L
Fourth Quarter Test Results

Sample ID	S-45	S-46	S-47	S-48	Condensate	Average
Sample Volume (L)*	4.10	4.06	4.18	4.11		4.11
Flow Rate (ACFM)	7,970			8,220		8,100
Stack Temperature (Deg.F)	54			54		54
Lower Quantitation Limit (ng/l)	53.7	54.2	52.6	53.5		53.5

TARGET COMPOUND	(ng/l)	(ng/l)	(ng/l)	(ng/l)	(ng)	(ng/l)
Benzene	144	135	134	144	NA	139
Bromodichloromethane					NA	
Bromoform					NA	
Carbon Tetrachloride					NA	
Chlorobenzene					NA	
Chloroethane					NA	
Chloroform					NA	
Dibromochloromethane					NA	
1,2-Dichlorobenzene (o)					NA	
1,3-Dichlorobenzene (m)					NA	
1,4-Dichlorobenzene (p)					NA	
1,1-Dichloroethane	220	236	227	229	NA	228
1,2-Dichloroethane					NA	
1,1-Dichloroethene					NA	
cis-1,2-Dichloroethene **	976	911	909	998	NA	949
trans-1,2-Dichloroethene					NA	
1,2-Dichloropropane					NA	
Ethylbenzene					NA	
Freon 13**					NA	
Methylene Chloride	61.0	64.0	64.6	65.7	NA	63.8
Tetrachloroethene	4,880	5,170	4,780	5,110	NA	4,990
Toluene					NA	
1,1,1-Trichloroethane	56.1	59.1	57.4	56.0	NA	57.2
Trichloroethene	390	369	359	365	NA	371
Vinyl Chloride	75.6	83.7	86.1	77.9	NA	80.8
Xylenes (Total)	87.8	93.6	88.5	105	NA	93.7

NOTE:
- All blank values are below the Lower Quantitation Limit.
- < Values are used where the Lower Quantitation Limit is averaged with reported values.
- A condensate sample was not available (NA) for collection.

* Corrected to stack conditions.
** Tentatively Identified Compound (TIC).

TABLE 6

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

AIR STRIPPER VOST TESTS RESULTS
Fourth Quarter Test Results

Test ID*	J	K	L	Average	S-FB(A)	S-TB4(A)
Sample Volume (L)**	4.11	4.09	4.11	4.10	---	---
Flow Rate (ACFM)	8,080	8,120	8,100	8,100	---	---
Stack Temperature (Deg.F)	53	54	54	54	---	---
Lower Quantitation Limit (ng/l)	62.0	56.4	53.5	57.3	20****	20****

TARGET COMPOUND	(ng/l)	(ng/l)	(ng/l)	(ng/l)	(ng)	(ng/l)
Benzene	140	140	139	140		
Bromodichloromethane						
Bromoform						
Carbon Tetrachloride						
Chlorobenzene						
Chloroethane						
Chloroform						
Dibromochloromethane						
1,2-Dichlorobenzene (o)						
1,3-Dichlorobenzene (m)						
1,4-Dichlorobenzene (p)						
1,1-Dichloroethane	238	239	228	235		
1,2-Dichloroethane		<56.4		<57.3		
1,1-Dichloroethene						
cis-1,2-Dichloroethene ***	937	1,040	949	975		
trans-1,2-Dichloroethene						
1,2-Dichloropropane						
Ethylbenzene						
Freon 13***						
Methylene Chloride	69.3	64.9	63.8	66.0		
Tetrachloroethene	5,290	4,650	4,990	4,980		
Toluene						
1,1,1-Trichloroethane	<63.2	<57.0	57.2	<59.1		
Trichloroethene	365	374	371	370		
Vinyl Chloride	96.7	89.3	80.8	88.9		
Xylenes (Total)	93.0	95.1	93.7	93.9		

NOTE:
- All blank values are below the Lower Quantitation Limit.
- < Values are used where the Lower Quantitation Limit is averaged with reported values.

* Test ID: J - Average of Runs S-37, S-38, S-39 and S-40
K - Average of Runs S-41, S-42, S-43 and S-44
L - Average of Runs S-45, S-46, S-47 and S-48

** Corrected to stack conditions.
*** Tentatively Identified Compound (TIC).
**** The Lower Quantitation Limit for the Stack Sampling Train Field Blank (S-FB(A)) and Trip Blank (S-TB4(A)) as 20 ng (mass loading limit of detection).

S-FB(A) - Fourth Quarter Stack Test Field Blank
S-TB4(A) - Fourth Quarter Test Effort Trip Blank

TABLE 7

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

COMPARISON OF AIR STRIPPER EMISSION CONCENTRATIONS
USING TWO INDEPENDENT METHODS
Fourth Quarter Test Results

CONSTITUENT	WATER INFLUENT CONCENTRATION (ug/l)	WATER EFFLUENT CONCENTRATION (ug/l)	EXHAUST STACK CONCENTRATION (ng/l)	EXHAUST STACK VOST CONCENTRATION (ng/l)	RATIO WATER/VOST
Benzene	3.96	0.04	66.1	135	0.49
Bromodichloromethane	0.00	0.00			
Bromoform	0.00	0.00			
Carbon Tetrachloride	0.00	0.00			
Chlorobenzene	0.58	0.05	8.94		
Chloroethane	1.27	0.00	21.4		
Chloroform	1.63	0.02	27.2		
Dibromochloromethane	0.00	0.00			
1,2-Dichlorobenzene (o)	0.38	0.03	5.91		
1,3-Dichlorobenzene (m)	0.06	0.02	0.675		
1,4-Dichlorobenzene (p)	1.31	0.07	20.9		
1,1-Dichloroethane	7.18	0.03	121	240	0.50
1,2-Dichloroethane	0.57	0.04	8.94		
1,1-Dichloroethene	0.25	0.00	4.22		
1,2-Dichloroethenes*	32.14	0.82	528	745	0.71
1,2-Dichloropropane	0.00	0.00			
Ethylbenzene	0.00	0.00			
Methylene Chloride	3.43	0.05	57.0	67.3	0.85
Tetrachloroethene	131.78	0.21	2,220	5,290	0.42
Toluene	0.06	0.01	0.844		
1,1,1-Trichloroethane	2.28	0.01	38.3		
Trichloroethene	9.76	0.03	164	361	0.45
Vinyl Chloride	4.38	0.00	73.9	98.6	0.75
Xylenes (Total)	1.51	0.02	25.1	84.1	0.30

NOTES:

- ug/l = micrograms per liter of water.
- ng/l = nanograms per liter of air leaving the air stripper stack.
- Exhaust Concentration: Concentration in ng/l based on water samples and VOST Run 37 water and air flow operational data (1,020 gallons per minute and 8,080 ACFM).
- Exhaust Stack VOST Concentration: Concentration in ng/l based on VOST sample Run S-37 test data collected at the air stripper exhaust stack. All blank values are below the lower quantitation limit (67.3 ug/l).
- Ratio Water/VOST: Ratio of water derived emission estimate vs. stack test VOST emission estimate.
- 1,2-Dichloroethenes - Water results reported as 1,2-Dichloroethene. VOST results reported total for both Cis (745 ug/l) and Trans (non-detected) isomers. The Cis isomer was tentatively identified via VOST.
- Water test results provided by the Town of Oyster Bay, Department of Public Works on-site laboratory.

* Tentatively Identified Compound (TIC) via VOST.

TABLE 8

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

SUMMARY OF AIR STRIPPER AMMONIA EMISSIONS
Fourth Quarter Test Results

TEST	SAMPLE ID	STRIPPER WATER AMMONIA CONC. (mg/l)	STRIPPER INFLUENT AND EFFLUENT FLOW RATE (Lpm)	MASS FLOW RATE (lb/hr)	AVG. AIR STRIPPER MASS EMISSION RATES* (lb/hr)	AVG. AIR STRIPPER MASS EMISSION RATES* (ug/m3)
10	Inlet -1	7.8	3,860	3.98		
	Outlet -1	7.0	3,860	3.57	0.41	13,500
	Inlet-2	7.0	3,860	3.57		
	Outlet-2	7.4	3,860	3.78	-0.21	-6,940
11	Inlet-3	6.8	3,850	3.46		
	Outlet-3	7.4	3,850	3.77	-0.31	-10,200
	Inlet-4	6.6	3,850	3.36		
	Outlet-4	7.2	3,850	3.67	-0.31	-10,200
12	Inlet-5	7.4	3,860	3.78		
	Outlet-5	7.2	3,860	3.68	0.10	3,300
	Inlet-6	7.3	3,860	3.73		
	Outlet-6	8.8	3,860	4.49	-0.76	-25,000
				AVERAGE	-0.18	-5,920

NOTE:
Influent and effluent water flows were found to be essentially the same.

*Calculated via air stripper influent and effluent water ammonia mass balance.

Concurrent Ammonia stack test (modified NIOSH P&CAM Method 205) yielded the following results:
Test 10 = <135 ug/m3 (<0.00409 lb/hr)
Test 11 = <174 ug/m3 (<0.00529 lb/hr)
Test 12 = <202 ug/m3 (<0.00613 lb/hr)
Average = <170 ug/m3 (<0.00517 lb/hr)

TABLE 9

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

AMBIENT AIR VOST RESULTS
Fourth Quarter Test Results

Sample ID*	1-4U	1-4D2	A-FB4(A)	S-TB4(A)
Sample Volume (L)**	299	203	-	-
Ambient Temperature (Deg.F)	46	47	48	48
Lower Quantitation Limit (ng/l)	0.0669	0.0985	20****	20****

TARGET COMPOUND	(ng/l)	(ng/l)	(ng/l)	(ng/l)
Benzene	0.635	0.591		
Bromodichloromethane				
Bromoform				
Carbon Tetrachloride	0.334	0.374		
Chlorobenzene				
Chloroethane				
Chloroform				
Dibromochloromethane				
1,2-Dichlorobenzene (o)				
1,3-Dichlorobenzene (m)				
1,4-Dichlorobenzene (p)				
1,1-Dichloroethane				
1,2-Dichloroethane				
1,1-Dichloroethene				
cis-1,2-Dichloroethene ***				
trans-1,2-Dichloroethene				
1,2-Dichloropropane				
Ethylbenzene	0.244	0.222		
Freon 13***				
Methylene Chloride	0.217	0.232		
Tetrachloroethene	0.635	1.53		
Toluene	1.54	1.58		
1,1,1-Trichloroethane	0.903	1.58		
Trichloroethene	0.602	0.542		
Vinyl Chloride				
Xylenes (Total)	1.17	1.18		

NOTE:
- All blank values are below the Lower Quantitation Limit.

* Run Number: A-4U (Ambient Sample Upwind of the Air Stripper).
A-4D2 (Ambient Sample Downwind of the Air Stripper).
A-FB4(A) (Ambient Sampling Train Field Blank).
S-TB4(A) (Fourth Quarter Test Effort Trip Blank).

** Sample volume at ambient conditions.

*** Tentatively Identified Compound (TIC).

****The Lower Quantitation Limit for the Ambient Sampling Train Field Blank (A-FB4(A)) and the Fourth Quarter Test Effort Trip Blank (S-TB4(A)) as 20 ng (mass loading lower quantitation limit).

TABLE 10

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

COMPARISON OF APPLICABLE DISCHARGE REQUIREMENTS
FOR AIR STRIPPER TREATMENT SYSTEM WITH STACK TEST RESULTS
Fourth Quarter Test Effort

CONSTITUENT	STACK TEST DISCHARGE CONCENTRATION* (ug/m3)	STACK DISCHARGE REQUIREMENTS** (ug/m3)
Ammonia	<170***	360
Benzene	140****	100
Bromodichloromethane		0.03
Bromoform		16.7
Carbon Tetrachloride		100
Chlorobenzene		1,170
Chloroethane		52,000
Chloroform		167
Dibromochloromethane		0.03
1,2-Dichlorobenzene (o)		1000
1,3-Dichlorobenzene (m)		0.03
1,4-Dichlorobenzene (p)		1,500
1,1-Dichloroethane	235	2,700
1,2-Dichloroethane	<57.3****	20
1,2-Dichloroethenes*	975	2,630*****
1,1-Dichloroethene		66.7
1,2-Dichloropropane		1,170
Ethylbenzene		1,450
Freon 13*		0.03
Methylene Chloride	66.0	1,170
Tetrachloroethene	4,980****	1,120
Toluene		7,500
1,1,1-Trichloroethane	<59.1	38,000
Trichloroethene	370	900
Vinyl Chloride	88.9****	0.4
Xylenes (Total)	93.9	1,450

NOTES:
- Stack test discharge concentrations are derived from VOST tests.
- All blank values are below the Lower Quantitation Limit (57.3ug/m3).

* Tentatively Identified Compounds (TIC).
** As per of the Final Consent Decree (Table 1).
*** Average of stack test data used instead of mass balance results due to suspect water ammonia analytical data (See Table 8).
**** Values in shaded areas exceed or may exceed applicable air discharge requirements.
***** Total of cis and trans isomers.

TABLE 11

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

MODELING VALIDATION RESULTS
Fourth Quarter Test Results

	AMBIENT AIR SAMPLING RESULTS			MODELING RESULTS		
COMPOUNDS	BACKGROUND	DOWNWIND	MEASURED IMPACT	BACKGROUND	MODELED IMPACT	RATIO*
Tetrachloroethene	0.635	1.53	0.895	0	1.79	0.500

NOTES:
- All concentrations are in micrograms per cubic meter.
- Model impacts are based on the normal impact of 94.2 micrograms per cubic meter

* Ratio of measured impact to modeled impact.

TABLE 12

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

MAXIMUM ANNUAL IMPACTS BASED ON AIR STRIPPER EMISSION TESTS
Fourth Quarter Test Results

CONSTITUENT	EMISSION RATES (g/s)	MAXIMUM ANNUAL IMPACT**	PREVIOUS AGCs**	CURRENT AGCs**
Ammonia	<0.000650***	<0.00489***	360	360
Benzene	0.000535	0.00402	100	0.12
Bromodichloromethane			0.03	0.02
Bromoform			11.9	12
Carbon Tetrachloride			100	0.07
Chlorobenzene			1,170	20
Chloroethane			52,000	63,000
Chloroform			167	23
Dibromochloromethane			0.03	0.1
1,2-Dichlorobenzene (o)			1,000	200
1,3-Dichlorobenzene (m)			714	200
1,4-Dichlorobenzene (p)				700
1,1-Dichloroethane	0.000898	0.00675	9,524	500
1,2-Dichloroethane	<0.000219	<0.00165	0.2	0.039
1,1-Dichloroethene			66.7	0.02
cis-1,2-Dichloroethene *	0.00373	0.0280	1,880	1,900
trans-1.2-Dichloroethene			360	360
1,2-Dichloropropane			833	0.15
Ethylbenzene			1,450	1,000
Freon 13*			133,333	530
Methylene Chloride	0.000252	0.00190	1,170	27
Tetrachloroethene	0.0190	0.143	1,120	1.2
Toluene			7,500	2,000
1,1,1-Trichloroethane	<0.000226	<0.00170	38,000	1,000
Trichloroethene	0.00141	0.0106	900	0.45
Vinyl Chloride	0.000340	0.00256	0.4	0.02
Xylenes (Total)	0.000359	0.00270	1,450	300

NOTES:
- All blank Emission Rate values are less than or equal to 0.000219 g/s.
- All blank Maximum Annual Impact values are less than or equal to 0.00165 (ug/m3)
- Maximum annual impacts are based on the maximum annual normalized impact of 7.52 (ug/m3)
- Values on shaded areas exceed current and/or previous AGCs.

* Freon 13 and the cis isomer of 1,2-Dichloroethene are Tentatively Identified Compounds (TICs).
** Concentrations are in micrograms per cubic meter (ug/m3).
***Average of stack test data used instead of mass balance results due to suspect water ammonia analytical data (see Table 8).

AGC = Annual Guideline Concentration

APPENDIX C

"AIR STRIPPER STACK EMISSIONS TEST PROGRAM"
OCTOBER, 1993
(FIRST YEAR ANNUAL SUMMARY REPORT)

OLD BETHPAGE LANDFILL
OYSTER BAY SOLID WASTE DISPOSAL COMPLEX
AIR STRIPPER STACK EMISSIONS TEST PROGRAM

First Year Annual Summary Report

Prepared for:

Lockwood, Kessler & Bartlett, Inc.
One Aerial Way
Syosset, New York 11791

Prepared by:

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, New York 11590

OCTOBER 1993

FIRST YEAR ANNUAL SUMMARY REPORT
OBSWDC AIR STRIPPER STACK EMISSIONS TEST PROGRAM

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FIRST YEAR ANNUAL SUMMARY REPORT
OBSWDC AIR STRIPPER TEST PROGRAM

1.0 INTRODUCTION

The Town of Oyster Bay entered into a Consent Decree (83CIV5357) with the New York State Department of Law (DOL) regarding remediation efforts at the Oyster Bay Solid Waste Disposal Complex (OBSWDC). The Decree requires, among other items, quarterly stack emission testing of the air stripper.

This report has been prepared by RTP Environmental Associates, Inc. (RTP), for Lockwood, Kessler and Bartlett (LKB) on behalf of the Town of Oyster Bay Department of Public Works (TOBDPW). The report provides a brief summary of sampling procedures and analytical methods; a presentation of data collected during the first year of quarterly tests; an analysis of the data including comparisons of emission limits to current regulations and an air quality modeling analysis. The report also includes an overall analysis of all tests combined for a direct comparison to the applicable USEPA and the New York State Department of Environmental Conservation (NYSDEC) regulations and guidelines.

The specific details of each quarterly test efforts are contained in the first four quarterly test reports prepared for this program by RTP (RTP 1992b, 1993a,b,c). An appendix containing supporting documentation on the quarterly tests is provided under separate cover.

2.0 MONITORING PROGRAM AND TEST RESULTS

This section provides a summary of the air stripper monitoring program sampling and analytical methodologies, facility operations during each quarterly test effort and air stripper ammonia and Volatile Organic Sampling Train (VOST) test results.

2.1 Sampling and Analysis Procedures

Prior to initiating the stack testing, a monitoring and analysis protocol was submitted (RTP, 1992a) for the quarterly tests to the NYSDEC for approval. The specific sampling and analysis procedures are fully defined in a series of documents including the project scope of work and subsequent correspondence with the NYSDEC and Lockwood, Kessler & Bartlett, Inc. (LKB). NYSDEC gave formal protocol approval on May 14, 1992 (NYSDEC,1992a). The approved protocol detailed the following quarterly monitoring parameters:

- <u>Monitor air stripper operations continuously</u>: Monitor process parameters including all five individual recovery well flow rates in gallons per minute (GPM), system flow rate (well total/pump station tank influent - GPM), air stripper influent flow (GPM), pressure filter flow (final holding tank effluent flow - GPM), air stripper blower pressure (inches H_2O), air stripper blower flow rate in cubic feet per minute (CFM), and status of operation. Record the above mentioned process parameters every 10 minutes during the test program. Record air stripper groundwater inlet totalizer readings at the beginning and end of each VOST run to calculate the air stripper waterflow (gallons of groundwater processed and/or average water flow rate) per VOST run.

- <u>Determine air stripper exhaust concentrations</u>: Monitor targeted Volatile Organic Compounds (VOCs) as presented in Table 2-1 by utilizing the VOST procedure as outlined in EPA SW846 Method 0030. Perform three (3) VOST tests consisting of four (4) 40-minute VOST runs (total of twelve (12) 40-minute VOST runs). Utilize VOST train flow rate of 0.1 Lpm and a probe temperature of $\geq$265°F. Analyze all VOST samples for targeted VOCs by Desorb Purge Trap Desorb Gas Chromatography Mass Spectrometry (DPTD GC/MS) in accordance with EPA SW846 Method 5040/8240.

- <u>Determine air stripper exhaust ammonia concentration:</u> Measure the ammonia mass flow rate via air stripper influent and effluent water ammonia content and influent and effluent water flow rates (mass balance). Collect one influent and one effluent air stripper water sample at the beginning and end of each VOST test for a total of two influent and two effluent samples per test and six samples of each per quarterly field effort. Analyze all water samples for ammonia in accordance with EPA Method 350.3 (determined potentiometrically using an ion selective ammonia electrode and pH meter).

- o Determine the air stripper volumetric flow rate: Measure the volumetric flow rate in accordance with EPA Methods 1 and 2 before and after each VOST test (every four (4) VOST runs). Flow rate data is used to determine air stripper exhaust VOC mass emission rates and ammonia concentrations.

The NYSDEC also approved a recommended change to the protocol used in the first quarterly test (NYSDEC, 1992b). The VOST sample run times were changed from 40 minutes to 20 minutes with an increase in the VOST sampling rate from 0.1 Lpm to 0.2 Lpm. This change was made because of the very low flow rates that must be maintained over the entire 40 minute sampling period by the flow control module. The new sampling rate and duration were first implemented during the second quarterly test program and have been used since. The air stripper stack sampling program was based on achieving a combined sampling and analytical method lower quantitation limit (LQL) that, when modeled, is less than the lowest target compound ambient air Annual Guideline Concentration (AGC) at the maximum point of impact.

Analysis of the initial first quarter VOST sample cartridges revealed high levels of carbon monoxide which eventually lead to detector saturation and instrument shut-down. RTP approved and the contract laboratory implemented a 1.96 minute scan delay to prevent instrument shut-down while continuing to detect all of the compounds on the target list. With the scan delay, none of the remaining first quarter samples had a shut-down and data was obtained on all remaining target compounds.

To correct the above problem, the second quarter VOST analysis involved a lower mass scan range modification (changed from 35 Molecular Weight (MW) to 45 MW in order to prevent Mass Spectrograph (MS) electronics from being saturated and vinyl chloride peak interferences from high levels of carbon dioxide (MW=44). All target compounds were identified by masses greater than 45. Significant improvements were observed with no detector saturation and vinyl chloride (MW=62.5) was reported when detected at the minimum quantitation limit. This lower scan range modification was implemented for all remaining air stripper VOST sample analyses including the third and fourth quarter efforts discussed herein.

As noted during each quarterly air stripper test, negative ammonia mass emission rates were observed using only the proposed mass balance technique. Because of this apparent problem, ammonia emissions were measured at the air stripper exhaust stack during the third quarterly sampling event in accordance with NIOSH P&CAM Method 205 (mini impingers with 0.1N sulfuric acid, analyzed by colorimetric methodology) and during the fourth quarterly sampling event in accordance with modified NIOSH P&CAM Method 205 (silica gel tubes impregnated with 0.1N sulfuric acid, analyzed by colorimetric methodology).

NIOSH P&CAM Method 205 is the traditionally accepted ammonia measurement method, however, it was changed to the modified NIOSH P&CAM Method 205 in order to minimize sample contamination. The NYSDEC gave formal protocol approval on July 7, 1993 for using modified NIOSH P&CAM Method 205 in place of the originally approved mass balance technique (NYSDEC, 1993).

The analytical laboratories selected for this project were Research Triangle Laboratories (RTL), EcoTest Laboratories (EcoTest) and Environmental Health Laboratories (EHL). RTL provided the required analytical gas chromatograph-mass spectrographic services to identify and quantify all substances listed on the Target Compound List (TCL) except ammonia. The TCL was based on the Consent Decree and is provided in Table 2-1. EcoTest provided ion specific electrode water analysis services to identify and quantify ammonia emissions via mass balance. EHL provided the collection media as well as the analytical services for the third and fourth quarter air stripper stack ammonia monitoring efforts.

All sampling equipment was calibrated before and after each quarterly field effort. Equipment pre and post calibrations are presented according to test quarter, under separate cover. All pre and post calibrations were well within acceptable test method criteria.

2.2 Air Stripper Operational Data

The facility operations were monitored on a continuous basis during the performance of each quarterly stack test. Site personnel kept detailed records of well water flows, air stripper flow, air blower flow and blower pressure. Table 2-2 summarizes the operational data for the groundwater treatment facility during each quarterly air stripper stack test.

Included in the air stripper operational data table are two air stripper water flow values, stripper flow and air stripper water flow. Note that the system flow is the total well flow (wells 1,2,3,4 and 5) into the

TABLE 2-1

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

PROGRAM TARGET COMPOUND LIST
AND NYSDEC AMBIENT GUIDELINES

VOC COMPOUND NAME	TOXICITY	CURRENT SGC (ug/m3)		CURRENT AGC (ug/m3)		FORMER AGC (ug/m3)	CONSENT DECREE LIMITS***
Benzene	H	30	(p)	0.12	(E,U)	100	100
Bromodichloromethane	H			0.02	(D)	0.03**	0.03
Bromoform	M	1,200	(t)	12	(T)	11.9**	16.7
Carbon Tetrachloride	H	1,300	(r)	0.07	(E,U)	100	100
Chlorobenzene	M	11,000	(p)	20	(E)	1,170	1,170
Chloroethane	L	630,000	(t)	63,000	(T)	52,000	52,000
Chloroform	M	980	(r)	23	(R)	167	167
Dibromochloromethane	M			0.1	(D)	0.03**	0.03
1,2-Dichlorobenzene (o)	M	30,000	(t)	200	(E)	1,000	1,000
1,3-Dichlorobenzene (m)	M	30,000	(a)	200	(A)	714**	0.03
1,4-Dichlorobenzene (p)	M**	110,000**		700**			1,500
1,1-Dichloroethane	L	190,000	(t)	500	(E)	9,524**	2,700
1,2-Dichloroethane	M	950	(r)	0.039	(E,U)	0.2	20
1,1-Dichloroethene	H	2,000	(t)	0.02	(E,U)	66.7	66.7
cis-1,2-Dichloroethene*	M	190,000	(a)	1,900	(A)	1,880**	2,630****
trans-1,2-Dichloroethene	M			360	(D)	360**	
1,2-Dichloropropane	M	83,000	(t)	0.15	(D)	833**	1,170
Ethylbenzene	M	100,000	(t)	1,000	(T)	1,450	1,450
Freon 13*	L	43,000	(a)	530	(A)	133,333**	0.03
Methylene Chloride	M	41,000	(t)	27	(D,U)	1,170	1,170
Tetrachloroethene	M	81,000	(t)	1.2*****	(D,U)	1,120	1,120
Toluene	L	89,000	(r)	2,000	(I)	7,500	7,500
1,1,1-Trichloroethane	L	450,000	(t)	1,000	(E)	38,000	38,000
Trichloroethene	M	33,000	(r)	0.45	(D,U)	900	900
Vinyl Chloride	H	1,300	(t)	0.02	(E,U)	0.4	0.4
Xylenes (Total)	M	100,000	(t)	300	(I)	1,450	1,450******
OTHER COMPOUNDS							
Ammonia	L	4,000	(t)	360	(E)	360	360

FOOTNOTES:
SGC - Short-term guideline concentration (current as of June 1991).
AGC - Annual guideline concentration (current as of June 1991, former as of 1986, 9/89 Edition).
* Tentatively Identified Compound (TIC) using EPA SW846 Method 8240.
** Proposed Value.
*** As per Table 1 of the Final Consent Decree. Reported in micrograms per cubic meter (ug/m3).
**** Total for cis and trans isomers.
***** Tetrachloroethene AGC currrent as of November 22, 1991.
****** 1,450 total for ortho and para xylene and 1450 total for meta xylene.
Toxicity - H for high; M for moderate; and L for low as defined by NYSDEC.
(a) - SGC based on NYSDEC structure-activity analogy.
(p) - SGC dervied from proposed ACGIH TLV-TWA (1990-1991).
(r) - SGC derived from NIOSH REL-TWA (1988).
(t) - SGC derived from ACGIH TLV-TWA (1990-1991).
(A) - AGC based on NYSDEC structure-activity analogy.
(D) - AGC derived from NYSDEC, Divison of Air Resources, Bureau of Air Toxics, Toxics Assessment Section.
(E) - AGC based on derivation by USEPA.
(I) - AGC based on RFC developed by USEPA - Integrated Risk Information System (IRIS), input pending.
(R) - AGC derived from NIOSH REL-TWA (1988).
(T) - AGC derived from ACGIH TLV-TWA (1990-1991).
(U) - AGC is the ambient air concentration which corresponds to an excess cancer risk of one in one million for a lifetime exposure.

TABLE 2-2

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

AIR STRIPPER OPERATIONAL DATA*
First Year Annual Summary

TEST QUARTER ID**	WELL 1 FLOW (GPM)	WELL 2 FLOW (GPM)	WELL 3 FLOW (GPM)	WELL 4 FLOW (GPM)	WELL 5 FLOW (GPM)	SYSTEM FLOW (GPM)	STRIPPER FLOW (GPM)	PRESSURE FILTER FLOW (GPM)	BLOWER AIR FLOW (CFM)	AIR PRESSURE (Inches H2O)	AIR STRIPPER WATER FLOW*** (GPM)
1st	200	252	199	199	198	1,020	1,080	1,100	9,970	2.8	973
2nd	199	245	200	194	201	914	934	1,090	10,300	NA	845
3rd	198	0****	0****	200	265	447***	589****	617****	10,100	NA	620****
4th	199	261	200	216	200	1,020	1,020	1,070	10,200	NA	1,020
<Observed>	199	190	150	202	216	850	906	969	10,100	- -	865
<Corrected>	199	240	200	202	216	950	1,010	1,070	10,100	- -	965

NOTE:
<Observed> - Average of observed 1st,2nd,3rd and 4th quarter data.
<Corrected> - Average of observed 1st, 2nd and 4th quarter and corrected 3rd quarter data.
GPM - Gallons per minute
CFM - Cubic feet per minute
NA-Air pressure measurements were not available.
Total groundwater processed during the first year of operations was 425 million gallons (Potential = 547.5 million gallons per year).

* Air Stripper operational data collected by Town of Oyster Bay personnel (Air Stripper Operator).
** Test Quarter ID: 1st - Average of Runs S-01 through S-12. Test date: 5/28/92.
2nd - Average of Runs S-13 through S-24 (except S-18). Test date: 9/23/92.
3rd - Average of Runs S-25 through S-36. Test date: 12/14/92.
4th - Average of Runs S-37 through S-48. Test date: 3/25/93.
*** Values determined from the air stripper inlet flow totalizer recordings.
****Wells 2 and 3 were non-operational during the third quarter (12/14/92) Air Stripper test effort. Observed third quarter data is presented and corrected where applicable (****) to represent operation of all five (5) groundwater wells. Corrected values are as follows:
Well 2 Flow - 200 GPM
Well 3 Flow - 200 GPM
System Flow - 847 GPM
Stripper Flow - 989 GPM
Pressure Filter Flow - 1,020 GPM
Air Stripper Water Flow - 1,020 GPM

groundwater holding tank and not the air stripper water flow rate. The stripper flow value is recorded every ten (10) minutes from a "real-time" control panel display. The air stripper water flow value is the difference between two timed mechanical flow totalizer readings (one recorded at the beginning and end of each VOST run) and is therefore considered the most accurate of the two values representing processed groundwater flow during each VOST run. The air stripper water flow value will be used for all actual and potential emission rate calculations.

All major unit processes were operating normally during the first, second and fourth quarter air stripper tests. As noted in Table 2-2, the third quarter air stripper water flows were below normal with Wells 2 and 3 non-operational. The wells were shut-down as a result of the lightning storm and were not able to run during the third quarter test. All other major unit processes were operating normally during the entire third quarter test.

In Table 2-2, all first year quarterly air stripper operational data has been averaged according to observed and corrected conditions. The average of observed quarterly data (<observed>) is the average of actual recorded process conditions. Observed third quarter operational data were corrected to represent more accurately expected third quarter operational data for normal air stripper conditions. To correct the third quarter data, a 200 gallon per minute (GPM) value was assumed for both wells 2 and 3. System flow, stripper flow, pressure filter flow and air stripper water flow values were also corrected proportionately (see Table 2-2 footnotes). The average adjusted quarterly data (<corrected>) is the average of observed first, second and fourth quarter and adjusted corrected third quarter data.

Adjusted corrected third quarter operational data and individual well water VOC concentrations were used to determine expected third quarter air stripper exhaust stack emissions and their impacts during normal operations (all 5 wells operating). These adjusted results were combined with other first year quarterly test results observed during normal operating conditions and modeled for comparison to ambient air AGC values.

Air stripper exhaust flow rates measured at the stack in accordance with EPA Methods 1 and 2 are presented in Section 2.3 along with VOC and ammonia concentration results.

2.3 First Year Emission Test Results

Table 2-3 provides the nanogram per liter (ng/l) air concentrations for each TCL constituent detected during each quarterly test effort. An average for all four quarters (1st year average) and the maximum test run concentration for the year is also presented. Several compounds were identified in the air stripper exhaust with the most prevalent being tetrachloroethene.

First, second and fourth quarter target compound concentrations are presented as measured. Adjusted third quarter data is provided to represent normal air stripper conditions for modeled impact for comparison to NYSDEC AGCs in Section 5.0. First year average and maximum test run ammonia concentrations are based on third and fourth quarter results derived from supplemental emissions monitoring (NIOSH P&CAM Methodology - see Section 2.1) at the air stripper exhaust stack.

In-stack measurements of pressure differential, temperature and dew point were made at the facility. This data was used to calculate the air stripper volumetric flow rate for each VOST test and to correct each individual VOST run sample volume to air stripper exhaust stack conditions. VOST test volumetric flow rates and stack temperatures are presented in Table 2-3. There was no condensate in any of the test samples primarily because of the low (4 liter) total sample volume required for each test run. Field and trip blank samples were collected. There is no indication that contamination was present in the blank sample tubes.

The above data are used in an overall analysis of air quality impacts that result from air stripper operations in Section 5.0.

3.0 REVIEW OF AMBIENT MONITORING DATA AND MODEL VALIDATION

Ambient air sampling data and meteorological data were collected during the initial year of the air stripper stack test program. The data were collected concurrently during the air stripper tests. The purpose of collecting these data was to assist in developing a modeling analysis of air stripper impacts on both a short-term and long-term basis.

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GROUNDWATER TREATMENT FACILITY

AIR STRIPPER VOST AND AMMONIA TEST RESULTS
First Year Annual Summary

Test Quarter ID*	1st	2nd	3rd***	4th	1st Yr Average	Maximum Test Run Concentration
Test Date	5/28/92	9/23/92	12/14/92	3/25/93	- -	
Flow Rate (ACFM)	8,450	8,710	8,330	8,100	8,400	
Stack Temperature (Deg.F)	53	56	52	54	54	- -
Lower Quantitation Limit (ng/l)	62.8	74.1	55.4	57.3	62.4	94.5****

TARGET COMPOUND	(ng/l)	(ng/l)	(ng/l)	(ng/l)	(ng)	(ng/l)
Ammonia	2570*****	865*****	<335	<170	<253	<343
Benzene	300	186	149	140	194	519(1)
Bromodichloromethane						
Bromoform						
Carbon Tetrachloride						
Chlorobenzene						
Chloroethane						
Chloroform						
Dibromochloromethane						
1,2-Dichlorobenzene (o)						
1,3-Dichlorobenzene (m)						
1,4-Dichlorobenzene (p)						
1,1-Dichloroethane	469	343	******	235	349	525(11)
1,2-Dichloroethane				<57.3	<62.4	54.2(43)
1,1-Dichloroethene						
cis-1,2-Dichloroethene **	<2,020	1,050	1,180	975	<1,310	4,160(1)
trans-1,2-Dichloroethene						
1,2-Dichloropropane						
Ethylbenzene						
Freon 13**						
Methylene Chloride	197	<112	******	66.0	<125	286(1)
Tetrachloroethene	4,390	5,710	4,650	4,980	4,930	7,420(24)
Toluene	<87.5		******		<73.0	338(1)
1,1,1-Trichloroethane	<70.7	<84.2		<59.1	<67.4	144(13)
Trichloroethene	344	381	440	370	384	453(29)
Vinyl Chloride		<81.2	******	88.9	<77.6	136(11)
Xylenes (Total)	326	145	******	93.9	188	753(1)

NOTE:
- All values are in nanograms per liter (ng/l) at stack conditions.
- All blank values are below the Lower Quantitation Limit (LQL).
- < Values are used where the LQL is averaged with reported values.
- Numbers in ( ) represent the VOST Run identification associated with the maximum VOST Test Run concentration.

* Test Quarter ID: 1st - Average of VOST Runs S-01 through S-12 and Ammonia Tests 1,2 and 3.
2nd - Average of VOST Runs S-13 through S-24 and Ammonia Tests 4,5 and 6.
3rd - Average of VOST Runs S-26 through S-36 (omitted S-25 due to suspect data) and Ammonia Tests 7,8 and 9.
4th - Average of VOST Runs S-37 through S-48 and Ammonia Tests 10,11 and 12.

** Tentatively Identified Compound (TIC).

*** Emission rates for each reported VOC and ammonia were corrected to represent emissions during the operation of all five (5) groundwater wells. At the time of the third quarter test (12/14/92) only three wells were in service (1,4 and 5), see Table 2-2.

**** Maximum LQL for all forty-eight (48) VOST Runs. Note that the maximum test run (short-term) 1,2-dichloroethane concentration is less than the maximum LQL. Ammonia sampling performed separately.

***** Suspect Ammonia mass balance results. First year average and maximum test run ammonia results were computed using 3rd and 4th quarter data only.

******Concentration below LQL and could not be corrected to represent emissions during the operation of all five (5) groundwater wells. First year average results for these compounds were computed using 1st, 2nd and 4th quarter data only.

The monitoring data that are important to the modeling analysis include the air stripper operations, upwind and downwind ambient air VOC concentrations, meteorological conditions during the ambient air sampling periods and the onsite meteorological conditions on an annual basis. The upwind and downwind VOC concentrations are used along with air stripper operations and meteorological data to validate model predictions of air stripper emission impacts. The annual meteorological data are used by the model to predict the air stripper annual average impacts.

This section presents a brief summary of the ambient air sampling data collected during the initial year of the program, long-term (annual average) ambient background concentrations, onsite meteorological data and a summary of the first four quarters model validation analyses.

3.1 Ambient Background Concentrations

One of the purposes of collecting ambient air VOC concentration data during the stack testing of the air stripper is to define the ambient background and air stripper VOC concentration impacts. These data are compared to observed downwind concentrations as part of the model validation process. Background VOC concentrations can be determined by collecting ambient air samples upwind of the emission source, in this case, upwind of the air stripper tower. These background concentrations can then be added to the modeled impacts from the air stripper to define total concentration impacts at locations of concern.

In the first year air stripper stack test program, upwind ambient air samples were collected during each quarterly test, concurrent with the air stripper stack tests. Prior to the stack test, the predominant or prevailing wind direction was forecast for the testing period based on the National Weather Service (NWS) data. The upwind sampling location was then positioned to be upwind of the air stripper tower. The sampling duration was determined based on several factors including the persistence of the wind direction, duration of the stack tests, desired sampling volume and sampling rate and site specific factors such as other local sources, site access and security.

Ambient air samples were not collected for ammonia, and therefore, an annual ambient air background ammonia level was not available. The specific details of the ambient monitoring program are contained in the quarterly summary reports.

3.2 Meteorological Data Review

Onsite meteorological data was collected to support the model validation and air quality impact analyses of the air stripper tower. Meteorological instruments were positioned during each quarterly test to monitoring onsite conditions during each quarterly stack test. The variables of interest included wind direction, wind speed, turbulence, air temperature, barometric pressure, humidity and precipitation. This set of data was collected for use in the model validation analysis that will be discussed in the following section.

A second set of meteorological data was also required for the annual impact analysis of the air stripper. This data set was collected from atop the Oyster Bay Landfill by the Town of Oyster Bay Industrial Development Authority in 1985. The meteorological parameters collected included wind speed, wind direction, ambient air temperature, humidity and turbulence level. Mixing height data for this period was estimated based on seasonal mixing height data and an algorithm developed by Holzworth (1972) for calculating hourly mixing height values.

3.3 Model Validation

An air quality dispersion model is used to calculate the air quality impacts associated with emissions from an air pollution source of interest. The dispersion model used in this case is the EPA approved ISCST2 model which is discussed in Section 4.2. The purpose of the model validation process is to determine if the dispersion model results can be used to accurately estimate actual observed ambient air impacts.

Model validation was performed on a quarterly basis. Four (4) separate validation analyses were performed for the initial program year. In all quarterly validation analyses, tetrachloroethene was selected as the appropriate compound for the model validation process. All other target compounds as tested during each quarterly air stripper stack tests had ambient air impacts that were at or below the sampling and analytical LQLs established for the ambient air samples. Therefore, these compounds could not be applied to validate the model.

A summary of the model validations performed for all four quarterly tests is presented in Table 3-1. The background concentrations represent the ambient levels upwind of the air stripper as observed in each

TABLE 3-1

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GROUNDWATER TREATMENT FACILITY

MODELING VALIDATION RESULTS
First Year Annual Summary

Test ID	AMBIENT AIR SAMPLING RESULTS			MODELED AIR STRIPPER IMPACT	RATIO*
	BACKGROUND	DOWNWIND	MEASURED IMPACT		
First Quarter	0.806	1.00	0.194	0.506	0.383
Second Quarter	<0.0466	0.978	0.931 to 0.978	0.346	2.69 to 2.83
Third Quarter	<0.175	0.844	0.669 to 0.844	0.768	0.871 to 1.10
Fourth Quarter	0.635	1.53	0.895	1.79	0.500
				Average =	1.11 to 1.20

NOTES:
- The target compound used for the model validation analysis is Tetrachloroethene.
- All concentrations are in micrograms per cubic meter.
- Modeling impacts are based on the observed first year, first through fourth quarter air stripper stack emission tests and the corresponding normalized impacts.

* Ratio of measured impact to modeled impact.

quarterly test. The downwind ambient air sampling results represent the summation of the background and air stripper impacts for tetrachloroethene. The contribution associated with the air stripper is calculated by subtracting the upwind or background concentration level from the downwind ambient air concentration. The predicted or modeled impact results are obtained from the model for each specific quarterly test using observed onsite meteorological conditions, air stripper operation parameters and tetrachloroethene emission rates. The ratios shown in Table 3-1 are obtained by dividing measured impacts by modeled impacts. The average ratio over four quarters, as shown in Table 3-1, is in the range of 1.11 to 1.20. The results indicate that there is reasonable correlation between observed versus model predicted air stripper stack emission impacts. The model tends to slightly under predict observed results. Based on the above correlation, the model can be used to estimate air stripper air quality impacts with reasonable accuracy.

4.0 PREDICTION OF AIR STRIPPER IMPACTS

The EPA approved ISCST2 dispersion model (EPA, 1992) was used to predict air quality impacts of air stripper emissions. The purpose of modeling short-term and long-term air stripper emissions is to assess whether the air quality in the vicinity of the air stripper meets the NYSDEC ambient air guideline concentrations for both short-term and long-term averaging periods as provided in Air Guide-1 (NYSDEC, 1991).

This section presents the modeling methodology used for the impact analysis, model configuration and the normalized modeling results. Air quality impacts based on potential and actual short-term and annual emission rates will be directly compared with the NYSDEC AGCs and Short-term Guideline Concentrations (SGCs) in Section 5.0.

4.1 Modeling Methodology

The ISCST2 dispersion model (EPA,1992) is the most updated version of the models that can be used in this case. Also, based on the model validation process as presented in Section 3.3, the model provides reasonably accurate estimates for specific cases available for analysis. The ISCST2 is a reconstructed and reprogrammed version of the original ISCST model. The ISCST2 model provides the ability to model emissions from a wide range of sources including elevated point sources. The model incorporates a straight-line, steady-state Gaussian plume dispersion equation. It can account for building downwash effects for different wind angles, local terrain information and hourly meteorological data. The user can select various time period averages including hourly and annual periods. Because of these and other options, ISCST2 is best suited for assessing air stripper tower air quality impacts at receptors surrounding the OBSWDC.

4.2 Model Configuration

The ISCST2 model has a variety of run options that are useful in customizing the model for a specific application. Site and source specific model options, source/receptor configurations and meteorological data were input into the model to predict the maximum short-term (1-hour) and long-term (annual average) impacts for off-property receptors associated with the air stripper tower.

The following regulatory default options were applied in the simulation:

- o final plume rise,
- o stack-tip downwash,
- o buoyancy-induced dispersion,
- o calm wind speed processing routine,
- o upper bound concentration estimates for sources influenced by building downwash from supersquat buildings,
- o regulatory default wind speed profile exponents and
- o regulatory default vertical potential temperature gradients.

The source parameters utilized in the modeling analysis are based on air stripper design parameters. The important parameters are the air stripper base location and elevation, tower/stack height, stack exit temperature and velocity, stack inner diameter of the exhaust section and the pollution emission rates. Since the building downwash option is included, the groundwater treatment building crosswind dimensions for various wind directions are also input into the model. The air stripper base location is set to be at the origin of the model coordinate system (0,0); the base elevation is 42.8 meters above sea level; the tower height is 16.7 meters above the tower base; and the stack inner diameter of the exhaust section is 1.02 meters. The air stripper temperature and stack exit velocity vary slightly with the tower's operation.

The tower design values are 285°K (average) and 4.85 meters per second. These values are identical to the average stack test results for the first four quarters of operation. The air stripper pollutant emission rates also vary with the tower operations and inlet water conditions.

A one (1) gram per second emission rate was input into the model to calculate normalized 1-hour and annual impacts. Potential and actual short-term and long-term emission rates were then multiplied by the calculated normalized impacts to obtain potential and actual short-term and long-term concentration impacts.

The modeling analysis includes an array of off-property receptor grids that cover a four(4) kilometer square area around the air stripper. The receptor spacing has been set at 100 meters for nearby receptors and 200 meters for more distant receptors. In addition, a separate series of property line receptors was positioned every 50 meters along the OBSWDC property line.

Receptor terrain elevation data was obtained from a United States Geological Survey (USGS) topographic map. The above surface height of each receptor is fixed at one (1) meter. Model results indicate that the above receptor grid is sufficient to adequately define all significant air stripper impacts.

One year of onsite meteorological data was used in the modeling analysis to predict annual average concentration patterns. Other information on data source, duration, location and parameters were described in Section 3.2. This data was used for both short-term and long-term impact analyses.

4.3 Modeling Results

One-hour and annual average normalized impacts have been calculated using the ISCST2 model for the OBSWDC air stripper tower based on the inputs and model options described above. Impact values have been predicted for all off-property receptors based on a one (1) gram per second emission rate and one year of onsite meteorological data for 1985. These are presented in Attachment 1.

The off-property maximum 1-hour normalized impact predicted by the ISCST2 model is 972 micrograms per cubic meter. The maximum impact point is located about 300 meters west and 400 meters north of the air stripper tower. The 2nd maximum 1-hour normalized impact is 798 micrograms per cubic meter and is located about 100 meters west of the maximum 1-hour impact location. The above impacts are based on design operating conditions for the air stripper tower.

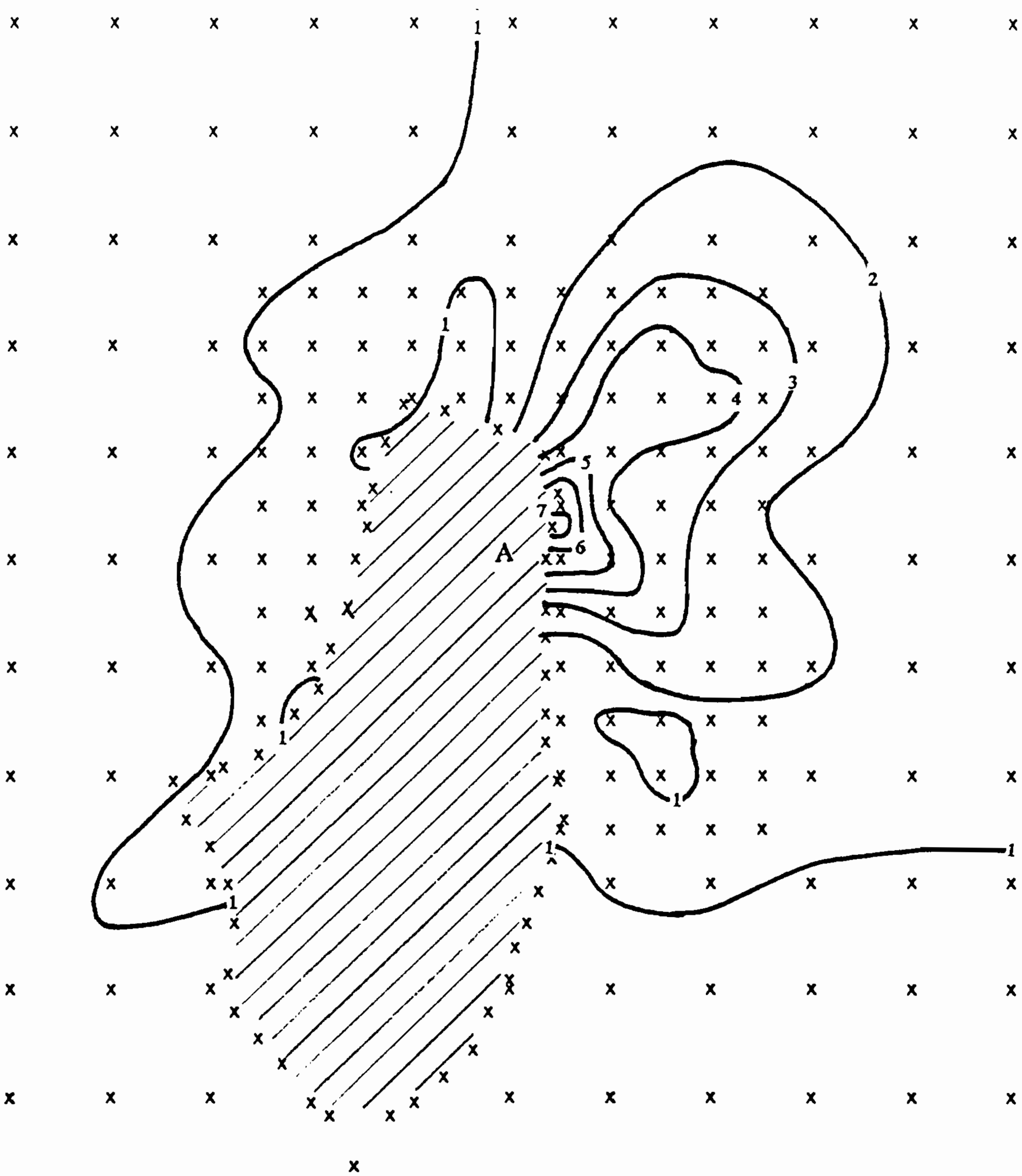
The off-property maximum annual normalized impact predicted by the ISCST2 model for the air stripper is 7.27 micrograms per cubic meter. The annual impact is also based on design operating conditions for the air stripper tower on a one (1) gram per second emission rate and one year of onsite meteorological data. The peak annual value impact point is located along the OBSWDC property line on Winding Road northeast of the air stripper tower.

The distribution of the annual average normalized impacts for all off-property receptors analyzed is shown in Figure 4-1. As can be seen in Figure 4-1, the maximum annual average normalized impact is located northeast of the air stripper tower. Generally the annual average normalized impacts are higher on the east side of the landfill than they are on the west and south sides of the landfill. The lowest off-property impacts occur to the south of the tower and this is primarily the result of the distance from the air stripper tower.

5.0 AIR QUALITY IMPACTS AND COMPARISONS WITH NYSDEC GUIDELINES

The air quality analysis of air stripper pollutant emission rates includes the assessment of both actual release rates and potential release rates. The pollutant emission rates are based on the actual and potential water influent volumes. Short-term values are based on the highest observed release rate per compound over the 48 VOST runs performed at the facility. Annual values are based on actual and potential water influent volumes during the first year of operation.

This section contains analyses of four issues: (1) total emission rates for VOCs relative to the Clean Air Act Amendments (CAAA), (2) short-term impacts of air stripper emissions, (3) long-term impacts of air stripper emissions. The impacts will be evaluated with respect to NYSDEC guidelines for air toxic constituents.



Numerical values represent unit micrograms per cubic meter concentrations based on a one (1) grams per second emission rate.

N

Scale: 1" = 1150' (approx.)

▨ = OBSWDC property
X = Receptor location
A = Air stripper location

FIGURE 4-1: ANNUAL NORMALIZED GROUND LEVEL CONCENTRATION DISTRIBUTION

RTP ENVIRONMENTAL ASSOCIATES, INC.

5.1 Comparison of Emission Rates with Applicable Limits

The Clean Air Act Amendments of 1990 required that areas not meeting the National Ambient Air Quality Standards (NAAQS) for ozone must prepare emission inventories of VOCs. In addition, hazardous air pollutants (HAPs) have been listed and must be identified separately. The definition of a major source is one that exceeds 10 tons per year per individual constituent HAP and 25 tons per year for all HAP's combined. For sources exceeding the above limits, the Administrator of EPA will set the achievable maximum degree of reduction for each source category. Source emission standards for air stripper towers have not been published by the EPA. Therefore, specific clean-up levels are not available at this time. The EPA has been delaying promulgation of these standards. When they are issued, the facility will need to comply if the air stripper is classified as a major source.

A compilation of the various HAPs that are associated with the air stripper has been prepared. The listing of constituents are those sets of compounds identified by the Consent Order. The compounds identified in the air stripper exhaust are based on gas chromatograph-mass spectrographic (GC/MS) analyses.

Table 5-1 provides a total of all reported HAP's, a total of all target compound HAP's, and a total for all target compounds. Both actual and potential release rates are provided. As shown, none of the individual actual or potential release rates for individual HAP's reported exceed the 10 ton per year limit for identifying major sources. In combination, neither the actual or potential emission rates for all VOCs identified exceed the 25 ton per year limit for HAP compounds.

It can therefore be concluded that the air stripper, based on current stack test methods and results, does not exceed the limits specified in the Clean Air Act Amendments for major sources of HAPs.

5.2 Short-Term Air Quality Impacts For Air Stripper Emissions

The maximum short-term (1-hour) actual and potential impacts specific to the air stripper emissions were calculated and the results are listed in Tables 5-2 and 5-3, respectively. Actual and potential maximum 1-hour emission rates shown in Table 5-1 per constituent were converted into grams per second emission

TABLE 5-1
OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

ACTUAL AND POTENTIAL SHORT-TERM AND ANNUAL TARGET COMPOUND EMISSION RATES*

First Year Annual Summary

CONSTITUENT	ACTUAL MAX SHORT-TERM EMISSION RATE (lbs/hr)	POTENTIAL MAX SHORT-TERM EMISSION RATE (lbs/hr)	ACTUAL ANNUAL EMISSION RATE (tons/yr)	POTENTIAL ANNUAL EMISSION RATE (tons/yr)
Ammonia	<0.0105***	<0.0108***	<0.0271***	<0.0349***
Benzene	0.0163	0.0210	0.0224	0.0289
Bromodichloromethane				
Bromoform				
Carbon Tetrachloride				
Chlorobenzene				
Chloroethane				
Chloroform				
Dibromochloromethane				
1,2-Dichlorobenzene (o)				
1,3-Dichlorobenzene (m)				
1,4-Dichlorobenzene (p)				
1,1-Dichloroethane	0.0165	0.0213	0.0403	0.0520
1,2-Dichloroethane	0.00170****	0.00219****	<0.00721	<0.00928
1,1-Dichloroethene				
cis-1,2-Dichloroethene **	0.131	0.169	<0.152	<0.195
trans-1,2-Dichloroethene				
1,2-Dichloropropane				
Ethylbenzene				
Freon 13**				
Methylene Chloride	0.00899	0.0116	<0.0145	<0.0186
Tetrachloroethene	0.233	0.300	0.570	0.735
Toluene	0.0106	0.0137	<0.00843	<0.0109
1,1,1-Trichloroethane	0.00453	0.00584	<0.00780	<0.0101
Trichloroethene	0.0142	0.0183	0.0444	0.0570
Vinyl Chloride	0.00428	0.00551	<0.0100	<0.0129
Xylenes (Total)	0.0237	0.0305	0.0217	0.0280
Total Reported HAPs	0.334	0.430	<0.747	<0.963
Total All Target HAPs	<0.361	<0.459	<0.812	<1.05
Total All Target Compounds	<0.520	<0.658	<1.03	<1.33

NOTE:

- < Values used where the Lower Quantitation Limit is averaged with reported values (see Table 2-3).
- HAPs - Hazardous Air Pollutants. Clean Air Act Title III regulated compound. Total of 189 HAPs. All target compounds are HAPs except for ammonia, bromodichloromethane, dibromochloromethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, cis-1,2-dichloroethene, trans-1,2 dichloroethene and Freon 13.
- All blank values are below the following assigned minimum detectable emission rates:

  Actual Max Short-Term Emission Rate = 0.00297 pounds per hour (lbs/hr).
  Potential Max Short-Term Emission Rate = 0.00383 pounds per hour.
  Actual Annual Emission Rate = 0.00721 tons per year (tons/yr).
  Potential Annual Emission Rate = 0.00928 tons per year.

* Actual short-term and annual emission rates are based on maximum test run and on first year average concentrations, respectively (See Table 3). Potential values are actual emission levels corrected for operation design at 1,042 GPM and 547.5 MGY (See Table 2).

** Tentatively Identified Compound (TIC).

*** Ammonia emission rates were computed using only 3rd and 4th quarter emissions data (see Table 2-3) and process data (8,220 ACFM and 1,020 gallons per minute) due to suspect 1st and 2nd quarter results.

****Note that the maximum test run (short-term) 1,2-dichloroethane concentration is less than the maximum Lower Quantitation Limit (see Table 3) and therefore actual and potential short-term emission rates are less than their assigned minimum detectable emission rate.

TABLE 5-2

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

MAXIMUM SHORT-TERM IMPACTS BASED ON ACTUAL SHORT-TERM AIR STRIPPER EMISSION RATES
First Year Annual Summary

CONSTITUENT	ACTUAL SHORT-TERM MAX. EMISSION RATE (lbs/hr)	(g/s)	MAXIMUM 1-HOUR ACTUAL IMPACT**	CURRENT SGC**	PERCENTAGE OF SGC
Ammonia	<0.0105	<0.00133	<1.29	4,000	<0.0323
Benzene	0.0163	0.00206	2.00	30	6.67
Bromodichloromethane				N/A	N/A
Bromoform				1,200	
Carbon Tetrachloride				1,300	
Chlorobenzene				11,000	
Chloroethane				630,000	
Chloroform				980	
Dibromochloromethane				N/A	N/A
1,2-Dichlorobenzene (o)				30,000	
1,3-Dichlorobenzene (m)				30,000	
1,4-Dichlorobenzene (p)				110,000	
1,1-Dichloroethane	0.0165	0.00208	2.02	190,000	0.00106
1,2-Dichloroethane	0.00170***	0.000215***	0.209***	950	0.0220
1,1-Dichloroethene				2,000	
cis-1,2-Dichloroethene *	0.131	0.0165	16.0	190,000	0.00842
trans-1,2-Dichloroethene				N/A	N/A
1,2-Dichloropropane				83,000	
Ethylbenzene				100,000	
Freon 13*				43,000	
Methylene Chloride	0.00899	0.00113	1.10	41,000	0.00268
Tetrachloroethene	0.233	0.0294	28.6	81,000	0.0353
Toluene	0.0106	0.00134	1.30	89,000	0.00146
1,1,1-Trichloroethane	0.00453	0.000571	0.555	450,000	0.000123
Trichloroethene	0.0142	0.00180	1.75	33,000	0.00530
Vinyl Chloride	0.00428	0.000539	0.524	1,300	0.0403
Xylenes (Total)	0.0237	0.00299	2.91	100,000	0.00291

NOTES:
- All blank emission rate values are less than or equal to 0.00297 lbs/hr or 0.000375 g/s.
- All blank maximum 1-hour actual impacts are less than or equal to 0.365 ug/m3.
- All blank percentage of SGC values are less than or equal to 1.22 percent.
- Maximum 1-hour actual impacts are based on the maximum 1-hour normalized impact of 972 ug/m3.

* Freon 13 and the cis isomer of 1,2-Dichloroethene are Tentatively Identified Compounds (TICs).
** All concentrations are in micrograms per cubic meter.
*** 1,2-dichloroethane's emission rates and maximum 1-hour impacts are less than all other target compound reporting limits due to 1,2-dichloroethane's relatively low maximum test run concentration value (less than the maximum lower quantitation limit - see Table 2-3).

N/A = not available.
SGC = Short-Term Guideline Concentration

TABLE 5-3

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

MAXIMUM SHORT-TERM IMPACTS BASED ON POTENTIAL SHORT-TERM AIR STRIPPER EMISSION RATES
First Year Annual Summary

CONSTITUENT	POTENTIAL SHORT-TERM MAX. EMISSION RATE (lbs/hr)	(g/s)	MAXIMUM 1-HOUR POTENTIAL IMPACT**	CURRENT SGC**	PERCENTAGE OF SGC
Ammonia	<0.0108	<0.00136	<1.32	4,000	<0.0330
Benzene	0.0210	0.00265	2.58	30	8.60
Bromodichloromethane				N/A	N/A
Bromoform				1,200	
Carbon Tetrachloride				1,300	
Chlorobenzene				11,000	
Chloroethane				630,000	
Chloroform				980	
Dibromochloromethane				N/A	N/A
1,2-Dichlorobenzene (o)				30,000	
1,3-Dichlorobenzene (m)				30,000	
1,4-Dichlorobenzene (p)				110,000	
1,1-Dichloroethane	0.0213	0.00268	2.60	190,000	0.00137
1,2-Dichloroethane	0.00219***	0.000277***	0.269***	950	0.0283
1,1-Dichloroethene				2,000	
cis-1,2-Dichloroethene *	0.169	0.0213	20.7	190,000	0.0109
trans-1,2-Dichloroethene				N/A	N/A
1,2-Dichloropropane				83,000	
Ethylbenzene				100,000	
Freon 13*				43,000	
Methylene Chloride	0.0116	0.00146	1.42	41,000	0.00346
Tetrachloroethene	0.300	0.0379	36.8	81,000	0.0454
Toluene	0.0137	0.00173	1.68	89,000	0.00189
1,1,1-Trichloroethane	0.00584	0.000736	0.715	450,000	0.000159
Trichloroethene	0.0183	0.00232	2.26	33,000	0.00685
Vinyl Chloride	0.00551	0.000694	0.675	1,300	0.0519
Xylenes (Total)	0.0305	0.00385	3.74	100,000	0.00374

NOTES:
- All blank emission rate values are less than or equal to 0.00383 lbs/hr or 0.000483 g/s.
- All blank maximum 1-hour potential impacts are less than or equal to 0.469 ug/m3.
- All blank percentage of SGC values are less than or equal to 1.56 percent.
- Maximum 1-Hour potential impacts are based on the maximum 1-hour normalized impact of 972 ug/m3.

* Freon 13 and the cis isomer of 1,2-Dichloroethene are Tentatively Identified Compounds (TICs).
** All concentrations are in micrograms per cubic meter.
*** 1,2-dichloroethane's emission rates and maximum 1-hour impacts are less than all other target compound reporting limits due to 1,2-dichloroethane's relatively low maximum test run concentration value (less than the maximum lower quantitation limit - see Table 2-3).

N/A = not available
SGC = Short-Term Guideline Concentration

rates. These rates are multiplied by the off-property maximum 1-hour normalized impact of 972 micrograms per cubic meter as estimated by the atmospheric dispersion model.

The individual constituent impacts are provided in Tables 5-2 and 5-3 along with their respective SGCs. As shown, the air stripper impacts are all well below the NYSDEC SGC values. The highest actual impact constituent is tetrachloroethene with an impact of 28.6 micrograms per cubic meter. This value is 0.0353 percent of the SGC. The highest potential impact constituent is also tetrachloroethene with an impact of 36.8 micrograms per cubic meter. This value is 0.0454 percent of the SGC. The NYSDEC generally had considered impacts of less than the SGC as acceptable. Both values are well below this significance criteria level. Benzene has the highest impact relative to its respective SGC value. Benzene 1-hour actual and potential impacts are 2.00 and 2.50 micrograms per cubic meter, respectively. The values are well below a level of concern based on a percent of the guideline.

5.3 Long-Term Air Quality Impacts For Air Stripper Emissions

The maximum long-term (annual) actual and potential impacts specific to air stripper emissions were calculated and the results are listed in Tables 5-4 and 5-5, respectively. Actual and potential annual average release rates shown in Table 5-1 were converted into grams per second release rates. These rates are multiplied by the off-property maximum annual normalized impact of 7.27 micrograms per cubic meter as estimated by the atmospheric dispersion model.

The individual constituent impacts are listed in Tables 5-4 and 5-5 along with their respective long-term AGC. As shown the air stripper impacts are all well below the NYSDEC guideline values. The highest actual impact constituent is tetrachloroethene with an impact of 0.119 micrograms per cubic meter. The maximum impact value is 9.92 percent of the appropriate AGC and, therefore, is considered to be insignificant. The highest potential impact constituent is also tetrachloroethene with an impact of 0.154 micrograms per cubic meter. This value is 12.8 percent of the AGC. Although vinyl chloride has an emission rate that is lower than tetrachloroethene, its AGC of 0.02 micrograms per cubic meter is among the lowest for VOCs. This places vinyl chloride with actual and potential impact percentages of < 10.5 and < 13.5 micrograms per cubic meter as the highest constituent impact relative to the AGC value.

TABLE 5-4

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

MAXIMUM ANNUAL IMPACTS BASED ON ACTUAL ANNUAL AIR STRIPPER EMISSION RATES
First Year Annual Summary

CONSTITUENT	ACTUAL ANNUAL MAX. EMISSION RATE (tons/yr)	(g/s)	MAXIMUM ANNUAL ACTUAL IMPACT**	CURRENT AGC**	PERCENTAGE OF AGC
Ammonia	<0.0271	<0.000779	<0.00566	360	<0.00157
Benzene	0.0224	0.000645	0.00469	0.12	3.91
Bromodichloromethane				0.02	
Bromoform				12	
Carbon Tetrachloride				0.07	
Chlorobenzene				20	
Chloroethane				63,000	
Chloroform				23	
Dibromochloromethane				0.1	
1,2-Dichlorobenzene (o)				200	
1,3-Dichlorobenzene (m)				200	
1,4-Dichlorobenzene (p)				700**	
1,1-Dichloroethane	0.0403	0.00116	0.00843	500	0.00169
1,2-Dichloroethane	<0.00721***	0.000208***	<0.00151***	0.039	<3.87
1,1-Dichloroethene				0.02	
cis-1,2-Dichloroethene *	<0.152	<0.00436	<0.0317	1,900	<0.00167
trans-1,2-Dichloroethene				360	
1,2-Dichloropropane				0.15	
Ethylbenzene				1,000	
Freon 13*				530	
Methylene Chloride	<0.0145	<0.000416	<0.00302	27	<0.0112
Tetrachloroethene	0.570	0.0164	0.119	1.2*****	9.92
Toluene	<0.00843	<0.000243	<0.00177	2,000	<0.0000885
1,1,1-Trichloroethane	<0.00780	<0.000225	<0.00164	1,000	<0.000164
Trichloroethene	0.0444	0.00128	0.00931	0.45	2.07
Vinyl Chloride	<0.0100	<0.000289	<0.00210	0.02	<10.5
Xylenes (Total)	0.0217	0.000625	0.00454	300	0.00151

NOTES:
- All blank emission rate values are less than or equal to 0.00721 tons per year or 0.000208 grams per second.
- All blank maximum annual actual impacts are less than or equal to 0.00151 ug/m3.
- All blank percentage of AGC values are less than or equal to 7.55 percent.
- Maximum annual actual impacts are based on the maximum annual normalized impact of 7.27 ug/m3.

* Freon 13 and the cis isomer of 1,2-Dichloroethene are Tentatively Identified Compounds (TICs).
** All concentrations are in micrograms per cubic meter.
*** 1,2-dichloroethane's emission rates and maximum annual impacts are less than all other target compound reporting limits due to 1,2-dichloroethane's relatively low maximum test run concentration value (less than the maximum lower quantitation limit - see Table 2-3).
AGC = Annual Guideline Concentration

TABLE 5-5

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

MAXIMUM ANNUAL IMPACTS BASED ON POTENTIAL ANNUAL AIR STRIPPER EMISSION RATES
First Year Annual Summary

CONSTITUENT	POTENTIAL ANNUAL MAX. EMISSION RATE tons/yr	g/s	MAXIMUM ANNUAL POTENTIAL IMPACT**	CURRENT AGC**	PERCENTAGE OF AGC
Ammonia	<0.0349	<0.00100	<0.00727	360	<0.00202
Benzene	0.0289	0.000831	0.00604	0.12	5.03
Bromodichloromethane				0.02	
Bromoform				12	
Carbon Tetrachloride				0.07	
Chlorobenzene				20	
Chloroethane				63,000	
Chloroform				23	
Dibromochloromethane				0.1	
1,2-Dichlorobenzene (o)				200	
1,3-Dichlorobenzene (m)				200	
1,4-Dichlorobenzene (p)				700**	
1,1-Dichloroethane	0.0520	0.00150	0.0109	500	0.00218
1,2-Dichloroethane	<0.00928***	<0.000267***	<0.00194***	0.039	<4.97
1,1-Dichloroethene				0.02	
cis-1,2-Dichloroethene *	<0.195	<0.00561	<0.0408	1,900	<0.00215
trans-1,2-Dichloroethene				360	
1,2-Dichloropropane				0.15	
Ethylbenzene				1,000	
Freon 13*				530	
Methylene Chloride	<0.0186	<0.000536	<0.00390	27	<0.0144
Tetrachloroethene	0.735	0.0212	0.154	1.2*****	12.8
Toluene	<0.0109	<0.000313	<0.00228	2,000	<0.000114
1,1,1-Trichloroethane	<0.0101	<0.000289	<0.00210	1,000	<0.000210
Trichloroethene	0.0570	0.00164	0.0119	0.45	2.64
Vinyl Chloride	<0.0129	<0.000372	<0.00270	0.02	<13.5
Xylenes (Total)	0.0280	0.000805	0.00585	300	0.00195

NOTES:
- All blank emission rate values are less than or equal to 0.00928 tons per year or 0.000267 grams per second.
- All blank annual maximum potential impacts are less than or equal to 0.00194 ug/m3.
- All blank percentage of AGC values are less than or equal to 9.70 percent.
- Maximum annual potential impacts are based on the maximum annual normalized impact of 7.27 ug/m3.

* Freon 13 and the cis isomer of 1,2-Dichloroethene are Tentatively Identified Compounds (TICs).
** All concentrations are in micrograms per cubic meter (ug/m3).
*** 1,2-dichloroethane's emission rates and maximum annual impacts are less than all other target compound reporting limits due to 1,2-dichloroethane's relatively low maximum test run concentration value (less than the maximum lower quantitation limit - see Table 2-3).
AGC = Annual Guideline Concentration

5.4 Air Quality Impacts Including Other Sources

The overall air quality of an area is determined by the combination of all emissions of individual constituents. In this case, the air stripper tower has been shown to be a minor "area" source of HAPs as defined by EPA. EPA, however, is concerned that individual emissions or the aggregate of several sources may present significant risks to public health. The EPA was directed by Congress to evaluate this potential and report back to Congress on the results by November 15, 1993.

The potential aggregate impact of all sources in the vicinity of the air stripper can be estimated by utilizing background air quality levels monitored by the Town under other programs. The Town has conducted an ambient air monitoring program in conjunction with the Consent Order under RAP Attachment 2. That program has monitored many HAP compounds in the vicinity of the OBSWDC and the air stripper.

In order to evaluate the impact of other sources confident along with the air stripper emission constituents, a tabulation of the average observed values for the target compound list for the air stripper has been developed from data collected in the vicinity of the OBSWDC. The available background data was collected over a series of locations in and around the OBSWDC and that data is presented in Table 5-6. The NYSDEC AGCs have also been listed for the TCL for the air stripper source test program. As shown, the background levels of eight (8) compounds are in excess or potentially in excess of the NYSDEC (1991) AGC limits as per the latest guidance documents.

The results of adding the actual and potential impacts from the air stripper to the background concentrations are also presented in Table 5-6. The air stripper impacts cause, at worst, a slight increase in the background concentration. The air stripper impact is considered minimal in that no additional individual compound's total actual or potential concentration impacts exceed the level of the NYSDEC guidelines. The source(s) of the constituents that exceed the guidelines has not been fully identified. Furthermore, it is apparent from the OBSWDC monitoring data, that the OBSWDC is not the primary source of the constituents that exceed the guideline values.

The NYSDEC, in cases where background levels exceed ambient guideline concentrations listed in Appendix C of Air Guide No-1 (NYSDEC, 1991), is in the process of assembling a data base of such

TABLE 5-6

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

TOTAL TCL ANNUAL IMPACT CONCENTRATIONS
First Year Annual Summary

CONSTITUENT	Background Concentration Upwind of OBSWDC	Air Stripper Impact Plus Background Concentration		Annual Guideline Concentration
		Actual	Potential	
Ammonia	N/A	<0.00566*	<0.00727*	360
Benzene	2.73	2.73	2.74	0.12
Bromodichloromethane	<0.0488			0.02
Bromoform	<0.0495			12
Carbon Tetrachloride	0.402			0.07
Chlorobenzene	<0.0644			20
Chloroethane	<0.0638			63,000
Chloroform	<0.0894			23
Dibromochloromethane	<0.0482			0.1
1,2-Dichlorobenzene (o)	<0.0196			200
1,3-Dichlorobenzene (m)	<0.129			200
1,4-Dichlorobenzene (p)	<0.211			700
1,1-Dichloroethane	<0.0488	<0.0572	<0.0597	500
1,2-Dichloroethane	<0.0604	<0.0619	<0.0623	0.039
1,1-Dichloroethene	<0.0488			0.02
cis-1,2-Dichloroethene **	<0.0492	<0.0809	<0.122	1,900
trans-1,2-Dichloroethene	<0.0492			360
1,2-Dichloropropane	<0.0624			0.15
Ethylbenzene	1.47			1,000
Freon 13**	N/A			530
Methylene Chloride	<0.816	<0.819	<0.823	27
Tetrachloroethene	4.26	4.38	4.53	1.2
Toluene	>5.86	>5.86	>5.86	2000
1,1,1-Trichloroethane	2.29	<2.29	<2.29	1,000
Trichloroethene	<1.37	<1.38	<1.39	0.45
Vinyl Chloride	<0.0485	<0.0506	<0.0533	0.02
Xylenes (Total)	>7.14	>7.14	>7.14	300

NOTES:
- All concentrations are in micrograms per cubic meter.
- Background values on shaded areas exceed current AGCs.
- Blank values indicate air stripper impacts are below respective LQL's.
- Background concentrations are based on ambient air sampling results for the RAP Attachment 2 Study. These values represent the average of 6 quarterly upwind samples.
N/A = Not available

* Does not include ammonia background value. Ambient ammonia monitoring was not performed.
** Freon 13 and the cis isomer of 1,2-Dichloroethene are Tentatively Identified Compounds (TICs).

occurrences. Contaminants identified as exceeding guideline levels will be the object of future abatement planning activities. These activities may include the development of a comprehensive abatement strategy for this area.

6.0 CONCLUSIONS

A full year of quarterly stack testing has been completed at the air stripper located at the OBSWDC. The tests were completed in accordance with protocols developed in conjunction with and approved by the NYSDEC. The test results reported summarize the stack tests and provide an air quality impact analysis at offsite receptors in the area surrounding the OBSWDC.

The tests indicate that the emission rates of HAPs compared to release rates promulgated by EPA for all constituents individually and in combination, are well below the major source limits specific by the EPA.

An air quality impact analysis of the air stripper emissions was prepared using EPA approved modeling procedures. The air quality analysis indicates that all air stripper impacts are well below both short-term and long-term guideline concentrations set by the NYSDEC for the list of target compounds identified in the Consent Order. The maximum annual impact point is located northeast of the air stripper tower on the OBSWDC property line along Winding Road. The highest annual impact constituent is tetrachloroethene. The highest actual and potential impacts are 0.119 and 0.154 micrograms per cubic meter, respectively. These values are at 9.92 and 12.8 percent of the tetrachloroethene AGC.

Since the first year of testing included only four (4) source and ambient air quality sampling tests, it was agreed to continue the testing while the first year of data was being reviewed and analyzed. A second year of source and ambient testing at the air stripper has been initiated.

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ATTACHMENT I

OLD BETHPAGE LANDFILL

OYSTER BAY SOLID WASTE DISPOSAL COMPLEX

AIR STRIPPER STACK EMISSIONS TEST PROGRAM

First Year Annual Summary Report

Air Dispersion Modeling Results

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

**Model Uses RURAL Dispersion.

**Model Uses Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for RURAL Mode

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 233 Receptor(s)

**The Model Assumes A Pollutant Type of: VOCS

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
Model Outputs Tables of PERIOD Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 10.00 ; Decay Coef. = .0000 ; Rot. Angle = .0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = .10000E+07
Output Units = MICROGRAMS/M**3

**Input Runstream File: yr1r1.inp ; **Output Print File: yr1r1.out
**Detailed Error/Message File: ER.OUT

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BUILDING EXISTS	EMISSION RATE SCALAR VARY BY
LKBAS	0	.10000E+01	.0	.0	42.8	16.70	285.00	4.85	1.02	YES	

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID	SOURCE IDs
ALL	LKBAS ,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: LKBAS

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WA
1	8.4,	14.4,	0	2	8.4,	15.0,	0	3	8.4,	18.0,	0	4	8.4,	22.5,	0	5	8.4,	24.8,	0	6	8.4,	25.5,	0
7	8.4,	26.3,	0	8	8.4,	27.0,	0	9	8.4,	25.5,	0	10	8.4,	24.0,	0	11	8.4,	24.0,	0	12	8.4,	25.5,	0
13	8.4,	26.3,	0	14	8.4,	26.7,	0	15	8.4,	25.5,	0	16	8.4,	24.0,	0	17	8.4,	21.0,	0	18	8.4,	18.0,	0
19	8.4,	14.4,	0	20	8.4,	15.0,	0	21	8.4,	18.0,	0	22	8.4,	22.5,	0	23	8.4,	24.8,	0	24	8.4,	25.5,	0
25	8.4,	26.3,	0	26	8.4,	27.0,	0	27	8.4,	25.5,	0	28	8.4,	24.0,	0	29	8.4,	24.0,	0	30	8.4,	25.5,	0
31	8.4,	26.3,	0	32	8.4,	26.7,	0	33	8.4,	25.5,	0	34	8.4,	24.0,	0	35	8.4,	21.0,	0	36	8.4,	18.0,	0

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

-1000.0, -800.0, -600.0, -400.0, -200.0, .0, 200.0, 400.0, 600.0, 800.0,
1000.0,

*** Y-COORDINATES OF GRID ***
(METERS)

1000.0, 800.0, 600.0, 400.0,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) -1000.00	-800.00	-600.00	-400.00	-200.00	.00	200.00	400.00	600.0
400.00	48.77	48.77	54.86	60.96	54.86	42.67	48.77	48.77	48.7
600.00	48.77	48.77	54.86	60.96	60.96	42.67	48.77	48.77	48.7
800.00	48.77	48.77	48.77	54.86	54.86	48.77	54.86	54.86	48.7
1000.00	48.77	54.86	54.86	54.86	60.96	54.86	54.86	60.96	60.9

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 800.00	1000.00
400.00	42.67	42.67
600.00	48.77	42.67
800.00	48.77	48.77
1000.00	54.86	48.77

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

* RECEPTOR FLAGPOLE HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) -1000.00	-800.00	-600.00	-400.00	-200.00	.00	200.00	400.00	600.00
400.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
600.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
800.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1000.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

* RECEPTOR FLAGPOLE HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 800.00	1000.00
400.00	1.00	1.00
600.00	1.00	1.00
800.00	1.00	1.00
1000.00	1.00	1.00

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: G2 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

-1000.0, -800.0, -600.0,

*** Y-COORDINATES OF GRID ***
(METERS)

200.0, .0, -200.0, -400.0, -600.0, -800.0, -1000.0,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G2 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) -1000.00	-800.00	-600.00
-1000.00	42.67	42.67	42.67
-800.00	42.67	42.67	42.67
-600.00	42.67	42.67	42.67
-400.00	42.67	42.67	42.67
-200.00	42.67	42.67	42.67
.00	48.77	42.67	48.77
200.00	48.77	48.77	54.86

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G2 ; NETWORK TYPE: GRIDCART ***

* RECEPTOR FLAGPOLE HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) -1000.00	-800.00	-600.00
-1000.00	1.00	1.00	1.00
-800.00	1.00	1.00	1.00
-600.00	1.00	1.00	1.00
-400.00	1.00	1.00	1.00
-200.00	1.00	1.00	1.00
.00	1.00	1.00	1.00
200.00	1.00	1.00	1.00

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: G3 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

200.0, 400.0, 600.0, 800.0, 1000.0,

*** Y-COORDINATES OF GRID ***
(METERS)

200.0, .0, -200.0, -400.0, -600.0, -800.0, -1000.0,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G3 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 200.00	400.00	600.00	800.00	1000.00
-1000.00	42.67	42.67	42.67	42.67	42.67
-800.00	42.67	42.67	48.77	48.77	42.67
-600.00	48.77	48.77	48.77	42.67	42.67
-400.00	42.67	48.77	48.77	48.77	48.77
-200.00	42.67	48.77	48.77	48.77	42.67
.00	42.67	42.67	42.67	42.67	36.58
200.00	42.67	48.77	48.77	42.67	42.67

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G3 ; NETWORK TYPE: GRIDCART ***

* RECEPTOR FLAGPOLE HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 200.00	400.00	600.00	800.00	1000.00
-1000.00	1.00	1.00	1.00	1.00	1.00
-800.00	1.00	1.00	1.00	1.00	1.00
-600.00	1.00	1.00	1.00	1.00	1.00
-400.00	1.00	1.00	1.00	1.00	1.00
-200.00	1.00	1.00	1.00	1.00	1.00
.00	1.00	1.00	1.00	1.00	1.00
200.00	1.00	1.00	1.00	1.00	1.00

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: G4 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

100.0, 200.0, 300.0, 400.0, 500.0,

*** Y-COORDINATES OF GRID ***
(METERS)

500.0, 400.0, 300.0, 200.0, 100.0, .0, -100.0, -200.0, -300.0, -400.0,
-500.0,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G4 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 100.00	200.00	300.00	400.00	500.00
-500.00	42.67	42.67	42.67	48.77	48.77
-400.00	42.67	42.67	36.58	42.67	48.77
-300.00	42.67	36.58	36.58	42.67	48.77
-200.00	42.67	42.67	42.67	42.67	48.77
-100.00	42.67	42.67	42.67	42.67	42.67
.00	42.67	42.67	42.67	42.67	42.67
100.00	42.67	42.67	42.67	42.67	42.67
200.00	42.67	42.67	42.67	48.77	42.67
300.00	42.67	42.67	48.77	48.77	48.77
400.00	42.67	48.77	48.77	48.77	48.77
500.00	42.67	48.77	48.77	48.77	48.77

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G4 ; NETWORK TYPE: GRIDCART ***

* RECEPTOR FLAGPOLE HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 100.00	200.00	300.00	400.00	500.00
-500.00	1.00	1.00	1.00	1.00	1.00
-400.00	1.00	1.00	1.00	1.00	1.00
-300.00	1.00	1.00	1.00	1.00	1.00
-200.00	1.00	1.00	1.00	1.00	1.00
-100.00	1.00	1.00	1.00	1.00	1.00
.00	1.00	1.00	1.00	1.00	1.00
100.00	1.00	1.00	1.00	1.00	1.00
200.00	1.00	1.00	1.00	1.00	1.00
300.00	1.00	1.00	1.00	1.00	1.00
400.00	1.00	1.00	1.00	1.00	1.00
500.00	1.00	1.00	1.00	1.00	1.00

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: G5 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

-500.0, -400.0, -300.0, -200.0, -100.0, .0,

*** Y-COORDINATES OF GRID ***
(METERS)

500.0, 400.0, 300.0,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G5 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) -500.00	-400.00	-300.00	-200.00	-100.00	.00
300.00	54.86	54.86	54.86	48.77	42.67	42.67
400.00	60.96	60.96	60.96	54.86	42.67	42.67
500.00	54.86	60.96	60.96	54.86	42.67	42.67

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** NETWORK ID: G5 ; NETWORK TYPE: GRIDCART ***

* RECEPTOR FLAGPOLE HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) -500.00	-400.00	-300.00	-200.00	-100.00	.00
300.00	1.00	1.00	1.00	1.00	1.00	1.00
400.00	1.00	1.00	1.00	1.00	1.00	1.00
500.00	1.00	1.00	1.00	1.00	1.00	1.00

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(-400.0,	200.0,	54.9,	1.0);	(-400.0,	.0,	48.8,	1.0);
(.0,	-800.0,	42.7,	1.0);	(.0,	-1000.0,	42.7,	1.0);
(-500.0,	200.0,	54.9,	1.0);	(-500.0,	100.0,	54.9,	1.0);
(-500.0,	.0,	48.8,	1.0);	(-500.0,	-100.0,	48.8,	1.0);
(-500.0,	-200.0,	42.7,	1.0);	(-500.0,	-300.0,	42.7,	1.0);
(-400.0,	100.0,	54.9,	1.0);	(-400.0,	-200.0,	42.7,	1.0);
(-300.0,	200.0,	48.8,	1.0);	(-300.0,	100.0,	48.8,	1.0);
(-216.9,	289.2,	48.8,	1.0);	(-132.5,	277.1,	42.7,	1.0);
(-24.1,	241.0,	42.7,	1.0);	(72.3,	192.8,	42.7,	1.0);
(96.4,	120.5,	42.7,	1.0);	(84.3,	60.2,	42.7,	1.0);
(72.3,	.0,	42.7,	1.0);	(72.3,	-96.4,	42.7,	1.0);
(72.3,	-144.6,	36.6,	1.0);	(72.3,	-216.9,	36.6,	1.0);
(72.3,	-289.2,	36.6,	1.0);	(72.3,	-337.4,	36.6,	1.0);
(96.4,	-409.6,	36.6,	1.0);	(108.4,	-481.9,	36.6,	1.0);
(84.3,	-554.2,	36.6,	1.0);	(60.2,	-614.4,	36.6,	1.0);
(36.1,	-674.7,	36.6,	1.0);	(12.0,	-722.9,	36.6,	1.0);
(.0,	-783.1,	36.6,	1.0);	(-41.2,	-843.4,	36.6,	1.0);
(-72.3,	-915.6,	36.6,	1.0);	(-132.5,	-963.8,	36.6,	1.0);
(-192.8,	-1012.0,	36.6,	1.0);	(-241.0,	-1036.1,	36.6,	1.0);
(-313.2,	-1132.5,	30.5,	1.0);	(-361.4,	-1036.1,	30.5,	1.0);
(-397.6,	-1012.0,	30.5,	1.0);	(-457.8,	-939.7,	36.6,	1.0);
(-506.9,	-891.6,	36.6,	1.0);	(-554.2,	-843.4,	36.6,	1.0);
(-566.3,	-771.1,	36.6,	1.0);	(-554.2,	-674.7,	36.6,	1.0);
(-566.3,	-602.4,	36.6,	1.0);	(-602.4,	-530.1,	36.6,	1.0);
(-650.6,	-481.9,	36.6,	1.0);	(-674.7,	-409.6,	36.6,	1.0);
(-578.3,	-385.5,	42.7,	1.0);	(-506.0,	-361.4,	42.7,	1.0);
(-433.7,	-289.2,	42.7,	1.0);	(-385.5,	-241.0,	42.7,	1.0);
(-361.4,	-168.7,	42.7,	1.0);	(-457.8,	-96.4,	48.8,	1.0);
(-313.2,	.0,	48.8,	1.0);	(-289.2,	60.2,	48.8,	1.0);
(-277.1,	132.5,	48.8,	1.0);	(-253.0,	216.9,	48.8,	1.0);

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: ANN85.MET FORMAT: FREE
SURFACE STATION NO.: 12345 UPPER AIR STATION NO.: 12345
NAME: UNKNOWN NAME: UNKNOWN
YEAR: 1985 YEAR: 1985

YEAR	MONTH	DAY	HOUR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	URBAN
85	1	1	1	226.0	5.10	277.0	4	90.0	90.0
85	1	1	2	228.0	4.02	277.0	5	92.0	92.0
85	1	1	3	235.0	4.92	277.0	5	95.0	95.0
85	1	1	4	226.0	4.65	276.0	5	97.0	97.0
85	1	1	5	226.0	4.65	275.0	5	100.0	100.0
85	1	1	6	232.0	4.65	275.0	5	102.0	102.0
85	1	1	7	246.0	5.36	275.0	4	105.0	105.0
85	1	1	8	252.0	5.10	276.0	4	107.0	107.0
85	1	1	9	261.0	5.99	277.0	4	110.0	110.0
85	1	1	10	262.0	5.54	278.0	4	112.0	112.0
85	1	1	11	285.0	5.10	281.0	4	115.0	115.0
85	1	1	12	320.0	4.47	281.0	4	117.0	117.0
85	1	1	13	10.0	4.02	282.0	4	120.0	120.0
85	1	1	14	275.0	4.04	281.0	4	122.0	122.0
85	1	1	15	273.0	4.13	281.0	4	122.0	122.0
85	1	1	16	268.0	4.03	280.0	4	122.0	122.0
85	1	1	17	260.0	3.63	279.0	5	141.0	141.0
85	1	1	18	250.0	4.72	279.0	5	181.0	181.0
85	1	1	19	248.0	5.04	279.0	4	221.0	221.0
85	1	1	20	236.0	5.35	278.0	4	260.0	260.0
85	1	1	21	236.0	5.29	278.0	4	300.0	300.0
85	1	1	22	241.0	5.82	278.0	4	340.0	340.0
85	1	1	23	230.0	5.15	278.0	4	380.0	380.0
85	1	1	24	234.0	5.87	277.0	4	419.0	419.0

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD	X-COORD (METERS)								
(METERS)	-1000.00	-800.00	-600.00	-400.00	-200.00	.00	200.00	400.00	600.0
400.00	.34936	.41998	.74511	1.49865	1.44381	1.57776	3.74140	3.41521	2.5239
600.00	.27514	.46196	.72170	.94393	1.43500	1.13988	2.21207	2.80011	2.1493
800.00	.36238	.39908	.44950	.63807	.88789	1.13087	1.79181	1.96206	1.7977
1000.00	.30623	.41599	.38258	.61900	.85093	1.04362	1.29695	1.41721	1.666

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 800.00	1000.00
400.00	1.35412	1.10611
600.00	1.88570	1.14596
800.00	1.49570	1.46239
1000.00	1.42874	1.11416

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G2 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) -1000.00	-800.00	-600.00
-1000.00	.62711	.56575	.47836
-800.00	.85877	.81916	.67730
-600.00	.82980	1.13292	1.12920
-400.00	.63668	.98601	1.48390
-200.00	.58198	.67020	.97684
.00	.63645	.60624	1.07469
200.00	.44973	.55858	.99772

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G3 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 200.00	400.00	600.00	800.00	1000.00
-1000.00	.72650	.72005	.54205	.37715	.38367
-800.00	.98242	.81300	.64048	.59529	.59729
-600.00	1.67808	1.08021	.86626	.79188	.65228
-400.00	1.58647	1.41141	1.37762	1.27528	1.22826
-200.00	1.86820	2.99470	2.42558	1.73558	1.14286
.00	4.50813	2.70433	1.85069	1.36889	.85535
200.00	4.20314	3.74304	2.46312	1.27824	.99066

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G4 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 100.00	200.00	300.00	400.00	500.00
-500.00	1.50257	1.54721	1.11718	1.05842	1.07339
-400.00	1.94167	1.58647	.73651	1.06367	1.60894
-300.00	2.48839	.96820	.91764	1.56236	1.84450
-200.00	2.57908	1.86820	2.18527	2.23256	2.89736
-100.00	2.76152	3.98090	3.74264	2.93249	2.38889
.00	6.63598	4.50813	3.40760	2.70433	2.20706
100.00	6.40544	3.96035	3.13437	2.45639	1.99702
200.00	4.38417	4.20314	3.34092	3.74304	2.16004
300.00	2.94699	4.15484	4.66375	4.08797	3.13071
400.00	2.13482	3.74140	4.14652	3.41521	3.28673
500.00	1.61088	2.65251	3.40540	3.00448	2.63818

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G5 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) -500.00	-400.00	-300.00	-200.00	-100.00	.00
300.00	.81806	1.35160	1.59459	1.03792	.91831	1.90177
400.00	1.33620	1.49865	1.73827	1.44381	.89083	1.57776
500.00	.89997	1.26298	1.15710	1.48138	.86788	1.32861

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
-400.00	200.00	1.20559	-400.00	.00	1.55312
.00	-800.00	.80479	.00	-1000.00	.64161
-500.00	200.00	1.00956	-500.00	100.00	1.31725
-500.00	.00	1.27536	-500.00	-100.00	1.53625
-500.00	-200.00	1.26319	-500.00	-300.00	1.70367
-400.00	100.00	1.61675	-400.00	-200.00	1.84764
-300.00	200.00	.93432	-300.00	100.00	1.16186
-216.90	289.20	1.12509	-132.50	277.10	.75208
-24.10	241.00	1.69343	72.30	192.80	3.91263
96.40	120.50	6.53196	84.30	60.20	7.27263
72.30	.00	6.20178	72.30	-96.40	2.61343
72.30	-144.60	1.27511	72.30	-216.90	1.57367
72.30	-289.20	1.44254	72.30	-337.40	1.31831
96.40	-409.60	1.24954	108.40	-481.90	1.12513
84.30	-554.20	.93514	60.20	-614.40	.85834
36.10	-674.70	.77396	12.00	-722.90	.69406
.00	-783.10	.63675	-41.20	-843.40	.57056
-72.30	-915.60	.53009	-132.50	-963.80	.51948
-192.80	-1012.00	.45626	-241.00	-1036.10	.36677
-313.20	-1132.50	.22371	-361.40	-1036.10	.22189
-397.60	-1012.00	.24095	-457.80	-939.70	.34911
-506.90	-891.60	.41479	-554.20	-843.40	.46670
-566.30	-771.10	.55199	-554.20	-674.70	.71355
-566.30	-602.40	.85820	-602.40	-530.10	1.01415
-650.60	-481.90	1.06621	-674.70	-409.60	.97552
-578.30	-385.50	1.54505	-506.00	-361.40	1.79754
-433.70	-289.20	2.03613	-385.50	-241.00	2.20359
-361.40	-168.70	1.87727	-457.80	-96.40	1.65760
-313.20	.00	1.91072	-289.20	60.20	1.41738
-277.10	132.50	1.02963	-253.00	216.90	1.13890

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) -1000.00	-800.00	-600.00	-400.00	-200.00
400.0	189.23210 (85091724)	184.44230 (85080301)	439.07270 (85080305)	798.00620 (85091623)	406.33940 (85100205
600.0	116.21520 (85062923)	214.28330 (85051801)	355.34480 (85091623)	627.08050 (85062905)	611.40360 (85060805
800.0	173.05260 (85051724)	174.83780 (85091623)	201.35260 (85070502)	241.27070 (85100205)	361.93390 (85091802
1000.0	147.32730 (85091623)	253.41850 (85042201)	218.63000 (85070424)	289.23390 (85090701)	293.81020 (85080223)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) .00	200.00	400.00	600.00	800.00
400.0	153.24000 (85060202)	236.92570 (85060221)	237.27070 (85092018)	195.51740 (85092222)	97.00433 (85060822)
600.0	125.54380 (85060202)	187.65830 (85060723)	182.67210 (85042206)	198.71520 (85070905)	156.38630 (85101801)
800.0	165.38370 (85060202)	285.29700 (85070824)	340.36150 (85070519)	213.51780 (85090702)	174.77820 (85070905)
1000.0	233.80350 (85042022)	330.40870 (85081724)	323.65230 (85100206)	202.31970 (85062201)	220.57490 (85092220)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G1 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 1000.00
400.0	91.07056 (85052706)
600.0	78.95792 (85050704)
800.0	180.86120 (85042002)
1000.0	147.28880 (85070905)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G2 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) -1000.00	-800.00	-600.00
-1000.0	70.28055 (85090306)	88.63548 (85101405)	91.36217 (85082002)
-800.0	106.84150 (85080604)	74.62373 (85090306)	100.83140 (85081004)
-600.0	100.45370 (85072401)	120.15420 (85082103)	82.08443 (85052501)
-400.0	113.09530 (85061601)	99.37057 (85052423)	114.79460 (85072401)
-200.0	110.94760 (85091624)	97.73320 (85080607)	129.97890 (85082021)
.0	214.24880 (85070506)	109.69730 (85051705)	205.28560 (85070506)
200.0	209.65240 (85062922)	198.16030 (85051624)	499.80270 (85070204)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G3 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 200.00	400.00	600.00	800.00	1000.00
-1000.0	107.15980 (85072719)	113.90540 (85091421)	101.37780 (85082122)	67.47382 (85072904)	62.72572 (85061505)
-800.0	98.18005 (85090624)	123.31770 (85080905)	146.40250 (85072903)	103.02100 (85061505)	84.91267 (85100719)
-600.0	180.48930 (85051406)	155.71410 (85061302)	137.98350 (85061505)	101.19390 (85101407)	80.63160 (85082206)
-400.0	127.43670 (85082224)	200.54060 (85061505)	166.76360 (85062003)	177.97860 (85052201)	184.66150 (85070906)
-200.0	166.61020 (85061505)	243.16730 (85052201)	206.44220 (85091123)	197.56340 (85081003)	79.22816 (85052608)
.0	196.33570 (85092007)	153.46880 (85092007)	125.82230 (85092007)	107.91570 (85092007)	64.32227 (85080904)
200.0	170.80650 (85071821)	263.16370 (85060822)	229.47170 (85072720)	107.17120 (85061420)	115.42450 (85072402)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G4 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 100.00	200.00	300.00	400.00	500.00
-500.0	119.96580 (85072320)	129.06760 (85071806)	128.36030 (85052301)	157.34780 (85090904)	164.09190 (85061505)
-400.0	140.58680 (85082304)	127.43670 (85082224)	68.88143 (85100218)	118.74780 (85061505)	170.94770 (85100719)
-300.0	156.13660 (85051406)	77.26165 (85072111)	74.14346 (85032109)	108.28810 (85092906)	191.62580 (85052221)
-200.0	179.48590 (85082224)	166.61020 (85061505)	152.49350 (85062003)	131.00600 (85061503)	193.95600 (85062802)
-100.0	237.18720 (85071804)	177.45050 (85061503)	162.07910 (85052224)	135.90160 (85090901)	112.61590 (85081606)
.0	289.20330 (85032905)	196.33570 (85092007)	170.37540 (85092007)	153.46880 (85092007)	136.76320 (85092007)
100.0	237.54380 (85043022)	182.86460 (85060822)	157.66530 (85060823)	152.59030 (85061420)	121.26540 (85070406)
200.0	177.82160 (85060221)	170.80650 (85071821)	156.83360 (85091920)	263.16370 (85060822)	131.99180 (85092006)
300.0	158.88210 (85060723)	156.18850 (85062124)	270.24840 (85071821)	246.64800 (85082201)	207.41540 (85050704)
400.0	143.25810 (85070421)	236.92570 (85060221)	242.02630 (85060821)	237.27070 (85092018)	213.34520 (85042002)
500.0	125.44900 (85053104)	211.80120 (85081423)	202.07850 (85091822)	190.77150 (85092220)	212.48190 (85092018)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G5 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) -500.00	-400.00	-300.00	-200.00	-100.00
300.0	336.50940 (85062923)	562.57730 (85051801)	503.38720 (85091623)	299.56160 (85091721)	164.93880 (85100203)
400.0	734.41650 (85051724)	798.00620 (85091623)	971.58170 (85070502)	406.33940 (85100205)	135.79200 (85072503)
500.0	417.99710 (85091623)	755.42490 (85042201)	675.06910 (85070424)	508.92140 (85090701)	128.88210 (85080702)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** NETWORK ID: G5 ; NETWORK TYPE: GRIDCART ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) .00
300.0	170.22370 (85060202)
400.0	153.24000 (85060202)
500.0	136.50990 (85060202)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
-400.00	200.00	489.02760	(85080301)	-400.00	.00	199.47570	(85061122)
.00	-800.00	88.69450	(85090905)	.00	-1000.00	82.39035	(85082406)
-500.00	200.00	511.43440	(85091724)	-500.00	100.00	553.59860	(85062922)
-500.00	.00	201.17960	(85082101)	-500.00	-100.00	235.12390	(85082922)
-500.00	-200.00	106.07030	(85021114)	-500.00	-300.00	119.59510	(85072401)
-400.00	100.00	497.48470	(85051624)	-400.00	-200.00	133.11630	(85071723)
-300.00	200.00	211.01960	(85063020)	-300.00	100.00	195.33350	(85011715)
-216.90	289.20	298.49010	(85051623)	-132.50	277.10	163.02300	(85091619)
-24.10	241.00	182.46330	(85061119)	72.30	192.80	187.60470	(85060104)
96.40	120.50	224.96550	(85061722)	84.30	60.20	276.31620	(85032822)
72.30	.00	269.00520	(85032905)	72.30	-96.40	242.68290	(85072224)
72.30	-144.60	78.85487	(85041915)	72.30	-216.90	85.50171	(85091009)
72.30	-289.20	91.85670	(85011112)	72.30	-337.40	113.64680	(85011112)
96.40	-409.60	97.56857	(85011112)	108.40	-481.90	96.78710	(85011112)
84.30	-554.20	82.86363	(85011112)	60.20	-614.40	66.25881	(85112709)
36.10	-674.70	72.74191	(85082018)	12.00	-722.90	72.21137	(85082018)
.00	-783.10	64.40597	(85082018)	-41.20	-843.40	76.77770	(85011111)
-72.30	-915.60	82.32564	(85011111)	-132.50	-963.80	60.67758	(85011111)
-192.80	-1012.00	82.66682	(85090105)	-241.00	-1036.10	64.42125	(85110609)
-313.20	-1132.50	44.43872	(85010516)	-361.40	-1036.10	35.86876	(85091518)
-397.60	-1012.00	48.86036	(85082004)	-457.80	-939.70	95.51393	(85021108)
-506.90	-891.60	102.05610	(85021108)	-554.20	-843.40	73.75996	(85101408)
-566.30	-771.10	55.61609	(85071305)	-554.20	-674.70	80.86537	(85101405)
-566.30	-602.40	74.17776	(85072324)	-602.40	-530.10	77.77947	(85082518)
-650.60	-481.90	79.05573	(85082103)	-674.70	-409.60	76.63824	(85072401)
-578.30	-385.50	114.76820	(85072401)	-506.00	-361.40	129.18220	(85081923)
-433.70	-289.20	107.30810	(85070102)	-385.50	-241.00	104.34920	(85052513)
-361.40	-168.70	130.58940	(85071723)	-457.80	-96.40	265.42510	(85082922)
-313.20	.00	245.76370	(85061122)	-289.20	60.20	236.67230	(85110118)
-277.10	132.50	196.15160	(85052921)	-253.00	216.90	332.71800	(85080224)

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE MAXIMUM 50 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

** CONC OF VOCS IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF		TYPE	RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF		TYPE
1.	971.58170	(85070502) AT (	-300.00,	400.00)	GC	26.	553.59860	(85062922) AT (	-500.00,	100.00)	DC
2.	798.00620	(85091623) AT (	-400.00,	400.00)	GC	27.	536.77430	(85070503) AT (	-400.00,	600.00)	GC
3.	798.00620	(85091623) AT (	-400.00,	400.00)	GC	28.	528.58830	(85062905) AT (	-300.00,	500.00)	GC
4.	755.42490	(85042201) AT (	-400.00,	500.00)	GC	29.	519.11030	(85070502) AT (	-400.00,	500.00)	GC
5.	753.31920	(85062919) AT (	-400.00,	400.00)	GC	30.	511.43440	(85091724) AT (	-500.00,	200.00)	DC
6.	753.31920	(85062919) AT (	-400.00,	400.00)	GC	31.	508.92140	(85090701) AT (	-200.00,	500.00)	GC
7.	734.41650	(85051724) AT (	-500.00,	400.00)	GC	32.	503.38720	(85091623) AT (	-300.00,	300.00)	GC
8.	720.33310	(85091723) AT (	-400.00,	400.00)	GC	33.	499.80270	(85070204) AT (	-600.00,	200.00)	GC
9.	720.33310	(85091723) AT (	-400.00,	400.00)	GC	34.	499.73620	(85062919) AT (	-300.00,	300.00)	GC
10.	690.32440	(85082424) AT (	-400.00,	400.00)	GC	35.	499.19940	(85060804) AT (	-300.00,	400.00)	GC
11.	690.32440	(85082424) AT (	-400.00,	400.00)	GC	36.	497.48470	(85051624) AT (	-400.00,	100.00)	DC
12.	686.51100	(85070503) AT (	-300.00,	400.00)	GC	37.	491.18610	(85081103) AT (	-400.00,	100.00)	DC
13.	685.28280	(85051601) AT (	-300.00,	400.00)	GC	38.	489.02760	(85080301) AT (	-400.00,	200.00)	DC
14.	681.29860	(85051603) AT (	-500.00,	400.00)	GC	39.	485.58230	(85051724) AT (	-400.00,	300.00)	GC
15.	675.06910	(85070424) AT (	-300.00,	500.00)	GC	40.	474.15350	(85051605) AT (	-400.00,	100.00)	DC
16.	627.08050	(85062905) AT (	-400.00,	600.00)	GC	41.	470.24030	(85091723) AT (	-300.00,	300.00)	GC
17.	621.78860	(85091622) AT (	-400.00,	500.00)	GC	42.	466.36370	(85072821) AT (	-300.00,	400.00)	GC
18.	621.38270	(85070505) AT (	-500.00,	400.00)	GC	43.	465.89840	(85090120) AT (	-200.00,	600.00)	GC
19.	611.40360	(85060805) AT (	-200.00,	600.00)	GC	44.	464.32130	(85080601) AT (	-200.00,	600.00)	GC
20.	600.98880	(85042201) AT (	-300.00,	400.00)	GC	45.	455.52160	(85082424) AT (	-300.00,	300.00)	GC
21.	562.57730	(85051801) AT (	-400.00,	300.00)	GC	46.	453.12860	(85070922) AT (	-300.00,	400.00)	GC
22.	558.79630	(85091801) AT (	-400.00,	400.00)	GC	47.	446.22070	(85091620) AT (	-400.00,	100.00)	DC
23.	558.79630	(85091801) AT (	-400.00,	400.00)	GC	48.	445.72870	(85062921) AT (	-300.00,	500.00)	GC
24.	554.02990	(85051801) AT (	-500.00,	400.00)	GC	49.	439.07270	(85080305) AT (	-600.00,	400.00)	GC
25.	553.99510	(85051601) AT (	-400.00,	500.00)	GC	50.	438.84350	(85082006) AT (	-500.00,	100.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)				OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	7.27263 AT (	84.30,	60.20,	42.67,	1.00)	DC	
	2ND HIGHEST VALUE IS	6.63598 AT (	100.00,	.00,	42.67,	1.00)	GC	G4
	3RD HIGHEST VALUE IS	6.53196 AT (	96.40,	120.50,	42.67,	1.00)	DC	
	4TH HIGHEST VALUE IS	6.40544 AT (	100.00,	100.00,	42.67,	1.00)	GC	G4
	5TH HIGHEST VALUE IS	6.20178 AT (	72.30,	.00,	42.67,	1.00)	DC	
	6TH HIGHEST VALUE IS	4.66375 AT (	300.00,	300.00,	48.77,	1.00)	GC	G4

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZFLAG)				OF TYPE	NETWORK GRID-ID
ALL	HIGH	1ST HIGH VALUE IS	971.58170	ON 85070502: AT (	-300.00,	400.00,	60.96,	1.00)	GC	G5

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

QUARTERLY REPORT APPENDICIES

OLD BETHPAGE LANDFILL
OYSTER BAY SOLID WASTE DISPOSAL COMPLEX
AIR STRIPPER STACK EMISSIONS TEST PROGRAM

Initial Year of Operation

Prepared for:

Lockwood, Kessler & Bartlett, Inc.
One Aerial Way
Syosset, New York 11791

Prepared by:

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, New York 11590

OCTOBER 1993

INITIAL YEAR OF OPERATION
OBSWDC AIR STRIPPER TEST PROGRAM
QUARTERLY REPORT APPENDICIES

FIRST QUARTER APPENDICIES ONLY
(Report submitted under separate cover)

APPENDICIES:

A. Equipment Calibrations
B. Process Data Sheets
C. RTL VOST Results
D. Field Data Sheets
E. Influent and Effluent Water VOC Results
F. Influent and Effluent Water Ammonia Results
G. Ammonia Stack Test Analytical Results
H. Meteorological Data
I. Modeling Data

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

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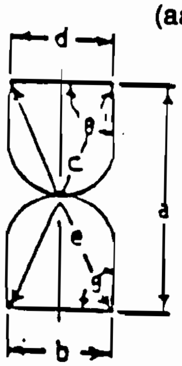
APPENDIX A

EQUIPMENT CALIBRATIONS

S-TYPE PITOT GEOMETRIC CALIBRATION
PART 2 – PITOT ALIGNMENT

Project: LKBORAS	Probe ID: NA
Project Site: OII Bellefage Landfill	Pitot ID: 5' S-Type (IT Leasing)
Date: 5/22/97	Operator: RSM

A. Transverse Tube Axis



$(aa + bb - cc)/2ab = \cos\theta$

$(aa + dd - ee)/2ad = \cos\theta'$

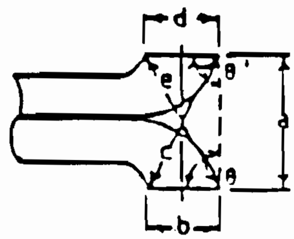
$(80 < \theta < 100)$

$(80 < \theta' < 100)$

a = 1.105
b = 0.368
c = 1.127
d = 0.378
e = 1.134

θ = 83.9
θ' = 84.6

B. Longitudinal Tube Axis



$(aa + bb - cc)/2ab = \cos\theta$

$(aa + dd - ee)/2ad = \cos\theta'$

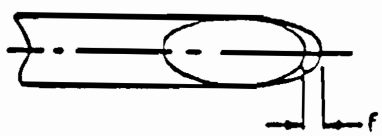
$(85 < \theta < 95)$

$(85 < \theta' < 95)$

a = 1.042
b = 0.510
c = 1.219
d = 0.520
e = 1.195

θ = 91.7
θ' = 88.2

C.



f = < 1/8"

f < 1/8 inches

D.

g = < 1/32"

g < 1/32 inches

Note: Values in parentheses are EPA Method 2 specifications.

Probe Thermocouple Calibration	Tolerances
Expected Stack Temperature, (Ts): ~80 °F	
Mercury Thermometer, (Tref): 32 / 80.2 / 192 °F	Ts: +/- 10% ✓
Thermocouple Readout: 32 / 80.2 / 192 °F	Tref: +/- 1.5% ✓
Probe Identification: 5' S-Type Pitot (IT Leasing)	
Technician: RSM	
Date: 5/22/97	

METER BOX FULL TEST CALIBRATION

Date: 2-27-92　　Operator: D Rybarski

Meter Box No.: 71-V5	Meter Box ΔH@: N/A	Meter Box Yd: .9868	Barometric Pressure: 29.25

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time θ	Yd	ΔH@
.33	1.4	-1.5	1.0000	∅	1.002	1.002	∅	29.62	1.0460	61	61	61	80	80	80	29.60	.9856	N/A
.33	1.4	-1.4	1.0000	∅	1.001	1.001	∅	29.59	1.0449	61	61	61	81	81	81	29.61	.9877	N/A
.33	1.4	-1.4	1.0000	∅	1.002	1.002	∅	29.63	1.0464	61	61	61	81	81	81	29.65	.9873	N/A

Nomenclature

Barometric Pressure
Flow Rate (cfm)
Orifice Pressure Differential ("H_2O)
Inlet Pressure Differential ("H_2O)
Volume Dry Gas Meter (ft^3)
Volume Dry Standard (ft^3)
Meter Correction Factor (unitless)
Standard Meter Correction Factor (unitless)
Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)\theta}{(Vds)(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)\theta}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
4.8	5.0
9.9	10.0
15.0	15.0
19.8	20.0
MAX	25.0

Thermometer Calibration

Standard	Inlet	Outlet
40	41	41
60	60	60
80	80	80
100	100	100
120	120	120
140	140	14

PUMP CALIBRATION SHEET

Project: [illegible]

Date: 5/21/[illegible] (pre) 6/[illegible] (post)

Time: [illegible] (pre) [illegible] (post)

Pump ID: [illegible]

Barometric Pressure, (Pb): (pre) (post) [illegible], [illegible] (in-Hg)

Temperature, (T): [illegible] (pre) [illegible] (post) (C)

Operator: [illegible]

← pre cal →				← post Calibration →		
Rotameter Reading (Center of the Ball)						
1.0	1.5			1.0	1.5	
Sampling Medium						
2 T/C series	2 T/C series			2 T/C series	2 T/C series	
Actual Liters Per Minutese, ALPM						
[illegible]	1.22			[illegible]	1.26	
0.848	1.23			0.927	[illegible]	
0.843	1.19			0.902	1.37	
0.846	1.12			0.897	1.23	
0.844	1.17			0.904	1.25	
0.845	1.14			0.957	1.29	
0.841	1.14			1.01	1.24	
0.858	1.12			[illegible]	1.23	
0.865	1.15			0.972	1.32	
0.876	1.09			[illegible]	1.35	
0.844	1.11			0.949	1.25	
0.852	1.12			[illegible]	[illegible]	
0.855	1.15			0.966	1.32	
0.852	1.15			[illegible]	1.32	
0.839	1.10			[illegible]	1.33	
[illegible]	1.11			[illegible]	1.21	
[illegible]	1.15			[illegible]	1.22	
Avg(ALPM)						
0.849	1.145			0.944	1.27	
Average Standard Liters Per Minute, Avg(SLPM)						

$$SLPM = ALPM \times \{[(Pb-Pv)/29.92] \times [293/(273+T)]\}$$

$$C = (5/9) \times (F-32)$$

Vapor Pressure (Pv) Table	
(C)	(in-Hg)
15	0.50
16	0.54
17	0.57
18	0.61
19	0.65
20	0.69
21	0.73
22	0.78
23	0.83
24	0.88
25	0.94
26	0.99
27	1.06
28	1.12
29	1.18
30	1.25
31	1.33
32	1.40

Remarks:

Remarks: 5 min warmup b4 start calibration [illegible]

OLD BETHPAGE LANDFILL
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APPENDIX B

PROCESS DATA SHEETS

sheet #1

TOWN OF OYSTER BAY

DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

DAILY OPERATIONS REPORT
DAY SHIFT

FILE ID # 92-05-28-12
DATE MAY 28 1992

	WELLFIELD OPERATION (GALLONS PER MINUTE)						AIR STRIPPER OPERATING PARAMETERS					
TIME	WELL 1 FLOW	WELL 2 FLOW	WELL 3 FLOW	WELL 4 FLOW	WELL 5 FLOW	SYSTEM FLOW	STRIPPER FLOW GPM	PRESS FIL FLOW GPM	BLOWER AIR FLOW SCFM	AIR PRESSURE INCHES WC	ACID RINSE ON/OFF	SUPERVISO & OPERATO INITITALS
10:50	202	250	201	199	192	1019	1112	1116	2.9	9813.40	263	D.C.
11:00	199	251	194	196	196	1012	1105	961	2.9	9813.40	275	D.C.
11:10	204	252	197	200	200	1033	1098	1018	2.9	9389.80	286	D.C.
11:20	205	253	196	200	201	1034	1067	1036	2.5	9389.80	296	D.C.
11:30	194	251	204	203	204	1023	1073	1127	2.9	9389.80	306	D.C.
11:40	196	252	198	202	197	1025	1082	1032	2.9	9813.40	316	D.C.
11:50	200	254	194	200	201	902	1046	1123	2.8	10166.40	327	D.C.
12:00	196	250	196	196	202	1023	1126	0002	2.8	9813.40	335	D.C.
AVERAGE												

REMARKS: SYSTEM FLOW - 11:50 FLUXUATED.

NOTES:

1- THE SYSTEM FLOW, STRIPPER FLOW AND PRESSURE FILTER FLOW READINGS MUST BE EQUAL WITHIN 5%.

2- EFFLUENT FLOW MEASURES THE TOTAL FLOW THROUGH THE FACILITY. OPERATOR SHALL RESET THE GAUGE TO ZERO AT THE BEGINNING OF EACH SHIFT.

(Sheet #3)

TOWN OF OYSTER BAY

DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

DAILY OPERATIONS REPORT
DAY SHIFT

FILE ID #	92-05-28.12
DATE	MAY 28 1992

	WELLFIELD OPERATION (GALLONS PER MINUTE)						AIR STRIPPER OPERATING PARAMETERS					
TIME	WELL 1 FLOW	WELL 2 FLOW	WELL 3 FLOW	WELL 4 FLOW	WELL 5 FLOW	SYSTEM FLOW	STRIPPER FLOW GPM	PRESS FIL FLOW GPM	BLOWER AIR FLOW SCFM	AIR PRESSURE INCHES WC	ACID RINSE ON/OFF	SUPERVISOR & OPERATOR INITIALS
1:30	196	250	200	196	197	1070	1115	685	2.9	10166.40	418	D.C
1:40	193	250	202	196	145	1030	1002	987	2.9	10166.40	427	D.C.
1:50	203	252	201	196	202	1005	892	1003	2.9.	10166.40	450	D.C.
2:00	203	251	194	199	201	879	904	1044	2.9.	10166.40	447	D.C.
2:10	202	251	196	202	198	1023	1089	1132	2.8	9813.40	458	D.C.
2:20	204	253	194	203	196	842	1021	1129	2.7	9813.40	5	D.C.
2:30	194	252	204	199	202	972	877	111.3	2.8	9813.40	15	D.C.
2:40	196	253	196	199	200	1001	1066	1125	2.9	10166.40	25	D.C.
AVERAGE												

REMARKS:

NOTES:

1- THE SYSTEM FLOW, STRIPPER FLOW AND PRESSURE FILTER FLOW READINGS MUST BE EQUAL WITHIN 5%.

2- EFFLUENT FLOW MEASURES THE TOTAL FLOW THROUGH THE FACILITY. OPERATOR SHALL RESET THE GAUGE TO ZERO AT THE BEGINNING OF EACH SHIFT.

SHEET #5

TOWN OF OYSTER BAY

DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

DAILY OPERATIONS REPORT
DAY SHIFT

FILE ID #	92-05-28-13
DATE	5-28-92

	WELLFIELD OPERATION (GALLONS PER MINUTE)						AIR STRIPPER OPERATING PARAMETERS					
TIME	WELL 1 FLOW	WELL 2 FLOW	WELL 3 FLOW	WELL 4 FLOW	WELL 5 FLOW	SYSTEM FLOW	STRIPPER FLOW GPM	PRESS FIL FLOW GPM	BLOWER AIR FLOW SCFM	AIR PRESSURE INCHES WC	ACID RINSE ON/OFF	SUPERVISO & OPERATO INITITALS
4:10	196	256	198	196	197	1030	1078	1124	9813.40	2.8	112	A.C.
4:20	194	252	201	196	195	1029	off 4:18 0000	1108	9813.40	1.7	123	B.W.S.
4:30	202	251	196	198	195	1026	on 4:24 1122	0000	9813.40	2.9	125	A.C.
4:40	202	252	196	194	196	1029	1111	1133	9813.40	2.9	135	A.C.
4:50	199	251	192	200	204	1031	1104	1132	9813.40	2.9	146	A.C.
5:00	202	251	198	197	204	1034	1099	1129	9813.40	2.9	154	A.C.
5:10	197	252	196	202	199	1040	1091	1129	9813.40	2.9	166	A.C.
5:20	197	252	193	201	197	103	1087	1127	9813.40	2.8	178	A.C.
AVERAGE												

REMARKS:

NOTES:

1- THE SYSTEM FLOW, STRIPPER FLOW AND PRESSURE FILTER FLOW READINGS MUST BE EQUAL WITHIN 5%.

2- EFFLUENT FLOW MEASURES THE TOTAL FLOW THROUGH THE FACILITY. OPERATOR SHALL RESET THE GAUGE TO ZERO AT THE BEGINNING OF EACH SHIFT.

SHEET #7

TOWN OF OYSTER BAY

DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

DAILY OPERATIONS REPORT
DAY SHIFT

FILE ID #	92-05-28-13
DATE	5-28-92

	WELLFIELD OPERATION (GALLONS PER MINUTE)						AIR STRIPPER OPERATING PARAMETERS					
TIME	WELL 1 FLOW	WELL 2 FLOW	WELL 3 FLOW	WELL 4 FLOW	WELL 5 FLOW	SYSTEM FLOW	STRIPPER FLOW GPM	PRESS FIL FLOW GPM	BLOWER AIR FLOW SCFM	AIR PRESSURE INCHES WC	ACID RINSE ON/OFF	SUPERVISO & OPERATO INITITALS
6:50	204	252	201	201	192	1035	1089	1131	9813.40	2.9	265	a.c.
7.00	204	252	200	194	202	1032	1083	1129	9813.40	2.9	276	a.c.
7:10	199	254	204	195	202	1032	1075	1125	9813.40	2.9	287	a.c.
7.20	198	251	198	202	196	1037	OFF 7:17 0000	1121	10590.00	1.7	299	a.c.
7:30	200	252	204	203	192	1039	ON 7:23 1123	1140	10166.40	3 0	302	a.c.
7 40	198	250	196	203	196	1034	1116	1133	9813.40	3.0	312	a.c.
7:50	200	252	194	196	203	1034	1109	1133	9813 40	2.9	323	a.c.
8:00	196	252	194	196	203	1032	1103	1132	9813 40	2.9	333	a.c.
AVERAGE												

REMARKS:

NOTES:

1- THE SYSTEM FLOW, STRIPPER FLOW AND PRESSURE FILTER FLOW READINGS MUST BE EQUAL WITHIN 5%.

2- EFFLUENT FLOW MEASURES THE TOTAL FLOW THROUGH THE FACILITY. OPERATOR SHALL RESET THE GAUGE TO ZERO AT THE BEGINNING OF EACH SHIFT.

OLD BETHPAGE LANDFILL
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APPENDIX C

RTL VOST RESULTS

GRASEBY RTL

VOST GC/MS REPORT

prepared for

RTP ENVIRONMENTAL ASSOCIATES

by

GRASEBY RTL

Barry A. Ruvio
Chemist/Prepared

J. Wayne Jones
Chemist/Reviewed

Thomas G. Conally
Laboratory Manager

RTL ID # 92060152B

July 2, 1992

GRASEBY RTL
4022 STIRRUP CREEK DRIVE, SUITE 325, DURHAM, NC 27703-9000, USA
TEL: 919 544 5775 FAX: 919 544 3770

GRASEBY
RTL

July 2, 1992

Scott Mills
RTP Environmental Associates
400 Post Avenue
Westbury, NY 11590

RE: 92060152 (LK BOBA/RSM 5/29/92)

Dear Mr. Mills:

Enclosed please find the revised results of analysis for the samples submitted to our laboratory on 6/1/92.

If you have any questions concerning these reports, please contact me at the number listed below.

Sincerely,

GRASEBY RTL

Barry A. Ruvio

Barry A. Ruvio
Chemist

BAR/mcg

Enclosures

GRASEBY RTL
4022 STIRRUP CREEK DRIVE, SUITE 325, DURHAM, NC 27703-9000, USA
TEL: 919 544 5775 FAX: 919 544 3770

ANALYTICAL CONDITIONS

Equipment:

HP 5970 GC/MSD tuned to BFB criteria

GC Conditions:

Temp 1	:	0 °C
Time 1	:	4.0 minutes
Ramp Rate	:	6.0 °C/minute
Temp 2	:	160 °C
Time 2	:	5.0 minutes

Column:

VOCOL (Supelco),
Length 60 m,
Film thickness 1.5 μm,
Internal diameter 0.75 mm,
Construction of Borosilicate glass
with fused silica ends

Mass Spectrometer Conditions:

Run Time	:	28 minutes
Scan Range	:	35 - 260 AMU
Scan Delay	:	1.25 minutes
Ion Source Temp	:	200 °C
Electron Multiplier	:	2300 ± 200 EV
Separator Temp	:	225 °C

Sample Chronicle:

Client	RTP Environmental Associates
RTL Project ID	92060152
Analysis Type	VOST Tenax/charcoal
Date of Collection	5/28 - 5/29/92
Date Received	6/1/92
Date Authorized	6/2/92
Date Analyzed	6/12/92 and 6/15/92
Date Reported	6/23/92

SAMPLE RESULTS

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	06/01/92
RTL ID:	92060152-1/2	File ID:	T0202/T0203
Sample ID:	A-FB-F/B [a]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	72
Toluene-d_8	83
4-Bromofluorobenzene	70

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	a
75-00-3	Chloroethane	a
75-35-4	1,1-Dichloroethene	a
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000 **BQL: Below Quantitation Limit**

a: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	06/01/92
RTL ID:	92060152-5/6	File ID:	T0206
Sample ID:	A-1D-F/B [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	85
Toluene-d_8	68
4-Bromofluorobenzene	45 [b]

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	f
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	c
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	520
56-23-5	Carbon tetrachloride	c
71-43-2	Benzene	c
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	c
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	810
127-18-4	Tetrachloroethene	320
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	c
1330-20-7	Xylene (total)	c
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 240 – 12,000 **BQL: Below Quantitation Limit**

Split ratio= 1:12
b,c,d,f: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	06/01/92
RTL ID:	92060152-8	File ID:	T0208
Sample ID:	S-FB [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	76
Toluene-d_8	86
4-Bromofluorobenzene	70

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	j
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000

BQL: Below Quantitation Limit

d,j: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	06/01/92
RTL ID:	92060152-10	File ID:	T0215
Sample ID:	S-02 [d]	Description:	VOST- Tenax only

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	78
Toluene-d_8	81
4-Bromofluorobenzene	67

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	310
75-00-3	Chloroethane	c
75-35-4	1,1-Dichloroethene	c
75-09-2	Methylene chloride	690
156-60-5	*trans*-1,2-Dichloroethene	c
75-34-3	1,1-Dichloroethane	1800
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	1200
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1300
78-87-5	1,2-Dichloropropane	c
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	240
127-18-4	Tetrachloroethene	17,000 [g]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	c
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	1200
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	c
106-46-7	1,4-Dichlorobenzene	c

Quantitation Range (ng): 180 – 9,000

BQL: Below Quantitation Limit

Split ratio= 1:9
c,d,g: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	06/01/92
RTL ID:	92060152-11	File ID:	T0217
Sample ID:	S-03 [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	86
Toluene-d_8	81
4-Bromofluorobenzene	64

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	76 [j]
75-00-3	Chloroethane	[c]
75-35-4	1,1-Dichloroethene	[c]
75-09-2	Methylene chloride	800
156-60-5	*trans*-1,2-Dichloroethene	[c]
75-34-3	1,1-Dichloroethane	1900
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	310
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	1300
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1400
78-87-5	1,2-Dichloropropane	[c]
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	[c]
127-18-4	Tetrachloroethene	18,000 [g]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	[c]
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	1200
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	[c]
106-46-7	1,4-Dichlorobenzene	[c]

Quantitation Range (ng): 220 – 11,000 **BQL: Below Quantitation Limit**

Split ratio= 1:11
c,d,g,j: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	06/01/92
RTL ID:	92060152-13	File ID:	T0219
Sample ID:	S-05 [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	77
Toluene-d_8	88
4-Bromofluorobenzene	59

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	420 [j]
75-00-3	Chloroethane	[c]
75-35-4	1,1-Dichloroethene	[c]
75-09-2	Methylene chloride	630
156-60-5	*trans*-1,2-Dichloroethene	[c]
75-34-3	1,1-Dichloroethane	1700
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	[c]
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	1100
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1200
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	[c]
127-18-4	Tetrachloroethene	16,000 [g]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	[c]
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	1100
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	[c]
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 260 – 13,000

BQL: Below Quantitation Limit

Split ratio= 1:13

c,d,g,j: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates, Inc.	Received:	06/01/92
RTL ID:	92060152-14	File ID:	T0220
Sample ID:	S-06 [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	85
Toluene-d_8	85
4-Bromofluorobenzene	48 [e]

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	59 [j]
75-00-3	Chloroethane	[c]
75-35-4	1,1-Dichloroethene	[c]
75-09-2	Methylene chloride	850
156-60-5	*trans*-1,2-Dichloroethene	[c]
75-34-3	1,1-Dichloroethane	1900
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	290
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	1300
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1500
78-87-5	1,2-Dichloropropane	[c]
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	~~150~~ [c]
127-18-4	Tetrachloroethene	19,000 [g]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	[c]
100-41-4	Ethylbenzene	[c]
1330-20-7	Xylene (total)	1200
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	[c]
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 260 – 13,000 **BQL: Below Quantitation Limit**

Split ratio= 1:13
c,d,e,g,j: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates, Inc.	Received:	06/01/92
RTL ID:	92060152-16	File ID:	T0222
Sample ID:	S-08 [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	80
Toluene-d_8	81
4-Bromofluorobenzene	49 [e]

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	78 [j]
75-00-3	Chloroethane	[c]
75-35-4	1,1-Dichloroethene	[c]
75-09-2	Methylene chloride	710
156-60-5	*trans*-1,2-Dichloroethene	[c]
75-34-3	1,1-Dichloroethane	2000
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	310
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	1200
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1500
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	[c]
127-18-4	Tetrachloroethene	19,000 [g]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	[c]
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	1300
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	[c]
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 260 – 13,000

BQL: Below Quantitation Limit

Split ratio= 1:13

c,d,e,g,j: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates, Inc.	Received:	06/01/92
RTL ID:	92060152-18	File ID:	T0224
Sample ID:	S-10 [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	81
Toluene-d_8	82
4-Bromofluorobenzene	48 [e]

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	82 [j]
75-00-3	Chloroethane	[c]
75-35-4	1,1-Dichloroethene	[c]
75-09-2	Methylene chloride	670
156-60-5	*trans*-1,2-Dichloroethene	[c]
75-34-3	1,1-Dichloroethane	1900
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	290
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	940
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1200
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	[c]
127-18-4	Tetrachloroethene	17,000 [g]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	[c]
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	1100
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	[c]
106-46-7	1,4-Dichlorobenzene	[c]

Quantitation Range (ng): 280 – 14,000 **BQL: Below Quantitation Limit**

Split ratio = 1:14
c,d,e,g,j: See Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates, Inc.	Received:	06/01/92
RTL ID:	92060152-20	File ID:	T0227
Sample ID:	S-12 [d]	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	81
Toluene-d_8	82
4-Bromofluorobenzene	49 [e]

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	44 [j]
75-00-3	Chloroethane	[c]
75-35-4	1,1-Dichloroethene	[c]
75-09-2	Methylene chloride	1100
156-60-5	*trans*-1,2-Dichloroethene	[c]
75-34-3	1,1-Dichloroethane	1500
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	810
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1100
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	[c]
127-18-4	Tetrachloroethene	15,000 [g]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	[c]
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	870
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	[c]
106-46-7	1,4-Dichlorobenzene	[c]

Quantitation Range (ng): 260 – 13,000

BQL: Below Quantitation Limit

Split ratio= 1:13

c,d,e,g,j: See Endnotes

Endnotes:

a: The run was aborted by the system because of high levels of primarily carbon dioxide. We immediately restarted the instrument and obtained a complete chromatogram for the remainder of the run. Early eluting targets were not detectable because of the problem. The internal standards, however, did recover within expected QA ranges and a scan delay of 1.96 minutes was instituted on all remaining samples.

b: Surrogate recovery was below expected QA levels because of a high sample split ratio which was instituted because high sample levels were expected to cause data dropout or possible run abortion.

c: Compound detected below the minimum quantitation limit. See each respective sample report range.

d: A scan delay of 1.96 minutes was instituted for this run to prevent detector saturation and possible run abortion from an early eluting high level sample peak. The scan delay was an attempt to ensure that vinyl chloride would be fully detected.

e: Surrogate recovery was distorted and exceeded QA levels because of a high level coeluting sample peak. All other standards recovered within QA limits.

f: Detector saturation occurred during the elution of this compound. See endnote "a" for more details. The actual amount of the compound in this sample is higher.

g: This amount is beyond the established calibration range. Linearity should not be assumed for results which greatly exceed our calibration range.

h: GC oven temperature had not reached equilibrium at the time of injection. Early eluting compounds were not detected because of the problem and several compounds had early eluting times. All QA measures were within expected limits and later eluting compounds appeared as in previous runs.

i: The total ion chromatogram for the internal standard was distorted because of interference from a high-level coeluting peak. Wherever necessary, the peak area from the method blank of the day was substituted for the sample internal standard area. The concentration of the TIC is again qualified as an estimate.

j: Because of the data dropout that was caused by high levels of carbon dioxide in these samples, a part of the peak for vinyl chloride was obscured. No more than one scan of data was lost. In our judgement, loss of one scan does not significantly affect the outcome of the analysis. We therefore are reporting all of the vinyl chloride data that is available (see endnote "a").

With the idea of producing the most accurate results possible, we compared the results of vinyl chloride with 1,1-dichloroethane. 1,1-Dichloroethane was chosen because it elutes soon after vinyl chloride and it has consistent results throughout the project. We observed that 1,1-dichloroethane had-1700-2000 ng each time it was detected. This consistency was expected for vinyl chloride but was not apparent. Therefore we speculate that when detected, vinyl chloride could be as high as 520 ng.

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

First Quarter

APPENDIX D

FIELD DATA SHEETS

EPA METHOD 2

VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

655Am – 725Am

Project Location:	Old Bethpage Landfill	Sampling Date:	5/28/92
Sampling Location:	Air Stripper outlet	Operator:	RSM / KJS

Stack Information:			
Dimensions:	40" Ø	Dry Bulb Temperature (F):	
Cross Section Area (square feet):	8.73	Wet Bulb Temperature (F):	
Ambient Barometric Pressure, Pb(in-Hg):	30.03	Gas Moisture Content, (% water):	
Static Pressure Differential, Pg(in-water): +/-	-.04	Pitot Tube ID:	IT 5' S-7
Gas Molecular Weight (Wet), Mw:		Pitot Coefficient, Cp:	0.84

PORT ID	POINT ID	Delta P (in-water)	Sqrt(Delta P)	Ts (F)	ccc (+/-)Theta	PITOTS REVERSED FOR NEGATIVE FLOW ?	[Sqrt(Delta P)]xCOS(Theta)
E	1 in	.05	0.2236	53	+8		
	2	.06	0.2449	53	+8		
	3	.07	0.2646	54	+8		
	4	.07	0.2646	53	+7		
	5	.08	0.2828	53	+5		
	6	.08	0.2828	53	+6		
	7	.07	0.2646	53	+5		
	8	.07	0.2646	53	+ 10		
S	1 in	.12	0.3464	53	+6		
	2	.13	0.3606	53	+4		
	3	.10	0.3162	53	+5		
	4	.10	0.3162	53	+5		
	5	.13	0.3606	53	0		
	6	.16	0.4	53	+6		
	7	.16	0.4	53	~~+10~~ → +8		
	8	.11	0.3317	53	~~+15~~ → +5		
Remarks		Average	0.3078	53	*	Schematic of Traverse Point Location:	

Cyclonic Flow Angle:
(Theta) > 0, Clockwise.
(Theta) < 0, Counterclockwise.

* Average of absolute values include zeroes.

Calculated Results:

Absolute Temperature, Tst(R) = Ts(F) + 460 = 513 (R).

Absolute Gas Pressure, Ps = Pb + Pg/13.6 = 30.03 (in-Hg).

Gas Velocity, Vs = (85.49) x Cp x Avg[Sqrt(Delta P)] x COS(Theta) x Avg {Sqrt[Avg(Tst)/(Ps)(Mw)]} = 16.96 (ft/sec).

Actual Gas Flowrate, Qa = (Vs) x (60) x (A) = 8,880 (ACFM).

Standard Gas Flowrate, Qstd = Qa x (528/Tst) x (Ps/29.92) x [(100 – % water)/100] = ______ (DSCFM).

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-02
Sampling Location: Air Stripper (outlet)
Date: 5/28/92
Operator: RSM

Module No.: 71-V5
Dry Gas Meter (Y): 0.9868
Rotameter (Yr): —
Sampling Rate: ~0.1 lpm
Ambient Temperature: 64
Baro. Press: 30.03

Test Duration: 40 min
Probe Heater Setting: 265°F
Test Start Time: 1128
Test End Time: 1215
Leak Check Start: 0.000 @ 3" Hg
Leak Check End: 0.000 @ 2" Hg
Leak Check Probe:

CARTRIDGE ID: TENAX	CARTRIDGE ID: TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔH
849B	847C	000	70	~0.1	1930.20	60	1	266	0.6
S-02-T	S-02-T/C	5	69		1930.74	60	1	275	0.6
		10	69		1931.17	56	1	236	0.6
		15	~~#~~70		1931.63	53	1	272	0.6
		20	70		1932.13	48	1	276	0.6
		25	70		1932.66	47	1	279	0.6
		30	70		1933.18	46	1	274	0.6
		35	71		1933.65	48	1	278	0.6
		40	72		1934.21	45	1	273	0.6
					.				
					.				
					.				
					.				
					.				
					.				

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments: Down @ 1149 (stripper H_2O off) WL→32.2
Up @ 1155
no H_2O in 1st Impg

VOST FIELD DATA SHEET

Project ID: LABOBAS.
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-04
Sampling Location: Air Strip (out)
Date: 5/28/92
Operator: RSM

Module No.: 71-US CAE
Dry Gas Meter (Y): 0.9868
Rotameter (Yr): ~
Sampling Rate: ~0.1 lpm
Ambient Temperature: 61
Baro. Press: 30.03

Test Duration: 40 min
Probe Heater Setting: 265
Test Start Time: 1314
Test End Time: 1354
Leak Check Start: 0.000 @ 3" Hg
Leak Check End: 0.000 @ 2" Hg
Leak Check Probe: 0.000 @ 4" Hg

CARTRIDGE ID									
TENAX	TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔH
849B	847C	0	72	~0.1 lpm	1938.31	49	1	267	0.6
S-04-T	S-04-T/C	5	72		1938.78	48	1	279	0.6
		10	72		1939.27	48	1	284	0.6
		15	73		1939.88	49	1	268	0.6
		20	73		1940.42	50	1	288	0.6
		25	74		1940.74	53	1	288	0.6
		30	73		1941.41	52	1	273	0.6
		35	74		1941.98	52	1	274	0.6
		40	71		1942.44	52	1	279	

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments: (A.S. H_2O off 1st 8 min)
no H_2O in 1st Imp.

VOST FIELD DATA SHEET

Project ID: LHBOBAS
Client: Town of Oyster Bay
Project Location: OD Bethpage LF
Test ID: S-05
Sampling Location: Air Strip (out)
Date: 3/28/92
Operator: RSM

Module No.: 71-V5
Dry Gas Meter (Y): 0.9868
Rotameter (Yr): ~
Sampling Rate: ~0.1 l/m
Ambient Temperature: 60
Baro. Press: 30.03

Test Duration: 40 min
Probe Heater Setting: 265
Test Start Time: 1425
Test End Time: 1505
Leak Check Start: 0.000 @ 4" Hg
Leak Check End: 0.000 @ 2" Hg
Leak Check Probe: 0.000 @ 4" Hg

#3 #2 #1

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔP
849A	847B	0	70	~0.1 lpm	1942.48	57	1	276	0.6
S-05-T	S-05-T/C	5	70		1943.03	52	1	269	0.6
		10	71		1943.55	52	1	286	0.6
		15	71		1944.00	48	1	273	0.6
		20	71		1944.37	52	1	287	0.6
		25	73		1944.97	52	1	269	0.6
		30	74		1945.54	53	1	287	0.6
		35	75		1945.89	55	1	279	0.6
		40	75		1946.60	54	1	285	0.6

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments: 1cc H_2O in 1st Imp.

TIP
A.S. H_2O (off) → 0.00ppm (H59)

TIP
A~B → ...
Tin 1433 — 1.60 ppm
1434 — 2.0 ppm

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-07
Sampling Location: Air Stripper (Out)
Date: 5/28/92
Operator: RSM

Module No.: 71-VS (CAE)
Dry Gas Meter (Y): 0.9868
Rotameter (Yr): ~
Sampling Rate: ~0.1 l/m
Ambient Temperature: 63
Baro. Press: 30.03

Test Duration: 40 min
Probe Heater Setting: 265 °F
Test Start Time: 1602
Test End Time: 1642
Leak Check Start: 0.000 @ 2" Hg
Leak Check End: 0.000 @ 2" Hg
Leak Check Probe:

CARTRIDGE ID									
TENAX	TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔH
849A	847C	0	75	~0.1	1950.66	49	1	270	0.6
S-07-T	S-07-T/C	5	75		1951.28	49	1	271	0.6
		10	75		1951.75	48	1	272	0.6
		15	76		1952.23	50	1	276	0.6
		20	76		1952.80	50	1	292	0.6
		25	76		1953.21	51	1	284	0.6
		30	75		1953.80	52	1	285	0.6
		35	75		1954.38	54	1	271	0.6
		40	75		1954.78	54	1	278	0.6
					.				
					.				
					.				
					.				
					.				
					.				

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments:

EPA METHOD 2

VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

Between U_2 & U_3
Time 1741 pm - 1747 pm

Project Location: Ol' Bethpage LF	Sampling Date: 5/29/93
Sampling Location: Air stripper (out)	Operator: RSM/KJS

Stack Information:	
Dimensions: 40" Ø	Dry Bulb Temperature (F):
Cross Section Area (square feet):	Wet Bulb Temperature (F):
Ambient Barometric Pressure, Pb(in-Hg): 30.03	Gas Moisture Content, (% water):
Static Pressure Differential, Pg(in-water): ~~+/-~~ − 0.06	Pitot Tube ID: IT 5' S-type
Gas Molecular Weight (Wet), Mw:	Pitot Coefficient, Cp: 0.84

RSM/KJS

PORT ID	POINT ID	Delta P (in-water)	Sqrt(Delta P)	Ts (F)	(+/-)Theta	PITOTS REVERSED FOR NEGATIVE FLOW ?	{Sqrt(Delta P)}xCOS(Theta)
E	1 In	0.05		54			
	2	0.05		54			
	3	0.06		54			
	4	0.05		54			
	5	0.11		54			
	6	0.07		54			
	7	0.05		54			
	8	0.05		54			
S	1 In	0.10		54			
	2	0.12		54			
	3	0.11		54			
	4	0.14		54			
	5	0.14		54			
	6	0.15		54			
	7	0.12		54			
	8	0.09		54			
Remarks	Average	0.2960		54	*	Schematic of Traverse Point Location:	

1053
+20

Cyclonic Flow Angle:
(Theta) > 0, Clockwise.
(Theta) < 0, Counterclockwise.

* Average of absolute values include zeroes.

Calculated Results:

Absolute Temperature, Tst(R) = Ts(F) + 460 = 514 (R).

Absolute Gas Pressure, Ps = Pb + Pg/13.6 = 30.03 (in-Hg).

Gas Velocity, Vs = (85.49) x Cp x Avg[Sqrt(Delta P)] x COS(Theta) x Avg{Sqrt[Avg(Tst)/(Ps)(Mw)]} = 16.33 (ft/sec).

Actual Gas Flowrate, Qa = (Vs) x (60) x (A) = 8,550 (ACFM).

Standard Gas Flowrate, Qstd = Qa x (528/Tst) x (Ps/29.92) x [(100 − % water)/100] = ______ (DSCFM).

VOST FIELD DATA SHEET

Project ID: LKBOBA'S
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-10
Sampling Location: Air Stripper (out)
Date: 5/28/92
Operator: RSW

Module No.: 71-V5
Dry Gas Meter (Y): 0.9868
Rotameter (Yr): —
Sampling Rate: ~0.1 ℓ/m
Ambient Temperature:
Baro. Press.: 30.03

Test Duration: 40 min
Probe Heater Setting: 265°F
Test Start Time: 1838
Test End Time: 1918
Leak Check Start: 0.000 @ 2" Hg
Leak Check End: 0.000 @ 2" Hg
Leak Check Probe:

CARTRIDGE ID: TENAX	CARTRIDGE ID: TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE #5	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER #2	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE #1	ΔH
S-10-T	S-10-T/C	0	58	~0.1 ℓpm	1963.00	45	1	271	0.6
849A	847C	5	58		1963.48	45	1	279	0.6
		10	65		1964.25	46	1	278	0.6
		15	65		1964.75	45	1	267	0.6
		20	65		1965.09	46	1	280	0.6
		25	65		1965.42	45	1	293	0.6
		30	65		1966.00	45	1	269	0.6
		35	65		1966.49	46	1	265	0.6
		40	65		1967.08	45	1	268	0.6

Condensate Sample: None
Sample ID:
Volume Collected (ml):

Comments:

VOST FIELD DATA SHEET

Project ID: LHBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-12
Sampling Location: Air Stripper Out
Date: 5/28/92
Operator: RSM

Module No.: 71-VS
Dry Gas Meter (Y): 0.9868
Rotameter (Yr): ~
Sampling Rate: ~0.1 lpm
Ambient Temperature:
Baro. Press: 30.3

Test Duration: 40 min
Probe Heater Setting: 265°F
Test Start Time: 2011
Test End Time: 2051
Leak Check Start: 0.000 @ 2" Hg
Leak Check End: 0.000 @ 2" Hg
Leak Check Probe: 0.000 @ 2.5" Hg

CARTRIDGE ID: TENAX	CARTRIDGE ID: TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔH
S-12-T 849B	S-12-T/C 847B	0	63	~0.1 lpm	1970.99	53	1	270	0.6
		5	63		1971.52	53	1	294	0.6
		10	63		1972.05	53	1	283	0.6
		15	63		1972.50	53	1	269	0.6
		20	63		1973.09	53	1	290	0.6
		25	63		1973.61	53	1	288	0.6
		30	63		1974.09	54	1	269	0.6
		35	63		1974.53	54	1	282	0.6
		40	63		1975.07	54	1	275	0.6

Condensate Sample: none
Sample ID:
Volume Collected (ml):

Comments:

AMBIENT AIR SAMPLING DATA SHEET

Project: LICBOTBA

Date: May 28, 92

Project Site: ~~OBS~~ Oyster Bay Landfill

Operators: MB JW

General Weather Conditions: Sunny, W, 6 m/s to NW

Sample ID: 850A (13) - 1st → Upwind (1st), U1 / 847C (8) - 2nd → Upwind (2nd), U2

Sample Location: E of incine stacks. (upwind)

Pump ID: D

Norminal Flow Rate: 1 l/m center ball

Sampler ID: D

Norminal Sample Volume: 480 l

Initial Ambient VOC Conc. (ppm): 0.0 ppm/.

Leak Check: OK

Sample Start Time: 9 ~~10~~ 33 EDT

Initial Rotameter Reading, (Center of the Ball): 1

Rotameter Reading	Total Elapse Time	Local Time
1	3 min	9 ~~10~~ 36 EDT
1	113 m	~1126 EDT
1 (after adj 89.+)	269 m	~1402 EDT
1.0	325	1458
1.0	360	1533
1.0	412	1625

Rotameter Reading	Total Elapse Time	Local Time

Sample Stop Time:

Final Rotameter Reading:

Total Elapse Time:

Final Ambient VOC Conc. (ppm):

Comments:	
850A, 847C ← outside #	Location: edge of
(13) (8) ← inside #	paved area (near A.S. Bldg)
lab. label	1150 EDT, 44°F inside
Trucks pass by once in a while	cooler temp.
39°F inside cooler @ 1402E T inside 41°F @ 1505E ~~T3F~~	

MICRO TIP 1640E 0.0 ppm | INSIDE T 38°F

AMBIENT AIR SAMPLING DATA SHEET

Project: LKBOBA
Date: 5/29/92
Project Site: Oyster Bay Landfill
Operators: JWS
General Weather Conditions: Sunny

Sample ID: A-FB-T/C-E, A-FB-T/C-B
Sample Location: Ambient Location
Pump ID: /
Norminal Flow Rate: /
Sampler ID: /
Norminal Sample Volume: /

Initial Ambient VOC Conc. (ppm): /
Leak Check: /
Sample Start Time: 1113 EDT
Initial Rotameter Reading, (Center of the Ball): /

Rotameter Reading	Total Elapse Time	Local Time
N	/	A

Rotameter Reading	Total Elapse Time	Local Time

Sample Stop Time: 1115 EDT
Final Rotameter Reading: /
Total Elapse Time: /
Final Ambient VOC Conc. (ppm): /

Comments:
This is a field blank sample
[illegible]
[illegible]

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

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APPENDIX E

INFLUENT EFFLUENT WATER VOC RESULTS

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO.C921945/1 06/01/92

2086-11
Weekly Sample
Wetback

Lockwood, Kessler & Bartlett
1 Aerial Way
Syosset, NY 11791
ATTN: Ray Wegener

SOURCE OF SAMPLE: Oyster Bay Town-Landfill Treatment Plant
COLLECTED BY: Client DATE COL'D:05/26/92 RECEIVED:05/26/92

SAMPLE: Wastewater sample, Influent I, 7:45 am

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Vinyl Chloride	ug/L	9	
Chloroethane	ug/L	1	
Methylene Chloride	ug/L	9	
11 Dichloroethene	ug/L	0.5	
11 Dichloroethane	ug/L	18	
12 Dichloroethene	ug/L	100	
Chloroform	ug/L	<1	
12 Dichloroethane	ug/L	1	
111 Trichloroethane	ug/L	4	
Carbon Tetrachloride	ug/L	<1	
Bromodichloromethane	ug/L	<1	
12 Dichloropropane	ug/L	<1	
Trichloroethylene	ug/L	12	
Chlorodibromomethane	ug/L	<1	
Bromoform	ug/L	<1	
Tetrachloroethene	ug/L	140	
Chlorobenzene	ug/L	2	
13 Dichlorobenzene	ug/L	<1	
12 Dichlorobenzene	ug/L	<1	
14 Dichlorobenzene	ug/L	3	
Benzene	ug/L	9	
Toluene	ug/L	<1	
Ethyl Benzene	ug/L	<1	
m Xylene	ug/L	<1	
o+p Xylene	ug/L	11	

cc:

REMARKS:

DIRECTOR________________________

rn= 8809 NYSDOH ID# 10320

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

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APPENDIX F

INFLUENT AND EFFLUENT WATER AMMONIA RESULTS

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C922030/1 06/03/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: Oyster Bay Air Stripper, LKBOBA
COLLECTED BY: Client DATE COL'D:05/28/92 RECEIVED:05/29/92

SAMPLE: Wastewater, Influent RAP, am-1, 1047-IN

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.0	

cc:

REMARKS:

DIRECTOR________________

rn= 9106 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C922030/3 06/03/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: Oyster Bay Air Stripper, LKBOBA
COLLECTED BY: Client DATE COL'D:05/28/92 RECEIVED:05/29/92

SAMPLE: Wastewater, Influent RAP, am-3, 1405-IN

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	6.8	

cc:

REMARKS:

DIRECTOR

rn= 9108 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C922030/5 06/03/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: Oyster Bay Air Stripper, LKBOBA
COLLECTED BY: Client DATE COL'D:05/28/92 RECEIVED:05/29/92

SAMPLE: Wastewater, Influent RAP, am-5, 1430-IN

ANALYTICAL PARAMETERS ANALYTICAL PARAMETERS

Ammonia as N	mg/L	6.6

cc:

REMARKS:

DIRECTOR________________

rn= 9110 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C922030/7 06/03/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: Oyster Bay Air Stripper, LKBOBA
COLLECTED BY: Client DATE COL'D:05/28/92 RECEIVED:05/29/92

SAMPLE: Wastewater, Influent RAP, am-7, 1807-IN

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	6.4	

cc:

REMARKS:

DIRECTOR

rn= 9112 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C922030/9 06/03/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: Oyster Bay Air Stripper, LKBOBA
COLLECTED BY: Client DATE COL'D:05/28/92 RECEIVED:05/29/92

SAMPLE: Wastewater, Influent RAP, am-9, 1816-IN

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	6.6	

cc:

REMARKS:

DIRECTOR________________________

rn= 9114 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C922030/11 06/03/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: Oyster Bay Air Stripper, LKBOBA
COLLECTED BY: Client DATE COL'D:05/28/92 RECEIVED:05/29/92

SAMPLE: Wastewater, Influent RAP, am-11, 2130-IN

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	6.6	

cc:

REMARKS:

DIRECTOR ______________________

rn= 9116 NYSDOH ID# 10320

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

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APPENDIX G

AMMONIA STACK TEST ANALYTICAL RESULTS

THE AMMONIA STACK TEST
ANALYTICAL RESULTS <u>DO</u> <u>NOT</u> APPLY
TO FIRST AND SECOND QUARTER EFFORTS

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

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APPENDIX H

METEOROLOGICAL DATA

METEOROLOGICAL EQUIPMENT SITING DATA SHEET

Project: LKBOBA

Project Site: Oyster Bay Landfill

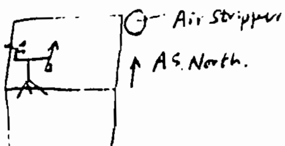
Operators: KTS, JLW, MB, SM

Instrument No.1 (old)

Location: on roof of the Air Stripper Building.

Initial Battery Voltage: 12.6

Wind Dir. Reference: Same orientation as air stripper bldg.



True WD = Measured WD +/− (   ) =

Date & Julian Day to Set Up:
May 26, 1992, J.day = 146

Start Time (Local): ~1359 EDT

Date & Julian Day to Take Down:
May 29, 1992, J.day = 149

Stop Time (Local): 1239 EDT

Remarks:

(1) The storage module was offlined right after the tests on May 28 1992, although the tower was taken done the next day.

(2) On-site inspection of all part of c.k. operation was performed and everything is ok

Instrument No.2 (new)

Location: Highest elevation area of the landfill, ~ north side of the highest part top of the landfill (240').

Initial Battery Voltage: 12.8

Wind Dir. Reference: Compass showed scale house is about 358° (after considering 14° lag (2° of N). Compass reading to center of 2 stacks from white bldg = 52°−14° = 38°.

this arm is perpendicular to NS.

True WD = Measured WD +/− (   ) =

Date & Julian Day to Set Up:
May 26, 1992 (Julian day 146)

Start Time (Local): 1520 (EDT)

Date & Julian Day to Take Down:
May 29, 1992 (Julian day 149)

Stop Time (Local): ~1422 (EDT)

Remarks:

Inspection before taking storage module offline → everything's OK

C:\CC04.dat
(6/1/92)

The data collected for ~~the~~ roof of the A.S.

01+0109.	02+0143.	03+1100.	04+0.500	05+10.72	06+0.184	07+076.4	08+38.19
09+30.03	10+0.000	11+13.47					
01+0115.	02+0143.	03+1100.	04+0.500	05+10.68	06+0.465	07+076.9	08+37.86
09+30.04	10+0.000	11+13.47					
01+0109.	02+0143.	03+1115.	04+0.500	05+10.61	06+0.374	07+076.1	08+38.40
09+30.02	10+0.040	11+13.46					
01+0109.	02+0143.	03+1130.	04+0.500	05+10.40	06+0.256	07+076.2	08+38.33
09+30.02	10+0.000	11+13.46					
01+0109.	02+0143.	03+1145.	04+0.500	05+10.39	06+0.239	07+076.3	08+38.15
09+30.02	10+0.000	11+13.47					
01+0109.	02+0143.	03+1200.	04+0.500	05+10.38	06+0.234	07+076.2	08+38.12
09+30.01	10+0.010	11+13.49					
01+0115.	02+0143.	03+1200.	04+0.500	05+10.45	06+0.465	07+076.2	08+38.25
09+30.02	10+0.050	11+13.49					
01+0109.	02+0143.	03+1215.	04+0.500	05+10.37	06+0.419	07+076.2	08+38.17
09+30.01	10+0.000	11+13.49					
01+0109.	02+0143.	03+1230.	04+0.500	05+10.36	06+0.233	07+076.4	08+37.96
09+30.00	10+0.000	11+13.48					
01+0109.	02+0143.	03+1245.	04+0.500	05+10.36	06+0.231	07+076.7	08+37.69
09+30.00	10+0.000	11+13.48					
01+0109.	02+0143.	03+1300.	04+0.500	05+10.37	06+0.228	07+076.8	08+37.43
09+30.00	10+0.000	11+13.49					
01+0115.	02+0143.	03+1300.	04+0.500	05+10.37	06+0.447	07+076.5	08+37.81
09+30.00	10+0.000	11+13.49					
01+0109.	02+0143.	03+1315.	04+0.500	05+10.37	06+0.214	07+076.8	08+37.25
09+30.00	10+0.000	11+13.50					
01+0109.	02+0143.	03+1330.	04+0.500	05+10.38	06+0.231	07+076.8	08+37.15
09+30.00	10+0.000	11+13.50					
01+0109.	02+0143.	03+1345.	04+0.500	05+10.38	06+0.229	07+076.7	08+37.09
09+29.99	10+0.000	11+13.50					
01+0109.	02+0143.	03+1400.	04+0.500	05+10.39	06+0.237	07+076.5	08+37.08
09+29.99	10+0.000	11+13.39					
01+0115.	02+0143.	03+1400.	04+0.500	05+10.38	06+0.415	07+076.7	08+37.14
09+30.00	10+0.000	11+13.39					
01+0109.	02+0143.	03+1415.	04+0.500	05+10.39	06+0.241	07+076.4	08+37.02
09+29.99	10+0.000	11+13.52					
01+0109.	02+0143.	03+1430.	04+0.500	05+10.39	06+0.249	07+076.4	08+36.93
09+29.98	10+0.000	11+13.50					
01+0109.	02+0143.	03+1445.	04+0.500	05+10.40	06+0.250	07+076.3	08+36.83
09+29.98	10+0.000	11+13.51					
01+0109.	02+0143.	03+1500.	04+0.500	05+10.40	06+0.260	07+076.3	08+36.76
09+29.98	10+0.000	11+13.52					
01+0115.	02+0143.	03+1500.	04+0.500	05+10.39	06+0.424	07+076.4	08+36.89
09+29.98	10+0.000	11+13.52					
01+0109.	02+0143.	03+1515.	04+0.500	05+10.40	06+0.259	07+076.2	08+36.69
09+29.97	10+0.000	11+13.52					
01+0109.	02+0143.	03+1530.	04+0.500	05+10.40	06+0.246	07+076.1	08+36.67
09+29.96	10+0.000	11+13.52					
01+0109.	02+0143.	03+1545.	04+0.500	05+10.40	06+0.246	07+076.0	08+36.66
09+29.96	10+0.000	11+13.54					
01+0109.	02+0143.	03+1600.	04+0.500	05+10.40	06+0.256	07+075.9	08+36.64
09+29.95	10+0.000	11+13.52					
01+0115.	02+0143.	03+1600.	04+0.500	05+10.40	06+0.434	07+076.1	08+36.66
09+29.96	10+0.000	11+13.52					
01+0109.	02+0143.	03+1615.	04+0.500	05+10.40	06+0.253	07+075.8	08+36.58
09+29.95	10+0.000	11+13.51					
01+0109.	02+0143.	03+1630.	04+0.500	05+10.40	06+0.260	07+075.7	08+36.55
09+29.94	10+0.000	11+13.50					
01+0109.	02+0143.	03+1645.	04+0.500	05+10.39	06+0.257	07+075.6	08+36.58
09+29.94	10+0.000	11+13.54					
01+0109.	02+0143.	03+1700.	04+0.500	05+10.40	06+0.258	07+075.5	08+36.58
09+29.93	10+0.000	11+13.57					
01+0115.	02+0143.	03+1700.	04+0.500	05+10.40	06+0.431	07+075.6	08+36.57
09+29.94	10+0.000	11+13.57					
01+0109.	02+0143.	03+1715.	04+0.500	05+10.39	06+0.253	07+075.3	08+36.54
09+29.93	10+0.000	11+13.54					
01+0109.	02+0143.	03+1730.	04+0.500	05+10.39	06+0.240	07+075.2	08+36.48
09+29.93	10+0.000	11+13.56					
01+0109.	02+0143.	03+1745.	04+0.500	05+10.38	06+0.231	07+075.1	08+36.40
09+29.93	10+0.000	11+13.58					
01+0109.	02+0143.	03+1800.	04+0.500	05+10.38	06+0.226	07+074.9	08+36.40
09+29.92	10+0.000	11+13.56					
01+0115.	02+0143.	03+1800.	04+0.500	05+10.39	06+0.427	07+075.1	08+36.45
09+29.93	10+0.000	11+13.56					
01+0109.	02+0143.	03+1815.	04+0.500	05+10.38	06+0.226	07+074.8	08+36.45
09+29.92	10+0.000	11+13.54					
01+0109.	02+0143.	03+1830.	04+0.500	05+10.38	06+0.226	07+074.6	08+36.55
09+29.92	10+0.000	11+13.56					
01+0109.	02+0143.	03+1845.	04+0.500	05+10.37	06+0.216	07+074.5	08+36.69
09+29.91	10+0.000	11+13.58					
01+0109.	02+0143.	03+1900.	04+0.500	05+10.37	06+0.205	07+074.4	08+36.87
09+29.91	10+0.000	11+13.57					
01+0115.	02+0143.	03+1900.	04+0.500	05+10.37	06+0.414	07+074.6	08+36.64
09+29.92	10+0.000	11+13.57					
01+0109.	02+0143.	03+1915.	04+0.500	05+10.37	06+0.248	07+074.2	08+37.10
09+29.91	10+0.000	11+13.57					
01+0109.	02+0143.	03+1930.	04+0.500	05+10.36	06+0.246	07+074.1	08+37.31
09+29.91	10+0.000	11+13.58					

```
09+29.79  10+0.000  11+13.59
01+0109.  02+0144.  03+0445.  04+0.500  05+09.91  06+0.042  07+071.0  08+46.03
09+29.79  10+0.000  11+13.59
01+0109.  02+0144.  03+0500.  04+0.500  05+09.91  06+0.000  07+071.0  08+46.30
09+29.79  10+0.000  11+13.59
01+0115.  02+0144.  03+0500.  04+0.500  05+09.91  06+0.500  07+071.0  08+45.89
09+29.79  10+0.000  11+13.59
01+0109.  02+0144.  03+0515.  04+0.500  05+09.91  06+0.042  07+071.0  08+46.61
09+29.79  10+0.000  11+13.59
01+0109.  02+0144.  03+0530.  04+0.500  05+09.91  06+0.000  07+070.9  08+46.76
09+29.80  10+0.000  11+13.60
01+0109.  02+0144.  03+0545.  04+0.500  05+09.90  06+0.000  07+070.9  08+47.17
09+29.80  10+0.000  11+13.58
01+0109.  02+0144.  03+0600.  04+0.500  05+09.90  06+0.000  07+070.8  08+47.52
09+29.80  10+0.000  11+13.60
01+0115.  02+0144.  03+0600.  04+0.500  05+09.90  06+0.497  07+070.9  08+47.02
09+29.80  10+0.000  11+13.60
01+0109.  02+0144.  03+0615.  04+0.500  05+09.89  06+0.000  07+070.8  08+47.82
09+29.79  10+0.000  11+13.59
01+0109.  02+0144.  03+0630.  04+0.500  05+09.89  06+0.000  07+071.1  08+48.05
09+29.79  10+0.000  11+13.61
01+0109.  02+0144.  03+0645.  04+0.500  05+09.89  06+0.000  07+071.4  08+48.33
09+29.79  10+0.000  11+13.61
01+0109.  02+0144.  03+0700.  04+0.500  05+09.90  06+0.000  07+071.7  08+48.04
09+29.79  10+0.000  11+13.60
01+0115.  02+0144.  03+0700.  04+0.500  05+09.89  06+0.497  07+071.3  08+48.06
09+29.79  10+0.000  11+13.60
01+0109.  02+0144.  03+0715.  04+0.500  05+09.90  06+0.000  07+072.2  08+47.75
09+29.79  10+0.000  11+13.58
01+0109.  02+0144.  03+0730.  04+0.500  05+09.90  06+0.000  07+072.8  08+47.01
09+29.79  10+0.000  11+13.58
01+0109.  02+0144.  03+0745.  04+0.500  05+09.92  06+0.073  07+073.4  08+46.43
09+29.79  10+0.000  11+13.58
01+0109.  02+0144.  03+0800.  04+0.500  05+09.92  06+0.089  07+073.9  08+45.97
09+29.79  10+0.000  11+13.57
01+0115.  02+0144.  03+0800.  04+0.500  05+09.91  06+0.501  07+073.1  08+46.79
09+29.79  10+0.000  11+13.57
01+0109.  02+0144.  03+0815.  04+0.500  05+09.94  06+0.138  07+074.7  08+45.18
09+29.79  10+0.000  11+13.57
01+0109.  02+0144.  03+0830.  04+0.500  05+09.98  06+0.204  07+075.6  08+44.35
09+29.79  10+0.000  11+13.56
01+0109.  02+0144.  03+0845.  04+0.500  05+10.05  06+0.269  07+076.4  08+43.56
09+29.79  10+0.000  11+13.56
01+0109.  02+0144.  03+0900.  04+0.500  05+10.17  06+0.311  07+077.3  08+42.83
09+29.79  10+0.000  11+13.54
01+0115.  02+0144.  03+0900.  04+0.500  05+10.04  06+0.535  07+076.0  08+43.98
09+29.79  10+0.000  11+13.54
01+0109.  02+0144.  03+0915.  04+0.500  05+10.27  06+0.303  07+078.0  08+42.11
09+29.79  10+0.000  11+13.54
01+0109.  02+0144.  03+0930.  04+0.500  05+10.33  06+0.291  07+078.4  08+41.83
09+29.79  10+0.000  11+13.52
01+0109.  02+0144.  03+0945.  04+0.500  05+10.35  06+0.281  07+078.6  08+41.54
09+29.79  10+0.000  11+13.54
01+0109.  02+0144.  03+1000.  04+0.500  05+10.35  06+0.278  07+078.4  08+41.78
09+29.79  10+0.000  11+13.52
01+0115.  02+0144.  03+1000.  04+0.500  05+10.33  06+0.408  07+078.4  08+41.82
09+29.79  10+0.000  11+13.52
01+0109.  02+0144.  03+1015.  04+0.500  05+10.35  06+0.278  07+077.9  08+42.36
09+29.79  10+0.000  11+13.54
01+0109.  02+0144.  03+1030.  04+0.500  05+10.35  06+0.278  07+077.3  08+42.83
09+29.79  10+0.000  11+13.54
01+0109.  02+0144.  03+1045.  04+0.500  05+10.35  06+0.234  07+077.0  08+43.31
09+29.79  10+0.000  11+13.52
01+0109.  02+0144.  03+1100.  04+0.500  05+10.36  06+0.208  07+076.8  08+43.71
09+29.79  10+0.000  11+13.54
01+0115.  02+0144.  03+1100.  04+0.500  05+10.35  06+0.399  07+077.3  08+43.05
09+29.79  10+0.000  11+13.54
01+0109.  02+0144.  03+1115.  04+0.500  05+10.35  06+0.189  07+076.7  08+44.10
09+29.79  10+0.000  11+13.52
01+0109.  02+0144.  03+1130.  04+0.500  05+10.36  06+0.211  07+076.6  08+44.43
09+29.79  10+0.000  11+13.50
01+0109.  02+0144.  03+1145.  04+0.500  05+10.37  06+0.215  07+076.5  08+44.89
09+29.78  10+0.000  11+13.53
01+0109.  02+0144.  03+1200.  04+0.500  05+10.36  06+0.218  07+076.4  08+45.48
09+29.78  10+0.000  11+13.57
01+0115.  02+0144.  03+1200.  04+0.500  05+10.36  06+0.402  07+076.5  08+44.73
09+29.78  10+0.000  11+13.57
01+0109.  02+0144.  03+1215.  04+0.500  05+10.37  06+0.211  07+076.2  08+46.09
09+29.77  10+0.000  11+13.55
01+0109.  02+0144.  03+1230.  04+0.500  05+10.37  06+0.206  07+076.2  08+46.65
09+29.77  10+0.000  11+13.56
01+0109.  02+0144.  03+1245.  04+0.500  05+10.37  06+0.212  07+076.1  08+46.93
09+29.77  10+0.000  11+13.52
01+0109.  02+0144.  03+1300.  04+0.500  05+10.37  06+0.218  07+076.0  08+47.32
09+29.77  10+0.000  11+13.53
01+0115.  02+0144.  03+1300.  04+0.500  05+10.37  06+0.411  07+076.1  08+46.75
09+29.77  10+0.000  11+13.53
01+0109.  02+0144.  03+1315.  04+0.500  05+10.38  06+0.221  07+076.0  08+47.75
09+29.76  10+0.000  11+13.54
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09+29.98	10+0.000	11+13.60					
01+0109.	02+0144.	03+2230.	04+0.500	05+09.90	06+0.000	07+070.2	08+43.93
09+29.98	10+0.000	11+13.60					
01+0109.	02+0144.	03+2245.	04+0.500	05+09.89	06+0.000	07+070.1	08+43.94
09+29.98	10+0.000	11+13.61					
01+0109.	02+0144.	03+2300.	04+0.500	05+09.86	06+0.113	07+69.94	08+43.95
09+29.98	10+0.000	11+13.61					
01+0115.	02+0144.	03+2300.	04+0.500	05+09.89	06+0.490	07+070.2	08+43.93
09+29.98	10+0.000	11+13.61					
01+0109.	02+0144.	03+2315.	04+0.500	05+09.80	06+0.193	07+69.82	08+43.95
09+29.98	10+0.000	11+13.59					
01+0109.	02+0144.	03+2330.	04+0.500	05+09.73	06+0.262	07+69.71	08+43.96
09+29.98	10+0.000	11+13.60					
01+0109.	02+0144.	03+2345.	04+0.500	05+09.65	06+0.277	07+69.59	08+44.00
09+29.99	10+0.000	11+13.59					
01+0109.	02+0144.	03+2400.	04+0.500	05+09.60	06+0.280	07+69.48	08+44.01
09+29.99	10+0.000	11+13.58					
01+0115.	02+0144.	03+2400.	04+0.500	05+09.70	06+0.344	07+69.65	08+43.98
09+29.99	10+0.000	11+13.58					
01+0109.	02+0145.	03+0015.	04+0.500	05+09.58	06+0.304	07+69.37	08+44.01
09+29.99	10+0.000	11+13.59					
01+0109.	02+0145.	03+0030.	04+0.500	05+09.47	06+0.284	07+69.27	08+44.01
09+29.99	10+0.000	11+13.59					
01+0109.	02+0145.	03+0045.	04+0.500	05+09.46	06+0.273	07+69.17	08+43.98
09+29.99	10+0.000	11+13.59					
01+0109.	02+0145.	03+0100.	04+0.500	05+09.45	06+0.266	07+69.08	08+43.94
09+29.99	10+0.000	11+13.60					
01+0115.	02+0145.	03+0100.	04+0.500	05+09.49	06+0.000	07+69.22	08+43.99
09+29.99	10+0.000	11+13.60					
01+0109.	02+0145.	03+0115.	04+0.500	05+09.45	06+0.264	07+68.99	08+43.92
09+29.98	10+0.000	11+13.59					
01+0109.	02+0145.	03+0130.	04+0.500	05+09.44	06+0.286	07+68.90	08+43.86
09+29.98	10+0.000	11+13.58					
01+0109.	02+0145.	03+0145.	04+0.500	05+09.44	06+0.256	07+68.79	08+43.78
09+29.98	10+0.000	11+13.58					
01+0109.	02+0145.	03+0200.	04+0.500	05+09.44	06+0.248	07+68.68	08+43.73
09+29.98	10+0.000	11+13.57					
01+0115.	02+0145.	03+0200.	04+0.500	05+09.44	06+0.000	07+68.84	08+43.82
09+29.98	10+0.000	11+13.57					
01+0109.	02+0145.	03+0215.	04+0.500	05+09.43	06+0.252	07+68.59	08+43.69
09+29.98	10+0.000	11+13.58					
01+0109.	02+0145.	03+0230.	04+0.500	05+09.43	06+0.234	07+68.49	08+43.65
09+29.98	10+0.000	11+13.57					
01+0109.	02+0145.	03+0245.	04+0.500	05+09.43	06+0.230	07+68.39	08+43.62
09+29.98	10+0.000	11+13.58					
01+0109.	02+0145.	03+0300.	04+0.500	05+09.42	06+0.219	07+68.33	08+43.55
09+29.98	10+0.000	11+13.58					
01+0115.	02+0145.	03+0300.	04+0.500	05+09.43	06+0.000	07+68.45	08+43.63
09+29.98	10+0.000	11+13.58					
01+0109.	02+0145.	03+0315.	04+0.500	05+09.42	06+0.211	07+68.23	08+43.49
09+29.98	10+0.000	11+13.58					
01+0109.	02+0145.	03+0330.	04+0.500	05+09.42	06+0.197	07+68.15	08+43.44
09+29.98	10+0.000	11+13.60					
01+0109.	02+0145.	03+0345.	04+0.500	05+09.42	06+0.205	07+68.05	08+43.38
09+29.98	10+0.000	11+13.59					
01+0109.	02+0145.	03+0400.	04+0.500	05+09.42	06+0.207	07+68.00	08+43.34
09+29.98	10+0.000	11+13.60					
01+0115.	02+0145.	03+0400.	04+0.500	05+09.42	06+0.000	07+68.11	08+43.41
09+29.98	10+0.000	11+13.60					
01+0109.	02+0145.	03+0415.	04+0.500	05+09.42	06+0.196	07+67.94	08+43.33
09+29.98	10+0.000	11+13.60					
01+0109.	02+0145.	03+0430.	04+0.500	05+09.41	06+0.194	07+67.87	08+43.31
09+29.99	10+0.000	11+13.60					
01+0109.	02+0145.	03+0445.	04+0.500	05+09.41	06+0.191	07+67.79	08+43.30
09+29.98	10+0.000	11+13.58					
01+0109.	02+0145.	03+0500.	04+0.500	05+09.41	06+0.191	07+67.74	08+43.30
09+29.98	10+0.000	11+13.59					
01+0115.	02+0145.	03+0500.	04+0.500	05+09.41	06+0.000	07+67.83	08+43.31
09+29.98	10+0.000	11+13.59					
01+0109.	02+0145.	03+0515.	04+0.500	05+09.41	06+0.192	07+67.66	08+43.31
09+29.98	10+0.000	11+13.61					
01+0109.	02+0145.	03+0530.	04+0.500	05+09.40	06+0.198	07+67.60	08+43.32
09+29.99	10+0.000	11+13.59					
01+0109.	02+0145.	03+0545.	04+0.500	05+09.40	06+0.196	07+67.53	08+43.32
09+29.99	10+0.000	11+13.60					
01+0109.	02+0145.	03+0600.	04+0.500	05+09.40	06+0.214	07+67.47	08+43.30
09+29.99	10+0.000	11+13.59					
01+0115.	02+0145.	03+0600.	04+0.500	05+09.40	06+0.000	07+67.56	08+43.31
09+29.99	10+0.000	11+13.59					
01+0109.	02+0145.	03+0615.	04+0.500	05+09.40	06+0.193	07+67.45	08+43.31
09+30.00	10+0.000	11+13.62					
01+0109.	02+0145.	03+0630.	04+0.500	05+09.38	06+0.209	07+67.60	08+43.26
09+30.00	10+0.000	11+13.62					
01+0109.	02+0145.	03+0645.	04+0.500	05+09.39	06+0.210	07+67.74	08+43.13
09+30.00	10+0.000	11+13.61					
01+0109.	02+0145.	03+0700.	04+0.500	05+09.39	06+0.215	07+67.83	08+43.00
09+30.00	10+0.000	11+13.62					
01+0115.	02+0145.	03+0700.	04+0.500	05+09.39	06+0.000	07+67.65	08+43.17
09+30.00	10+0.000	11+13.62					

09+30.03	10+0.000	11+13.59					
01+0109.	02+0145.	03+1615.	04+0.500	05+09.49	06+0.280	07+070.9	08+39.38
09+30.03	10+0.000	11+13.57					
01+0109.	02+0145.	03+1630.	04+0.500	05+09.51	06+0.296	07+070.9	08+39.52
09+30.03	10+0.000	11+13.57					
01+0109.	02+0145.	03+1645.	04+0.500	05+09.51	06+0.272	07+070.9	08+39.63
09+30.04	10+0.000	11+13.58					
01+0109.	02+0145.	03+1700.	04+0.500	05+09.53	06+0.284	07+070.9	08+39.74
09+30.04	10+0.000	11+13.57					
01+0115.	02+0145.	03+1700.	04+0.500	05+09.51	06+0.000	07+070.9	08+39.57
09+30.04	10+0.000	11+13.57					
01+0109.	02+0145.	03+1715.	04+0.500	05+09.55	06+0.273	07+070.9	08+39.85
09+30.04	10+0.000	11+13.57					
01+0109.	02+0145.	03+1730.	04+0.500	05+09.51	06+0.282	07+070.9	08+39.92
09+30.05	10+0.000	11+13.59					
01+0109.	02+0145.	03+1745.	04+0.500	05+09.60	06+0.266	07+070.9	08+40.01
09+30.05	10+0.000	11+13.59					
01+0109.	02+0145.	03+1800.	04+0.500	05+09.56	06+0.270	07+070.9	08+40.09
09+30.05	10+0.000	11+13.58					
01+0115.	02+0145.	03+1800.	04+0.500	05+09.55	06+0.162	07+070.9	08+39.97
09+30.05	10+0.000	11+13.58					
01+0109.	02+0145.	03+1815.	04+0.500	05+09.56	06+0.293	07+070.9	08+40.17
09+30.06	10+0.000	11+13.58					
01+0109.	02+0145.	03+1830.	04+0.500	05+09.53	06+0.290	07+070.8	08+40.25
09+30.06	10+0.000	11+13.59					
01+0109.	02+0145.	03+1845.	04+0.500	05+09.57	06+0.264	07+070.8	08+40.34
09+30.06	10+0.000	11+13.58					
01+0109.	02+0145.	03+1900.	04+0.500	05+09.65	06+0.297	07+070.7	08+40.43
09+30.07	10+0.000	11+13.60					
01+0115.	02+0145.	03+1900.	04+0.500	05+09.57	06+0.225	07+070.8	08+40.30
09+30.06	10+0.000	11+13.60					
01+0109.	02+0145.	03+1915.	04+0.500	05+09.53	06+0.284	07+070.6	08+40.47
09+30.07	10+0.000	11+13.59					
01+0109.	02+0145.	03+1930.	04+0.500	05+09.53	06+0.282	07+070.5	08+40.52
09+30.07	10+0.000	11+13.60					
01+0109.	02+0145.	03+1945.	04+0.500	05+09.51	06+0.279	07+070.5	08+40.58
09+30.07	10+0.000	11+13.58					
01+0109.	02+0145.	03+2000.	04+0.500	05+09.49	06+0.282	07+070.4	08+40.65
09+30.08	10+0.000	11+13.58					
01+0115.	02+0145.	03+2000.	04+0.500	05+09.52	06+0.000	07+070.5	08+40.56
09+30.07	10+0.000	11+13.58					
01+0109.	02+0145.	03+2015.	04+0.500	05+09.48	06+0.282	07+070.3	08+40.73
09+30.08	10+0.000	11+13.57					
01+0109.	02+0145.	03+2030.	04+0.500	05+09.48	06+0.289	07+070.2	08+40.80
09+30.08	10+0.000	11+13.57					
01+0109.	02+0145.	03+2045.	04+0.500	05+09.49	06+0.267	07+070.1	08+40.88
09+30.09	10+0.000	11+13.59					
01+0109.	02+0145.	03+2100.	04+0.500	05+09.47	06+0.271	07+070.0	08+40.94
09+30.09	10+0.000	11+13.59					
01+0115.	02+0145.	03+2100.	04+0.500	05+09.48	06+0.000	07+070.2	08+40.84
09+30.09	10+0.000	11+13.59					
01+0109.	02+0145.	03+2115.	04+0.500	05+09.47	06+0.275	07+69.95	08+41.01
09+30.10	10+0.000	11+13.60					
01+0109.	02+0145.	03+2130.	04+0.500	05+09.46	06+0.286	07+69.88	08+41.07
09+30.10	10+0.000	11+13.58					
01+0109.	02+0145.	03+2145.	04+0.500	05+09.46	06+0.282	07+69.80	08+41.13
09+30.10	10+0.000	11+13.59					
01+0109.	02+0145.	03+2200.	04+0.500	05+09.46	06+0.282	07+69.75	08+41.16
09+30.10	10+0.000	11+13.58					
01+0115.	02+0145.	03+2200.	04+0.500	05+09.46	06+0.000	07+69.84	08+41.09
09+30.10	10+0.000	11+13.58					
01+0109.	02+0145.	03+2215.	04+0.500	05+09.45	06+0.276	07+69.74	08+41.14
9+30.10	10+0.000	11+13.58					
01+0109.	02+0145.	03+2230.	04+0.500	05+09.45	06+0.279	07+69.74	08+41.14
09+30.10	10+0.000	11+13.60					
01+0109.	02+0145.	03+2245.	04+0.500	05+09.45	06+0.276	07+69.64	08+41.16
09+30.09	10+0.000	11+13.61					
01+0109.	02+0145.	03+2300.	04+0.500	05+09.44	06+0.258	07+69.43	08+41.16
09+30.09	10+0.000	11+13.58					
01+0115.	02+0145.	03+2300.	04+0.500	05+09.45	06+0.000	07+69.64	08+41.15
09+30.10	10+0.000	11+13.58					
01+0109.	02+0145.	03+2315.	04+0.500	05+09.44	06+0.264	07+69.18	08+41.17
09+30.10	10+0.000	11+13.60					
01+0109.	02+0145.	03+2330.	04+0.500	05+09.44	06+0.251	07+68.95	08+41.19
09+30.10	10+0.000	11+13.59					
01+0109.	02+0145.	03+2345.	04+0.500	05+09.43	06+0.250	07+68.70	08+41.23
09+30.10	10+0.000	11+13.60					
01+0109.	02+0145.	03+2400.	04+0.500	05+09.42	06+0.[illegible]7	07+68.48	08+41.28
09+30.10	10+0.000	11+13.59					
1+0115.	02+0145.	03+2400.	04+0.500	05+09.43	06+0.000	07+68.83	08+41.22
09+30.10	10+0.000	11+13.59					
01+0109.	02+0146.	03+0015.	04+0.500	05+09.42	06+0.201	07+68.31	08+41.31
09+30.11	10+0.000	11+13.61					
01+0109.	02+0146.	03+0030.	04+0.500	05+09.42	06+0.196	07+68.17	08+41.35
09+30.10	10+0.000	11+13.60					
01+0109.	02+0146.	03+0045.	04+0.500	05+09.42	06+0.192	07+68.03	08+41.39
09+30.09	10+0.000	11+13.60					
01+0109.	02+0146.	03+0100.	04+0.500	05+09.42	06+0.191	07+67.91	08+41.42
09+30.09	10+0.000	11+13.59					

09+30.07	10+0.010	11+12.92					
01+0115.	02+0146.	03+1000.	04+0.500	05+09.44	06+0.000	07+074.9	08+36.06
09+30.07	10+0.010	11+12.92					
01+0109.	02+0146.	03+1015.	04+0.500	05+09.52	06+0.386	07+073.7	08+38.48
09+30.07	10+0.010	11+12.77					
01+0109.	02+0146.	03+1030.	04+0.500	05+09.57	06+0.392	07+073.7	08+36.32
09+30.00	10+0.000	11+12.73					
01+0109.	02+0146.	03+1045.	04+0.500	05+09.47	06+0.338	07+074.8	08+30.13
09+30.04	10+0.000	11+12.72					
01+0109.	02+0146.	03+1100.	04+0.500	05+09.64	06+0.225	07+077.4	08+28.05
09+30.04	10+0.000	11+12.71					
01+0115.	02+0146.	03+1100.	04+0.500	05+09.55	06+0.234	07+074.9	08+33.24
09+30.04	10+0.010	11+12.71					
01+0109.	02+0146.	03+1115.	04+0.500	05+09.89	06+0.000	07+078.8	08+26.55
09+30.03	10+0.000	11+12.71					
01+0109.	02+0146.	03+1130.	04+0.500	05+10.00	06+0.233	07+079.2	08+31.10
09+30.03	10+0.000	11+12.71					
01+0109.	02+0146.	03+1145.	04+0.500	05+10.33	06+0.299	07+074.0	08+37.58
09+30.04	10+0.000	11+12.71					
01+0109.	02+0146.	03+1200.	04+0.500	05+10.35	06+0.278	07+69.34	08+41.76
09+30.03	10+0.000	11+12.70					
01+0115.	02+0146.	03+1200.	04+0.500	05+10.14	06+0.536	07+075.3	08+34.25
09+30.03	10+0.000	11+12.70					
01+0109.	02+0146.	03+1215.	04+0.500	05+10.33	06+0.283	07+65.34	08+45.56
09+30.03	10+0.000	11+12.69					
01+0109.	02+0146.	03+1230.	04+0.500	05+10.03	06+0.213	07+63.54	08+47.51
09+30.02	10+0.000	11+12.69					
01+0109.	02+0146.	03+1245.	04+0.500	05+09.88	06+0.032	07+63.16	08+48.36
09+30.03	10+0.000	11+12.68					
01+0109.	02+0146.	03+1300.	04+0.500	05+09.50	06+0.308	07+62.60	08+48.60
09+30.02	10+0.000	11+12.67					
01+0115.	02+0146.	03+1300.	04+0.500	05+09.94	06+0.481	07+63.66	08+47.51
09+30.03	10+0.000	11+12.67					
01+0109.	02+0146.	03+1315.	04+0.500	05+09.42	06+0.240	07+60.49	08+51.74
09+30.03	10+0.000	11+12.67					
01+0109.	02+0146.	03+1330.	04+0.500	05+09.24	06+0.883	07+59.37	08+55.14
09+30.02	10+0.080	11+12.67					
01+0109.	02+0146.	03+1345.	04+0.500	05+08.90	06+1.195	07+60.50	08+54.28
09+30.00	10+0.050	11+12.66					

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01+0109.	02+0146.	03+1400.	04+2.838	05+34.41	06+58.38	07+57.45	08+58.82
09+29.98	10+0.130	11+12.64					
01+0115.	02+0146.	03+1400.	04+1.084	05+13.25	06+28.16	07+59.45	08+55.00
09+30.01	10+0.260	11+12.64					
01+0109.	02+0146.	03+1415.	04+08.16	05+127.4	06+16.45	07+52.94	08+071.4
09+29.97	10+0.000	11+12.63					
01+0109.	02+0146.	03+1430.	04+07.81	05+128.2	06+18.71	07+52.79	08+075.4
09+29.96	10+0.000	11+12.63					
01+0109.	02+0146.	03+1445.	04+6.254	05+127.7	06+34.47	07+52.95	08+076.1
09+29.96	10+0.000	11+12.62					
01+0109.	02+0146.	03+1500.	04+6.780	05+116.2	06+29.91	07+52.66	08+077.0
09+29.95	10+0.000	11+12.61					
01+0115.	02+0146.	03+1500.	04+07.25	05+125.0	06+26.24	07+52.83	08+075.0
09+29.96	10+0.000	11+12.61					
01+0109.	02+0146.	03+1515.	04+07.06	05+123.9	06+25.73	07+52.23	08+078.2
09+29.94	10+0.000	11+12.60					
01+0109.	02+0146.	03+1530.	04+5.841	05+115.4	06+28.64	07+52.10	08+079.5
09+29.94	10+0.000	11+12.59					
01+0109.	02+0146.	03+1545.	04+5.287	05+101.5	06+32.86	07+52.23	08+079.5
09+29.93	10+0.000	11+12.58					
01+0109.	02+0146.	03+1600.	04+5.851	05+128.5	06+22.70	07+52.08	08+080.0
09+29.92	10+0.000	11+12.58					
01+0115.	02+0146.	03+1600.	04+6.009	05+117.7	06+29.48	07+52.16	08+079.3
9+29.93	10+0.000	11+12.58					
01+0109.	02+0146.	03+1615.	04+5.953	05+126.9	06+16.92	07+51.74	08+080.7
09+29.92	10+0.000	11+12.57					
01+0109.	02+0146.	03+1630.	04+5.479	05+116.3	06+25.53	07+51.90	08+080.2
09+29.92	10+0.000	11+12.56					
01+0109.	02+0146.	03+1645.	04+5.745	05+132.2	06+19.59	07+51.41	08+081.0
09+29.93	10+0.000	11+12.56					
01+0109.	02+0146.	03+1700.	04+6.683	05+123.6	06+15.16	07+50.75	08+082.8
09+29.92	10+0.010	11+12.55					
01+0115.	02+0146.	03+1700.	04+5.965	05+124.9	06+20.45	07+51.45	08+081.2
09+29.92	10+0.010	11+12.55					
01+0109.	02+0146.	03+1715.	04+4.177	05+132.9	06+15.79	07+49.97	08+088.0
09+29.92	10+0.000	11+12.54					
01+0109.	02+0146.	03+1730.	04+4.910	05+135.9	06+12.40	07+49.61	08+093.1
09+29.92	10+0.010	11+12.54					
01+0109.	02+0146.	03+1745.	04+5.373	05+133.2	06+10.12	07+48.87	08+096.2
09+29.92	10+0.020	11+12.52					
1+0109.	02+0146.	03+1800.	04+5.619	05+140.8	06+12.11	07+48.30	08+097.6
09+29.91	10+0.010	11+12.51					
01+0115.	02+0146.	03+1800.	04+5.020	05+135.7	06+13.15	07+49.19	08+093.7
09+29.92	10+0.040	11+12.51					
01+0109.	02+0146.	03+1815.	04+4.412	05+137.5	06+12.58	07+48.13	08+098.8
09+29.91	10+0.010	11+12.50					
01+0109.	02+0146.	03+1830.	04+3.313	05+134.6	06+11.95	07+47.96	08+099.6
09+29.90	10+0.010	11+12.50					
01+0109.	02+0146.	03+1845.	04+2.906	05+146.8	06+18.43	07+48.00	08+100.2
09+29.90	10+0.010	11+12.50					

09+29.83	10+0.000	11+12.34					
01+0109.	02+0147.	03+0400.	04+1.789	05+295.8	06+33.69	07+47.44	08+096.9
09+29.83	10+0.000	11+12.34					
01+0115.	02+0147.	03+0400.	04+2.262	05+311.6	06+36.98	07+47.23	08+096.4
09+29.84	10+0.000	11+12.34					
01+0109.	02+0147.	03+0415.	04+1.730	05+276.5	06+19.19	07+47.56	08+097.4
09+29.83	10+0.000	11+12.34					
01+0109.	02+0147.	03+0430.	04+1.352	05+330.7	06+57.24	07+47.69	08+097.1
09+29.83	10+0.000	11+12.34					
01+0109.	02+0147.	03+0445.	04+2.280	05+296.3	06+31.61	07+47.72	08+097.4
09+29.83	10+0.000	11+12.33					
01+0109.	02+0147.	03+0500.	04+2.361	05+288.4	06+17.35	07+47.70	08+097.5
09+29.83	10+0.000	11+12.33					
01+0115.	02+0147.	03+0500.	04+1.931	05+294.3	06+38.35	07+47.67	08+097.4
09+29.83	10+0.000	11+12.33					
01+0109.	02+0147.	03+0515.	04+2.358	05+296.2	06+22.87	07+47.78	08+097.3
09+29.83	10+0.000	11+12.33					
01+0109.	02+0147.	03+0530.	04+3.881	05+300.1	06+14.16	07+47.59	08+096.1
09+29.82	10+0.000	11+12.33					
01+0109.	02+0147.	03+0545.	04+3.341	05+302.5	06+14.76	07+47.55	08+095.7
09+29.83	10+0.000	11+12.33					
01+0109.	02+0147.	03+0600.	04+3.194	05+302.2	06+11.18	07+47.46	08+096.0
09+29.83	10+0.000	11+12.32					
01+0115.	02+0147.	03+0600.	04+3.194	05+300.3	06+16.46	07+47.60	08+096.3
09+29.83	10+0.000	11+12.32					
01+0109.	02+0147.	03+0615.	04+3.273	05+290.0	06+10.83	07+47.57	08+097.2
09+29.83	10+0.000	11+12.32					
01+0109.	02+0147.	03+0630.	04+2.423	05+297.0	06+18.91	07+47.97	08+097.8
09+29.83	10+0.000	11+12.32					
01+0109.	02+0147.	03+0645.	04+2.089	05+301.4	06+25.61	07+48.67	08+097.5
09+29.84	10+0.000	11+12.31					
01+0109.	02+0147.	03+0700.	04+2.561	05+299.7	06+30.55	07+49.35	08+096.9
09+29.84	10+0.000	11+12.31					
01+0115.	02+0147.	03+0700.	04+2.586	05+296.8	06+22.98	07+48.39	08+097.4
09+29.83	10+0.000	11+12.31					
01+0109.	02+0147.	03+0715.	04+2.357	05+359.2	06+27.53	07+49.99	08+096.2
09+29.84	10+0.000	11+12.31					
01+0109.	02+0147.	03+0730.	04+3.089	05+353.4	06+21.37	07+50.51	08+095.2
09+29.84	10+0.000	11+12.31					
01+0109.	02+0147.	03+0745.	04+3.702	05+333.8	06+43.59	07+52.06	08+092.7
09+29.84	10+0.000	11+12.31					
01+0109.	02+0147.	03+0800.	04+4.663	05+335.3	06+39.03	07+52.97	08+088.9
09+29.85	10+0.000	11+12.31					
01+0115.	02+0147.	03+0800.	04+3.453	05+346.3	06+35.42	07+51.38	08+093.2
09+29.84	10+0.000	11+12.31					
01+0109.	02+0147.	03+0815.	04+3.963	05+320.5	06+31.42	07+52.55	08+088.2
09+29.86	10+0.000	11+12.31					
01+0109.	02+0147.	03+0830.	04+3.612	05+306.8	06+39.39	07+53.08	08+087.4
09+29.86	10+0.000	11+12.30					
01+0109.	02+0147.	03+0845.	04+4.581	05+299.2	06+20.21	07+53.67	08+085.8
09+29.87	10+0.000	11+12.30					
01+0109.	02+0147.	03+0900.	04+5.502	05+294.3	06+13.59	07+53.64	08+083.3
09+29.87	10+0.000	11+12.30					
01+0115.	02+0147.	03+0900.	04+4.414	05+304.7	06+29.30	07+53.24	08+086.2
09+29.87	10+0.000	11+12.30					
01+0109.	02+0147.	03+0915.	04+4.870	05+303.8	06+27.54	07+54.40	08+079.0
09+29.87	10+0.000	11+12.30					
01+0109.	02+0147.	03+0930.	04+4.019	05+342.6	06+42.75	07+54.79	08+074.1
09+29.88	10+0.000	11+12.32					
01+0109.	02+0147.	03+0945.	04+4.195	05+11.74	06+39.48	07+56.37	08+071.0
09+29.87	10+0.000	11+12.32					
01+0109.	02+0147.	03+1000.	04+4.602	05+324.4	06+53.27	07+56.95	08+67.38
09+29.88	10+0.000	11+12.32					
01+0115.	02+0147.	03+1000.	04+4.422	05+334.8	06+48.74	07+55.63	08+072.9
09+29.88	10+0.000	11+12.32					
01+0109.	02+0147.	03+1015.	04+3.299	05+10.46	06+48.01	07+58.43	08+62.82
09+29.88	10+0.000	11+12.32					
01+0109.	02+0147.	03+1030.	04+3.019	05+21.52	06+081.1	07+60.58	08+60.00
09+29.89	10+0.000	11+12.32					
01+0109.	02+0147.	03+1045.	04+4.086	05+59.37	06+45.14	07+59.78	08+57.85
09+29.90	10+0.000	11+12.33					
01+0109.	02+0147.	03+1100.	04+4.358	05+55.00	06+40.58	07+60.26	08+53.79
09+29.91	10+0.000	11+12.33					
01+0115.	02+0147.	03+1100.	04+3.690	05+39.95	06+58.48	07+59.76	08+58.62
09+29.89	10+0.000	11+12.33					
01+0109.	02+0147.	03+1115.	04+3.346	05+102.0	06+56.55	07+61.18	08+50.49
09+29.91	10+0.000	11+12.32					
01+0109.	02+0147.	03+1130.	04+5.017	05+194.7	06+082.1	07+62.14	08+49.65
09+29.91	10+0.000	11+12.32					
01+0109.	02+0147.	03+1145.	04+4.438	05+095.3	06+58.46	07+60.94	08+50.45
09+29.91	10+0.000	11+12.32					
01+0109.	02+0147.	03+1200.	04+3.194	05+45.54	06+53.33	07+62.95	08+46.69
09+29.91	10+0.000	11+12.32					
01+0115.	02+0147.	03+1200.	04+3.999	05+090.8	06+075.1	07+61.80	08+49.32
09+29.91	10+0.000	11+12.32					
01+0109.	02+0147.	03+1215.	04+4.527	05+270.3	06+38.83	07+65.98	08+43.21
09+29.91	10+0.000	11+12.32					
01+0109.	02+0147.	03+1230.	04+3.459	05+206.1	06+57.56	07+65.48	08+42.89
09+29.91	10+0.000	11+12.32					

09+29.87	10+0.000	11+11.15					
01+0109.	02+0147.	03+2145.	04+2.541	05+223.6	06+21.58	07+50.76	08+097.0
09+29.87	10+0.000	11+11.13					
01+0109.	02+0147.	03+2200.	04+2.520	05+235.6	06+23.89	07+50.73	08+096.8
09+29.87	10+0.000	11+11.12					
01+0115.	02+0147.	03+2200.	04+2.521	05+225.9	06+34.58	07+51.20	08+096.2
09+29.87	10+0.000	11+11.12					
01+0109.	02+0147.	03+2215.	04+3.159	05+243.9	06+29.04	07+50.35	08+097.1
09+29.87	10+0.000	11+11.10					
01+0109.	02+0147.	03+2230.	04+3.520	05+196.9	06+19.70	07+50.63	08+097.1
09+29.87	10+0.000	11+11.09					
01+0109.	02+0147.	03+2245.	04+2.901	05+229.4	06+19.62	07+50.23	08+097.5
09+29.88	10+0.000	11+11.09					
01+0109.	02+0147.	03+2300.	04+3.282	05+207.9	06+16.53	07+50.04	08+098.3
09+29.88	10+0.000	11+11.08					
01+0115.	02+0147.	03+2300.	04+3.216	05+219.0	06+28.27	07+50.31	08+097.5
09+29.88	10+0.000	11+11.08					
01+0109.	02+0147.	03+2315.	04+3.433	05+248.4	06+27.05	07+50.07	08+098.6
09+29.88	10+0.000	11+11.06					
01+0109.	02+0147.	03+2330.	04+2.891	05+265.4	06+14.60	07+49.65	08+099.1
09+29.88	10+0.000	11+11.06					
01+0109.	02+0147.	03+2345.	04+2.887	05+271.6	06+12.61	07+48.93	08+099.8
09+29.88	10+0.000	11+11.04					
01+0109.	02+0147.	03+2400.	04+3.493	05+266.7	06+11.41	07+48.98	08+100.3
09+29.88	10+0.000	11+11.04					
01+0115.	02+0147.	03+2400.	04+3.176	05+263.4	06+19.41	07+49.41	08+099.5
09+29.88	10+0.000	11+11.04					
01+0109.	02+0148.	03+0015.	04+3.253	05+271.0	06+09.22	07+48.64	08+100.6
09+29.88	10+0.000	11+11.02					
01+0109.	02+0148.	03+0030.	04+3.196	05+283.3	06+11.45	07+48.06	08+101.2
09+29.87	10+0.000	11+11.02					
01+0109.	02+0148.	03+0045.	04+4.166	05+279.7	06+09.04	07+48.43	08+101.4
09+29.87	10+0.000	11+11.00					
01+0109.	02+0148.	03+0100.	04+3.487	05+280.0	06+10.36	07+48.44	08+100.1
09+29.88	10+0.000	11+11.00					
01+0115.	02+0148.	03+0100.	04+3.526	05+278.5	06+11.04	07+48.39	08+100.8
09+29.88	10+0.000	11+11.00					
01+0109.	02+0148.	03+0115.	04+3.337	05+288.7	06+6.354	07+48.22	08+098.8
09+29.88	10+0.000	11+10.99					
01+0109.	02+0148.	03+0130.	04+2.051	05+289.6	06+12.68	07+47.80	08+098.6
09+29.88	10+0.000	11+10.98					
01+0109.	02+0148.	03+0145.	04+2.994	05+285.4	06+6.741	07+47.04	08+098.9
09+29.87	10+0.000	11+10.97					
01+0109.	02+0148.	03+0200.	04+4.484	05+290.2	06+5.603	07+46.74	08+099.1
09+29.87	10+0.000	11+10.96					
01+0115.	02+0148.	03+0200.	04+3.217	05+288.5	06+08.52	07+47.45	08+098.8
09+29.88	10+0.000	11+10.96					
01+0109.	02+0148.	03+0215.	04+5.558	05+287.3	06+5.147	07+46.94	08+099.0
09+29.87	10+0.000	11+10.96					
01+0109.	02+0148.	03+0230.	04+5.257	05+288.1	06+5.491	07+46.80	08+098.6
09+29.88	10+0.000	11+10.95					
01+0109.	02+0148.	03+0245.	04+5.109	05+289.7	06+4.462	07+46.51	08+098.9
09+29.88	10+0.000	11+10.94					
01+0109.	02+0148.	03+0300.	04+5.101	05+286.4	06+5.505	07+46.65	08+098.8
09+29.88	10+0.000	11+10.94					
01+0115.	02+0148.	03+0300.	04+5.256	05+287.9	06+5.304	07+46.72	08+098.8
09+29.88	10+0.000	11+10.94					
01+0109.	02+0148.	03+0315.	04+5.026	05+287.5	06+5.052	07+46.38	08+098.9
09+29.88	10+0.000	11+10.93					
01+0109.	02+0148.	03+0330.	04+4.704	05+289.5	06+07.25	07+46.14	08+099.2
09+29.88	10+0.000	11+10.92					
01+0109.	02+0148.	03+0345.	04+4.696	05+287.1	06+10.24	07+46.23	08+099.5
09+29.89	10+0.000	11+10.91					
01+0109.	02+0148.	03+0400.	04+4.291	05+288.6	06+07.56	07+46.21	08+099.8
09+29.89	10+0.000	11+10.91					
01+0115.	02+0148.	03+0400.	04+4.679	05+288.2	06+07.80	07+46.24	08+099.4
09+29.88	10+0.000	11+10.91					
01+0109.	02+0148.	03+0415.	04+4.439	05+289.6	06+08.18	07+46.24	08+100.3
09+29.89	10+0.000	11+10.90					
01+0109.	02+0148.	03+0430.	04+5.324	05+287.8	06+07.54	07+46.35	08+100.6
09+29.90	10+0.000	11+10.90					
01+0109.	02+0148.	03+0445.	04+6.139	05+284.1	06+07.18	07+46.51	08+101.0
09+29.90	10+0.000	11+10.90					
01+0109.	02+0148.	03+0500.	04+5.079	05+284.0	06+6.238	07+46.28	08+101.1
09+29.91	10+0.000	11+10.89					
01+0115.	02+0148.	03+0500.	04+5.245	05+286.4	06+07.71	07+46.35	08+100.7
09+29.90	10+0.000	11+10.89					
01+0109.	02+0148.	03+0515.	04+4.920	05+287.1	06+4.227	07+45.90	08+101.5
09+29.91	10+0.000	11+10.89					
01+0109.	02+0148.	03+0530.	04+4.821	05+291.5	06+6.401	07+45.75	08+101.8
09+29.91	10+0.000	11+10.89					
01+0109.	02+0148.	03+0545.	04+4.966	05+290.1	06+08.05	07+45.95	08+101.9
09+29.92	10+0.000	11+10.88					
01+0109.	02+0148.	03+0600.	04+5.506	05+287.7	06+6.680	07+46.23	08+101.5
09+29.93	10+0.000	11+10.87					
01+0115.	02+0148.	03+0600.	04+5.053	05+289.1	06+6.724	07+45.96	08+101.7
09+29.92	10+0.000	11+10.87					
01+0109.	02+0148.	03+0615.	04+5.113	05+292.4	06+10.04	07+46.60	08+101.1
09+29.93	10+0.000	11+10.87					

09+30.07	10+0.000	11+10.28					
01+0109.	02+0148.	03+1530.	04+6.185	05+310.4	06+36.67	07+67.57	08+42.40
09+30.07	10+0.000	11+10.25					
01+0109.	02+0148.	03+1545.	04+4.696	05+313.3	06+52.86	07+69.11	08+40.55
09+30.06	10+0.000	11+10.26					
01+0109.	02+0148.	03+1600.	04+5.729	05+312.3	06+48.11	07+69.07	08+40.11
09+30.06	10+0.000	11+10.24					
01+0115.	02+0148.	03+1600.	04+5.980	05+305.2	06+42.77	07+68.73	08+41.34
09+30.07	10+0.000	11+10.24					
01+0109.	02+0148.	03+1615.	04+3.584	05+15.07	06+36.41	07+67.86	08+40.22
09+30.07	10+0.000	11+10.21					
01+0109.	02+0148.	03+1630.	04+07.19	05+147.4	06+33.23	07+65.63	08+48.74
09+30.06	10+0.000	11+10.12					
01+0109.	02+0148.	03+1645.	04+08.67	05+183.8	06+18.27	07+63.94	08+52.93
09+30.06	10+0.000	11+09.87					
01+0109.	02+0148.	03+1700.	04+07.97	05+180.9	06+18.02	07+63.27	08+53.77
09+30.06	10+0.000	11+09.72					
01+0115.	02+0148.	03+1700.	04+6.854	05+162.1	06+~~67.82~~ 27.79	07+65.17	08+48.91
09+30.06	10+0.000	11+09.72					
01+0109.	02+0148.	03+1715.	04+07.28	05+172.6	06+20.26	07+63.88	08+53.51
09+30.05	10+0.000	11+09.65					
01+0109.	02+0148.	03+1730.	04+07.83	05+176.3	06+17.82	07+64.45	08+52.88
09+30.05	10+0.000	11+09.55					
01+0109.	02+0148.	03+1745.	04+08.59	05+166.3	06+16.76	07+63.55	08+54.23
09+29.99	10+0.000	11+09.49					
01+0109.	02+0148.	03+1800.	04+07.37	05+176.3	06+24.50	07+62.42	08+57.14
09+29.89	10+0.000	11+09.44					
01+0115.	02+0148.	03+1800.	04+07.77	05+172.8	06+20.44	07+63.57	08+54.44
09+29.99	10+0.000	11+09.44					
01+0109.	02+0148.	03+1815.	04+07.71	05+191.6	06+19.91	07+62.25	08+61.12
09+29.78	10+0.000	11+09.39					
01+0109.	02+0148.	03+1830.	04+08.10	05+196.4	06+16.23	07+60.99	08+64.50
09+29.70	10+0.000	11+09.35					
01+0109.	02+0148.	03+1845.	04+09.32	05+202.1	06+12.14	07+59.45	08+66.06
09+29.61	10+0.000	11+09.32					
01+0109.	02+0148.	03+1900.	04+08.76	05+195.9	06+11.94	07+58.45	08+67.76
09+29.53	10+0.000	11+09.28					
01+0115.	02+0148.	03+1900.	04+08.47	05+196.5	06+15.82	07+60.28	08+64.86
09+29.65	10+0.000	11+09.28					
01+0109.	02+0148.	03+1915.	04+6.806	05+183.3	06+15.60	07+58.09	08+68.14
09+29.46	10+0.000	11+09.25					
01+0109.	02+0148.	03+1930.	04+4.668	05+181.4	06+17.42	07+58.08	08+68.08
09+29.40	10+0.000	11+09.23					
01+0109.	02+0148.	03+1945.	04+5.474	05+194.1	06+11.14	07+57.83	08+69.04
09+29.35	10+0.000	11+09.21					
01+0109.	02+0148.	03+2000.	04+6.363	05+191.5	06+14.52	07+57.36	08+69.25
09+29.31	10+0.000	11+09.19					
01+0115.	02+0148.	03+2000.	04+5.828	05+187.6	06+15.77	07+57.84	08+68.63
09+29.38	10+0.000	11+09.19					
01+0109.	02+0148.	03+2015.	04+4.922	05+187.2	06+15.89	07+56.86	08+070.6
09+29.27	10+0.000	11+09.17					
01+0109.	02+0148.	03+2030.	04+4.793	05+192.0	06+10.59	07+56.35	08+071.8
09+29.23	10+0.000	11+09.16					
01+0109.	02+0148.	03+2045.	04+4.574	05+183.6	06+12.46	07+55.85	08+074.4
09+29.20	10+0.000	11+09.14					
01+0109.	02+0148.	03+2100.	04+3.198	05+176.9	06+23.56	07+55.38	08+077.8
09+29.17	10+0.000	11+09.12					
01+0115.	02+0148.	03+2100.	04+4.371	05+185.1	06+17.21	07+56.11	08+073.6
09+29.22	10+0.000	11+09.12					

too high to be right

(formula from P6-6 of "in-situ ---")

$\left[\left(\sigma_{15}^2 + \sigma_{30}^2 + \sigma_{45}^2 + \sigma_{60}^2\right)/4\right]^{1/2}$

$= \left[\left(36.41^2 + 33.23^2 + 18.27^2 + 18.02^2\right)/4\right]^{1/2}$

$= [(1325.69 + 1104.23 + 333.79 + 324$

$= 27.79$

When battery voltage drops to below 10 vol data collected are not reliable especially B b metric pressure (as per Adams from Climatronic

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

First Quarter

APPENDIX I

MODELING DATA

Appen~~1~~ 1. *
(3/16/93)

1st year, 1st qt. val.

```
** INPUT FILE NAME: AS1R2.INP

CO STARTING
   TITLEONE  LKBOBA - ISC2, 1ST QUARTER, AS TESTED ON MAY 28, 1992, RUN-2
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  PERIOD
   POLLUTID  VOCs
   TERRHGTS  ELEV
   ELEVUNIT  FEET
   FLAGPOLE  1
   RUNORNOT  RUN
   ERRORFIL  ERRORS.OUT
CO FINISHED

SO STARTING
   LOCATION  LKBAS  POINT  0.0   0.0   42.8
**          SOURCE  EMISSION  STACK  EXIT   EXIT     STACK
**      PARAMETERS      RATE     HT  TEMP  SPEED  DIAMETER
** ---------------  --------   ----  ----  -----  --------
   SRCPARAM  LKBAS      1.00   16.7  285.   4.99      1.02

   BUILDHGT  LKBAS   36*8.38
   BUILDWID  LKBAS   14.4 15.0 18.0 22.5 24.8 25.5 26.3 27.0
             LKBAS   25.5 24.0 24.0 25.5 26.3 26.7 25.5 24.0
             LKBAS   21.0 18.0 14.4 15.0 18.0 22.5 24.8 25.5
             LKBAS   26.3 27.0 25.5 24.0 24.0 25.5 26.3 26.7
             LKBAS   25.5 24.0 21.0 18.0
   SRCGROUP  ALL
SO FINISHED

RE STARTING

RE DISCPOLR LKBAS 120.3 140.  120. 1.
RE DISCPOLR LKBAS  65.5 291.5 140. 1.

RE FINISHED

ME STARTING
   INPUTFIL  AS.MET
   ANEMHGHT  37.5 FEET
   SURFDATA  12345  1992
   UAIRDATA  12345  1992
   WDROTATE 180
ME FINISHED

OU STARTING
** RECTABLE     1  FIRST
** MAXTABLE     1  50
   DAYTABLE     1
OU FINISHED

************************************
*** SETUP Finishes Successfully ***
************************************
```

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BUILDING EXISTS	EMISSION RATE SCALAR VARY BY
LKBAS	0	.10000E+01	.0	.0	42.8	16.70	285.00	4.99	1.02	YES	

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: LKBAS

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW
1	8.4,	14.4,	0	2	8.4,	15.0,	0	3	8.4,	18.0,	0	4	8.4,	22.5,	0	5	8.4,	24.8,	0	6	8.4,	25.5
7	8.4,	26.3,	0	8	8.4,	27.0,	0	9	8.4,	25.5,	0	10	8.4,	24.0,	0	11	8.4,	24.0,	0	12	8.4,	25.5
13	8.4,	26.3,	0	14	8.4,	26.7,	0	15	8.4,	25.5,	0	16	8.4,	24.0,	0	17	8.4,-	21.0,	0	18	8.4,	18.0
19	8.4,	14.4,	0	20	8.4,	15.0,	0	21	8.4,	18.0,	0	22	8.4,	22.5,	0	23	8.4,	24.8,	0	24	8.4,	25.5
25	8.4,	26.3,	0	26	8.4,	27.0,	0	27	8.4,	25.5,	0	28	8.4,	24.0,	0	29	8.4,	24.0,	0	30	8.4,	25.5
31	8.4,	26.3,	0	32	8.4,	26.7,	0	33	8.4,	25.5,	0	34	8.4,	24.0,	0	35	8.4,	21.0,	0	36	8.4,	18.0,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 9 FOR DAY 149 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE POLAR RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC	ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC
LKBAS :	120.30	140.00	33.38549	LKBAS :	65.50	291.50	.00000

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 11 FOR DAY 149 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE POLAR RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC	ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC
LKBAS :	120.30	140.00	40.08248	LKBAS :	65.50	291.50	.00000

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 13 FOR DAY 149 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE POLAR RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC	ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC
LKBAS :	120.30	140.00	43.52855	LKBAS :	65.50	291.50	.00000

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 15 FOR DAY 149 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE POLAR RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

ORIGIN SRCID		DIST (M)	DIR (DEG)	CONC	ORIGIN SRCID		DIST (M)	DIR (DEG)	CONC
LKBAS	:	120.30	140.00	.03739	LKBAS	:	65.50	291.50	.00000

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 17 FOR DAY 149 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE POLAR RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC	ORIGIN SRCID	DIST (M)	DIR (DEG)	CONC
LKBAS :	120.30	140.00	.00000	LKBAS :	65.50	291.50	.00000

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (9 HRS) RESULTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)				OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	28.89351 AT (	77.33,	-92.16,	36.58,	1.00)	DP	
	2ND HIGHEST VALUE IS	.00000 AT (	.00,	.00,	.00,	.00)		
	3RD HIGHEST VALUE IS	.00000 AT (	.00,	.00,	.00,	.00)		
	4TH HIGHEST VALUE IS	.00000 AT (	.00,	.00,	.00,	.00)		
	5TH HIGHEST VALUE IS	.00000 AT (	.00,	.00,	.00,	.00)		
	6TH HIGHEST VALUE IS	.00000 AT (	.00,	.00,	.00,	.00)		

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

INITIAL YEAR OF OPERATION
OBSWDC AIR STRIPPER TEST PROGRAM
QUARTERLY REPORT APPENDICIES

SECOND QUARTER APPENDICIES ONLY
(Report submitted under separate cover)

<u>APPENDICIES:</u>

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

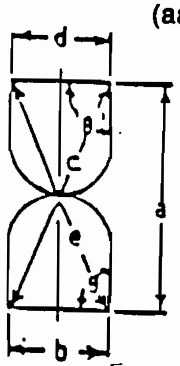
APPENDIX A

EQUIPMENT CALIBRATIONS

S-TYPE PITOT GEOMETRIC CALIBRATION
PART 2 – PITOT ALIGNMENT

Project:	LK BOBAS	**Probe ID:**	NA
Project Site:	Old Bethpage LF - Air Stripper	**Pitot ID:**	5' S-Type (IT Leasing)
Date:	8/27/92	**Operator:**	RSM

A. Transverse Tube Axis



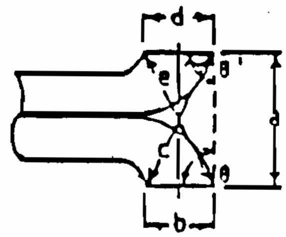
(aa + bb – cc)/2ab = cosθ
(aa + dd – ee)/2ad = cosθ'

(80 < θ < 100)
(80 < θ' < 100)

a = 1.141
b = 0.379
c = 1.155
d = 0.375
e = 1.175

θ = 82.6
θ' = 85.9

B. Longitudinal Tube Axis



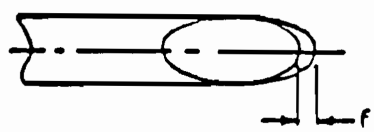
(aa + bb – cc)/2ab = cosθ
(aa + dd – ee)/2ad = cosθ'

(85 < θ < 95)
(85 < θ' < 95)

a = 1.126
b = 0.529
c = 1.260
d = 0.534
e = 1.233

θ = 91.9
θ' = 88.4

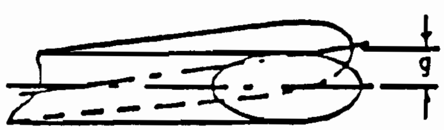
C.



f = < 1/8"

f < 1/8 Inches

D.



g = < 1/32"

g < 1/32 inches

Note: Values in parentheses are EPA Method 2 specifications.

Probe Thermocouple Calibration					Tolerances
Expected Stack Temperature, (Ts):	~ 53°F				
Mercury Thermometer, (Tref):	32	42	58	86	
Thermocouple Readout:	32	42.1	58	86	Ts: +/– 10% Tref: +/– 1.5%
Probe Identification:	5' S-Type TC (IT)				
Technician:	RSM				
Date:	8/27/92				

Dry Gas Meter Calibration Sheet

Client RTP

Project No.

Module

Orifice

Run By Jim McCulloch

Date 9-30-92

Barometric Press. 29.51

ΔH in. H_2O	Vw initial	Vw final	Vw ft.^{3}	liters initial	liters final	Vd ft.^{3}	tw °F	tdi °F	tdo °F	Pw in H_2O	Time θ min.
.2	044.450	045.316	.866	0668.021	0691.890	.843	66	7	5		60 min
.5	045.320	046.044	.724	0692.034	0712.5[illegible]	.726	67	8	0		30 min
1.0	046.054	047.099	1.045	0712.744	0742.111	1.037	67	8	1		30 min
1.5	047.113	048.739	1.626	0742.489	0787.370	1.585	67	8	1		30 min
2.0	048.747	050.823	2.076	0787.697	0845.571	2.044	67	8	1		30 min

ΔH	$\frac{\Delta H}{13.6}$	Mc(Y) $\frac{Vw\ Pb\ (td + 460)}{Vd\ (Pb + \Delta H/13.6)\ (tw + 460)}$	ΔHa (for Small Orifice Only) $\frac{0.0317 \Delta H}{Pb\ (td + 460)} \frac{(tw + 460)\ \theta}{Vw}$
.2	.0147	1.05	
.5	.0368	1.02	
1.0	.074	1.03	
1.5	.110	1.05	
2.0	.147	1.04	
Average		1.04	

ΔH = Orfice Setting
Vw = Volume of Gas of Wet Test Meter
Vd = Volume of Gas of Dry Gas Meter
Pw = Pressure of Wet Test Meter
tw = Temperature of Fluid in Wet Test Meter
tdi = Inlet Temperature of Dry Gas Meter
tdo = Outlet Temperature of Dry Gas Meter
td = Average Temperature of Dry Gas Meter
θ = Time required to pull specified cubic feet
Mc = Dry Gas Meter Correction Factor
ΔHa = Orifice setting that would pull .75 cfm of air at standard conditions

PUMP CALIBRATION SHEET

Project:	LKB0BA - 2nd Qt	Barometric Pressure, (Pb):	31.5 30.3 (in-Hg)
Date:	8/31/92 9/25	Temperature, (T):	74.0°F 67°F (C)
Time:	11:30AM 9:30A	Operator:	JW JW
Pump ID:	B		

Pre Post

Rotameter Reading (Center of the Ball)					
1.0	1.25		1.0		
Sampling Medium					
2 T/C series	2 T/C series		2 T/C series		
Actual Liters Per Minutese, ALPM					
1.01	1.22		1.03		
1.05	1.22		1.04		
1.01	1.23		1.03		
1.06	1.21		1.03		
1.03	1.21		1.02		
1.04	1.21		0.940		
1.03	1.25		1.09		
1.05	1.20		1.03		
0.970	1.26		1.03		
1.06	1.27		1.05		
0.977	1.21		1.03		
1.05	1.25		0.929		
1.04	1.21		1.06		
0.978	1.21		1.03		
0.976	1.22		1.04		
1.06	1.22		1.08		
1.00	1.23		1.03		
Avg(ALPM)					
1.02	1.23		1.029		
Average Standard Liters Per Minute, Avg(SLPM)					

SLPM = ALPM x {[(Pb−Pv)/29.92] x [293/(273+T)]}
C = (5/9) x (F−32)

Vapor Pressure (Pv) Table	
(C)	(in-Hg)
15	0.50
16	0.54
17	0.57
18	0.61
19	0.65
20	0.69
21	0.73
22	0.78
23	0.83
24	0.88
25	0.94
26	0.99
27	1.06
28	1.12
29	1.18
30	1.25
31	1.33
32	1.40

Remarks:

Remarks: Black – precalibration
blue – postcalibration (preheat the pump for 10 min bef. calibration)

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX B

PROCESS DATA SHEETS

TOWN OF OYSTER BAY
DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

DAILY OPERATIONS REPORT
DAY SHIFT

FILE ID	9-23-92
DATE	

	WELLFIELD OPERATION GALLONS PER MINUTE						AIR STRIPPER OPERATING PARAMETERS					
TIME	WELL 1 FLOW	WELL 2 FLOW	WELL 3 FLOW	WELL 4 FLOW	WELL 5 FLOW	SYSTEM FLOW	STRIPPER FLOW GPM	PRESS FIL FLOW GPM	BLOWER AIR FLOW CFM	AIR PRESSURE INCHES WC	EFFLUENT FLOW M GALS	SUPERVISOR/ OPERATOR INITIALS
[illegible]	200	240	196	200	209	1040	1083	1122	10166.40	000.0	ZERO64	
10[illegible]	204	240	200	198	201	1051	902	987	10166.40	000.0	73	
10[illegible]	194	240	198	202	200	0921	0814	0772	10166.40	000.0	86.	
10[illegible]	206	241	204	201	186	1043	982	1119	10943.00	000.0	93	
1050	203	244	196	202	206	615	491	775	10943.00	000.0	102	
11 00	192	244	196	208	220	1033	512	1117	10943.00	000.0	112	
11 30	205	243	198	190	185	1021	617	1114	10166.40	000.0	138	
11 40	209	246	202	200	196	539	508	1113	10166.40	000.0	146.	
11 50	192	247	194	202	220	1045	1060	1100	10943.00	000.0	156	
AVERAGE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

REMARKS

NOTES

1- THE SYSTEM FLOW, STRIPPER FLOW AND PRESSURE FILTER FLOW MUST BE EQUAL WITHIN 5%.

2- EFFLUENT FLOW MEASURES THE TOTAL FLOW THROUGH THE FACILITY. OPERATOR SHALL RESET THE GAUGE TO ZERO AT THE BEGINNING OF EACH SHIFT.

TOWN OF OYSTER BAY

DEPARTMENT OF PUBLIC WORKS
GROUNDWATER TREATMENT FACILITY

DAILY OPERATIONS REPORT
DAY SHIFT

FILE ID:	9-23-92
DATE:	

	WELLFIELD OPERATION GALLONS PER MINUTE						AIR STRIPPER OPERATING PARAMETERS					
TIME	WELL 1 FLOW	WELL 2 FLOW	WELL 3 FLOW	WELL 4 FLOW	WELL 5 FLOW	SYSTEM FLOW	STRIPPER FLOW GPM	PRESS FIL FLOW GPM	BLOWER AIR FLOW CFM	AIR PRESSURE INCHES WC	EFFLUENT FLOW M GALS	SUPERVISOR/ OPERATOR INITIALS
2:33	199	246	201	200	219	561	995	1119	10166.40	000.0	~~ZERO~~ 280	
2:41	193	244	202	199	219	1052	1072	1121	10166.40	000.0	289.	
2:52	197	248	198	190	200	1050	1070	1070	10166.40	000.0	297	
3:17	195	245	196	190	211	987	1069	1105	10166.40	000.0	021	
3:27	193	248	202	184	213	1040	1069	1116	10166.40	000.0	027	
3:37	205	248	203	166	188	1010	1064	1114	10166.40	000.0	035	
3:45	194	248	202	181	190	1015	1034	1113	10166.40	000.0	042	
[illegible]	204	246	199	184	196	980	1066	1113	10166.40	000.0	050	
[illegible]	199	245	205	185	180	1014	1054	1112	10166.40	000.0	059	
AVERAGE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

REMARKS

NOTES

1- THE SYSTEM FLOW, STRIPPER FLOW AND PRESSURE FILTER FLOW MUST BE EQUAL WITHIN 5%.

2- EFFLUENT FLOW MEASURES THE TOTAL FLOW THROUGH THE FACILITY. OPERATOR SHALL RESET THE GAUGE TO ZERO AT THE BEGINNING OF EACH SHIFT.

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX C

RTL VOST RESULTS

GRASEBY RTL

VOST GC/MS REPORT

prepared for

RTP ENVIRONMENTAL ASSOCIATES

by

GRASEBY RTL

J. Wayne Jones
Chemist

Thomas G. Conally
Laboratory Manager

RTL ID # 92092450

October 21, 1992

GRASEBY RTL
4022 STIRRUP CREEK DRIVE, SUITE 325, DURHAM, NC 27703-9000, USA
TEL: 919 544 5775 FAX: 919 544 3770

GRASEBY RTL

October 21, 1992

Scott Mills
RTP Environmental Associates
400 Post Avenue
Westbury, NY 11590

RE: 92092450 (LK BOBA/RSM)

Dear Mr. Mills:

Enclosed please find the revised results of analysis for the samples submitted to our laboratory on 9/24/92.

If you have any questions concerning these reports, please contact me at the number listed below.

Sincerely,

GRASEBY RTL

J. Wayne Jones
J. Wayne Jones
Chemist

JWJ/mcg

Enclosures

GRASEBY RTL
4022 STIRRUP CREEK DRIVE, SUITE 325, DURHAM, NC 27703-9000, USA
TEL: 919 544 5775 FAX: 919 544 3770

INTRODUCTION

Scope:

To analyze (VOST) Tenax/Charcoal cartridges for the special target compound list (TCL) and tentatively identify Freon 13 and *cis*-1,2-dichloroethene, if detected, and the next 8 greatest Non-TCL peaks by Desorb-Purge-Trap-Desorb Gas Chromatography/Mass Spectrometry (DPTD GC/MS).

Method Summary:

Sample cartridges are analyzed by desorb-purge-trap-desorb gas chromatography/mass spectrometry (DPTD GC/MS). Daily analytical checks are performed on cartridge blanks and reagent water. The daily GC/MS performance test required for this method is described in SW 846, Method 8240. The key Abundance Criteria for 4-Bromofluorobenzene (BFB) must be met before any samples are analyzed. All standards, blanks and samples are spiked with a known amount of BFB to maintain a constant check of system performance.

Sample Desorption:

The DPTD GC/MS procedures are those described in SW 846 Method 5040. The spiked sample cartridge is placed in the thermal desorption apparatus (Nutech 8533) and desorbed in the VOST system by heat to 200 °C for 10 minutes. Consideration is given for individual analysis of cartridges. The desorbed components then pass into the bottom of the water column, are purged from the water and collected on the internal analytical sorbent trap. The compounds are desorbed from the analytical trap into the GC/MS system.

Calculations:

All compounds detected that coincide with those of the Target Compound List (TCL) are calculated using equation #1 and response factors derived from in-house standards. All tentatively identified compounds are calculated, using equation #2 and a standard TIC response factor of one (1.0). Compounds quantified by equation #2 are qualified as being estimates.

Eqn #1: $$[X] = \frac{A_X \cdot [IS]}{A_{IS} \cdot RF}$$

Eqn #2: $$[X] = \frac{A_X \cdot [IS]}{A_{IS} \cdot 1.0}$$

Where:

$[X]$ = amount of compound, ng
$[IS]$ = amount of internal standard, ng
A_X = response of compound
A_{IS} = response of internal standard
RF = response factor

ANALYTICAL CONDITIONS

Equipment:

HP 5970 GC/MSD tuned to BFB criteria

GC Conditions:

Temp 1	:	0 °C
Time 1	:	4.0 minutes
Ramp Rate	:	6.0 °C/minute
Temp 2	:	160 °C
Time 2	:	5.0 minutes

Column:

VOCOL (Supelco),
Length 60 m,
Film thickness 1.5 μm,
Internal diameter 0.75 mm,
Construction of Borosilicate glass
with fused silica ends

Mass Spectrometer Conditions:

Run Time	:	25 minutes
Scan Range	:	35 - 260 AMU
Scan Delay	:	1.25 minutes
Ion Source Temp	:	200 °C
Electron Multiplier	:	2700 ± 200 EV
Separator Temp	:	225 °C

Sample Chronicle:

Client	RTP Environmental Associates
RTL Project ID	92092450
Analysis Type	VOST Tenax/charcoal
Date of Collection	not supplied
Date Received	9/24/92
Date Authorized	9/24/92
Date Analyzed	10/2/92 - 10/6/92
Date Reported	10/21/92

Narrative:

Several unusual occurrences were observed during this project and are listed below and further explained in the Endnotes.

- Per your letter, carbon dioxide was observed to cause a problem with detection of vinyl chloride. The scan delay change by the laboratory was not effective versus the high levels detected. See the Endnotes where applicable. The laboratory recommended to alter the lower scan range of 35 to 45 to prevent MS electronics from being saturated by carbon dioxide (MW = 44). All target compounds were identified by masses greater than 45. Approval of this change was obtained from S. Mills on 10/5/92. Significant improvements were observed with no detector saturation and vinyl chloride was reported when detected when at the minimum quantitation limit.

- The final sample was observed with a low internal standard #3 recovery. System contamination was noted as the problem and was resolved after the project. See the Endnotes for a more detailed explanation.

  The laboratory remains available to assist with questions concerning these reports or sampling procedures.

REFERENCES

Federal Register, 44, 69464, December 3, 1979

Protocol for the Collection and Analysis of Volatile POHCs Using VOST, EPA-600/8-84-007 available from ORD Publications, Center for Environmental Research Information, Cincinnati, Ohio 45268

NIOSH Manual of Analytical Methods, HEW Publication No. (NIOSH) 75-121, available from Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. 20402

Supelco Bulletin 769, "Determination of Organic Vapors in the Industrial Atmosphere", 1977: Supelco, Inc., Bellefonte, PA 16823

Test Methods for Evaluation of Solid Waste, SW 846 Methods 0030, 8240, 5040, 5030

Compendium of Methods for the Determination of Toxic Organic Compounds in Air, PB87-168688, Battelle Columbus Laboratories, Columbus, Ohio

SAMPLE RESULTS

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-13	File ID:	T0900
Sample ID:	S-TB2	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	77
Toluene-d_8	78
4-Bromofluorobenzene	59

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000

BQL: Below Quantitation Limit

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	--	N/D	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-14	File ID:	T0901
Sample ID:	S-FB2	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	72
Toluene-d_8	75
4-Bromofluorobenzene	59

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000

BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	--	N/D	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-15	File ID:	T0902
Sample ID:	A-FB2	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	67
Toluene-d_8	70
4-Bromofluorobenzene	60

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000 **BQL: Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	--	N/D	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-17	File ID:	T0907
Sample ID:	A-2D-F	Description:	VOST Tenax/Charcoal

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	86
Toluene-d_8	85
4-Bromofluorobenzene	86

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL [a]
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	22
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	180
56-23-5	Carbon tetrachloride	74
71-43-2	Benzene	63
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	230
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	240
127-18-4	Tetrachloroethene	400
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	37
1330-20-7	Xylene (total)	220
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000

BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	--	N/D	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

N/D: not detected

a: see Endnote

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-17	File ID:	T0908
Sample ID:	A-2D-B	Description:	VOST Tenax/Charcoal

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	92
Toluene-d_8	89
4-Bromofluorobenzene	86

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL [a]
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000 BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	--	N/D	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

N/D: not detected a: see Endnote

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-16	File ID:	T0909
Sample ID:	A-2U	Description:	VOST Tenax/Charcoal

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	77
Toluene-d_8	83
4-Bromofluorobenzene	82

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL [a]
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 20 – 1000 BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	--	N/D	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

N/D: not detected a: see Endnote

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-1	File ID:	T0912
Sample ID:	S-13	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	87
Toluene-d_8	81
4-Bromofluorobenzene	59

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	360
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	450
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,300
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	600
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	720
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,800
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	19,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	510
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 220 – 11,000

BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	3,800	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	----	N/D	104

Split ratio: 1:11

Scan Range: 45 - 260

N/D: not detected

b: see Endnote

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-2	File ID:	T0913
Sample ID:	S-14	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	80
Toluene-d_8	85
4-Bromofluorobenzene	52

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	500
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,600
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	310
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	810
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,600
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	24,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	550
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 280 – 14,000 BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.45	5,100	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	----	N/D	

Split ratio: 1:14 Scan Range: 45 - 260 N/D: not detected

b: see Endnote

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-3	File ID:	T0911
Sample ID:	S-15	Description:	VOST Tenax only

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	89
Toluene-d_8	89
4-Bromofluorobenzene	64

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	290
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	490
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,500
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	280
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	770
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,500
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	22,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	510
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 260 – 13,000 **BQL: Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	4,100	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

Split ratio: 1:13 Scan Range: 45 - 260 N/D: not detected
b: see Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-3	File ID:	T0910
Sample ID:	S-15	Description:	VOST Tenax/Charcoal

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	87
Toluene-d_8	82
4-Bromofluorobenzene	69

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	BQL
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	BQL
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	BQL
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	BQL
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	BQL
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 260 – 13,000 **BQL: Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	--	N/D	97
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	--	N/D	104

Split ratio: 1:13

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-4	File ID:	T0914
Sample ID:	S-16	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	84
Toluene-d_8	80
4-Bromofluorobenzene	50

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	360
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	480
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,400
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	280
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	830
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,600
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	23,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	560
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 260 – 20,000 BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	**Retention Time** (minutes)	**Results** (ng)	**Molecular Weight** (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	4,100	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	---	N/D	140

Split ratio: 1:13
b: see Endnote

Scan Range: 45 - 260

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-5	File ID:	T0915
Sample ID:	S-17	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	89
Toluene-d_8	86
4-Bromofluorobenzene	59

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	340
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	510
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,500
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	310
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	820
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,600
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	24,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	610
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 260 – 20,000 **BQL: Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.46	4,700	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	—	N/D	140

Split ratio: 1:13 Scan Range: 45 - 260 N/D: not detected

b: see Endnote

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-6	File ID:	T0922
Sample ID:	S-18	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	85
Toluene-d_8	76
4-Bromofluorobenzene	54

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	460
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,400
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	750
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,500
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	24,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	510
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 320 – 16,000

BQL: Below Quantitation Limit

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	3,800	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	—	N/D	140

Split ratio: 1:16

b: see Endnote

Scan Range: 45 - 260

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-7	File ID:	T0923
Sample ID:	S-19	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	100
Toluene-d_8	85
4-Bromofluorobenzene	58

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	480
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,400
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	780
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,600
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	27,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	530
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 380 – 19,000 **BQL: Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.48	3,500	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	—	N/D	140

Split ratio: 1:19
b: see Endnote

Scan Range: 45 - 260

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-8	File ID:	T0924
Sample ID:	S-20	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	92
Toluene-d_8	90
4-Bromofluorobenzene	91

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	430
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,400
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	740
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,500
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	18,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	600
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 300 – 15,000 **BQL: Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	3,800	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	---	N/D	140

Split ratio: 1:15 Scan Range: 45 - 260 N/D: not detected
b: see Endnote

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-9	File ID:	T0925
Sample ID:	S-21	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	85
Toluene-d_8	74
4-Bromofluorobenzene	113

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	460
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,400
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	710
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,500
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	18,000
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	1,100
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 360 – 18,000

BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.43	4,400	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	----	N/D	140

Split ratio: 1:18

Scan Range: 45 - 260

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-10	File ID:	T0926
Sample ID:	S-22	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	90
Toluene-d_8	76
4-Bromofluorobenzene	50

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	460
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,400
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	750
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,500
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	28,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	570
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 340 – 17,000 BQL: **Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	5,300	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	----	N/D	140

Split ratio: 1:17 Scan Range: 45 - 260 N/D: not detected
b: see Endnotes

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-11	File ID:	T0927
Sample ID:	S-23	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	88
Toluene-d_8	79
4-Bromofluorobenzene	50

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	430
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,300
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	700
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,400
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	24,000 [b]
124-48-1	Dibromochloromethane	BQL
108-90-7	Chlorobenzene	BQL
100-41-4	Ethylbenzene	BQL
1330-20-7	Xylene (total)	550
75-25-2	Bromoform	BQL
95-50-1	1,2-Dichlorobenzene	BQL
541-73-1	1,3-Dichlorobenzene	BQL
106-46-7	1,4-Dichlorobenzene	BQL

Quantitation Range (ng): 320 – 16,000

BQL: Below Quantitation Limit

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	4,800	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	—	N/D	140

Split ratio: 1:16

b: see Endnotes

Scan Range: 45 - 260

N/D: not detected

GRASEBY RTL

Client:	RTP Environmental Associates Inc.	Received:	09/24/92
RTL ID:	92092450-12	File ID:	T0928
Sample ID:	S-24	Description:	VOST pair

Surrogate Percent Recovery	
1,2-Dichloroethane-d_4	117
Toluene-d_8	69
4-Bromofluorobenzene	51 d

CAS Number	Target Compound	Results (ng)
75-01-4	Vinyl chloride	BQL
75-00-3	Chloroethane	BQL
75-35-4	1,1-Dichloroethene	BQL
75-09-2	Methylene chloride	BQL
156-60-5	*trans*-1,2-Dichloroethene	BQL
75-34-3	1,1-Dichloroethane	1,300
67-66-3	Chloroform	BQL
71-55-6	1,1,1-Trichloroethane	BQL
56-23-5	Carbon tetrachloride	BQL
71-43-2	Benzene	780
107-06-2	1,2-Dichloroethane	BQL
79-01-6	Trichloroethene	1,700
78-87-5	1,2-Dichloropropane	BQL
75-27-4	Bromodichloromethane	BQL
108-88-3	Toluene	BQL
127-18-4	Tetrachloroethene	31,000 [b,d]
124-48-1	Dibromochloromethane	d
108-90-7	Chlorobenzene	d
100-41-4	Ethylbenzene	d
1330-20-7	Xylene (total)	550 [d]
75-25-2	Bromoform	d
95-50-1	1,2-Dichlorobenzene	d
541-73-1	1,3-Dichlorobenzene	d
106-46-7	1,4-Dichlorobenzene	d

Quantitation Range (ng): 360 – 18,000 **BQL: Below Quantitation Limit**

Tentatively Identified Compounds	Retention Time (minutes)	Results (ng)	Molecular Weight (AMU)
cis-1,2-Dichloroethene (CAS# 156-59-2)	8.44	4,400	96
Chlorotrifluoromethane or Freon-13 (CAS# 75-72-9)	—	N/D	140

Split ratio: 1:18
b,d: see Endnotes

Scan Range: 45 - 260

N/D: not detected

Endnotes:

a: The early eluting target was not clearly detectable because of coelution with a high level peak, primarily carbon dioxide. A scan delay was attempted to prevent detector saturation and still obtain quality data for the target per prior client information. See Narrative for the final approved Scope change to circumvent the problem.

b: This amount is beyond the established calibration range. Linearity should not be assumed for results which greatly exceed our calibration range.

c: The total ion chromatograph for the internal standard was distorted because of interference from a high-level coeluting peak. The peak area from the method blank of the day was substituted for the sample internal standard area. Results of the TICs by external standard comparison are again qualified as estimates.

d: Internal standard #3 was observed recovering low after the sample analysis (the final sample of the project). The expected area was approximately one half and is considered an occurrence in which the analytical system should be inspected for a malfunction. Recovery of the surrogate BFB was observed within acceptable QC ranges, thus targets eluting during the time range are considered to recover relative to the surrogate. Note prior BFB recoveries. The problem was found to be an unknown system contaminant relating to prior samples that selectively absorbed certain GRTL standards. Extensive cleaning and downtime was necessary to return the desorption system to acceptable operating levels.

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX D

FIELD DATA SHEETS

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EPA METHOD 2

VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

Project Location: Old Bethpage Landfill
Sampling Location: Air Stripper Outlet

Sampling Date: 9/23/92 Time: 0925-0935
Operator: RSM/ KJS Amb 61°F

Stack Information:

Dimensions:	40" Ø	Dry Bulb Temperature (F):	56
Cross Section Area (square feet):	8.76	Wet Bulb Temperature (F):	57.8
Ambient Barometric Pressure, Pb(in-Hg):	30.04	Gas Moisture Content, (% water):	1.5
Static Pressure Differential, Pg(in-water): +/-	-0.05	Pitot Tube ID:	5' S-Type (IT)
Gas Molecular Weight (Wet), Mw:	~29	Pitot Coefficient, Cp:	0.84

PORT ID	POINT ID	Delta P (in-water)	Sqrt(Delta P)	Ts (F)	(+/-)Theta	PITOTS REVERSED FOR NEGATIVE FLOW ?	(Sqrt(Delta P))xCOS(Theta)
	1	.12	.3464	56	5		
	2	.12	.3464		9		
	3	.12	.3464		8		
	4	.11	.3317		10		
	5	.11	.3317		4		
	6	.11	.3317		6		
	7	.15	.3873		7		
	8	.17	.4123		9		
	1	.04	.2		3		
	2	.04	.2		3		
	3	.04	.2		0		
	4	.05	.2236		9		
	5	.12	.3464 ~~.2236~~		6		
	6	.08	.2828		1		
	7	.06	.2449		4		
	8	.06	.2449		3		
Remarks	Average	0.2985	56	*		Schematic of Traverse Point Location:	

Cyclonic Flow Angle:
(Theta) > 0, Clockwise.
(Theta) < 0, Counterclockwise.

* Average of absolute values include zeroes.

Calculated Results:

Absolute Temperature, Tst(R) = Ts(F) + 460 = 516 (R).

Absolute Gas Pressure, Ps = Pb + Pg/13.6 = 30.04 (in-Hg).

Gas Velocity, Vs = (85.49) x Cp x Avg[Sqrt(Delta P)] x COS(Theta) x Avg{Sqrt[Avg(Tst)/(Ps)(Mw)]} = 16.5 (ft/sec).

Actual Gas Flowrate, Qa = (Vs) x (60) x (A) = 8672 (ACFM).

Standard Gas Flowrate, Qstd = Qa x (528/Tst) x (Ps/29.92) x [(100 - % water)/100] = ______ (DSCFM).

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-13
Sampling Location: Air Strip Out
Date: 7/23/92
Operator: RSM

Module No. RTP-SC1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 64 F
Baro. Press: 29.86 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1006
Test End Time: 1026
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: 0.000 @ 5 "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
5-13-T 876A	5-13-TC 857C	0	69	~0.2	0333.00	51	~1"	279°F	0.8
		5	70	~0.2	0334.00	51	~1"	279°F	0.7
		10	70	~0.2	0335.06	51	~1"	282°F	0.8
		15	71	~0.2	0336.08	51	~1"	283°F	0.7
		20	72	~0.2	0337.12	51	~1"	282°F	0.7
			70.4		4.12				0.74

$V_{sc} = 4.08 * (\gamma) = 4.08 * (1.025) = 4.18$

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments:

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-14
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RTP/SC-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 65 °F
Baro. Press: 29.92 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1035
Test End Time: 1055
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: @ "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
S-14-T	S-14-TC	0	73	~0.2	0337.15	51	~1"	282	~0.8
876 A	959 C	5	73	~0.2	0338.20	53	~1"	284	~0.8
		10	74	~0.2	0339.15	53	~1"	281	~0.8
		15	75	~0.2	0340.20	55	~1"	283	~0.8
		20	75	~0.2	0341.23	55	~1"	284	0.8
			74.0		4.13				0.8

V_{std} = 4.06 ~~4.25~~ (1.025) = 4.16

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments: Mecc Tip reading @ 1040 (1.7 - 2.6 ppm)

Temp @ air intake
1055am Dry = 61.5°F
wet = 54.8°F

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-15
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RTP/SC-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 64 F
Baro. Press: 29.98 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1124
Test End Time: 1144
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: @ "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔH@
S-15-T	S-15-Tc	0	75	~0.2	0341.35	45	~1"	280°C	0.8
876A	839A	5	75	~0.2	0342.49	45	~1"	281	0.8
		10	75	~0.2	0343.30	45	~1"	282	0.8
		15	76	~0.2	0344.38	46	~1"	287	0.8
		20	76	~0.2	0345.42	45	~1"	284	0.8
			75.4		4.07				0.8

V_c = 3.99 * (1.025) = 4.09

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments: Micro tip ~~= 6.5 ppm~~ @ 1132 (still climbing)
= 0.9 ppm @ 1136 (steady reading)

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-16
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RTP/se - 1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 66 F
Baro. Press: 30.01 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1224
Test End Time: 1244
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: 0.000 @ 5 "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
5-16-T	5-16-TC	0	78	~0.2	0345.48	44	~1"	280	0.8
876A	855C	5	78	~0.2	0346.58	44	~1"	280	0.8
		10	79	~0.2	0347.63	44	~1"	283	0.8
		15	79	~0.2	0348.57	45	~1"	280	0.8
		20	79	~0.2	0349.56	44	~1"	280	0.8
			78.6		4.08				0.8

V_{sc} = 3.98 * (1.025) = 4.08

Condensate Sample: None
Sample ID: —
Volume Collected (ml): 0.00

Comments:

✓

EPA METHOD 2

VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

Project Location: Old Bethpage Landfill
Sampling Location: Air Stripper Outlet
Sampling Date: 9/23/92 Time: 1247-1255
Operator: RSM/ KJS

Stack Information:			
Dimensions:	40" ∅	Dry Bulb Temperature (F):	56
Cross Section Area (square feet):	8.76	Wet Bulb Temperature (F):	55.7
Ambient Barometric Pressure, Pb(in-Hg):	30.04	Gas Moisture Content, (% water):	1.5
Static Pressure Differential, Pg(in-water): +/-	-0.05	Pitot Tube ID:	5' S-Type (IT)
Gas Molecular Weight (Wet), Mw:	~29	Pitot Coefficient, Cp:	0.84

PORT ID	POINT ID	Delta P (in-water)	Sqrt(Delta P)	Ts (F)	(+/-)Theta	PITOTS REVERSED FOR NEGATIVE FLOW ?	(Sqrt(Delta P))xCOS(Theta)
	1	0.13	0.3606	56			
	2	0.13	0.3606				
	3	0.13	0.3606				
	4	0.11	0.3317				
	5	0.11	0.3317				
	6	0.12	0.3464				
	7	0.15	0.373				
	8	0.17	0.4123				
	1	0.04	0.2				
	2	0.04	0.2				
	3	0.04	0.2				
	4	0.05	0.2236				
	5	0.12	0.3464				
	6	0.08	0.2828				
	7	0.06	0.2449				
	8	0.06	0.2449				
Remarks		Average	0.3021	56	*	Schematic of Traverse Point Location:	

Cyclonic Flow Angle:
(Theta) > 0, Clockwise.
(Theta) < 0, Counterclockwise.

* Average of absolute values include zeroes.

Calculated Results:

Absolute Temperature, Tst(R) = Ts(F) + 460 = 516 (R).

Absolute Gas Pressure, Ps = Pb + Pg/13.6 = 30.04 (in-Hg).

Gas Velocity, Vs = (85.49) x Cp x Avg[Sqrt(Delta P)] x COS(Theta) x Avg{Sqrt[Avg(Tst)/(Ps)(Mw)]} = 16.70 (ft/sec).

Actual Gas Flowrate, Qa = (Vs) x (60) x (A) = 8778 (ACFM).

Standard Gas Flowrate, Qstd = Qa x (528/Tst) x (Ps/29.92) x [(100 - % water)/100] = ________ (DSCFM).

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-17
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RTP/SC - 1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 66 F
Baro. Press: 30.03 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1300
Test End Time: 1320
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: 0.000 @ 5 "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
5-17-T	5-17-TC	0	76	~0.2	349.25	44	~1"	278	0.8
876A	859C	5	76	~0.2	350.88	44	~1"	279	0.8
		10	77	~0.2	351.81	45	~1"	283	0.8
		15	78	~0.2	352.80	45	~1"	281	0.8
		20	78	~0.2	353.83	45	~1"	280	0.8
			77.0		4.08				

V_{sc} = 3.99 * (1.025) = 4.09

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments: Micro Tip ~ 0.9 (Slow Steady rise) 1308

V: 4.0 ( )( )( )

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: ~~S-18~~ 5-18
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RTP/SC-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 67 F
Baro. Press: 30.03 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1328
Test End Time: 1348
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: @ "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
5-18-T 876A	5-18-TC 852C	0	79	~0.2	0353.89	45	~1"	285	0.8
		5	79	~0.2	0354.95	45	~1	285	0.7
		10	79	~0.2	0355.99	46	~1	284	0.8
		15	79	~0.2	0356.80	45	~1	281	0.8
		20	80	~0.2	0358.01	46	~1	282	0.8
			79.2		4.12				0.8

$V_{sc} = 4.01 * (1.025) = 4.11$

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments:

V_{s} = [illegible]

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-19
Sampling Location: Air Strip Out
Date: 7/23/90
Operator: RSM

Module No.: RTP/se-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 67 F
Baro. Press: 30.04 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1402
Test End Time: 1422
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: @ "Hg

CARTRIDGE ID TENAX	TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
5-19-T	5-19-TC	0	79	~0.2	0358.02	46	~1"	278	0.8
876B	839A	5	80	~0.2	0359.03	47	~1"	280	0.8
		10	80	~0.2	0360.15	46	~1"	280	0.8
		15	80	~0.2	0361.05	44	~1"	288	0.8
		20	80	~0.2	0362.10	45	~1"	280	0.8
			79.8		4.03				0.8

V_{std} = 3.92 * (1.025) = 4.02

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments:

V_{s} 4.02 ([illegible]) ([illegible]) (1.025) [illegible]

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-20
Sampling Location: Air Strip Out
Date: 7/23/92
Operator: RSM

Module No.: KTP/SC-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 67 F
Baro. Press: 30.04 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1428
Test End Time: 1448
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: 0.000 @ 5 "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
5-20-T	5-20-TC	0	80	~0.2	0362.15	45	~1"	279	0.8
876B	869A	5	80	~0.2	0363.08	44	~1"	285	0.8
		10	80	~0.2	0364.10	45	~1"	280	0.8
		15	81	~0.2	0365.08	44	~1"	279	0.8
		20	81	~0.2	0366.15	44	~1"	280	0.8
			80.4		4.00				0.8

Condensate Sample: None
Sample ID: —
Volume Collected (ml): 0.0

Vsc = 4.00 (528)(30.04)/(540.4)(29.92) (1.00) = [illegible]

V_{std} = 3.88 * (1.025) = 3.98

Comments:

✓

EPA METHOD 2
VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

Project Location: Old Bethpage Landfill | Sampling Date: 9/23/92 | Time: 1500 - 1505

Sampling Location: Air Stripper Outlet | Operator: RSM/ KJS

Stack Information:

Dimensions: 40" ø	Dry Bulb Temperature (F): 56
Cross Section Area (square feet): 8.76	Wet Bulb Temperature (F): 55.8
Ambient Barometric Pressure, Pb(in-Hg): 30.04	Gas Moisture Content, (% water): 1.5
Static Pressure Differential, Pg(in-water): +/- -0.05	Pitot Tube ID: 5' S-Type (IT)
Gas Molecular Weight (Wet), Mw: ~29	Pitot Coefficient, Cp: 0.84

PORT ID	POINT ID	Delta P (in-water)	Sqrt(Delta P)	Ts (F)	(+/-)Theta	PITOTS REVERSED FOR NEGATIVE FLOW?	(Sqrt(Delta P))xCOS(Theta)
S	1	.12	0.3464	56			
	2	.12	0.3464				
	3	.11	0.3317				
	4	.10 ~~.09~~	0.3162				
	5	.11	0.3317				
	6	.12	0.3464				
	7	.16	0.4				
	8	.17	0.4123				
E	1	.04	0.2				
	2	.04	0.2				
	3	.04	0.2				
	4	.05	0.2236				
	5	.10	0.3162				
	6	.08	0.2828 ~~0.2646~~				
	7	.07	0.2646				
	8	.06	0.2449				
			~~0.2977~~				
Remarks	Average	0.2977	56	*			

Cyclonic Flow Angle:
(Theta) > 0, Clockwise.
(Theta) < 0, Counterclockwise.

Schematic of Traverse Point Location:

* Average of absolute values include zeroes.

Calculated Results:

Absolute Temperature, Tst(R) = Ts(F) + 460 = 516 (R).

Absolute Gas Pressure, Ps = Pb + Pg/13.6 = 30.04 (in-Hg).

Gas Velocity, Vs = (85.49) x Cp x Avg[Sqrt(Delta P)] x COS(Theta) x Avg{Sqrt[Avg(Tst)/(Ps)(Mw)]} = 16.5 (ft/sec).

Actual Gas Flowrate, Qa = (Vs) x (60) x (A) = 8670 (ACFM).

Standard Gas Flowrate, Qstd = Qa x (528/Tst) x (Ps/29.92) x [(100 - % water)/100] = ______ (DSCFM).

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-21
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RT2/SC-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 66 F
Baro. Press: 30.04 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1512
Test End Time: 1532
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: @ "Hg
Leak Check Probe: 0.000 @ 5 "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔH@
5-21-T	5-21-TC	0	78	~0.2	0366.32	44	~1"	281	0.8
876B	869A	5	78	~0.2	0367.40	45	~1"	286	0.8
		10	79	~0.2	0368.44	45	~1"	280	0.8
		15	78	~0.2	0369.49	45	~1"	280	0.8
		20	78	~0.2	0370.52	45	~1"	281	0.8
			78.2		4.20				0.8

V_{std} = 4.20 * (1.025) = 4.20

Condensate Sample:
Sample ID:
Volume Collected (ml):
V... [illegible]

Comments:

S-TB2-T 876B
S-TB2-TC 869A
S-FB2-T 876B

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-22
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RTP/SC-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 68 F
Baro. Press: 30.04 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1542
Test End Time: 1602
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: @ "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (In-Hg)	PROBE TEMPERATURE	ΔH@
5-22-T	5-22-TC	0	78	~0.2	370.58	45	~1"	282	0.8
876B	865A	5	78	~0.2	371.58	45	~1"	281	0.8
		10	78	~0.2	372.70	46	~1"	281	0.8
		15	79	~0.2	373.52	44	~1"	280	0.8
		20	78	~0.2	374.72	44	~1"	283	0.8
			77.8		4.14				0.8

V_{sc} = 4.04 * (1.025) = 4.14

Condensate Sample:
Sample ID:
Volume Collected (ml):

Comments:

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: S-23
Sampling Location: Air Strip Out
Date: 7/23/92
Operator: RSM

Module No.: RTP/5e - 1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 66 F
Baro. Press: 30.04 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1609
Test End Time: 1629
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: @ "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
S-23-T	S-23-TC	0	77	~0.2	374.78	45	~1"	285	0.5
876B	865A	5	76	~0.2	375.77	44	~1"	283	0.8
		10	76	~0.2	376.76	43	~1"	282	0.8
		15	76	~0.2	377.84	43	~1"	282	0.8
		20	76	~0.2	378.92	43	~1"	285	0.8
			76.2		4.14				0.8

V_m - 4.06 * (1.025) = 4.16

Comments:

Condensate Sample:
Sample ID:
Volume Collected (ml):

VOST FIELD DATA SHEET

Project ID: LKBOBAS
Client: Town of Oyster Bay
Project Location: Old Bethpage LF
Test ID: 5-24
Sampling Location: Air Strip Out
Date: 9/23/92
Operator: RSM

Module No.: RTP/SC-1
Dry Gas Meter (Y): 1.00
Rotameter (Yr): —
Sampling Rate: 0.20 LPM
Ambient Temperature: 65 F
Baro. Press: 30.05 "Hg

Test Duration: 20 Min.
Probe Heater Setting: 265 F+
Test Start Time: 1637
Test End Time: 1657
Leak Check Start: 0.000 @ 5 "Hg
Leak Check End: 0.000 @ 5 "Hg
Leak Check Probe: 0.000 @ 5 "Hg

CARTRIDGE ID TENAX	CARTRIDGE ID TENAX/ CHARCOAL	MINUTES	METER TEMPERATURE	ROTAMETER SETTING	METER VOLUME (Liters)	TEMP OF GAS LEAVING 1ST CONDENSER	PUMP VACUUM (in-Hg)	PROBE TEMPERATURE	ΔH@
5-24-T	5-24-TC	0	75	~0.2	378.96	45	~1"	281	0.8
816B	865A	5	74	~0.2	380.11	44	~1"	282	0.8
		10	74	~0.2	381.14	44	~1"	281	0.8
		15	74	~0.2	382.06	44	~1"	284	0.8
		20	74	~0.2	383.11	44	~1"	281	0.8
			74.2		4.15				0.8

V_m = 4.08 * (1.025) = 4.18

Condensate Sample: None
Sample ID: —
Volume Collected (ml): —

Comments:

V... [illegible]

✓

EPA METHOD 2
VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

Project Location:	Old Bethpage Landfill	Sampling Date:	9/23/92 Time: 1702-1708
Sampling Location:	Air Stripper Outlet	Operator:	RSM/ KJS

Stack Information:

Dimensions:	40" Ø	Dry Bulb Temperature (F):	56
Cross Section Area (square feet):	8.76	Wet Bulb Temperature (F):	55.7
Ambient Barometric Pressure, Pb(in-Hg):		Gas Moisture Content, (% water):	1.5
Static Pressure Differential, Pg(in-water): +/-		Pitot Tube ID:	5' S-Type (IT)
Gas Molecular Weight (Wet), Mw: ~29		Pitot Coefficient, Cp:	0.84

PORT ID	POINT ID	Delta P (in-water)	Sqrt(Delta P)	Ts (F)	(+/-)Theta	PITOTS REVERSED FOR NEGATIVE FLOW ?	(Sqrt(Delta P))xCOS(Theta)
	1	.13	.3606	56			
	2	.12	.3464 ~~.3606~~				
	3	.12	.3464				
	4	.11	.3317				
	5	.11	.3317				
	6	.11	.3317				
	7	.15	.3873				
	8	.17	.4123				
	1	0.04	.2				
	2	.04	.2				
	3	.04	.2				
	4	.05	.2236				
	5	.12	.3464				
	6	.08	.2828				
	7	.06	.2449				
	8	.06	.2449				
Remarks		Average	.2994	56	*	Schematic of Traverse Point Location:	

Cyclonic Flow Angle:
(Theta) > 0, Clockwise.
(Theta) < 0, Counterclockwise.

* Average of absolute values include zeroes.

Calculated Results:

Absolute Temperature, Tst(R) = Ts(F) + 460 = 516 (R).

Absolute Gas Pressure, Ps = Pb + Pg/13.6 = 30.[illegible] (in-Hg).

Gas Velocity, Vs = (85.49) x Cp x Avg[Sqrt(Delta P)] x COS(Theta) x Avg {Sqrt[Avg(Tst)/(Ps)(Mw)]} = 16.5 (ft/sec).

Actual Gas Flowrate, Qa = (Vs) x (60) x (Ai = 8672 (ACFM).

Standard Gas Flowrate, Qstd = Qa x (528/Tst) x (Ps/29.92) x [(100 – % water)/100] = ______ (DSCFM).

AMBIENT AIR SAMPLING DATA SHEET

Project: LKBOBA
Date: 9/23/92
Project Site: Old Bethpage Landfill, Air Stripper Site
Operators: JW, MB
General Weather Conditions: Sunny, NW wind

Sample ID: A-2U (upwind sample)
Sample Location: Upwind (cross the St. on N. of A.S.)
Pump ID: B
Norminal Flow Rate: 1 lpm
Sampler ID: 4 (upwind sampler)
Norminal Sample Volume: 412 (l)

Initial Ambient VOC Conc. (ppm): 0.0
Leak Check: OK
Sample Start Time: 10:25 AM
Initial Rotameter Reading, (Center of the Ball): 1.0

Rotameter Reading	Total Elapse Time	Local Time
1.0	0036	1101
1.0	0078	1143
1.0	161	1306
1.0	235	1420
1.0	290	1515
1.0	386	1651
1.0	412	1716

Rotameter Reading	Total Elapse Time	Local Time

Sample Stop Time: 1716
Final Rotameter Reading: 1.0
Total Elapse Time: 412 min
Final Ambient VOC Conc. (ppm): 0.0

Comments: set max. thermometer inside the sampler, the initial temp. reading was set to be < 40°F.
Final max temp. reading = 52°F @ 1716 ET.

AMBIENT AIR SAMPLING DATA SHEET

Project: LKB0BA
Date: 9/23/92
Project Site: Old Bethpage Landfill
Operators: JW MB
General Weather Conditions: Sunny, NW wind

Sample ID: A-2D (Downwind)
Sample Location: Downwind (see comments)
Pump ID: D
Norminal Flow Rate: 1 lpm
Sampler ID: 1 (Downwind Sampler)
Norminal Sample Volume: ~ 416

Initial Ambient VOC Conc. (ppm): 0.0
Leak Check: OK
Sample Start Time: 10:05 AM
Initial Rotameter Reading, (Center of the Ball): 1.0

Rotameter Reading	Total Elapse Time	Local Time
1.0	0032	1037
1.0	0092	1138
1.0	176	1302
1.0	246	1441
1.0	300	1505
1.0	416	1702
1.0		

Rotameter Reading	Total Elapse Time	Local Time

Sample Stop Time: 1702
Final Rotameter Reading: 1.0
Total Elapse Time: 416
Final Ambient VOC Conc. (ppm): 0.0

Comments: Reset max. thermometer at 1138 E.T., the temp. reading was <50°F. Max. temp. reading @ 1702 was 52°F.
The downwind sampling location ~60 m W of the winding road, ~97 steps (JW) from the pipe end (near fense) that is east of the sampler, ~25 steps N. of the pipe line.

AMBIENT AIR SAMPLING DATA SHEET

Project: LKBOBA
Date: 9/23/92
Project Site: Old Bethpage Landfill
Operators: JW
General Weather Conditions: Sunny, NW wind

Sample ID: A-FB2 (both front & back)
Sample Location: Upwind location
Pump ID: None
Norminal Flow Rate: —
Sampler ID: B
Norminal Sample Volume: —

Initial Ambient VOC Conc. (ppm): —
Leak Check: —
Sample Start Time: 1650 ET
Initial Rotameter Reading, (Center of the Ball): —

Rotameter Reading	Total Elapse Time	Local Time

Rotameter Reading	Total Elapse Time	Local Time

Sample Stop Time: 1651 ET
Final Rotameter Reading: —
Total Elapse Time: —
Final Ambient VOC Conc. (ppm): —

Comments: Field blank, not connected with Sampling line, not connected to pump.

ECO TEST LABORATORIES, INC. • ENVIRONMENTAL TESTIN
377 Sheffield Avenue, North Babylon, New York 11703
(516) 422-5777 • FAX (516) 422-5770

CHAIN OF CUSTODY RECORD

Client: RTP Environmental Associates, Inc.
Address: 400 Post Avenue
Westbury, New York 11590
Phone: 516-333-4526 FAX: 4571
Person receiving report: Scott Mills
Sampled by:
Source: Air Stripper H_2O inlet & outlet
Job No.: LKBOBAS

MATRIX (Soil, Water, etc.)	COLLECTED DATE	COLLECTED TIME	SAMPLE IDENTIFICATION	TOTAL NUMBER OF CONTAINERS	TYPE & NUMBER OF CONTAINERS	REMARKS–TESTS REQUIRED, SPECIAL TURNAROUND, SPECIAL Q.C. etc
WATER	9/23	1140	AS2 I1			Ammonia Analysis via EPA Method 350.3
		[illegible]	E1			
		1225	I2			
		[illegible]	E2			
		[illegible]	I3			
		[illegible]	E3			
		[illegible]	I4			
		[illegible]	E4			
		[illegible]	I5			
		[illegible]	E5			
		[illegible]	I6			
		[illegible]	E6			

Relinquished by: (Signature)	DATE/TIME	SEAL INTACT ?	Received by: (Signature)	Relinquished by: (Signature)	DATE/TIME	SEAL INTACT ?	Received by: (Signature)
[illegible] Representing:	9/23 [illegible]	YES NO NA	[illegible] Representing:	Representing:		YES NO NA	Representing:
Relinquished by: (Signature) Representing:	DATE/TIME	SEAL INTACT ? YES NO NA	Received by: (Signature) Representing:	Relinquished by: (Signature) Representing:	DATE/TIME	SEAL INTACT ? YES NO NA	Received by: (Signature) Representing:

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX E

INFLUENT EFFLUENT WATER VOC RESULTS

NOV-20-92 FRI 11:20

Lina Yi Lab

ECOTEST LABORATORIES, INC.

ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923786/1 10/09/92

Lockwood, Kessler & Bartlett
1 Aerial Way
Syosset, NY 11791
ATTN: Ray Wegener

SOURCE OF SAMPLE: Oyster Bay Town-Landfill Treatment Plant
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, Influent, 10:50 am

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Vinyl Chloride	ug/L	5.4	
Chloroethane	ug/L	1.9	
Methylene Chloride	ug/L	4.5	
11 Dichloroethene	ug/L	<1.	
11 Dichloroethane	ug/L	11	
12 Dichloroethene	ug/L	65	
Chloroform	ug/L	<1.	
12 Dichloroethane	ug/L	<1.	
111 Trichloroethane	ug/L	2.5	
Carbon Tetrachloride	ug/L	<1.	
Bromodichloromethane	ug/L	<1.	
12 Dichloropropane	ug/L	<1.	
Trichloroethylene	ug/L	10	
Chlorodibromomethane	ug/L	<1.	
Bromoform	ug/L	<2.	
Tetrachloroethene	ug/L	110	
Chlorobenzene	ug/L	<1.	
13 Dichlorobenzene	ug/L	<2.	
12 Dichlorobenzene	ug/L	<2.	
14 Dichlorobenzene	ug/L	<2.	
Benzene	ug/L	5.7	
Toluene	ug/L	<2.	
Ethyl Benzene	ug/L	<1.	
m Xylene	ug/L	<2.	
o+p Xylene	ug/L	5.6	

cc:

REMARKS:

DIRECTOR ____________________

rn= 16738 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTIN

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923786/2 10/09/92

Lockwood, Kessler & Bartlett
1 Aerial Way
Syosset, NY 11791
ATTN: Ray Wegener

SOURCE OF SAMPLE: Oyster Bay Town-Landfill Treatment Plant
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, Effluent, 10:40 am

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Vinyl Chloride	ug/L	<1.	
Chloroethane	ug/L	<1.	
Methylene Chloride	ug/L	<1.	
11 Dichloroethene	ug/L	ND*	
11 Dichloroethane	ug/L	<1.	
12 Dichloroethene	ug/L	1	
Chloroform	ug/L	<1.	
12 Dichloroethane	ug/L	<1.	
111 Trichloroethane	ug/L	<1.	
Carbon Tetrachloride	ug/L	<1.	
Bromodichloromethane	ug/L	<1.	
12 Dichloropropane	ug/L	<1.	
Trichloroethylene	ug/L	<1.	
Chlorodibromomethane	ug/L	<1.	
Bromoform	ug/L	<1.	
Tetrachloroethene	ug/L	<1.	
Chlorobenzene	ug/L	<1.	
13 Dichlorobenzene	ug/L	<2.	
12 Dichlorobenzene	ug/L	<2.	
14 Dichlorobenzene	ug/L	<2.	
Benzene	ug/L	<1.	
Toluene	ug/L	<2.	
Ethyl Benzene	ug/L	<1.	
m Xylene	ug/L	<2.	
o+p Xylene	ug/L	<4.	

cc:

REMARKS: * Not detected at MDL of 0.07ug/L.

DIRECTOR

rn= 16739 NYSDOH ID# 10320

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX F

INFLUENT AND EFFLUENT WATER AMMONIA RESULTS

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/1 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2I1, 1040

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	6.6	

cc:

REMARKS:

DIRECTOR

rn= 16773 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/2 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2E1, 1045

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.4	

cc:

REMARKS:

DIRECTOR

rn= 16774 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/3 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2I2, 1225

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.8	

cc:

REMARKS:

DIRECTOR

rn= 16775 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/4 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2E2, 1220

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.0	

cc:

REMARKS:

DIRECTOR ____________________

rn= 16776 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/5 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2I3, 1305

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	8.0	

cc:

REMARKS:

DIRECTOR________________

rn= 16777 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/6 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2E3, 1307

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.2	

cc:

REMARKS:

DIRECTOR

rn= 16778 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/7 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2I4, 1435

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	6.6	

cc:

REMARKS:

DIRECTOR

rn= 16779 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO.C923789/8 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2E4, 1440

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	6.8	

cc:

REMARKS:

DIRECTOR________________

rn= 16780 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/9 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2IS, 1520

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.4	

cc:

REMARKS:

DIRECTOR

rn= 16781 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/10 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2E5, 1525

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.0	

cc:

REMARKS:

DIRECTOR

rn= 16782 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/11 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2I6, 1640

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.0	

cc:

REMARKS:

DIRECTOR________________________

rn= 16783 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. *ENVIRONMENTAL TESTING*

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO. C923789/12 09/30/92

RTP Environmental Associates, Inc.
400 Post Avenue
Westbury, NY 11590
ATTN: Scott Mills

SOURCE OF SAMPLE: LKBOBAS, Air Stripper Inlet & Outlet
COLLECTED BY: Client DATE COL'D:09/23/92 RECEIVED:09/23/92

SAMPLE: Wastewater sample, AS2E6, 1645

ANALYTICAL PARAMETERS			ANALYTICAL PARAMETERS
Ammonia as N	mg/L	7.6	

cc:

REMARKS:

DIRECTOR

rn= 16784 NYSDOH ID# 10320

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX G

AMMONIA STACK TEST ANALYTICAL RESULTS

THE AMMONIA STACK TEST
ANALYTICAL RESULTS DO NOT APPLY
TO FIRST AND SECOND QUARTER EFFORTS

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX H

METEOROLOGICAL DATA

METEOROLOGICAL EQUIPMENT SITING DATA SHEET

Project: LKBOBA – 2nd Quarterly Test, 9/23/92 = Test Day

Project Site: Old Bethpage Landfill

Operators: JW, KJS

Instrument No.1 (old)

Location:
Roof of Air Stripper BLDG. West side of the BLDG ridge.

Initial Battery Voltage: 12.70

Wind Dir. Reference:
Air Stripper BLDG.
i.e. BLDG roof ridge = EW arm of wind instrument

True WD = Measured WD +/– ( ) =

Date & Julian Day to Set Up:
Sept. 17, 1992, J. day = 261

Start Time (Local): 3:15 PM finish set up

Date & Julian Day to Take Down:
Disconnect data logger on 9/23 after test @

Stop Time (Local): ~6:05 PM (P_b = 30.06) (Wl = 12.30)

Remarks: ① start set up in Am and finished in the PM (wait for sand bags).

② Need to reck. EW arm again before taking down.

③ Initial Pb @ the time when stack test starts (see data sheet print out).

④ Disconnect storage module after test on 9/23/92. The tower was taken down the next day on 9/24/92. Notice tower position shifted a bit ~~during~~ bef. test adjusted it.

Instrument No.2 (new)

Location:
Atop of the landfill, near northern end of the highest elevat. area

Initial Battery Voltage: 12.60

Wind Dir. Reference:
Scale house (NS oriented)

True WD = Measured WD +/– (0°) =

Date & Julian Day to Set Up:
Sept 17, 92. J. day = 261

Start Time (Local): ~11:35 Am

Date & Julian Day to Take Down:
Disconnected storage module the day after

Stop Time (Local): test in the morning.

Remarks:
① When doing set up found temp sensor is out of the holding tube, fixed it bef put up the tower.

② Disconnect storage module on 9/24/92 morning. Take down tower about 2–3 hours later.

old.dat
(print: 7/25/9

```
01+0109.  02+0258.  03+1545.  04+0.500  05+08.52  06+0.228  07+070.5  08+54.34
09+30.26  10+0.000  11+14.34
01+0109.  02+0258.  03+1600.  04+0.500  05+08.52  06+0.228  07+070.4  08+54.00
09+30.26  10+0.000  11+14.34
01+0115.  02+0258.  03+1600.  04+0.500  05+08.52  06+0.356  07+070.5  08+54.46
09+30.26  10+0.000  11+14.34
01+0109.  02+0258.  03+1615.  04+0.500  05+08.52  06+0.275  07+070.3  08+54.02
09+30.26  10+0.000  11+14.35
01+0109.  02+0258.  03+1630.  04+0.500  05+08.52  06+0.227  07+070.3  08+54.06
09+30.26  10+0.000  11+14.35
01+0109.  02+0258.  03+1645.  04+0.500  05+08.52  06+0.227  07+070.3  08+53.93
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1700.  04+0.500  05+08.52  06+0.223  07+070.3  08+53.66
09+30.25  10+0.000  11+14.35
01+0115.  02+0258.  03+1700.  04+0.500  05+08.52  06+0.362  07+070.3  08+53.92
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1715.  04+0.500  05+08.52  06+0.228  07+070.3  08+53.40
09+30.25  10+0.000  11+14.34
01+0109.  02+0258.  03+1730.  04+0.500  05+08.52  06+0.226  07+070.2  08+53.18
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1745.  04+0.500  05+08.52  06+0.228  07+070.1  08+52.96
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1800.  04+0.500  05+08.52  06+0.227  07+69.97  08+52.72
09+30.25  10+0.000  11+14.35
01+0115.  02+0258.  03+1800.  04+0.500  05+08.52  06+0.354  07+070.1  08+53.07
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1815.  04+0.500  05+08.52  06+0.227  07+69.77  08+52.36
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1830.  04+0.500  05+08.51  06+0.222  07+69.59  08+52.67
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1845.  04+0.500  05+08.51  06+0.223  07+69.45  08+53.13
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1900.  04+0.500  05+08.51  06+0.221  07+69.36  08+53.71
09+30.25  10+0.000  11+14.35
01+0115.  02+0258.  03+1900.  04+0.500  05+08.51  06+0.348  07+69.54  08+52.97
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1915.  04+0.500  05+08.51  06+0.219  07+69.30  08+54.31
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1930.  04+0.500  05+08.51  06+0.218  07+69.22  08+54.79
09+30.25  10+0.000  11+14.35
01+0109.  02+0258.  03+1945.  04+0.500  05+08.50  06+0.213  07+69.09  08+55.15
09+30.25  10+0.000  11+14.36
01+0109.  02+0258.  03+2000.  04+0.500  05+08.50  06+0.209  07+68.96  08+55.70
09+30.26  10+0.000  11+14.36
01+0115.  02+0258.  03+2000.  04+0.500  05+08.51  06+0.342  07+69.14  08+54.99
09+30.25  10+0.000  11+14.36
01+0109.  02+0258.  03+2015.  04+0.500  05+08.50  06+0.203  07+68.83  08+56.02
09+30.26  10+0.000  11+14.36
01+0109.  02+0258.  03+2030.  04+0.500  05+08.49  06+0.199  07+68.73  08+56.44
09+30.27  10+0.000  11+14.35
01+0109.  02+0258.  03+2045.  04+0.500  05+08.49  06+0.204  07+68.62  08+56.78
09+30.27  10+0.000  11+14.35
01+0109.  02+0258.  03+2100.  04+0.500  05+08.49  06+0.207  07+68.49  08+57.05
09+30.26  10+0.000  11+14.36
01+0115.  02+0258.  03+2100.  04+0.500  05+08.49  06+0.329  07+68.67  08+56.57
09+30.26  10+0.000  11+14.36
01+0109.  02+0258.  03+2115.  04+0.500  05+08.49  06+0.189  07+68.40  08+57.33
09+30.27  10+0.000  11+14.35
01+0109.  02+0258.  03+2130.  04+0.500  05+08.48  06+0.174  07+68.30  08+57.49
09+30.27  10+0.000  11+14.36
01+0109.  02+0258.  03+2145.  04+0.500  05+08.49  06+0.165  07+68.22  08+57.61
09+30.27  10+0.000  11+14.36
01+0109.  02+0258.  03+2200.  04+0.500  05+08.48  06+0.154  07+68.16  08+57.77
09+30.27  10+0.000  11+14.36
01+0115.  02+0258.  03+2200.  04+0.500  05+08.48  06+0.288  07+68.27  08+57.55
09+30.27  10+0.000  11+14.36
01+0109.  02+0258.  03+2215.  04+0.500  05+08.48  06+0.145  07+68.09  08+57.97
09+30.27  10+0.000  11+14.36
01+0109.  02+0258. - 03+2230.  04+0.500  05+08.48  06+0.148  07+68.02  08+58.10
09+30.28  10+0.000  11+14.36
01+0109.  02+0258.  03+2245.  04+0.500  05+08.48  06+0.139  07+67.95  08+58.07
09+30.28  10+0.000  11+14.36
01+0109.  02+0258.  03+2300.  04+0.500  05+08.48  06+0.133  07+67.89  08+58.16
09+30.28  10+0.000  11+14.36
01+0115.  02+0258.  03+2300.  04+0.500  05+08.48  06+0.272  07+67.99  08+58.07
09+30.28  10+0.000  11+14.36
01+0109.  02+0258.  03+2315.  04+0.500  05+08.48  06+0.127  07+67.82  08+58.26
09+30.28  10+0.000  11+14.36
01+0109.  02+0258.  03+2330.  04+0.500  05+08.48  06+0.129  07+67.77  08+58.37
09+30.28  10+0.000  11+14.36
01+0109.  02+0258.  03+2345.  04+0.500  05+08.48  06+0.129  07+67.72  08+58.38
09+30.27  10+0.000  11+14.36
01+0109.  02+0258.  03+2400.  04+0.500  05+08.48  06+0.127  07+67.68  08+58.41
09+30.27  10+0.000  11+14.36
01+0115.  02+0258.  03+2400.  04+0.500  05+08.48  06+0.265  07+67.75  08+58.36
09+30.28  10+0.000  11+14.36
01+0109.  02+0259.  03+0015.  04+0.500  05+08.48  06+0.127  07+67.65  08+58.48
09+30.27  10+0.000  11+14.36
```

01+0109.	02+0259.	03+0030.	04+0.500	05+08.48	06+0.127	07+67.60	08+58.47
09+30.27	10+0.000	11+14.36					
01+0109.	02+0259.	03+0045.	04+0.500	05+08.48	06+0.127	07+67.56	08+58.52
09+30.27	10+0.000	11+14.36					
01+0109.	02+0259.	03+0100.	04+0.500	05+08.48	06+0.127	07+67.52	08+58.61
09+30.27	10+0.000	11+14.36					
01+0115.	02+0259.	03+0100.	04+0.500	05+08.48	06+0.264	07+67.58	08+58.52
09+30.27	10+0.000	11+14.36					
01+0109.	02+0259.	03+0115.	04+0.500	05+08.48	06+0.127	07+67.49	08+58.57
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0130.	04+0.500	05+08.48	06+0.127	07+67.45	08+58.59
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0145.	04+0.500	05+08.48	06+0.127	07+67.39	08+58.68
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0200.	04+0.500	05+08.48	06+0.127	07+67.34	08+58.60
09+30.25	10+0.000	11+14.36					
01+0115.	02+0259.	03+0200.	04+0.500	05+08.48	06+0.264	07+67.42	08+58.61
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0215.	04+0.500	05+08.48	06+0.127	07+67.30	08+58.63
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0230.	04+0.500	05+08.48	06+0.127	07+67.25	08+58.64
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0245.	04+0.500	05+08.48	06+0.127	07+67.22	08+58.58
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0300.	04+0.500	05+08.48	06+0.127	07+67.18	08+58.64
09+30.25	10+0.000	11+14.36					
01+0115.	02+0259.	03+0300.	04+0.500	05+08.48	06+0.264	07+67.24	08+58.62
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0315.	04+0.500	05+08.48	06+0.127	07+67.12	08+58.56
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0330.	04+0.500	05+08.48	06+0.127	07+67.08	08+58.59
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0345.	04+0.500	05+08.48	06+0.127	07+67.02	08+58.58
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0400.	04+0.500	05+08.48	06+0.127	07+66.97	08+58.53
09+30.25	10+0.000	11+14.36					
01+0115.	02+0259.	03+0400.	04+0.500	05+08.48	06+0.264	07+67.05	08+58.56
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0415.	04+0.500	05+08.48	06+0.127	07+66.91	08+58.56
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0430.	04+0.500	05+08.48	06+0.127	07+66.86	08+58.48
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0445.	04+0.500	05+08.48	06+0.127	07+66.83	08+58.52
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0500.	04+0.500	05+08.48	06+0.127	07+66.79	08+58.41
09+30.26	10+0.000	11+14.36					
01+0115.	02+0259.	03+0500.	04+0.500	05+08.48	06+0.264	07+66.85	08+58.49
09+30.25	10+0.000	11+14.36					
01+0109.	02+0259.	03+0515.	04+0.500	05+08.48	06+0.127	07+66.75	08+58.45
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0530.	04+0.500	05+08.48	06+0.127	07+66.73	08+58.50
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0545.	04+0.500	05+08.48	06+0.127	07+66.69	08+58.51
09+30.27	10+0.000	11+14.36					
01+0109.	02+0259.	03+0600.	04+0.500	05+08.48	06+0.127	07+66.69	08+58.51
09+30.27	10+0.000	11+14.36					
01+0115.	02+0259.	03+0600.	04+0.500	05+08.48	06+0.264	07+66.71	08+58.49
09+30.26	10+0.000	11+14.36					
01+0109.	02+0259.	03+0615.	04+0.500	05+08.48	06+0.127	07+66.67	08+58.49
09+30.27	10+0.000	11+14.36					
01+0109.	02+0259.	03+0630.	04+0.500	05+08.48	06+0.127	07+66.66	08+58.48
09+30.28	10+0.000	11+14.36					
01+0109.	02+0259.	03+0645.	04+0.500	05+08.48	06+0.127	07+66.66	08+58.50
09+30.29	10+0.000	11+14.36					
01+0109.	02+0259.	03+0700.	04+0.500	05+08.48	06+0.127	07+66.66	08+58.53
09+30.29	10+0.000	11+14.36					
01+0115.	02+0259.	03+0700.	04+0.500	05+08.48	06+0.264	07+66.66	08+58.50
09+30.28	10+0.000	11+14.36					
01+0109.	02+0259.	03+0715.	04+0.500	05+08.48	06+0.127	07+66.68	08+58.59
09+30.29	10+0.000	11+14.36					
01+0109.	02+0259.	03+0730.	04+0.500	05+08.48	06+0.127	07+66.75	08+58.70
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0745.	04+0.500	05+08.48	06+0.127	07+66.91	08+58.47
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0800.	04+0.500	05+08.48	06+0.127	07+67.13	08+58.43
09+30.30	10+0.000	11+14.36					
01+0115.	02+0259.	03+0800.	04+0.500	05+08.48	06+0.264	07+66.86	08+58.55
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0815.	04+0.500	05+08.48	06+0.127	07+67.46	08+58.68
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0830.	04+0.500	05+08.48	06+0.127	07+67.84	08+58.88
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0845.	04+0.500	05+08.48	06+0.127	07+68.23	08+59.09
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0900.	04+0.500	05+08.48	06+0.127	07+68.62	08+59.29
09+30.29	10+0.000	11+14.36					
01+0115.	02+0259.	03+0900.	04+0.500	05+08.48	06+0.264	07+68.04	08+58.98
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0915.	04+0.500	05+08.48	06+0.133	07+68.99	08+59.37

09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+0930.	04+0.500	05+08.48	06+0.127	07+69.36	08+59.36
09+30.31	10+0.000	11+14.36					
01+0109.	02+0259.	03+0945.	04+0.500	05+08.48	06+0.127	07+69.74	08+59.15
09+30.31	10+0.000	11+14.36					
01+0109.	02+0259.	03+1000.	04+0.500	05+08.48	06+0.127	07+070.1	08+58.68
09+30.30	10+0.000	11+14.36					
01+0115.	02+0259.	03+1000.	04+0.500	05+08.48	06+0.265	07+69.54	08+59.14
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+1015.	04+0.500	05+08.48	06+0.127	07+070.3	08+57.88
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+1030.	04+0.500	05+08.48	06+0.127	07+070.4	08+57.03
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+1045.	04+0.500	05+08.48	06+0.127	07+070.6	08+57.38
09+30.30	10+0.000	11+14.36					
01+0109.	02+0259.	03+1100.	04+0.500	05+08.48	06+0.152	07+070.6	08+56.92
09+30.30	10+0.000	11+14.35					
01+0115.	02+0259.	03+1100.	04+0.500	05+08.48	06+0.265	07+070.5	08+57.30
09+30.30	10+0.000	11+14.35					
01+0109.	02+0259.	03+1115.	04+0.500	05+08.48	06+0.175	07+070.7	08+56.28
09+30.29	10+0.000	11+14.35					
01+0109.	02+0259.	03+1130.	04+0.500	05+08.48	06+0.181	07+070.8	08+55.87
09+30.29	10+0.000	11+14.36					
01+0109.	02+0259.	03+1145.	04+0.500	05+08.49	06+0.183	07+070.8	08+55.56
09+30.28	10+0.000	11+14.34					
01+0109.	02+0259.	03+1200.	04+0.500	05+08.49	06+0.204	07+070.9	08+55.34
09+30.28	10+0.000	11+14.36					
01+0115.	02+0259.	03+1200.	04+0.500	05+08.49	06+0.304	07+070.8	08+55.76
09+30.28	10+0.000	11+14.36					
01+0109.	02+0259.	03+1215.	04+0.500	05+08.49	06+0.196	07+071.0	08+55.21
09+30.28	10+0.000	11+14.35					
01+0109.	02+0259.	03+1230.	04+0.500	05+08.50	06+0.206	07+071.1	08+54.77
09+30.27	10+0.000	11+14.35					
01+0109.	02+0259.	03+1245.	04+0.500	05+08.50	06+0.214	07+071.1	08+54.22
09+30.27	10+0.000	11+14.35					
01+0109.	02+0259.	03+1300.	04+0.500	05+08.50	06+0.215	07+071.1	08+53.95
09+30.27	10+0.000	11+14.35					
01+0115.	02+0259.	03+1300.	04+0.500	05+08.50	06+0.332	07+071.1	08+54.54
09+30.27	10+0.000	11+14.35					
01+0109.	02+0259.	03+1315.	04+0.500	05+08.51	06+0.217	07+071.0	08+53.82
09+30.26	10+0.000	11+14.35					
01+0109.	02+0259.	03+1330.	04+0.500	05+08.51	06+0.219	07+070.9	08+53.77
09+30.26	10+0.000	11+14.34					
01+0109.	02+0259.	03+1345.	04+0.500	05+08.51	06+0.221	07+070.8	08+53.81
09+30.25	10+0.000	11+14.35					
01+0109.	02+0259.	03+1400.	04+0.500	05+08.51	06+0.223	07+070.7	08+53.85
09+30.25	10+0.000	11+14.35					
01+0115.	02+0259.	03+1400.	04+0.500	05+08.51	06+0.343	07+070.8	08+53.81
09+30.25	10+0.000	11+14.35					
01+0109.	02+0259.	03+1415.	04+0.500	05+08.51	06+0.222	07+070.6	08+53.78
09+30.24	10+0.000	11+14.35					
01+0109.	02+0259.	03+1430.	04+0.500	05+08.52	06+0.225	07+070.5	08+53.76
09+30.23	10+0.000	11+14.35					
01+0109.	02+0259.	03+1445.	04+0.500	05+08.51	06+0.223	07+070.4	08+53.68
09+30.23	10+0.000	11+14.35					
01+0109.	02+0259.	03+1500.	04+0.500	05+08.51	06+0.223	07+070.3	08+53.63
09+30.22	10+0.000	11+14.34					
01+0115.	02+0259.	03+1500.	04+0.500	05+08.51	06+0.351	07+070.4	08+53.71
09+30.23	10+0.000	11+14.34					
01+0109.	02+0259.	03+1515.	04+0.500	05+08.51	06+0.220	07+070.1	08+53.67
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1530.	04+0.500	05+08.51	06+0.221	07+070.1	08+53.86
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1545.	04+0.500	05+08.51	06+0.222	07+070.1	08+54.04
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1600.	04+0.500	05+08.51	06+0.218	07+070.1	08+54.21
09+30.21	10+0.000	11+14.35					
01+0115.	02+0259.	03+1600.	04+0.500	05+08.51	06+0.348	07+070.1	08+53.95
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1615.	04+0.500	05+08.51	06+0.222	07+070.1	08+54.33
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+1630.	04+0.500	05+08.51	06+0.219	07+070.2	08+54.42
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+1645.	04+0.500	05+08.51	06+0.221	07+070.2	08+54.41
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+1700.	04+0.500	05+08.51	06+0.222	07+070.2	08+54.45
09+30.21	10+0.000	11+14.34					
01+0115.	02+0259.	03+1700.	04+0.500	05+08.51	06+0.344	07+070.2	08+54.40
09+30.21	10+0.000	11+14.34					
01+0109.	02+0259.	03+1715.	04+0.500	05+08.51	06+0.221	07+070.2	08+54.52
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1730.	04+0.500	05+08.52	06+0.225	07+070.2	08+54.53
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1745.	04+0.500	05+08.52	06+0.226	07+070.1	08+54.56
09+30.22	10+0.000	11+14.34					
01+0109.	02+0259.	03+1800.	04+0.500	05+08.51	06+0.224	07+070.1	08+54.59
09+30.22	10+0.000	11+14.36					
01+0115.	02+0259.	03+1800.	04+0.500	05+08.52	06+0.352	07+070.1	08+54.55
09+30.22	10+0.000	11+14.36					

01+0109.	02+0259.	03+1815.	04+0.500	05+08.51	06+0.222	07+070.1	08+54.63
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1830.	04+0.500	05+08.51	06+0.222	07+070.0	08+54.84
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1845.	04+0.500	05+08.52	06+0.231	07+070.0	08+55.55
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1900.	04+0.500	05+08.51	06+0.222	07+070.1	08+56.13
09+30.22	10+0.000	11+14.35					
01+0115.	02+0259.	03+1900.	04+0.500	05+08.52	06+0.351	07+070.0	08+55.29
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1915.	04+0.500	05+08.52	06+0.223	07+070.1	08+56.64
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+1930.	04+0.500	05+08.52	06+0.225	07+070.1	08+57.15
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+1945.	04+0.500	05+08.52	06+0.221	07+070.1	08+57.71
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+2000.	04+0.500	05+08.51	06+0.220	07+070.1	08+58.29
09+30.21	10+0.000	11+14.35					
01+0115.	02+0259.	03+2000.	04+0.500	05+08.51	06+0.351	07+070.1	08+57.45
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+2015.	04+0.500	05+08.51	06+0.222	07+070.0	08+58.86
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+2030.	04+0.500	05+08.52	06+0.223	07+070.0	08+59.39
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+2045.	04+0.500	05+08.51	06+0.222	07+69.98	08+59.97
09+30.22	10+0.000	11+14.36					
01+0109.	02+0259.	03+2100.	04+0.500	05+08.51	06+0.223	07+69.95	08+60.53
09+30.21	10+0.000	11+14.35					
01+0115.	02+0259.	03+2100.	04+0.500	05+08.51	06+0.349	07+070.0	08+59.69
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+2115.	04+0.500	05+08.51	06+0.221	07+69.90	08+61.06
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+2130.	04+0.500	05+08.51	06+0.218	07+69.83	08+61.53
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+2145.	04+0.500	05+08.51	06+0.218	07+69.77	08+62.07
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+2200.	04+0.500	05+08.51	06+0.216	07+69.71	08+62.55
09+30.22	10+0.000	11+14.35					
01+0115.	02+0259.	03+2200.	04+0.500	05+08.51	06+0.341	07+69.80	08+61.80
09+30.21	10+0.000	11+14.35					
01+0109.	02+0259.	03+2215.	04+0.500	05+08.50	06+0.213	07+69.65	08+63.02
09+30.22	10+0.000	11+14.36					
01+0109.	02+0259.	03+2230.	04+0.500	05+08.50	06+0.215	07+69.61	08+63.57
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+2245.	04+0.500	05+08.50	06+0.214	07+69.57	08+64.05
09+30.22	10+0.000	11+14.36					
01+0109.	02+0259.	03+2300.	04+0.500	05+08.50	06+0.213	07+69.53	08+64.49
09+30.22	10+0.000	11+14.35					
01+0115.	02+0259.	03+2300.	04+0.500	05+08.50	06+0.336	07+69.59	08+63.78
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+2315.	04+0.500	05+08.49	06+0.209	07+69.50	08+64.96
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+2330.	04+0.500	05+08.50	06+0.200	07+69.46	08+65.42
09+30.22	10+0.000	11+14.36					
01+0109.	02+0259.	03+2345.	04+0.500	05+08.49	06+0.199	07+69.43	08+65.82
09+30.22	10+0.000	11+14.35					
01+0109.	02+0259.	03+2400.	04+0.500	05+08.49	06+0.199	07+69.40	08+66.20
09+30.22	10+0.000	11+14.35					
01+0115.	02+0259.	03+2400.	04+0.500	05+08.49	06+0.329	07+69.45	08+65.60
09+30.22	10+0.000	11+14.35					
01+0109.	02+0260.	03+0015.	04+0.500	05+08.49	06+0.195	07+69.36	08+66.60
09+30.22	10+0.000	11+14.36					
01+0109.	02+0260.	03+0030.	04+0.500	05+08.49	06+0.198	07+69.32	08+66.99
09+30.22	10+0.000	11+14.36					
01+0109.	02+0260.	03+0045.	04+0.500	05+08.48	06+0.200	07+69.28	08+67.31
09+30.21	10+0.000	11+14.36					
01+0109.	02+0260.	03+0100.	04+0.500	05+08.48	06+0.197	07+69.23	08+67.55
09+30.21	10+0.000	11+14.35					
01+0115.	02+0260.	03+0100.	04+0.500	05+08.49	06+0.323	07+69.30	08+67.11
09+30.22	10+0.000	11+14.35					
01+0109.	02+0260.	03+0115.	04+0.500	05+08.48	06+0.182	07+69.17	08+67.93
09+30.21	10+0.000	11+14.36					
01+0109.	02+0260.	03+0130.	04+0.500	05+08.48	06+0.180	07+69.14	08+68.42
09+30.21	10+0.000	11+14.36					
01+0109.	02+0260.	03+0145.	04+0.500	05+08.48	06+0.193	07+69.09	08+68.69
09+30.21	10+0.000	11+14.36					
01+0109.	02+0260.	03+0200.	04+0.500	05+08.48	06+0.177	07+69.04	08+69.04
09+30.20	10+0.000	11+14.35					
01+0115.	02+0260.	03+0200.	04+0.500	05+08.48	06+0.308	07+69.11	08+68.52
09+30.21	10+0.000	11+14.35					
01+0109.	02+0260.	03+0215.	04+0.500	05+08.48	06+0.171	07+69.03	08+69.52
09+30.20	10+0.000	11+14.36					
01+0109.	02+0260.	03+0230.	04+0.500	05+08.48	06+0.181	07+68.97	08+69.75
09+30.20	10+0.000	11+14.36					
01+0109.	02+0260.	03+0245.	04+0.500	05+08.48	06+0.150	07+68.93	08+69.97
09+30.20	10+0.000	11+14.36					
01+0109.	02+0260.	03+0300.	04+0.500	05+08.48	06+0.158	07+68.88	08+070.3
09+30.19	10+0.000	11+14.36					
01+0115.	02+0260.	03+0300.	04+0.500	05+08.48	06+0.279	07+68.95	08+69.88

09+30.20	10+0.000	11+14.36					
01+0109.	02+0260.	03+0315.	04+0.500	05+08.48	06+0.151	07+68.83	08+070.6
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0330.	04+0.500	05+08.48	06+0.134	07+68.79	08+070.9
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0345.	04+0.500	05+08.48	06+0.148	07+68.75	08+071.2
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0400.	04+0.500	05+08.48	06+0.129	07+68.71	08+071.4
09+30.19	10+0.000	11+14.36					
01+0115.	02+0260.	03+0400.	04+0.500	05+08.48	06+0.268	07+68.77	08+071.0
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0415.	04+0.500	05+08.48	06+0.146	07+68.67	08+071.7
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0430.	04+0.500	05+08.48	06+0.129	07+68.61	08+071.9
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0445.	04+0.500	05+08.48	06+0.128	07+68.59	08+072.1
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0500.	04+0.500	05+08.48	06+0.127	07+68.55	08+072.4
09+30.19	10+0.000	11+14.36					
01+0115.	02+0260.	03+0500.	04+0.500	05+08.48	06+0.267	07+68.60	08+072.0
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0515.	04+0.500	05+08.48	06+0.127	07+68.50	08+072.6
09+30.18	10+0.000	11+14.36					
01+0109.	02+0260.	03+0530.	04+0.500	05+08.48	06+0.143	07+68.46	08+072.7
09+30.18	10+0.000	11+14.36					
01+0109.	02+0260.	03+0545.	04+0.500	05+08.48	06+0.129	07+68.43	08+073.0
09+30.17	10+0.000	11+14.36					
01+0109.	02+0260.	03+0600.	04+0.500	05+08.48	06+0.128	07+68.40	08+073.2
09+30.17	10+0.000	11+14.35					
01+0115.	02+0260.	03+0600.	04+0.500	05+08.48	06+0.264	07+68.45	08+072.9
09+30.18	10+0.000	11+14.35					
01+0109.	02+0260.	03+0615.	04+0.500	05+08.48	06+0.127	07+68.36	08+073.4
09+30.17	10+0.000	11+14.35					
01+0109.	02+0260.	03+0630.	04+0.500	05+08.48	06+0.127	07+68.33	08+073.6
09+30.17	10+0.000	11+14.36					
01+0109.	02+0260.	03+0645.	04+0.500	05+08.48	06+0.127	07+68.30	08+073.7
09+30.18	10+0.000	11+14.36					
01+0109.	02+0260.	03+0700.	04+0.500	05+08.48	06+0.127	07+68.26	08+073.9
09+30.18	10+0.000	11+14.36					
01+0115.	02+0260.	03+0700.	04+0.500	05+08.48	06+0.264	07+68.31	08+073.7
09+30.17	10+0.000	11+14.36					
01+0109.	02+0260.	03+0715.	04+0.500	05+08.48	06+0.127	07+68.22	08+074.0
09+30.18	10+0.000	11+14.36					
01+0109.	02+0260.	03+0730.	04+0.500	05+08.48	06+0.127	07+68.22	08+074.2
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0745.	04+0.500	05+08.48	06+0.127	07+68.26	08+074.6
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0800.	04+0.500	05+08.48	06+0.127	07+68.41	08+075.1
09+30.18	10+0.000	11+14.36					
01+0115.	02+0260.	03+0800.	04+0.500	05+08.48	06+0.264	07+68.28	08+074.5
09+30.18	10+0.000	11+14.36					
01+0109.	02+0260.	03+0815.	04+0.500	05+08.48	06+0.127	07+68.62	08+075.5
09+30.18	10+0.000	11+14.36					
01+0109.	02+0260.	03+0830.	04+0.500	05+08.48	06+0.127	07+68.90	08+075.7
09+30.19	10+0.000	11+14.35					
01+0109.	02+0260.	03+0845.	04+0.500	05+08.48	06+0.127	07+69.17	08+075.5
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0900.	04+0.500	05+08.48	06+0.127	07+69.43	08+074.9
09+30.19	10+0.000	11+14.36					
01+0115.	02+0260.	03+0900.	04+0.500	05+08.48	06+0.264	07+69.03	08+075.4
09+30.19	10+0.000	11+14.36					
01+0109.	02+0260.	03+0915.	04+0.500	05+08.48	06+0.127	07+69.68	08+074.2
09+30.19	10+0.000	11+14.35					
01+0109.	02+0260.	03+0930.	04+0.500	05+08.48	06+0.127	07+69.95	08+073.2
09+30.18	10+0.000	11+14.36					
01+0109.	02+0260.	03+0945.	04+0.500	05+08.48	06+0.127	07+070.2	08+072.5
09+30.18	10+0.000	11+14.35					
01+0109.	02+0260.	03+1000.	04+0.500	05+08.48	06+0.127	07+070.5	08+071.2
09+30.18	10+0.000	11+14.35					
01+0115.	02+0260.	03+1000.	04+0.500	05+08.48	06+0.264	07+070.1	08+072.8
09+30.18	10+0.000	11+14.35					
01+0109.	02+0260.	03+1015.	04+0.500	05+08.48	06+0.139	07+070.8	08+070.3
09+30.18	10+0.000	11+14.35					
01+0109.	02+0260.	03+1030.	04+0.500	05+08.48	06+0.181	07+071.0	08+69.11
09+30.18	10+0.000	11+14.34					
01+0109.	02+0260.	03+1045.	04+0.500	05+08.48	06+0.196	07+071.3	08+67.94
09+30.17	10+0.000	11+14.34					
01+0109.	02+0260.	03+1100.	04+0.500	05+08.49	06+0.196	07+071.5	08+67.31
09+30.17	10+0.000	11+14.34					
01+0115.	02+0260.	03+1100.	04+0.500	05+08.48	06+0.304	07+071.1	08+68.65
09+30.18	10+0.000	11+14.34					
01+0109.	02+0260.	03+1115.	04+0.500	05+08.50	06+0.201	07+071.6	08+66.69
09+30.17	10+0.000	11+14.34					
01+0109.	02+0260.	03+1130.	04+0.500	05+08.51	06+0.218	07+071.8	08+65.93
09+30.16	10+0.000	11+14.34					
01+0109.	02+0260.	03+1145.	04+0.500	05+08.51	06+0.219	07+071.8	08+65.16
09+30.15	10+0.000	11+14.34					
01+0109.	02+0260.	03+1200.	04+0.500	05+08.52	06+0.246	07+071.9	08+64.26
09+30.15	10+0.000	11+14.34					

01+0115.	02+0260.	03+1200.	04+0.500	05+08.51	06+0.341	07+071.8	08+65.51
09+30.16	10+0.000	11+14.34					
01+0109.	02+0260.	03+1215.	04+0.500	05+08.52	06+0.228	07+072.0	08+63.30
09+30.15	10+0.000	11+14.34					
01+0109.	02+0260.	03+1230.	04+0.500	05+08.53	06+0.231	07+072.1	08+62.32
09+30.15	10+0.000	11+14.35					
01+0109.	02+0260.	03+1245.	04+0.500	05+08.57	06+0.353	07+072.1	08+61.70
09+30.15	10+0.000	11+14.35					
01+0109.	02+0260.	03+1300.	04+0.500	05+08.79	06+0.237	07+072.0	08+60.76
09+30.14	10+0.000	11+14.34					
01+0115.	02+0260.	03+1300.	04+0.500	05+08.60	06+0.387	07+072.1	08+62.02
09+30.15	10+0.000	11+14.34					
01+0109.	02+0260.	03+1315.	04+0.500	05+08.78	06+0.236	07+072.1	08+60.23
09+30.13	10+0.000	11+14.34					
01+0109.	02+0260.	03+1330.	04+0.500	05+08.80	06+0.200	07+072.1	08+59.84
09+30.12	10+0.000	11+14.34					
01+0109.	02+0260.	03+1345.	04+0.500	05+08.80	06+0.227	07+072.2	08+59.43
09+30.12	10+0.000	11+14.34					
01+0109.	02+0260.	03+1400.	04+0.500	05+08.85	06+0.164	07+072.2	08+59.01
09+30.12	10+0.000	11+14.34					
01+0115.	02+0260.	03+1400.	04+0.500	05+08.81	06+0.460	07+072.1	08+59.63
09+30.12	10+0.000	11+14.34					
01+0109.	02+0260.	03+1415.	04+0.500	05+08.87	06+0.145	07+072.3	08+59.15
09+30.11	10+0.000	11+14.33					
01+0109.	02+0260.	03+1430.	04+0.500	05+08.91	06+0.000	07+072.4	08+58.84
09+30.11	10+0.000	11+14.34					
01+0109.	02+0260.	03+1445.	04+0.500	05+08.94	06+0.000	07+072.4	08+58.52
09+30.11	10+0.000	11+14.34					
01+0109.	02+0260.	03+1500.	04+0.500	05+08.94	06+0.000	07+072.4	08+57.71
09+30.11	10+0.000	11+14.34					
01+0115.	02+0260.	03+1500.	04+0.500	05+08.91	06+0.446	07+072.4	08+58.56
09+30.11	10+0.000	11+14.34					
01+0109.	02+0260.	03+1515.	04+0.500	05+08.94	06+0.000	07+072.5	08+57.68
09+30.11	10+0.000	11+14.34					
01+0109.	02+0260.	03+1530.	04+0.500	05+08.94	06+0.000	07+072.5	08+57.59
09+30.11	10+0.000	11+14.34					
01+0109.	02+0260.	03+1545.	04+0.500	05+08.94	06+0.000	07+072.5	08+57.33
09+30.10	10+0.000	11+14.34					
01+0109.	02+0260.	03+1600.	04+0.500	05+08.94	06+0.000	07+072.4	08+57.12
09+30.10	10+0.000	11+14.34					
01+0115.	02+0260.	03+1600.	04+0.500	05+08.94	06+0.441	07+072.5	08+57.43
09+30.10	10+0.000	11+14.34					
01+0109.	02+0260.	03+1615.	04+0.500	05+08.94	06+0.000	07+072.3	08+56.93
09+30.10	10+0.000	11+14.35					
01+0109.	02+0260.	03+1630.	04+0.500	05+08.94	06+0.000	07+072.2	08+56.68
09+30.10	10+0.000	11+14.34					
01+0109.	02+0260.	03+1645.	04+0.500	05+08.90	06+0.115	07+072.1	08+56.79
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1700.	04+0.500	05+08.90	06+0.062	07+072.0	08+56.71
09+30.09	10+0.000	11+14.34					
01+0115.	02+0260.	03+1700.	04+0.500	05+08.92	06+0.456	07+072.1	08+56.78
09+30.10	10+0.000	11+14.34					
01+0109.	02+0260.	03+1715.	04+0.500	05+08.91	06+0.023	07+071.9	08+56.73
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1730.	04+0.500	05+08.90	06+0.045	07+071.8	08+56.66
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1745.	04+0.500	05+08.88	06+0.110	07+071.7	08+56.66
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1800.	04+0.500	05+08.87	06+0.153	07+071.5	08+56.59
09+30.09	10+0.000	11+14.34					
01+0115.	02+0260.	03+1800.	04+0.500	05+08.89	06+0.461	07+071.7	08+56.66
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1815.	04+0.500	05+08.85	06+0.155	07+071.4	08+56.43
09+30.09	10+0.000	11+14.35					
01+0109.	02+0260.	03+1830.	04+0.500	05+08.78	06+0.217	07+071.2	08+56.36
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1845.	04+0.500	05+08.78	06+0.257	07+071.1	08+56.65
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1900.	04+0.500	05+08.80	06+0.228	07+071.0	08+57.01
09+30.09	10+0.000	11+14.34					
01+0115.	02+0260.	03+1900.	04+0.500	05+08.80	06+0.458	07+071.1	08+56.61
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1915.	04+0.500	05+08.79	06+0.215	07+070.9	08+57.36
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1930.	04+0.500	05+08.76	06+0.261	07+070.8	08+57.64
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+1945.	04+0.500	05+08.73	06+0.238	07+070.7	08+58.00
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+2000.	04+0.500	05+08.70	06+0.259	07+070.7	08+58.35
09+30.09	10+0.000	11+14.34					
01+0115.	02+0260.	03+2000.	04+0.500	05+08.75	06+0.456	07+070.8	08+57.84
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+2015.	04+0.500	05+08.68	06+0.259	07+070.6	08+58.72
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+2030.	04+0.500	05+08.63	06+0.238	07+070.5	08+59.11
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+2045.	04+0.500	05+08.65	06+0.265	07+070.4	08+59.53
09+30.09	10+0.000	11+14.34					
01+0109.	02+0260.	03+2100.	04+0.500	05+08.61	06+0.258	07+070.3	08+59.98

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09+30.08  10+0.000  11+14.34
01+0115.  02+0260.  03+2100.  04+0.500  05+08.64  06+0.417  07+070.5  08+59.34
09+30.09  10+0.000  11+14.34
01+0109.  02+0260.  03+2115.  04+0.500  05+08.61  06+0.260  07+070.3  08+60.47
09+30.08  10+0.000  11+14.34
01+0109.  02+0260.  03+2130.  04+0.500  05+08.58  06+0.258  07+070.2  08+60.90
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2145.  04+0.500  05+08.56  06+0.246  07+070.1  08+61.39
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2200.  04+0.500  05+08.55  06+0.245  07+070.1  08+61.82
09+30.07  10+0.000  11+14.34
01+0115.  02+0260.  03+2200.  04+0.500  05+08.58  06+0.400  07+070.2  08+61.15
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2215.  04+0.500  05+08.54  06+0.232  07+070.0  08+62.20
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2230.  04+0.500  05+08.52  06+0.228  07+69.94  08+62.69
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2245.  04+0.500  05+08.53  06+0.230  07+69.87  08+63.05
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2300.  04+0.500  05+08.52  06+0.225  07+69.80  08+63.44
09+30.07  10+0.000  11+14.34
01+0115.  02+0260.  03+2300.  04+0.500  05+08.53  06+0.357  07+69.91  08+62.84
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2315.  04+0.500  05+08.52  06+0.227  07+69.73  08+63.84
09+30.06  10+0.000  11+14.35
01+0109.  02+0260.  03+2330.  04+0.500  05+08.52  06+0.227  07+69.65  08+64.28
09+30.07  10+0.000  11+14.35
01+0109.  02+0260.  03+2345.  04+0.500  05+08.52  06+0.225  07+69.58  08+64.60
09+30.07  10+0.000  11+14.34
01+0109.  02+0260.  03+2400.  04+0.500  05+08.51  06+0.223  07+69.51  08+64.91
09+30.06  10+0.000  11+14.35
01+0115.  02+0260.  03+2400.  04+0.500  05+08.52  06+0.352  07+69.62  08+64.41
09+30.07  10+0.000  11+14.35
01+0109.  02+0261.  03+0015.  04+0.500  05+08.51  06+0.221  07+69.43  08+65.28
09+30.06  10+0.000  11+14.34
01+0109.  02+0261.  03+0030.  04+0.500  05+08.51  06+0.218  07+69.36  08+65.69
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0045.  04+0.500  05+08.50  06+0.215  07+69.30  08+66.01
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0100.  04+0.500  05+08.50  06+0.218  07+69.24  08+66.37
09+30.06  10+0.000  11+14.35
01+0115.  02+0261.  03+0100.  04+0.500  05+08.51  06+0.343  07+69.33  08+65.84
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0115.  04+0.500  05+08.50  06+0.209  07+69.19  08+66.77
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0130.  04+0.500  05+08.50  06+0.202  07+69.14  08+67.07
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0145.  04+0.500  05+08.50  06+0.206  07+69.09  08+67.34
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0200.  04+0.500  05+08.49  06+0.200  07+69.04  08+67.57
09+30.06  10+0.000  11+14.35
01+0115.  02+0261.  03+0200.  04+0.500  05+08.50  06+0.333  07+69.11  08+67.19
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0215.  04+0.500  05+08.49  06+0.198  07+68.98  08+67.80
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0230.  04+0.500  05+08.49  06+0.191  07+68.94  08+68.05
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0245.  04+0.500  05+08.48  06+0.183  07+68.89  08+68.40
09+30.06  10+0.000  11+14.35
01+0109.  02+0261.  03+0300.  04+0.500  05+08.49  06+0.185  07+68.84  08+68.67
09+30.05  10+0.000  11+14.34
01+0115.  02+0261.  03+0300.  04+0.500  05+08.49  06+0.314  07+68.91  08+68.23
09+30.06  10+0.000  11+14.34
01+0109.  02+0261.  03+0315.  04+0.500  05+08.48  06+0.187  07+68.80  08+68.97
09+30.05  10+0.000  11+14.35
01+0109.  02+0261.  03+0330.  04+0.500  05+08.48  06+0.176  07+68.76  08+69.15
09+30.05  10+0.000  11+14.35
01+0109.  02+0261.  03+0345.  04+0.500  05+08.49  06+0.164  07+68.71  08+69.38
09+30.04  10+0.000  11+14.35
01+0109.  02+0261.  03+0400.  04+0.500  05+08.48  06+0.157  07+68.68  08+69.55
09+30.04  10+0.000  11+14.35
01+0115.  02+0261.  03+0400.  04+0.500  05+08.48  06+0.288  07+68.74  08+69.26
09+30.05  10+0.000  11+14.35
01+0109.  02+0261.  03+0415.  04+0.500  05+08.48  06+0.154  07+68.64  08+69.74
09+30.04  10+0.000  11+14.35
01+0109.  02+0261.  03+0430.  04+0.500  05+08.48  06+0.148  07+68.63  08+69.99
09+30.04  10+0.000  11+14.35
01+0109.  02+0261.  03+0445.  04+0.500  05+08.48  [illegible]  07+68.59  08+070.2
09+30.03  10+0.000  11+14.35
01+0109.  02+0261.  03+0500.  04+0.500  05+08.48  06+0.136  07+68.56  08+070.3
09+30.03  10+0.000  11+14.35
01+0115.  02+0261.  03+0500.  04+0.500  05+08.48  06+0.270  07+68.60  08+070.1
09+30.04  10+0.000  11+14.35
01+0109.  02+0261.  03+0515.  04+0.500  05+08.48  06+0.132  07+68.53  08+070.5
09+30.03  10+0.000  11+14.34
01+0109.  02+0261.  03+0530.  04+0.500  05+08.48  06+0.132  07+68.51  08+070.6
09+30.03  10+0.000  11+14.35
01+0109.  02+0261.  03+0545.  04+0.500  05+08.48  06+0.144  07+68.47  08+070.7
09+30.03  10+0.000  11+14.35
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01+0109.	02+0261.	03+0600.	04+0.500	05+08.48	06+0.130	07+68.44	08+070.9
09+30.04	10+0.000	11+14.35					
01+0115.	02+0261.	03+0600.	04+0.500	05+08.48	06+0.266	07+68.49	08+070.7
09+30.03	10+0.000	11+14.35					
01+0109.	02+0261.	03+0615.	04+0.500	05+08.48	06+0.130	07+68.41	08+071.1
09+30.04	10+0.000	11+14.35					
01+0109.	02+0261.	03+0630.	04+0.500	05+08.48	06+0.127	07+68.37	08+071.2
09+30.05	10+0.000	11+14.35					
01+0109.	02+0261.	03+0645.	04+0.500	05+08.48	06+0.127	07+68.34	08+071.4
09+30.05	10+0.000	11+14.35					
01+0109.	02+0261.	03+0700.	04+0.500	05+08.48	06+0.127	07+68.32	08+071.6
09+30.05	10+0.000	11+14.35					
01+0115.	02+0261.	03+0700.	04+0.500	05+08.48	06+0.264	07+68.36	08+071.3
09+30.05	10+0.000	11+14.35					
01+0109.	02+0261.	03+0715.	04+0.500	05+08.48	06+0.127	07+68.30	08+071.9
09+30.06	10+0.000	11+14.34					
01+0109.	02+0261.	03+0730.	04+0.500	05+08.48	06+0.127	07+68.28	08+072.4
09+30.06	10+0.000	11+14.35					
01+0109.	02+0261.	03+0745.	04+0.500	05+08.48	06+0.127	07+68.30	08+072.9
09+30.06	10+0.000	11+14.35					
01+0109.	02+0261.	03+0800.	04+0.500	05+08.48	06+0.127	07+68.37	08+073.4
09+30.06	10+0.000	11+14.35					
01+0115.	02+0261.	03+0800.	04+0.500	05+08.48	06+0.264	07+68.31	08+072.6
09+30.06	10+0.000	11+14.35					
01+0109.	02+0261.	03+0815.	04+0.500	05+08.48	06+0.127	07+68.53	08+074.0
09+30.05	10+0.000	11+14.35					
01+0109.	02+0261.	03+0830.	04+0.500	05+08.48	06+0.127	07+68.76	08+074.7
09+30.05	10+0.000	11+14.34					
01+0109.	02+0261.	03+0845.	04+0.500	05+08.48	06+0.127	07+69.02	08+075.0
09+30.05	10+0.000	11+14.35					
01+0109.	02+0261.	03+0900.	04+0.500	05+08.48	06+0.127	07+69.29	08+074.4
09+30.05	10+0.000	11+14.34					
01+0115.	02+0261.	03+0900.	04+0.500	05+08.48	06+0.264	07+68.90	08+074.5
09+30.05	10+0.000	11+14.34					
01+0109.	02+0261.	03+0915.	04+0.500	05+08.48	06+0.130	07+69.58	08+073.6
09+30.04	10+0.000	11+14.34					
01+0109.	02+0261.	03+0930.	04+0.500	05+08.50	06+0.571	07+69.92	08+072.3
09+30.05	10+0.000	11+13.43					
01+0109.	02+0261.	03+0945.	04+0.500	05+08.48	06+0.155	07+070.5	08+075.0
09+30.07	10+0.000	11+13.21					
01+0109.	02+0261.	03+1000.	04+0.500	05+08.48	06+0.171	07+071.3	08+077.4
09+30.01	10+0.000	11+13.03					
01+0115.	02+0261.	03+1000.	04+0.500	05+08.48	06+0.394	07+070.3	08+074.6
09+30.04	10+0.000	11+13.03					
01+0109.	02+0261.	03+1015.	04+0.500	05+08.48	06+0.210	07+072.3	08+080.6
09+29.98	10+0.000	11+12.88					
01+0109.	02+0261.	03+1030.	04+0.500	05+08.48	06+0.109	07+073.5	08+083.5
09+30.03	10+0.000	11+12.79					
01+0109.	02+0261.	03+1045.	04+1.117	05+10.96	06+40.01	07+075.0	08+083.4
09+30.00	10+0.040	11+12.73					
01+0109.	02+0261.	03+1100.	04+5.479	05+187.4	06+20.70	07+077.5	08+078.8
09+30.01	10+0.000	11+12.72					
01+0115.	02+0261.	03+1100.	04+1.899	05+10.10	06+69.27	07+074.6	08+081.6
09+30.00	10+0.040	11+12.72					
01+0109.	02+0261.	03+1115.	04+5.667	05+189.2	06+22.00	07+078.7	08+077.3
09+30.01	10+0.000	11+12.73					
01+0109.	02+0261.	03+1130.	04+5.531	05+202.6	06+28.63	07+080.0	08+074.6
09+30.02	10+0.000	11+12.74					
01+0109.	02+0261.	03+1145.	04+5.941	05+194.8	06+22.44	07+080.4	08+073.8
09+30.02	10+0.000	11+12.75					
01+0109.	02+0261.	03+1200.	04+6.526	05+195.3	06+19.53	07+080.0	08+074.1
09+30.01	10+0.000	11+12.76					
01+0115.	02+0261.	03+1200.	04+5.916	05+195.4	06+23.81	07+079.8	08+074.9
09+30.01	10+0.000	11+12.76					
01+0109.	02+0261.	03+1215.	04+07.66	05+177.9	06+23.29	07+079.8	08+074.2
09+30.01	10+0.000	11+12.77					
01+0109.	02+0261.	03+1230.	04+07.85	05+181.5	06+24.78	07+079.6	08+074.5
09+30.01	10+0.000	11+12.77					
01+0109.	02+0261.	03+1245.	04+07.14	05+184.7	06+25.07	07+080.6	08+073.7
09+30.00	10+0.000	11+12.77					
01+0109.	02+0261.	03+1300.	04+08.32	05+178.5	06+21.16	07+080.2	08+073.1
09+30.00	10+0.000	11+12.78					
01+0115.	02+0261.	03+1300.	04+07.74	05+180.6	06+23.77	07+080.0	08+073.9
09+30.01	10+0.000	11+12.78					
01+0109.	02+0261.	03+1315.	04+08.98	05+173.9	06+18.88	07+079.7	08+073.0
09+30.00	10+0.000	11+12.78					
01+0109.	02+0261.	03+1330.	04+09.20	05+182.5	06+22.07	07+079.9	08+073.6
09+29.99	10+0.000	11+12.78					
01+0109.	02+0261.	03+1345.	04+07.94	05+203.9	06+29.01	07+080.6	08+072.0
09+29.99	10+0.000	11+12.78					
01+0109.	02+0261.	03+1400.	04+08.00	05+200.3	06+26.17	07+081.2	08+071.1
09+29.99	10+0.000	11+12.79					
01+0115.	02+0261.	03+1400.	04+08.53	05+189.8	06+27.26	07+080.4	08+072.4
09+29.99	10+0.000	11+12.79					
01+0109.	02+0261.	03+1415.	04+08.14	05+187.3	06+24.44	07+080.8	08+071.5
09+29.99	10+0.000	11+12.78					
01+0109.	02+0261.	03+1430.	04+08.89	05+183.6	06+20.06	07+080.8	08+071.4
09+29.98	10+0.000	11+12.79					
01+0109.	02+0261.	03+1445.	04+09.00	05+181.6	06+23.02	07+080.3	08+072.3

09+29.98	10+0.000	11+12.79					
01+0109.	02+0261.	03+1500.	04+09.37	05+174.1	06+18.49	07+080.0	08+072.4
09+29.97	10+0.010	11+12.78					
01+0115.	02+0261.	03+1500.	04+08.85	05+181.6	06+22.14	07+080.5	08+071.9
09+29.98	10+0.010	11+12.78					
01+0109.	02+0261.	03+1515.	04+07.62	05+182.7	06+22.79	07+079.8	08+072.9
09+29.97	10+0.000	11+12.78					
01+0109.	02+0261.	03+1530.	04+09.40	05+173.7	06+17.58	07+079.4	08+073.2
09+29.96	10+0.000	11+12.78					
01+0109.	02+0261.	03+1545.	04+08.91	05+160.2	06+16.03	07+078.6	08+075.8
09+29.96	10+0.000	11+12.77					
01+0109.	02+0261.	03+1600.	04+09.03	05+164.1	06+14.20	07+078.2	08+077.8
09+29.95	10+0.000	11+12.78					
01+0115.	02+0261.	03+1600.	04+08.74	05+170.0	06+19.89	07+079.0	08+074.9
09+29.96	10+0.000	11+12.78					
01+0109.	02+0261.	03+1615.	04+07.97	05+159.8	06+16.39	07+077.6	08+079.3
09+29.95	10+0.000	11+12.77					
01+0109.	02+0261.	03+1630.	04+6.919	05+175.0	06+20.53	07+077.8	08+079.0
09+29.95	10+0.000	11+12.77					
01+0109.	02+0261.	03+1645.	04+07.69	05+190.5	06+21.57	07+077.5	08+078.9
09+29.95	10+0.000	11+12.77					
01+0109.	02+0261.	03+1700.	04+08.12	05+176.0	06+15.64	07+077.1	08+079.4
09+29.95	10+0.000	11+12.77					
01+0115.	02+0261.	03+1700.	04+07.67	05+175.2	06+21.59	07+077.5	08+079.1
09+29.95	10+0.000	11+12.77					
01+0109.	02+0261.	03+1715.	04+6.809	05+169.1	06+20.12	07+076.7	08+081.4
09+29.94	10+0.000	11+12.76					
01+0109.	02+0261.	03+1730.	04+07.05	05+179.8	06+16.87	07+076.2	08+083.4
09+29.94	10+0.000	11+12.77					
01+0109.	02+0261.	03+1745.	04+07.43	05+183.3	06+14.56	07+075.8	08+084.5
09+29.94	10+0.000	11+12.76					
01+0109.	02+0261.	03+1800.	04+08.37	05+175.6	06+12.60	07+075.0	08+086.4
09+29.94	10+0.000	11+12.75					
01+0115.	02+0261.	03+1800.	04+07.41	05+177.0	06+17.09	07+075.9	08+083.9
09+29.94	10+0.000	11+12.75					
01+0109.	02+0261.	03+1815.	04+08.08	05+177.5	06+13.24	07+074.4	08+088.8
09+29.94	10+0.000	11+12.75					
01+0109.	02+0261.	03+1830.	04+4.796	05+184.0	06+14.77	07+074.1	08+089.9
09+29.93	10+0.000	11+12.75					
01+0109.	02+0261.	03+1845.	04+4.791	05+193.0	06+15.02	07+073.8	08+090.5
09+29.93	10+0.000	11+12.74					
01+0109.	02+0261.	03+1900.	04+5.294	05+194.4	06+16.08	07+073.3	08+091.7
09+29.92	10+0.000	11+12.73					
01+0115.	02+0261.	03+1900.	04+5.739	05+187.2	06+16.33	07+073.9	08+090.2
09+29.93	10+0.000	11+12.73					
01+0109.	02+0261.	03+1915.	04+5.381	05+196.4	06+13.58	07+072.8	08+093.4
09+29.92	10+0.000	11+12.73					
01+0109.	02+0261.	03+1930.	04+5.065	05+184.0	06+13.21	07+072.4	08+094.9
09+29.92	10+0.000	11+12.73					
01+0109.	02+0261.	03+1945.	04+4.696	05+178.5	06+14.07	07+072.0	08+096.0
09+29.93	10+0.000	11+12.72					
01+0109.	02+0261.	03+2000.	04+4.593	05+171.8	06+15.20	07+071.7	08+096.8
09+29.93	10+0.000	11+12.72					
01+0115.	02+0261.	03+2000.	04+4.934	05+182.7	06+16.68	07+072.2	08+095.3
09+29.93	10+0.000	11+12.72					
01+0109.	02+0261.	03+2015.	04+3.944	05+176.9	06+17.54	07+071.5	08+097.4
09+29.94	10+0.000	11+12.72					
01+0109.	02+0261.	03+2030.	04+3.671	05+179.8	06+19.74	07+071.4	08+097.8
09+29.93	10+0.000	11+12.72					
01+0109.	02+0261.	03+2045.	04+2.804	05+187.8	06+19.35	07+071.1	08+098.1
09+29.94	10+0.000	11+12.72					
01+0109.	02+0261.	03+2100.	04+3.119	05+179.3	06+12.59	07+070.9	08+098.5
09+29.93	10+0.000	11+12.71					
01+0115.	02+0261.	03+2100.	04+3.385	05+180.9	06+17.98	07+071.2	08+097.9
09+29.93	10+0.000	11+12.71					
01+0109.	02+0261.	03+2115.	04+2.333	05+205.3	06+18.04	07+070.6	08+098.7
09+29.93	10+0.000	11+12.71					
01+0109.	02+0261.	03+2130.	04+1.646	05+251.8	06+28.00	07+070.0	08+098.9
09+29.93	10+0.000	11+12.71					
01+0109.	02+0261.	03+2145.	04+1.791	05+212.5	06+28.20	07+69.67	08+099.1
09+29.93	10+0.000	11+12.71					
01+0109.	02+0261.	03+2200.	04+1.417	05+187.2	06+42.86	07+69.67	08+099.1
09+29.92	10+0.000	11+12.70					
01+0115.	02+0261.	03+2200.	04+1.797	05+214.7	06+38.13	07+69.99	08+099.0
09+29.93	10+0.000	11+12.70					
01+0109.	02+0261.	03+2215.	04+1.845	05+217.0	06+18.09	07+69.53	08+099.1
09+29.92	10+0.000	11+12.70					
01+0109.	02+0261.	03+2230.	04+1.552	05+246.5	06+18.00	07+69.38	08+099.0
09+29.92	10+0.000	11+12.70					
01+0109.	02+0261.	03+2245.	04+1.702	05+265.1	06+14.02	07+68.95	08+099.0
09+29.92	10+0.000	11+12.70					
01+0109.	02+0261.	03+2300.	04+1.378	05+224.4	06+49.11	07+69.13	08+099.3
09+29.92	10+0.000	11+12.70					
01+0115.	02+0261.	03+2300.	04+1.619	05+239.3	06+33.56	07+69.25	08+099.1
09+29.92	10+0.000	11+12.70					
01+0109.	02+0261.	03+2315.	04+1.159	05+164.4	06+46.88	07+69.05	08+099.2
09+29.92	10+0.000	11+12.69					
01+0109.	02+0261.	03+2330.	04+1.488	05+186.7	06+39.00	07+69.04	08+099.1
09+29.92	10+0.000	11+12.69					

01+0109.	02+0261.	03+2345.	04+2.172	05+187.4	06+27.82	07+69.09	08+098.6
09+29.91	10+0.000	11+12.69					
01+0109.	02+0261.	03+2400.	04+1.611	05+246.6	06+35.43	07+69.10	08+098.0
09+29.91	10+0.000	11+12.69					
01+0115.	02+0261.	03+2400.	04+1.608	05+196.1	06+48.38	07+69.07	08+098.7
09+29.92	10+0.000	11+12.69					
01+0109.	02+0262.	03+0015.	04+1.729	05+241.4	06+39.03	07+69.00	08+097.7
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0030.	04+1.415	05+255.6	06+65.22	07+68.88	08+097.4
09+29.92	10+0.000	11+12.69					
01+0109.	02+0262.	03+0045.	04+1.626	05+170.8	06+44.68	07+68.68	08+097.0
09+29.92	10+0.000	11+12.69					
01+0109.	02+0262.	03+0100.	04+1.722	05+250.8	06+070.1	07+68.41	08+096.8
09+29.91	10+0.000	11+12.69					
01+0115.	02+0262.	03+0100.	04+1.623	05+227.3	06+65.25	07+68.74	08+097.2
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0115.	04+1.205	05+186.5	06+075.1	07+68.08	08+096.9
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0130.	04+1.511	05+251.1	06+66.10	07+67.85	08+096.9
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0145.	04+1.755	05+261.4	06+62.44	07+67.84	08+096.7
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0200.	04+2.252	05+267.2	06+47.66	07+67.71	08+096.6
09+29.91	10+0.000	11+12.69					
01+0115.	02+0262.	03+0200.	04+1.681	05+249.2	06+68.59	07+67.87	08+096.8
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0215.	04+1.549	05+209.9	06+072.8	07+67.71	08+096.4
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0230.	04+1.264	05+237.1	06+098.5	07+67.77	08+096.1
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0245.	04+1.129	05+163.9	06+080.3	07+67.54	08+096.1
09+29.91	10+0.000	11+12.69					
01+0109.	02+0262.	03+0300.	04+2.177	05+171.5	06+60.97	07+67.59	08+096.1
09+29.90	10+0.000	11+12.68					
01+0115.	02+0262.	03+0300.	04+1.530	05+184.7	06+080.8	07+67.65	08+096.2
09+29.91	10+0.000	11+12.68					
01+0109.	02+0262.	03+0315.	04+2.432	05+182.5	06+62.97	07+68.12	08+095.8
09+29.90	10+0.000	11+12.68					
01+0109.	02+0262.	03+0330.	04+1.816	05+196.1	06+076.0	07+68.33	08+095.6
09+29.90	10+0.000	11+12.67					
01+0109.	02+0262.	03+0345.	04+2.311	05+204.5	06+63.24	07+68.46	08+095.5
09+29.90	10+0.000	11+12.68					
01+0109.	02+0262.	03+0400.	04+2.683	05+194.0	06+48.32	07+68.75	08+095.1
09+29.90	10+0.000	11+12.68					
01+0115.	02+0262.	03+0400.	04+2.311	05+194.1	06+63.33	07+68.42	08+095.5
09+29.90	10+0.000	11+12.68					
01+0109.	02+0262.	03+0415.	04+2.279	05+214.2	06+53.39	07+68.85	08+095.0
09+29.90	10+0.000	11+12.68					
01+0109.	02+0262.	03+0430.	04+2.573	05+229.1	06+48.22	07+69.02	08+094.8
09+29.90	10+0.000	11+12.68					
01+0109.	02+0262.	03+0445.	04+2.852	05+220.7	06+50.32	07+69.15	08+094.4
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0500.	04+2.313	05+204.4	06+56.55	07+69.02	08+094.4
09+29.89	10+0.000	11+12.68					
01+0115.	02+0262.	03+0500.	04+2.504	05+217.5	06+52.90	07+69.01	08+094.6
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0515.	04+1.350	05+250.0	06+085.6	07+68.53	08+094.8
09+29.90	10+0.000	11+12.68					
01+0109.	02+0262.	03+0530.	04+1.863	05+188.4	06+55.64	07+68.21	08+095.2
09+29.90	10+0.000	11+12.67					
01+0109.	02+0262.	03+0545.	04+1.718	05+183.4	06+62.70	07+68.11	08+095.6
09+29.90	10+0.000	11+12.68					
01+0109.	02+0262.	03+0600.	04+1.769	05+195.7	06+65.42	07+68.45	08+095.6
09+29.90	10+0.000	11+12.67					
01+0115.	02+0262.	03+0600.	04+1.675	05+196.2	06+070.3	07+68.32	08+095.3
09+29.90	10+0.000	11+12.67					
01+0109.	02+0262.	03+0615.	04+2.131	05+200.5	06+53.79	07+68.42	08+095.6
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0630.	04+1.821	05+216.3	06+68.86	07+68.21	08+095.5
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0645.	04+1.700	05+248.1	06+66.99	07+67.76	08+095.7
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0700.	04+2.641	05+262.1	06+30.89	07+67.54	08+096.1
09+29.89	10+0.000	11+12.67					
01+0115.	02+0262.	03+0700.	04+2.073	05+234.8	06+61.45	07+67.98	08+095.7
09+29.89	10+0.000	11+12.67					
01+0109.	02+0262.	03+0715.	04+1.842	05+229.0	06+57.83	07+67.71	08+096.1
09+29.89	10+0.000	11+12.67					
01+0109.	02+0262.	03+0730.	04+2.592	05+204.0	06+46.57	07+68.17	08+095.9
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0745.	04+2.160	05+197.3	06+52.42	07+68.87	08+095.4
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0800.	04+3.075	05+205.3	06+24.79	07+69.40	08+094.9
09+29.89	10+0.000	11+12.68					
01+0115.	02+0262.	03+0800.	04+2.417	05+208.0	06+47.63	07+68.54	08+095.6
09+29.89	10+0.000	11+12.68					
01+0109.	02+0262.	03+0815.	04+3.740	05+213.9	06+22.32	07+69.93	08+094.6
09+29.89	10+0.000	11+12.69					
01+0109.	02+0262.	03+0830.	04+3.065	05+216.0	06+32.04	07+071.0	08+093.7

09+29.90	10+0.000	11+12.69					
01+0109.	02+0262.	03+0845.	04+4.557	05+205.8	06+18.16	07+071.8	08+092.4
09+29.90	10+0.000	11+12.70					
01+0109.	02+0262.	03+0900.	04+4.205	05+209.7	06+21.97	07+072.9	08+090.7
09+29.90	10+0.000	11+12.71					
01+0115.	02+0262.	03+0900.	04+3.891	05+211.2	06+24.37	07+071.4	08+092.9
09+29.90	10+0.000	11+12.71					
01+0109.	02+0262.	03+0915.	04+4.501	05+210.5	06+18.43	07+074.0	08+088.9
09+29.90	10+0.000	11+12.72					
01+0109.	02+0262.	03+0930.	04+4.496	05+213.0	06+19.02	07+075.2	08+086.7
09+29.90	10+0.000	11+12.74					
01+0109.	02+0262.	03+0945.	04+4.788	05+231.1	06+23.64	07+076.7	08+084.0
09+29.91	10+0.000	11+12.75					
01+0109.	02+0262.	03+1000.	04+4.832	05+217.4	06+24.40	07+077.6	08+081.2
09+29.91	10+0.000	11+12.75					
01+0115.	02+0262.	03+1000.	04+4.655	05+217.9	06+22.92	07+075.9	08+085.2
09+29.91	10+0.000	11+12.75					
01+0109.	02+0262.	03+1015.	04+5.159	05+230.7	06+20.52	07+078.5	08+078.7
09+29.92	10+0.000	11+12.76					
01+0109.	02+0262.	03+1030.	04+5.328	05+223.9	06+25.75	07+079.3	08+075.6
09+29.92	10+0.000	11+12.75					
01+0109.	02+0262.	03+1045.	04+5.268	05+216.3	06+22.72	07+080.0	08+073.3
09+29.92	10+0.000	11+12.75					
01+0109.	02+0262.	03+1100.	04+5.198	05+208.3	06+27.12	07+081.0	08+070.4
09+29.92	10+0.000	11+12.75					
01+0115.	02+0262.	03+1100.	04+5.238	05+219.9	06+25.53	07+079.7	08+074.5
09+29.92	10+0.000	11+12.75					
01+0109.	02+0262.	03+1115.	04+5.113	05+196.0	06+27.97	07+081.8	08+69.16
09+29.92	10+0.000	11+12.75					
01+0109.	02+0262.	03+1130.	04+07.01	05+209.8	06+19.54	07+082.0	08+66.71
09+29.92	10+0.000	11+12.75					
01+0109.	02+0262.	03+1145.	04+6.087	05+207.9	06+21.76	07+081.9	08+66.83
09+29.92	10+0.000	11+12.76					
01+0109.	02+0262.	03+1200.	04+6.413	05+192.6	06+25.28	07+082.5	08+66.91
09+29.92	10+0.000	11+12.76					
01+0115.	02+0262.	03+1200.	04+6.155	05+201.7	06+24.93	07+082.1	08+67.40
09+29.92	10+0.000	11+12.76					
01+0109.	02+0262.	03+1215.	04+6.828	05+186.2	06+23.44	07+082.5	08+66.63
09+29.91	10+0.000	11+12.75					
01+0109.	02+0262.	03+1230.	04+07.31	05+205.5	06+18.34	07+082.6	08+63.89
09+29.91	10+0.000	11+12.75					
01+0109.	02+0262.	03+1245.	04+07.17	05+173.3	06+30.33	07+082.5	08+65.14
09+29.91	10+0.000	11+12.75					
01+0109.	02+0262.	03+1300.	04+08.71	05+157.2	06+17.58	07+081.3	08+070.1
09+29.90	10+0.000	11+12.76					
01+0115.	02+0262.	03+1300.	04+07.51	05+180.6	06+29.07	07+082.2	08+66.43
09+29.91	10+0.000	11+12.76					
01+0109.	02+0262.	03+1315.	04+08.63	05+169.0	06+17.29	07+081.2	08+070.4
09+29.90	10+0.000	11+12.76					
01+0109.	02+0262.	03+1330.	04+08.19	05+158.7	06+19.65	07+080.6	08+070.9
09+29.89	10+0.000	11+12.75					
01+0109.	02+0262.	03+1345.	04+09.41	05+160.7	06+21.40	07+080.7	08+071.3
09+29.88	10+0.000	11+12.74					
01+0109.	02+0262.	03+1400.	04+09.46	05+158.5	06+17.40	07+080.8	08+071.1
09+29.87	10+0.000	11+12.75					
01+0115.	02+0262.	03+1400.	04+08.92	05+161.8	06+19.48	07+080.8	08+070.9
09+29.89	10+0.000	11+12.75					
01+0109.	02+0262.	03+1415.	04+09.63	05+164.8	06+18.35	07+080.1	08+073.5
09+29.87	10+0.000	11+12.74					
01+0109.	02+0262.	03+1430.	04+10.01	05+165.5	06+16.14	07+079.8	08+074.0
09+29.86	10+0.000	11+12.74					
01+0109.	02+0262.	03+1445.	04+10.25	05+167.0	06+18.10	07+079.7	08+073.8
09+29.86	10+0.000	11+12.74					
01+0109.	02+0262.	03+1500.	04+09.29	05+169.1	06+18.33	07+079.5	08+076.0
09+29.85	10+0.000	11+12.74					
01+0115.	02+0262.	03+1500.	04+09.80	05+166.6	06+17.83	07+079.8	08+074.3
09+29.86	10+0.000	11+12.74					
01+0109.	02+0262.	03+1515.	04+09.34	05+159.7	06+18.87	07+079.6	08+076.8
09+29.85	10+0.000	11+12.73					
01+0109.	02+0262.	03+1530.	04+10.03	05+160.1	06+18.25	07+079.2	08+077.0
09+29.84	10+0.000	11+12.74					
01+0109.	02+0262.	03+1545.	04+09.00	05+165.0	06+17.74	07+078.9	08+078.0
09+29.84	10+0.000	11+12.73					
01+0109.	02+0262.	03+1600.	04+09.25	05+182.3	06+17.80	07+079.1	08+076.6
09+29.84	10+0.000	11+12.73					
01+0115.	02+0262.	03+1600.	04+09.40	05+166.8	06+20.34	07+079.2	08+077.1
09+29.84	10+0.000	11+12.73					
01+0109.	02+0262.	03+1615.	04+09.57	05+178.4	06+17.47	07+078.6	08+077.3
09+29.84	10+0.000	11+12.73					
01+0109.	02+0262.	03+1630.	04+08.12	05+170.5	06+19.43	07+078.1	08+077.2
09+29.83	10+0.000	11+12.72					
01+0109.	02+0262.	03+1645.	04+09.08	05+174.6	06+14.07	07+078.0	08+074.6
09+29.83	10+0.000	11+12.72					
01+0109.	02+0262.	03+1700.	04+08.96	05+176.4	06+17.63	07+078.2	08+071.3
09+29.82	10+0.000	11+12.72					
01+0115.	02+0262.	03+1700.	04+08.93	05+175.0	06+17.49	07+078.2	08+075.1
09+29.83	10+0.000	11+12.72					
01+0109.	02+0262.	03+1715.	04+09.27	05+175.3	06+16.56	07+078.0	08+69.90
09+29.82	10+0.000	11+12.71					

01+0109.	02+0262.	03+1730.	04+08.77	05+168.5	06+17.32	07+077.1	08+071.7
09+29.81	10+0.000	11+12.71					
01+0109.	02+0262.	03+1745.	04+10.05	05+171.7	06+14.66	07+076.6	08+073.5
09+29.81	10+0.000	11+12.72					
01+0109.	02+0262.	03+1800.	04+08.88	05+171.8	06+17.58	07+076.0	08+077.5
09+29.80	10+0.000	11+12.70					
01+0115.	02+0262.	03+1800.	04+09.24	05+171.8	06+16.74	07+076.9	08+073.2
09+29.81	10+0.000	11+12.70					
01+0109.	02+0262.	03+1815.	04+09.06	05+177.6	06+16.26	07+075.2	08+081.7
09+29.80	10+0.000	11+12.70					
01+0109.	02+0262.	03+1830.	04+08.89	05+165.5	06+15.15	07+074.6	08+086.1
09+29.79	10+0.000	11+12.69					
01+0109.	02+0262.	03+1845.	04+08.80	05+168.0	06+14.95	07+074.1	08+089.7
09+29.78	10+0.000	11+12.69					
01+0109.	02+0262.	03+1900.	04+08.81	05+174.1	06+15.89	07+073.5	08+093.5
09+29.78	10+0.000	11+12.69					
01+0115.	02+0262.	03+1900.	04+08.89	05+171.3	06+16.28	07+074.4	08+087.7
09+29.79	10+0.000	11+12.69					
01+0109.	02+0262.	03+1915.	04+09.26	05+173.4	06+15.72	07+073.3	08+096.2
09+29.77	10+0.000	11+12.68					
01+0109.	02+0262.	03+1930.	04+08.55	05+176.7	06+14.70	07+073.1	08+097.3
09+29.77	10+0.000	11+12.68					
01+0109.	02+0262.	03+1945.	04+08.07	05+175.0	06+13.63	07+073.1	08+097.5
09+29.77	10+0.000	11+12.67					
01+0109.	02+0262.	03+2000.	04+08.23	05+170.3	06+12.84	07+073.2	08+097.5
09+29.77	10+0.000	11+12.67					
01+0115.	02+0262.	03+2000.	04+08.53	05+173.8	06+14.46	07+073.2	08+097.1
09+29.77	10+0.000	11+12.67					
01+0109.	02+0262.	03+2015.	04+07.86	05+177.5	06+15.80	07+073.4	08+097.5
09+29.77	10+0.000	11+12.67					
01+0109.	02+0262.	03+2030.	04+09.69	05+181.6	06+15.69	07+073.7	08+097.2
09+29.76	10+0.000	11+12.67					
01+0109.	02+0262.	03+2045.	04+09.02	05+178.0	06+15.63	07+073.8	08+096.8
09+29.76	10+0.000	11+12.66					
01+0109.	02+0262.	03+2100.	04+08.08	05+181.7	06+14.56	07+073.7	08+096.7
09+29.76	10+0.000	11+12.67					
01+0115.	02+0262.	03+2100.	04+08.66	05+179.7	06+15.55	07+073.6	08+097.0
09+29.76	10+0.000	11+12.67					
01+0109.	02+0262.	03+2115.	04+07.66	05+184.5	06+15.69	07+073.6	08+096.6
09+29.76	10+0.000	11+12.67					
01+0109.	02+0262.	03+2130.	04+07.62	05+180.2	06+15.69	07+073.5	08+096.6
09+29.76	10+0.000	11+12.67					
01+0109.	02+0262.	03+2145.	04+07.99	05+182.4	06+14.23	07+073.4	08+096.7
09+29.75	10+0.000	11+12.66					
01+0109.	02+0262.	03+2200.	04+08.83	05+180.3	06+14.40	07+073.3	08+096.8
09+29.75	10+0.000	11+12.66					
01+0115.	02+0262.	03+2200.	04+08.03	05+181.8	06+15.12	07+073.4	08+096.7
09+29.75	10+0.000	11+12.66					
01+0109.	02+0262.	03+2215.	04+07.70	05+176.7	06+16.01	07+073.3	08+096.6
09+29.74	10+0.000	11+12.66					
01+0109.	02+0262.	03+2230.	04+08.38	05+180.2	06+16.01	07+073.5	08+096.2
09+29.74	10+0.000	11+12.66					
01+0109.	02+0262.	03+2245.	04+08.71	05+178.6	06+15.41	07+073.8	08+095.8
09+29.74	10+0.000	11+12.66					
01+0109.	02+0262.	03+2300.	04+08.61	05+179.3	06+16.98	07+073.8	08+095.7
09+29.74	10+0.000	11+12.66					
01+0115.	02+0262.	03+2300.	04+08.35	05+178.7	06+16.16	07+073.6	08+096.1
09+29.74	10+0.000	11+12.66					
01+0109.	02+0262.	03+2315.	04+08.14	05+186.8	06+17.38	07+073.8	08+095.8
09+29.74	10+0.000	11+12.65					
01+0109.	02+0262.	03+2330.	04+10.23	05+185.9	06+14.88	07+073.9	08+095.7
09+29.74	10+0.000	11+12.65					
01+0109.	02+0262.	03+2345.	04+09.67	05+183.0	06+15.97	07+074.0	08+095.8
09+29.73	10+0.000	11+12.66					
01+0109.	02+0262.	03+2400.	04+09.74	05+185.2	06+14.72	07+073.9	08+095.8
09+29.73	10+0.000	11+12.65					
01+0115.	02+0262.	03+2400.	04+09.45	05+185.2	06+15.83	07+073.9	08+095.8
09+29.73	10+0.000	11+12.65					
01+0109.	02+0263.	03+0015.	04+09.32	05+180.9	06+13.65	07+074.0	08+095.6
09+29.72	10+0.000	11+12.65					
01+0109.	02+0263.	03+0030.	04+08.93	05+176.6	06+15.22	07+073.7	08+095.8
09+29.72	10+0.000	11+12.65					
01+0109.	02+0263.	03+0045.	04+08.68	05+182.0	06+15.16	07+073.5	08+096.0
09+29.72	10+0.000	11+12.65					
01+0109.	02+0263.	03+0100.	+08.20	05+190.1	06+19.49	07+073.5	08+095.9
09+29.72	10+0.000	11+12.65					
01+0115.	02+0263.	03+0100.	+08.78	05+182.4	06+16.73	07+073.7	08+095.8
09+29.72	10+0.000	11+12.65					
01+0109.	02+0263.	03+0115.	04+09.71	05+183.0	06+14.47	07+073.5	08+095.6
09+29.71	10+0.000	11+12.65					
01+0109.	02+0263.	03+0130.	04+08.61	05+185.7	06+17.45	07+073.6	08+095.1
09+29.71	10+0.000	11+12.65					
01+0109.	02+0263.	03+0145.	04+08.71	05+177.5	06+13.97	07+073.7	08+094.8
09+29.71	10+0.000	11+12.65					
01+0109.	02+0263.	03+0200.	04+09.92	05+177.8	06+14.39	07+073.6	08+095.1
09+29.70	10+0.000	11+12.65					
01+0115.	02+0263.	03+0200.	04+09.24	05+181.0	06+15.52	07+073.6	08+095.2
09+29.71	10+0.000	11+12.65					
01+0109.	02+0263.	03+0215.	04+08.65	05+181.7	06+18.78	07+073.6	08+095.1

09+29.70	10+0.000	11+12.65					
01+0109.	02+0263.	03+0230.	04+09.09	05+188.4	06+20.53	07+074.0	08+094.4
09+29.69	10+0.000	11+12.65					
01+0109.	02+0263.	03+0245.	04+10.33	05+194.5	06+17.89	07+074.4	08+093.7
09+29.68	10+0.000	11+12.65					
01+0109.	02+0263.	03+0300.	04+09.98	05+192.0	06+20.35	07+074.4	08+093.5
09+29.68	10+0.000	11+12.65					
01+0115.	02+0263.	03+0300.	04+09.51	05+189.2	06+20.00	07+074.1	08+094.2
09+29.69	10+0.000	11+12.65					
01+0109.	02+0263.	03+0315.	04+08.75	05+201.7	06+23.11	07+074.3	08+093.5
09+29.68	10+0.000	11+12.65					
01+0109.	02+0263.	03+0330.	04+09.61	05+201.2	06+23.29	07+074.4	08+093.2
09+29.68	10+0.000	11+12.65					
01+0109.	02+0263.	03+0345.	04+08.62	05+200.1	06+19.17	07+074.4	08+093.1
09+29.68	10+0.000	11+12.65					
01+0109.	02+0263.	03+0400.	04+09.69	05+202.3	06+23.15	07+074.2	08+092.8
09+29.68	10+0.000	11+12.65					
01+0115.	02+0263.	03+0400.	04+09.17	05+201.3	06+22.26	07+074.3	08+093.1
09+29.68	10+0.000	11+12.65					
01+0109.	02+0263.	03+0415.	04+07.83	05+206.4	06+25.04	07+073.7	08+093.4
09+29.68	10+0.000	11+12.64					
01+0109.	02+0263.	03+0430.	04+6.732	05+194.4	06+16.42	07+073.4	08+094.8
09+29.68	10+0.000	11+12.64					
01+0109.	02+0263.	03+0445.	04+4.570	05+204.5	06+20.40	07+073.1	08+095.9
09+29.69	10+0.020	11+12.63					
01+0109.	02+0263.	03+0500.	04+07.95	05+197.6	06+27.98	07+072.6	08+096.5
09+29.68	10+0.040	11+12.64					
01+0115.	02+0263.	03+0500.	04+6.770	05+200.7	06+23.34	07+073.2	08+095.1
09+29.68	10+0.060	11+12.64					
01+0109.	02+0263.	03+0515.	04+6.947	05+199.0	06+19.12	07+072.6	08+096.4
09+29.68	10+0.000	11+12.64					
01+0109.	02+0263.	03+0530.	04+6.343	05+189.3	06+18.79	07+072.5	08+096.5
09+29.68	10+0.000	11+12.63					
01+0109.	02+0263.	03+0545.	04+6.112	05+196.4	06+19.36	07+072.5	08+096.6
09+29.68	10+0.000	11+12.63					
01+0109.	02+0263.	03+0600.	04+5.943	05+200.1	06+22.81	07+072.5	08+096.3
09+29.69	10+0.000	11+12.63					
01+0115.	02+0263.	03+0600.	04+6.336	05+196.2	06+20.51	07+072.5	08+096.4
09+29.68	10+0.000	11+12.63					
01+0109.	02+0263.	03+0615.	04+5.157	05+201.4	06+26.95	07+072.5	08+096.1
09+29.69	10+0.000	11+12.63					
01+0109.	02+0263.	03+0630.	04+5.497	05+214.1	06+23.45	07+072.5	08+095.9
09+29.70	10+0.000	11+12.63					
01+0109.	02+0263.	03+0645.	04+5.516	05+217.4	06+26.46	07+072.6	08+095.7
09+29.70	10+0.000	11+12.64					
01+0109.	02+0263.	03+0700.	04+5.849	05+199.4	06+25.00	07+072.6	08+095.4
09+29.70	10+0.000	11+12.63					
01+0115.	02+0263.	03+0700.	04+5.505	05+208.1	06+26.65	07+072.6	08+095.8
09+29.70	10+0.000	11+12.63					
01+0109.	02+0263.	03+0715.	04+5.023	05+214.5	06+28.98	07+072.6	08+095.5
09+29.71	10+0.000	11+12.63					
01+0109.	02+0263.	03+0730.	04+4.118	05+224.2	06+33.17	07+072.6	08+095.6
09+29.71	10+0.000	11+12.64					
01+0109.	02+0263.	03+0745.	04+5.074	05+246.2	06+25.89	07+072.7	08+095.6
09+29.72	10+0.000	11+12.63					
01+0109.	02+0263.	03+0800.	04+6.354	05+249.3	06+22.53	07+072.8	08+095.5
09+29.72	10+0.000	11+12.64					
01+0115.	02+0263.	03+0800.	04+5.142	05+234.0	06+31.50	07+072.7	08+095.5
09+29.71	10+0.000	11+12.64					
01+0109.	02+0263.	03+0815.	04+6.332	05+251.0	06+19.17	07+072.9	08+095.4
09+29.73	10+0.000	11+12.63					
01+0109.	02+0263.	03+0830.	04+10.63	05+285.0	06+16.77	07+072.0	08+094.7
09+29.73	10+0.010	11+12.63					
01+0109.	02+0263.	03+0845.	04+09.74	05+287.7	06+16.02	07+070.6	08+093.7
09+29.74	10+0.000	11+12.63					
01+0109.	02+0263.	03+0900.	04+09.27	05+291.5	06+16.99	07+69.83	08+092.4
09+29.75	10+0.000	11+12.63					
01+0115.	02+0263.	03+0900.	04+08.99	05+279.1	06+23.62	07+071.3	08+094.1
09+29.74	10+0.010	11+12.63					
01+0109.	02+0263.	03+0915.	04+10.19	05+301.4	06+16.60	07+68.75	08+090.8
09+29.76	10+0.000	11+12.63					
01+0109.	02+0263.	03+0930.	04+09.20	05+300.0	06+15.86	07+67.70	08+090.6
09+29.77	10+0.000	11+12.63					
01+0109.	02+0263.	03+0945.	04+07.80	05+310.1	06+31.63	07+66.80	08+088.8
09+29.79	10+0.000	11+12.62					
01+0109.	02+0263.	03+1000.	04+6.976	05+317.1	06+32.75	07+65.77	08+084.9
09+29.79	10+0.000	11+12.62					
01+0115.	02+0263.	03+1000.	04+08.54	05+306.8	06+26.17	07+67.26	08+088.8
09+29.78	10+0.000	11+12.62					
01+0109.	02+0263.	03+1015.	04+6.497	05+338.8	06+24.21	07+64.78	08+086.2
09+29.80	10+0.000	11+12.62					
01+0109.	02+0263.	03+1030.	04+6.846	05+333.2	06+27.69	07+64.68	08+085.8
09+29.80	10+0.000	11+12.61					
01+0109.	02+0263.	03+1045.	04+6.634	05+341.0	06+27.25	07+64.44	08+086.2
09+29.80	10+0.000	11+12.61					
01+0109.	02+0263.	03+1100.	04+6.618	05+343.7	06+27.19	07+64.75	08+085.9
09+29.80	10+0.000	11+12.61					
01+0115.	02+0263.	03+1100.	04+6.649	05+339.2	06+26.88	07+64.66	08+086.0
09+29.80	10+0.000	11+12.61					

01+0109.	02+0263.	03+1115.	04+6.259	05+336.7	06+30.81	07+65.91	08+085.0
09+29.80	10+0.000	11+12.61					
01+0109.	02+0263.	03+1130.	04+08.22	05+318.0	06+34.68	07+67.26	08+082.4
09+29.81	10+0.000	11+12.62					
01+0109.	02+0263.	03+1145.	04+07.37	05+351.4	06+21.25	07+67.77	08+080.8
09+29.80	10+0.000	11+12.62					
01+0109.	02+0263.	03+1200.	04+07.79	05+319.4	06+31.91	07+69.35	08+077.9
09+29.81	10+0.000	11+12.63					
01+0115.	02+0263.	03+1200.	04+07.41	05+331.9	06+33.01	07+67.57	08+081.5
09+29.80	10+0.000	11+12.63					
01+0109.	02+0263.	03+1215.	04+07.49	05+315.6	06+35.36	07+69.11	08+075.6
09+29.82	10+0.000	11+12.63					
01+0109.	02+0263.	03+1230.	04+07.00	05+332.9	06+33.33	07+68.73	08+075.2
09+29.82	10+0.000	11+12.63					
01+0109.	02+0263.	03+1245.	04+07.05	05+320.1	06+34.52	07+68.83	08+074.4
09+29.82	10+0.000	11+12.64					
01+0109.	02+0263.	03+1300.	04+08.06	05+343.9	06+26.84	07+68.19	08+073.7
09+29.83	10+0.000	11+12.63					
01+0115.	02+0263.	03+1300.	04+07.40	05+328.4	06+34.49	07+68.72	08+074.7
09+29.82	10+0.000	11+12.63					
01+0109.	02+0263.	03+1315.	04+6.619	05+322.3	06+36.82	07+69.33	08+073.6
09+29.83	10+0.000	11+12.64					
01+0109.	02+0263.	03+1330.	04+07.64	05+342.1	06+33.36	07+070.2	08+072.2
09+29.83	10+0.000	11+12.63					
01+0109.	02+0263.	03+1345.	04+08.45	05+326.3	06+32.09	07+69.68	08+071.2
09+29.84	10+0.000	11+12.63					
01+0109.	02+0263.	03+1400.	04+6.772	05+312.8	06+33.54	07+070.4	08+070.9
09+29.84	10+0.000	11+12.63					
01+0115.	02+0263.	03+1400.	04+07.37	05+325.9	06+35.58	07+69.91	08+072.0
09+29.83	10+0.000	11+12.63					
01+0109.	02+0263.	03+1415.	04+07.89	05+300.8	06+17.94	07+070.5	08+070.1
09+29.83	10+0.000	11+12.64					
01+0109.	02+0263.	03+1430.	04+6.136	05+324.0	06+37.31	07+070.5	08+070.8
09+29.83	10+0.000	11+12.64					
01+0109.	02+0263.	03+1445.	04+5.957	05+323.6	06+31.14	07+69.66	08+071.4
09+29.83	10+0.000	11+12.64					
01+0109.	02+0263.	03+1500.	04+5.944	05+307.3	06+25.73	07+69.87	08+070.8
09+29.83	10+0.000	11+12.63					
01+0115.	02+0263.	03+1500.	04+6.481	05+313.4	06+30.44	07+070.1	08+070.8
09+29.83	10+0.000	11+12.63					
01+0109.	02+0263.	03+1515.	04+4.533	05+303.1	06+37.54	07+070.1	08+070.8
09+29.83	10+0.000	11+12.64					
01+0109.	02+0263.	03+1530.	04+5.178	05+296.6	06+31.37	07+070.7	08+070.3
09+29.84	10+0.000	11+12.64					
01+0109.	02+0263.	03+1545.	04+5.092	05+352.2	06+32.98	07+071.2	08+69.68
09+29.83	10+0.000	11+12.63					
01+0109.	02+0263.	03+1600.	04+6.634	05+345.9	06+24.47	07+070.7	08+69.83
09+29.83	10+0.000	11+12.64					
01+0115.	02+0263.	03+1600.	04+5.359	05+325.0	06+40.52	07+070.7	08+070.2
09+29.83	10+0.000	11+12.64					
01+0109.	02+0263.	03+1615.	04+5.750	05+356.7	06+21.64	07+69.49	08+071.2
09+29.83	10+0.000	11+12.63					
01+0109.	02+0263.	03+1630.	04+6.974	05+2.378	06+17.09	07+69.32	08+070.1
09+29.83	10+0.000	11+12.63					
01+0109.	02+0263.	03+1645.	04+5.541	05+348.2	06+26.97	07+69.43	08+69.26
09+29.83	10+0.000	11+12.63					
01+0109.	02+0263.	03+1700.	04+6.607	05+325.6	06+32.33	07+69.87	08+67.33
09+29.83	10+0.000	11+12.62					
01+0115.	02+0263.	03+1700.	04+6.218	05+348.9	06+28.57	07+69.53	08+69.46
09+29.83	10+0.000	11+12.62					
01+0109.	02+0263.	03+1715.	04+5.759	05+336.2	06+31.91	07+69.55	08+66.62
09+29.84	10+0.000	11+12.61					
01+0109.	02+0263.	03+1730.	04+5.688	05+317.2	06+34.04	07+69.57	08+65.91
09+29.84	10+0.000	11+12.62					
01+0109.	02+0263.	03+1745.	04+4.339	05+323.8	06+31.12	07+69.10	08+64.01
09+29.85	10+0.000	11+12.61					
01+0109.	02+0263.	03+1800.	04+4.395	05+310.4	06+30.71	07+68.15	08+64.68
09+29.85	10+0.000	11+12.61					
01+0115.	02+0263.	03+1800.	04+5.045	05+321.9	06+33.34	07+69.09	08+65.31
09+29.84	10+0.000	11+12.61					
01+0109.	02+0263.	03+1815.	04+3.583	05+300.2	06+22.68	07+67.26	08+65.85
09+29.85	10+0.000	11+12.61					
01+0109.	02+0263.	03+1830.	04+3.308	05+332.7	06+32.74	07+66.35	08+67.44
09+29.85	10+0.000	11+12.60					
01+0109.	02+0263.	03+1845.	04+3.173	05+332.9	06+37.78	07+65.36	08+070.1
09+29.85	10+0.000	11+12.60					
01+0109.	02+0263.	03+1900.	04+2.700	05+338.5	06+26.74	07+64.56	08+072.3
09+29.85	10+0.000	11+12.59					
01+0115.	02+0263.	03+1900.	04+3.191	05+325.8	06+34.08	07+65.88	08+o8.93
09+29.85	10+0.000	11+12.59					
01+0109.	02+0263.	03+1915.	04+0.905	05+307.2	06+69.57	07+63.50	08+075.3
09+29.86	10+0.000	11+12.59					
01+0109.	02+0263.	03+1930.	04+0.704	05+38.21	06+070.6	07+62.35	08+081.1
09+29.86	10+0.000	11+12.59					
01+0109.	02+0263.	03+1945.	04+0.935	05+290.6	06+35.75	07+61.28	08+087.6
09+29.87	10+0.000	11+12.59					
01+0109.	02+0263.	03+2000.	04+0.796	05+296.5	06+087.7	07+60.57	08+090.9
09+29.88	10+0.000	11+12.58					
01+0115.	02+0263.	03+2000.	04+0.835	05+313.7	06+076.9	07+61.92	08+083.7

09+29.87	10+0.000	11+12.58					
01+0109.	02+0263.	03+2015.	04+1.338	05+281.0	06+52.54	07+60.46	08+091.8
09+29.88	10+0.000	11+12.57					
01+0109.	02+0263.	03+2030.	04+1.001	05+359.9	06+67.97	07+60.33	08+092.3
09+29.89	10+0.000	11+12.57					
01+0109.	02+0263.	03+2045.	04+1.566	05+3.947	06+50.96	07+60.25	08+092.8
09+29.89	10+0.000	11+12.56					
01+0109.	02+0263.	03+2100.	04+1.538	05+26.81	06+16.20	07+60.77	08+092.0
09+29.89	10+0.000	11+12.56					
01+0115.	02+0263.	03+2100.	04+1.361	05+355.6	06+63.18	07+60.45	08+092.2
09+29.89	10+0.000	11+12.56					
01+0109.	02+0263.	03+2115.	04+1.481	05+27.60	06+35.97	07+60.93	08+090.7
09+29.89	10+0.000	11+12.56					
01+0109.	02+0263.	03+2130.	04+1.009	05+121.5	06+24.39	07+60.63	08+091.5
09+29.90	10+0.000	11+12.56					
01+0109.	02+0263.	03+2145.	04+1.094	05+16.83	06+54.11	07+59.76	08+093.2
09+29.89	10+0.000	11+12.56					
01+0109.	02+0263.	03+2200.	04+1.702	05+15.66	06+19.67	07+60.06	08+089.0
09+29.90	10+0.000	11+12.55					
01+0115.	02+0263.	03+2200.	04+1.321	05+42.12	06+57.79	07+60.34	08+091.1
09+29.90	10+0.000	11+12.55					
01+0109.	02+0263.	03+2215.	04+1.160	05+337.5	06+40.94	07+60.10	08+087.1
09+29.90	10+0.000	11+12.55					
01+0109.	02+0263.	03+2230.	04+1.984	05+355.1	06+25.57	07+59.41	08+087.4
09+29.90	10+0.000	11+12.55					
01+0109.	02+0263.	03+2245.	04+1.938	05+18.24	06+13.87	07+60.29	08+083.4
09+29.91	10+0.000	11+12.54					
01+0109.	02+0263.	03+2300.	04+1.585	05+07.89	06+26.46	07+60.15	08+083.0
09+29.91	10+0.000	11+12.55					
01+0115.	02+0263.	03+2300.	04+1.667	05+0.906	06+31.70	07+59.99	08+085.2
09+29.91	10+0.000	11+12.55					
01+0109.	02+0263.	03+2315.	04+2.009	05+340.0	06+34.51	07+59.97	08+081.9
09+29.91	10+0.000	11+12.54					
01+0109.	02+0263.	03+2330.	04+3.653	05+335.6	06+13.75	07+60.43	08+079.0
09+29.90	10+0.000	11+12.55					
01+0109.	02+0263.	03+2345.	04+4.214	05+336.8	06+15.95	07+60.64	08+077.2
09+29.89	10+0.000	11+12.54					
01+0109.	02+0263.	03+2400.	04+4.340	05+338.4	06+19.63	07+60.57	08+077.2
09+29.89	10+0.000	11+12.54					
01+0115.	02+0263.	03+2400.	04+3.554	05+337.6	06+22.25	07+60.40	08+078.8
09+29.90	10+0.000	11+12.54					
01+0109.	02+0264.	03+0015.	04+3.995	05+328.8	06+28.55	07+59.82	08+080.6
09+29.89	10+0.000	11+12.54					
01+0109.	02+0264.	03+0030.	04+3.521	05+301.0	06+22.38	07+58.94	08+083.5
09+29.91	10+0.000	11+12.54					
01+0109.	02+0264.	03+0045.	04+3.648	05+338.6	06+29.63	07+58.34	08+083.5
09+29.91	10+0.000	11+12.53					
01+0109.	02+0264.	03+0100.	04+3.460	05+337.4	06+27.25	07+58.09	08+082.5
09+29.91	10+0.000	11+12.53					
01+0115.	02+0264.	03+0100.	04+3.656	05+326.3	06+31.08	07+58.80	08+082.5
09+29.90	10+0.000	11+12.53					
01+0109.	02+0264.	03+0115.	04+2.655	05+327.4	06+35.11	07+57.53	08+082.1
09+29.91	10+0.000	11+12.53					
01+0109.	02+0264.	03+0130.	04+2.356	05+07.76	06+26.07	07+57.23	08+081.7
09+29.91	10+0.000	11+12.53					
01+0109.	02+0264.	03+0145.	04+1.842	05+27.22	06+29.21	07+57.10	08+081.3
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0200.	04+2.315	05+19.24	06+54.00	07+56.90	08+081.2
09+29.92	10+0.000	11+12.52					
01+0115.	02+0264.	03+0200.	04+2.292	05+5.518	06+43.64	07+57.19	08+081.6
09+29.91	10+0.000	11+12.52					
01+0109.	02+0264.	03+0215.	04+3.551	05+343.6	06+16.34	07+56.71	08+080.5
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0230.	04+3.098	05+333.0	06+17.57	07+56.28	08+080.5
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0245.	04+3.390	05+316.1	06+20.78	07+55.89	08+081.1
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0300.	04+2.872	05+328.3	06+20.95	07+55.69	08+081.8
09+29.92	10+0.000	11+12.52					
01+0115.	02+0264.	03+0300.	04+3.227	05+330.4	06+21.40	07+56.14	08+081.0
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0315.	04+3.889	05+342.2	06+19.23	07+55.67	08+082.4
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0330.	04+4.820	05+339.6	06+15.64	07+55.85	08+083.0
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0345.	04+4.252	05+346.2	06+15.94	07+55.88	08+083.7
09+29.92	10+0.000	11+12.52					
01+0109.	02+0264.	03+0400.	04+5.786	05+357.9	06+14.36	07+56.21	08+084.2
09+29.92	10+0.000	11+12.51					
01+0115.	02+0264.	03+0400.	04+4.687	05+346.5	06+17.81	07+55.90	08+083.3
09+29.92	10+0.000	11+12.51					
01+0109.	02+0264.	03+0415.	04+6.274	05+349.7	06+16.51	07+57.13	08+083.0
09+29.92	10+0.000	11+12.51					
01+0109.	02+0264.	03+0430.	04+4.996	05+337.8	06+18.33	07+56.87	08+083.3
09+29.93	10+0.000	11+12.51					
01+0109.	02+0264.	03+0445.	04+3.978	05+340.8	06+20.54	07+56.32	08+084.3
09+29.93	10+0.000	11+12.51					
01+0109.	02+0264.	03+0500.	04+3.007	05+347.9	06+19.54	07+56.19	08+085.0
09+29.94	10+0.000	11+12.52					

01+0115.	02+0264.	03+0500.	04+4.564	05+344.1	06+19.41	07+56.63	08+083.9
09+29.93	10+0.000	11+12.52					
01+0109.	02+0264.	03+0515.	04+2.741	05+346.2	06+26.86	07+56.35	08+085.2
09+29.94	10+0.000	11+12.51					
01+0109.	02+0264.	03+0530.	04+2.545	05+326.2	06+37.84	07+56.26	08+085.4
09+29.94	10+0.000	11+12.51					
01+0109.	02+0264.	03+0545.	04+2.212	05+329.4	06+30.93	07+56.09	08+085.7
09+29.95	10+0.000	11+12.51					
01+0109.	02+0264.	03+0600.	04+2.884	05+324.5	06+24.98	07+56.00	08+086.0
09+29.95	10+0.000	11+12.51					
01+0115.	02+0264.	03+0600.	04+2.595	05+331.7	06+31.64	07+56.17	08+085.6
09+29.95	10+0.000	11+12.51					
01+0109.	02+0264.	03+0615.	04+3.291	05+353.1	06+21.62	07+56.10	08+085.7
09+29.96	10+0.000	11+12.51					
01+0109.	02+0264.	03+0630.	04+2.204	05+359.5	06+67.74	07+56.21	08+085.3
09+29.96	10+0.000	11+12.51					
01+0109.	02+0264.	03+0645.	04+1.999	05+266.1	06+42.63	07+55.15	08+087.4
09+29.97	10+0.000	11+12.50					
01+0109.	02+0264.	03+0700.	04+4.059	05+287.8	06+10.73	07+54.96	08+089.0
09+29.97	10+0.000	11+12.51					
01+0115.	02+0264.	03+0700.	04+2.888	05+312.5	06+56.25	07+55.61	08+086.9
09+29.97	10+0.000	11+12.51					
01+0109.	02+0264.	03+0715.	04+3.706	05+295.7	06+14.40	07+55.57	08+088.9
09+29.98	10+0.000	11+12.50					
01+0109.	02+0264.	03+0730.	04+3.327	05+316.8	06+34.25	07+56.38	08+088.7
09+29.98	10+0.000	11+12.51					
01+0109.	02+0264.	03+0745.	04+3.209	05+344.9	06+27.37	07+57.47	08+087.7
09+29.99	10+0.000	11+12.52					
01+0109.	02+0264.	03+0800.	04+4.031	05+351.2	06+16.29	07+58.04	08+087.2
09+30.00	10+0.000	11+12.52					
01+0115.	02+0264.	03+0800.	04+3.568	05+327.3	06+33.29	07+56.86	08+088.2
09+29.99	10+0.000	11+12.52					
01+0109.	02+0264.	03+0815.	04+3.669	05+347.8	06+18.97	07+59.06	08+086.2
09+30.01	10+0.000	11+12.53					
01+0109.	02+0264.	03+0830.	04+4.603	05+350.5	06+21.60	07+59.89	08+084.4
09+30.02	10+0.000	11+12.55					
01+0109.	02+0264.	03+0845.	04+4.650	05+353.7	06+19.93	07+60.30	08+082.5
09+30.02	10+0.000	11+12.56					
01+0109.	02+0264.	03+0900.	04+4.652	05+3.363	06+21.72	07+61.18	08+081.0
09+30.03	10+0.000	11+12.56					
01+0115.	02+0264.	03+0900.	04+4.394	05+353.8	06+21.39	07+60.11	08+083.5
09+30.02	10+0.000	11+12.56					
01+0109.	02+0264.	03+0915.	04+5.430	05+6.277	06+16.68	07+61.72	08+080.0
09+30.04	10+0.000	11+12.56					
01+0109.	02+0264.	03+0930.	04+4.774	05+07.85	06+24.78	07+62.61	08+078.9
09+30.04	10+0.000	11+12.58					
01+0109.	02+0264.	03+0945.	04+5.089	05+0.200	06+17.82	07+63.13	08+077.6
09+30.05	10+0.000	11+12.58					
01+0109.	02+0264.	03+1000.	04+4.039	05+16.28	06+29.28	07+64.36	08+075.0
09+30.06	10+0.000	11+12.59					
01+0115.	02+0264.	03+1000.	04+4.833	05+07.47	06+23.33	07+62.95	08+077.9
09+30.05	10+0.000	11+12.59					
01+0109.	02+0264.	03+1015.	04+3.868	05+14.62	06+31.90	07+65.44	08+071.8
09+30.07	10+0.000	11+12.59					
01+0109.	02+0264.	03+1030.	04+3.63[illegible]	05+6.566	06+40.27	07+65.96	08+69.61
09+30.07	10+0.000	11+12.59					
01+0109.	02+0264.	03+1045.	04+3.752	05+359.2	06+31.03	07+66.92	08+69.18
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1100.	04+4.713	05+22.75	06+26.52	07+66.93	08+68.59
09+30.08	10+0.000	11+12.60					
01+0115.	02+0264.	03+1100.	04+3.991	05+10.99	06+33.87	07+66.31	08+69.79
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1115.	04+3.691	05+19.08	06+61.02	07+68.00	08+67.87
09+30.08	10+0.000	11+12.60					
01+0109.	02+0264.	03+1130.	04+3.794	05+15.77	06+56.99	07+69.13	08+65.93
09+30.08	10+0.000	11+12.60					
01+0109.	02+0264.	03+1145.	04+3.962	05+61.85	06+47.13	07+68.90	08+65.43
09+30.08	10+0.000	11+12.60					
01+0109.	02+0264.	03+1200.	04+3.635	05+078.7	06+60.07	07+69.61	08+63.52
09+30.07	10+0.000	11+12.60					
01+0115.	02+0264.	03+1200.	04+3.771	05+44.54	06+62.11	07+68.91	08+65.69
09+30.08	10+0.000	11+12.60					
01+0109.	02+0264.	03+1215.	04+3.761	05+336.5	06+61.76	07+070.5	08+62.46
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1230.	04+3.225	05+29.45	06+080.9	07+071.5	08+57.94
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1245.	04+2.749	05+122.1	06+42.40	07+071.7	08+52.79
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1300.	04+3.815	05+076.7	06+57.65	07+071.5	08+52.65
09+30.07	10+0.000	11+12.60					
01+0115.	02+0264.	03+1300.	04+3.387	05+66.05	06+080.9	07+071.3	08+56.46
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1315.	04+3.827	05+69.99	06+60.45	07+071.5	08+51.00
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1330.	04+2.909	05+128.4	06+079.8	07+072.4	08+48.91
09+30.06	10+0.000	11+12.60					
01+0109.	02+0264.	03+1345.	04+4.466	05+357.1	06+37.89	07+072.4	08+47.20
09+30.07	10+0.000	11+12.60					
01+0109.	02+0264.	03+1400.	04+3.322	05+1.644	06+42.14	07+072.1	08+46.31

09+30.06	10+0.000	11+12.60					
01+0115.	02+0264.	03+1400.	04+3.631	05+26.48	06+071.7	07+072.1	08+48.36
09+30.06	10+0.000	11+12.60					
01+0109.	02+0264.	03+1415.	04+3.487	05+07.70	06+66.86	07+073.5	08+44.38
09+30.06	10+0.000	11+12.60					
01+0109.	02+0264.	03+1430.	04+3.173	05+42.96	06+59.17	07+073.8	08+43.78
09+30.05	10+0.000	11+12.60					
01+0109.	02+0264.	03+1445.	04+4.382	05+104.4	06+077.7	07+073.8	08+44.54
09+30.05	10+0.000	11+12.60					
01+0109.	02+0264.	03+1500.	04+6.515	05+136.0	06+14.17	07+69.61	08+59.52
09+30.05	10+0.000	11+12.59					
01+0115.	02+0264.	03+1500.	04+4.389	05+085.3	06+076.6	07+072.7	08+48.05
09+30.05	10+0.000	11+12.59					
01+0109.	02+0264.	03+1515.	04+4.859	05+126.5	06+23.98	07+68.74	08+61.74
09+30.05	10+0.000	11+12.59					
01+0109.	02+0264.	03+1530.	04+5.455	05+159.9	06+18.44	07+68.54	08+62.56
09+30.04	10+0.000	11+12.58					
01+0109.	02+0264.	03+1545.	04+5.454	05+138.3	06+14.10	07+67.90	08+63.09
09+30.04	10+0.000	11+12.58					
01+0109.	02+0264.	03+1600.	04+4.873	05+143.1	06+17.63	07+68.00	08+63.27
09+30.04	10+0.000	11+12.57					
01+0115.	02+0264.	03+1600.	04+5.160	05+142.1	06+22.26	07+68.30	08+62.66
09+30.04	10+0.000	11+12.57					
01+0109.	02+0264.	03+1615.	04+5.851	05+140.6	06+21.38	07+68.16	08+62.31
09+30.04	10+0.000	11+12.56					
01+0109.	02+0264.	03+1630.	04+5.269	05+149.0	06+18.18	07+67.99	08+61.82
09+30.04	10+0.000	11+12.56					
01+0109.	02+0264.	03+1645.	04+5.584	05+174.5	06+20.95	07+68.19	08+62.43
09+30.04	10+0.000	11+12.56					
01+0109.	02+0264.	03+1700.	04+5.922	05+171.6	06+29.95	07+68.41	08+62.34
09+30.04	10+0.000	11+12.56					
01+0115.	02+0264.	03+1700.	04+5.656	05+158.7	06+27.13	07+68.19	08+62.23
09+30.04	10+0.000	11+12.56					
01+0109.	02+0264.	03+1715.	04+6.018	05+151.5	06+15.96	07+68.06	08+63.37
09+30.05	10+0.000	11+12.56					
01+0109.	02+0264.	03+1730.	04+5.362	05+141.3	06+18.87	07+67.49	08+64.82
09+30.05	10+0.000	11+12.56					
01+0109.	02+0264.	03+1745.	04+5.585	05+135.1	06+15.12	07+67.07	08+65.58
09+30.05	10+0.000	11+12.55					
01+0109.	02+0264.	03+1800.	04+5.023	05+145.8	06+10.64	07+66.50	08+65.93
09+30.05	10+0.000	11+12.55					
01+0115.	02+0264.	03+1800.	04+5.497	05+143.4	06+16.54	07+67.28	08+64.92
09+30.05	10+0.000	11+12.55					
01+0109.	02+0264.	03+1815.	04+4.822	05+146.5	06+10.90	07+65.92	08+66.69
09+30.05	10+0.000	11+12.54					
01+0109.	02+0264.	03+1830.	04+3.622	05+143.6	06+10.68	07+65.07	08+68.50
09+30.05	10+0.000	11+12.54					
01+0109.	02+0264.	03+1845.	04+2.694	05+144.0	06+11.39	07+64.24	08+071.4
09+30.04	10+0.000	11+12.53					
01+0109.	02+0264.	03+1900.	04+2.238	05+139.7	06+11.25	07+63.35	08+074.6
09+30.04	10+0.000	11+12.53					
01+0115.	02+0264.	03+1900.	04+3.344	05+143.4	06+11.32	07+64.65	08+070.3
09+30.04	10+0.000	11+12.53					
01+0109.	02+0264.	03+1915.	04+1.939	05+135.9	06+10.19	07+62.38	08+078.1
09+30.04	10+0.000	11+12.52					
01+0109.	02+0264.	03+1930.	04+1.280	05+128.1	06+21.98	07+61.43	08+080.6
09+30.03	10+0.000	11+12.52					
01+0109.	02+0264.	03+1945.	04+1.210	05+144.2	06+21.51	07+60.52	08+083.6
09+30.03	10+0.000	11+12.51					
01+0109.	02+0264.	03+2000.	04+0.751	05+152.6	06+66.88	07+59.81	08+086.3
09+30.03	10+0.000	11+12.51					
01+0115.	02+0264.	03+2000.	04+1.295	05+138.5	06+35.42	07+61.04	08+082.1
09+30.03	10+0.000	11+12.51					
01+0109.	02+0264.	03+2015.	04+0.840	05+276.2	06+63.85	07+59.18	08+089.3
09+30.04	10+0.000	11+12.50					
01+0109.	02+0264.	03+2030.	04+0.793	05+262.7	06+092.9	07+58.68	08+091.6
09+30.04	10+0.000	11+12.50					
01+0109.	02+0264.	03+2045.	04+0.676	05+274.7	06+65.57	07+58.39	08+093.5
09+30.03	10+0.000	11+12.49					
01+0109.	02+0264.	03+2100.	04+0.957	05+298.4	06+33.74	07+57.86	08+094.7
09+30.03	10+0.000	11+12.49					
01+0115.	02+0264.	03+2100.	04+0.817	05+284.0	06+66.43	07+58.53	08+092.3
09+30.04	10+0.000	11+12.49					
01+0109.	02+0264.	03+2115.	04+1.141	05+313.1	06+37.00	07+57.49	08+095.6
09+30.03	10+0.000	11+12.48					
01+0109.	02+0264.	03+2130.	04+0.909	05+329.7	06+46.83	07+57.33	08+096.1
09+30.04	10+0.000	11+12.48					
01+0109.	02+0264.	03+2145.	04+0.671	05+359.0	06+085.0	07+57.[illegible]	08+096.6
09+30.04	10+0.000	11+12.48					
01+0109.	02+0264.	03+2200.	04+0.740	05+242.2	06+64.26	07+57.31	08+096.7
09+30.04	10+0.000	11+12.48					
01+0115.	02+0264.	03+2200.	04+0.865	05+310.1	06+69.17	07+57.34	08+096.2
09+30.04	10+0.000	11+12.48					
01+0109.	02+0264.	03+2215.	04+0.764	05+342.8	06+073.6	07+57.04	08+097.0
09+30.04	10+0.000	11+12.48					
01+0109.	02+0264.	03+2230.	04+0.779	05+309.9	06+61.14	07+56.83	08+097.6
09+30.04	10+0.000	11+12.47					
01+0109.	02+0264.	03+2245.	04+0.629	05+296.4	06+084.6	07+56.67	08+097.8
09+30.04	10+0.000	11+12.47					

01+0109.	02+0264.	03+2300.	04+0.661	05+21.99	06+53.42	07+56.63	08+097.8
09+30.04	10+0.000	11+12.47					
01+0115.	02+0264.	03+2300.	04+0.708	05+339.4	06+075.1	07+56.79	08+097.5
09+30.04	10+0.000	11+12.47					
01+0109.	02+0264.	03+2315.	04+0.714	05+312.6	06+56.19	07+56.45	08+098.0
09+30.04	10+0.000	11+12.46					
01+0109.	02+0264.	03+2330.	04+0.594	05+356.9	06+075.6	07+56.43	08+098.1
09+30.03	10+0.000	11+12.46					
01+0109.	02+0264.	03+2345.	04+0.572	05+180.4	06+070.0	07+56.39	08+098.0
09+30.03	10+0.000	11+12.46					
01+0109.	02+0264.	03+2400.	04+0.607	05+135.8	06+094.7	07+56.25	08+097.9
09+30.03	10+0.000	11+12.46					
01+0115.	02+0264.	03+2400.	04+0.622	05+303.2	06+096.1	07+56.38	08+098.0
09+30.03	10+0.000	11+12.46					
01+0109.	02+0265.	03+0015.	04+0.822	05+66.87	06+68.20	07+56.03	08+098.1
09+30.02	10+0.000	11+12.46					
01+0109.	02+0265.	03+0030.	04+0.813	05+40.57	06+66.40	07+55.75	08+098.2
09+30.02	10+0.000	11+12.46					
01+0109.	02+0265.	03+0045.	04+0.933	05+289.8	06+25.24	07+55.38	08+098.5
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0100.	04+0.739	05+325.1	06+44.78	07+55.27	08+098.6
09+30.02	10+0.000	11+12.45					
01+0115.	02+0265.	03+0100.	04+0.827	05+340.7	06+075.1	07+55.61	08+098.3
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0115.	04+1.023	05+280.6	06+17.22	07+55.30	08+098.6
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0130.	04+0.679	05+255.7	06+25.22	07+55.25	08+098.4
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0145.	04+1.159	05+290.8	06+30.51	07+55.30	08+098.3
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0200.	04+0.670	05+225.2	06+090.6	07+55.25	08+098.3
09+30.02	10+0.000	11+12.45					
01+0115.	02+0265.	03+0200.	04+0.883	05+272.6	06+48.96	07+55.27	08+098.4
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0215.	04+0.620	05+356.3	06+28.86	07+55.43	08+098.2
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0230.	04+0.755	05+092.2	06+16.76	07+55.70	08+097.9
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0245.	04+0.721	05+61.02	06+62.76	07+55.72	08+097.6
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0300.	04+0.713	05+296.9	06+55.93	07+55.69	08+097.7
09+30.02	10+0.000	11+12.45					
01+0115.	02+0265.	03+0300.	04+0.702	05+30.78	06+074.2	07+55.63	08+097.9
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0315.	04+0.936	05+302.4	06+088.8	07+55.76	08+097.8
09+30.02	10+0.000	11+12.45					
01+0109.	02+0265.	03+0330.	04+0.622	05+109.1	06+094.9	07+55.83	08+097.7
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0345.	04+0.741	05+327.8	06+100.7	07+55.68	08+097.7
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0400.	04+0.616	05+36.32	06+070.1	07+55.42	08+098.1
09+30.02	10+0.000	11+12.44					
01+0115.	02+0265.	03+0400.	04+0.729	05+21.15	06+095.1	07+55.67	08+097.8
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0415.	04+1.130	05+13.74	06+37.33	07+55.42	08+098.4
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0430.	04+0.989	05+25.51	06+28.39	07+55.28	08+098.5
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0445.	04+1.024	05+56.69	06+26.08	07+55.25	08+098.6
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0500.	04+0.967	05+358.3	06+63.13	07+55.08	08+098.8
09+30.02	10+0.000	11+12.44					
01+0115.	02+0265.	03+0500.	04+1.028	05+26.63	06+45.26	07+55.26	08+098.6
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0515.	04+0.997	05+19.26	06+36.20	07+55.08	08+098.8
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0530.	04+1.138	05+355.9	06+51.15	07+55.13	08+098.8
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0545.	04+0.755	05+43.46	06+31.92	07+55.19	08+098.7
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0600.	04+1.075	05+080.8	06+62.06	07+55.12	08+098.5
09+30.01	10+0.000	11+12.44					
01+0115.	02+0265.	03+0600.	04+0.991	05+32.17	06+54.30	07+55.13	08+098.7
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0615.	04+1.058	05+07.94	06+53.48	07+55.29	08+098.4
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0630.	04+0.837	05+13.08	06+38.40	07+55.41	08+098.1
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0645.	04+0.844	05+25.74	06+33.52	07+55.44	08+098.1
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0700.	04+0.793	05+40.56	06+29.90	07+55.68	08+098.1
09+30.02	10+0.000	11+12.44					
01+0115.	02+0265.	03+0700.	04+0.883	05+22.98	06+41.31	07+55.45	08+098.2
09+30.01	10+0.000	11+12.44					
01+0109.	02+0265.	03+0715.	04+1.287	05+25.18	06+21.67	07+56.39	08+097.8
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0730.	04+1.084	05+66.06	06+40.85	07+58.00	08+096.6
09+30.02	10+0.000	11+12.44					
01+0109.	02+0265.	03+0745.	04+1.393	05+57.15	06+47.71	07+60.12	08+094.0

09+30.04	10+0.000	11+12.45					
01+0109.	02+0265.	03+0800.	04+1.331	05+076.4	06+072.4	07+62.33	08+090.6
09+30.04	10+0.000	11+12.45					
01+0115.	02+0265.	03+0800.	04+1.274	05+52.14	06+51.25	07+59.21	08+094.7
09+30.03	10+0.000	11+12.45					
01+0109.	02+0265.	03+0815.	04+2.312	05+104.4	06+32.33	07+64.15	08+087.0
09+30.05	10+0.000	11+12.46					
01+0109.	02+0265.	03+0830.	04+3.135	05+088.6	06+31.90	07+65.07	08+085.6
09+30.06	10+0.000	11+12.47					
01+0109.	02+0265.	03+0845.	04+3.396	05+102.3	06+36.77	07+65.85	08+085.2
09+30.06	10+0.000	11+12.48					
01+0109.	02+0265.	03+0900.	04+4.443	05+088.3	06+36.45	07+67.17	08+083.2
09+30.07	10+0.000	11+12.48					
01+0115.	02+0265.	03+0900.	04+3.322	05+095.9	06+35.21	07+65.56	08+085.3
09+30.06	10+0.000	11+12.48					
01+0109.	02+0265.	03+0915.	04+5.426	05+115.1	06+38.23	07+67.63	08+081.8
09+30.08	10+0.000	11+12.48					
01+0109.	02+0265.	03+0930.	04+07.04	05+125.8	06+17.48	07+66.75	08+081.9
09+30.08	10+0.000	11+12.49					
01+0109.	02+0265.	03+0945.	04+07.08	05+126.8	06+20.66	07+66.82	08+082.2
09+30.08	10+0.000	11+12.48					
01+0109.	02+0265.	03+1000.	04+07.83	05+127.5	06+23.34	07+67.67	08+081.3
09+30.08	10+0.000	11+12.49					
01+0115.	02+0265.	03+1000.	04+6.845	05+124.1	06+26.30	07+67.22	08+081.8
09+30.08	10+0.000	11+12.49					
01+0109.	02+0265.	03+1015.	04+08.42	05+109.0	06+31.76	07+69.02	08+079.8
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1030.	04+10.73	05+111.1	06+25.02	07+69.15	08+079.0
09+30.07	10+0.000	11+12.50					
01+0109.	02+0265.	03+1045.	04+09.41	05+109.3	06+25.26	07+68.87	08+079.1
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1100.	04+09.68	05+112.1	06+28.46	07+69.10	08+078.8
09+30.08	10+0.000	11+12.50					
01+0115.	02+0265.	03+1100.	04+09.56	05+110.4	06+27.76	07+69.04	08+079.2
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1115.	04+10.58	05+124.2	06+19.67	07+68.80	08+079.4
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1130.	04+09.86	05+117.7	06+21.89	07+68.73	08+081.1
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1145.	04+08.81	05+120.6	06+28.48	07+69.08	08+081.3
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1200.	04+09.77	05+121.4	06+22.09	07+68.68	08+082.6
09+30.08	10+0.000	11+12.50					
01+0115.	02+0265.	03+1200.	04+09.75	05+121.0	06+23.34	07+68.82	08+081.1
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1215.	04+08.95	05+126.4	06+18.86	07+68.83	08+082.6
09+30.08	10+0.000	11+12.50					
01+0109.	02+0265.	03+1230.	04+08.59	05+117.8	06+21.61	07+69.08	08+082.4
09+30.07	10+0.000	11+12.50					
01+0109.	02+0265.	03+1245.	04+09.35	05+122.3	06+21.14	07+68.64	08+082.9
09+30.07	10+0.000	11+12.50					
01+0109.	02+0265.	03+1300.	04+08.97	05+112.2	06+32.03	07+69.56	08+082.0
09+30.06	10+0.000	11+12.50					
01+0115.	02+0265.	03+1300.	04+08.97	05+119.9	06+24.40	07+69.03	08+082.5
09+30.07	10+0.000	11+12.50					
01+0109.	02+0265.	03+1315.	04+10.53	05+128.6	06+14.91	07+69.50	08+081.7
09+30.06	10+0.000	11+12.50					
01+0109.	02+0265.	03+1330.	04+09.12	05+117.2	06+27.47	07+69.72	08+082.2
09+30.06	10+0.000	11+12.50					
01+0109.	02+0265.	03+1345.	04+10.08	05+134.6	06+16.43	07+070.1	08+082.2
09+30.06	10+0.000	11+12.50					
01+0109.	02+0265.	03+1400.	04+09.12	05+125.0	06+18.97	07+070.1	08+082.9
09+30.06	10+0.000	11+12.50					
01+0115.	02+0265.	03+1400.	04+09.71	05+126.5	06+20.90	07+69.86	08+082.2
09+30.06	10+0.000	11+12.50					
01+0109.	02+0265.	03+1415.	04+08.28	05+111.2	06+31.33	07+070.2	08+083.6
09+30.06	10+0.000	11+12.50					
01+0109.	02+0265.	03+1430.	04+08.78	05+110.1	06+31.34	07+070.0	08+083.9
09+30.05	10+0.000	11+12.49					
01+0109.	02+0265.	03+1445.	04+08.25	05+109.6	06+29.69	07+69.71	08+084.2
09+30.05	10+0.000	11+12.49					
01+0109.	02+0265.	03+1500.	04+09.60	05+117.6	06+19.00	07+69.46	08+084.7
09+30.04	10+0.000	11+12.48					
01+0115.	02+0265.	03+1500.	04+08.73	05+112.2	06+28.41	07+69.84	08+084.1
09+30.05	10+0.000	11+12.48					
01+0109.	02+0265.	03+1515.	04+08.29	05+114.0	06+25.04	07+69.00	08+086.5
09+30.04	10+0.000	11+12.48					
01+0109.	02+0265.	03+1530.	04+6.779	05+103.2	06+30.93	07+69.34	08+087.4
09+30.03	10+0.000	11+12.48					
01+0109.	02+0265.	03+1545.	04+07.46	05+102.7	06+28.17	07+69.37	08+088.2
09+30.03	10+0.000	11+12.48					
01+0109.	02+0265.	03+1600.	04+08.80	05+113.0	06+23.78	07+69.51	08+088.7
09+30.02	10+0.000	11+12.48					
01+0115.	02+0265.	03+1600.	04+07.83	05+108.3	06+27.60	07+69.31	08+087.7
09+30.03	10+0.000	11+12.48					
01+0109.	02+0265.	03+1615.	04+08.70	05+121.5	06+17.61	07+69.39	08+089.0
09+30.02	10+0.000	11+12.48					
01+0109.	02+0265.	03+1630.	04+09.34	05+121.3	06+16.63	07+69.43	08+089.1
09+30.01	10+0.000	11+12.48					

01+0109.	02+0265.	03+1645.	04+09.23	05+115.3	06+19.00	07+69.31	08+089.3
09+30.01	10+0.000	11+12.48					
01+0109.	02+0265.	03+1700.	04+08.68	05+125.0	06+21.83	07+69.27	08+089.6
09+30.01	10+0.000	11+12.47					
01+0115.	02+0265.	03+1700.	04+08.99	05+120.8	06+19.17	07+69.35	08+089.3
09+30.01	10+0.000	11+12.47					
01+0109.	02+0265.	03+1715.	04+10.29	05+122.1	06+16.95	07+69.22	08+089.9
09+30.01	10+0.000	11+12.47					
01+0109.	02+0265.	03+1730.	04+09.90	05+125.4	06+17.78	07+69.08	08+090.4
09+30.01	10+0.000	11+12.47					
01+0109.	02+0265.	03+1745.	04+08.41	05+116.5	06+21.28	07+69.02	08+090.8
09+30.00	10+0.000	11+12.46					
01+0109.	02+0265.	03+1800.	04+09.09	05+122.4	06+17.79	07+68.97	08+091.1
09+30.00	10+0.000	11+12.46					
01+0115.	02+0265.	03+1800.	04+09.42	05+121.6	06+18.79	07+69.07	08+090.5
09+30.00	10+0.000	11+12.46					
01+0109.	02+0265.	03+1815.	04+08.47	05+122.1	06+15.22	07+68.79	08+091.4
09+30.00	10+0.000	11+12.46					
01+0109.	02+0265.	03+1830.	04+6.777	05+120.4	06+14.74	07+68.73	08+091.7
09+30.00	10+0.000	11+12.46					
01+0109.	02+0265.	03+1845.	04+08.50	05+115.6	06+16.81	07+68.67	08+091.8
09+29.99	10+0.000	11+12.45					
01+0109.	02+0265.	03+1900.	04+07.65	05+116.8	06+15.18	07+68.59	08+092.0
09+29.99	10+0.000	11+12.46					
01+0115.	02+0265.	03+1900.	04+07.85	05+118.7	06+15.73	07+68.69	08+091.7
09+29.99	10+0.000	11+12.46					
01+0109.	02+0265.	03+1915.	04+07.28	05+118.2	06+16.69	07+68.54	08+092.3
09+29.98	10+0.000	11+12.46					
01+0109.	02+0265.	03+1930.	04+07.95	05+117.6	06+15.34	07+68.52	08+092.6
09+29.98	10+0.000	11+12.46					
01+0109.	02+0265.	03+1945.	04+6.309	05+113.6	06+23.46	07+68.54	08+092.8
09+29.98	10+0.000	11+12.46					
01+0109.	02+0265.	03+2000.	04+07.58	05+114.8	06+15.93	07+68.56	08+092.9
09+29.98	10+0.000	11+12.46					
01+0115.	02+0265.	03+2000.	04+07.28	05+116.1	06+18.21	07+68.54	08+092.7
09+29.98	10+0.000	11+12.46					
01+0109.	02+0265.	03+2015.	04+08.83	05+114.6	06+14.51	07+68.61	08+093.1
09+29.97	10+0.000	11+12.45					
01+0109.	02+0265.	03+2030.	04+07.82	05+115.0	06+18.10	07+68.50	08+093.9
09+29.97	10+0.000	11+12.45					
01+0109.	02+0265.	03+2045.	04+08.39	05+115.1	06+16.56	07+68.45	08+094.5
09+29.97	10+0.000	11+12.45					
01+0109.	02+0265.	03+2100.	04+07.20	05+112.3	06+21.07	07+68.04	08+096.1
09+29.97	10+0.000	11+12.44					
01+0115.	02+0265.	03+2100.	04+08.06	05+114.3	06+17.74	07+68.40	08+094.4
09+29.97	10+0.000	11+12.44					
01+0109.	02+0265.	03+2115.	04+5.688	05+105.6	06+20.54	07+67.88	08+097.0
09+29.97	10+0.000	11+12.44					
01+0109.	02+0265.	03+2130.	04+5.304	05+110.4	06+22.73	07+68.06	08+097.1
09+29.96	10+0.000	11+12.44					
01+0109.	02+0265.	03+2145.	04+5.459	05+107.4	06+30.66	07+68.26	08+097.1
09+29.96	10+0.000	11+12.44					
01+0109.	02+0265.	03+2200.	04+4.752	05+102.8	06+31.91	07+68.48	08+097.1
09+29.95	10+0.000	11+12.44					
01+0115.	02+0265.	03+2200.	04+5.301	05+106.6	06+26.95	07+68.17	08+097.1
09+29.96	10+0.000	11+12.44					
01+0109.	02+0265.	03+2215.	04+5.039	05+112.2	06+19.51	07+68.63	08+097.0
09+29.95	10+0.000	11+12.44					
01+0109.	02+0265.	03+2230.	04+5.144	05+115.5	06+20.56	07+68.87	08+096.9
09+29.94	10+0.000	11+12.44					
01+0109.	02+0265.	03+2245.	04+5.338	05+119.3	06+18.28	07+69.13	08+097.0
09+29.93	10+0.000	11+12.44					
01+0109.	02+0265.	03+2300.	04+5.256	05+120.0	06+22.11	07+69.47	08+097.1
09+29.93	10+0.000	11+12.44					
01+0115.	02+0265.	03+2300.	04+5.194	05+116.7	06+20.40	07+69.03	08+097.0
09+29.94	10+0.000	11+12.44					
01+0109.	02+0265.	03+2315.	04+5.640	05+125.0	06+14.80	07+69.70	08+097.3
09+29.93	10+0.000	11+12.43					
01+0109.	02+0265.	03+2330.	04+6.231	05+121.7	06+13.80	07+69.94	08+097.3
09+29.92	10+0.000	11+12.43					
01+0109.	02+0265.	03+2345.	04+5.631	05+130.2	06+15.39	07+070.1	08+097.3
09+29.92	10+0.010	11+12.44					
01+0109.	02+0265.	03+2400.	04+07.50	05+135.0	06+18.32	07+070.2	08+097.5
09+29.91	10+0.010	11+12.44					
01+0115.	02+0265.	03+2400.	04+6.250	05+127.9	06+16.45	07+69.99	08+097.3
09+29.92	10+0.020	11+12.44					
01+0109.	02+0266.	03+0015.	04+5.992	05+136.1	06+19.52	07+070.5	08+097.7
09+29.91	10+0.010	11+12.44					
01+0109.	02+0266.	03+0030.	04+6.270	05+131.4	06+11.88	07+070.7	08+097.8
09+29.91	10+0.000	11+12.43					
01+0109.	02+0266.	03+0045.	04+6.514	05+132.6	06+15.03	07+071.0	08+097.7
09+29.90	10+0.000	11+12.43					
01+0109.	02+0266.	03+0100.	04+6.458	05+136.1	06+14.88	07+071.3	08+097.7
09+29.90	10+0.000	11+12.43					
01+0115.	02+0266.	03+0100.	04+6.308	05+134.0	06+15.69	07+070.9	08+097.7
09+29.90	10+0.010	11+12.43					
01+0109.	02+0266.	03+0115.	04+07.36	05+142.5	06+15.40	07+071.6	08+097.8
09+29.89	10+0.010	11+12.43					
01+0109.	02+0266.	03+0130.	04+07.88	05+142.9	06+13.17	07+071.9	08+097.7

09+29.88	10+0.010	11+12.43					
01+0109.	02+0266.	03+0145.	04+6.790	05+147.3	06+13.13	07+072.3	08+097.7
09+29.88	10+0.000	11+12.42					
01+0109.	02+0266.	03+0200.	04+07.52	05+149.2	06+14.13	07+072.5	08+097.6
09+29.88	10+0.000	11+12.43					
01+0115.	02+0266.	03+0200.	04+07.39	05+145.5	06+14.27	07+072.1	08+097.7
09+29.88	10+0.020	11+12.43					
01+0109.	02+0266.	03+0215.	04+6.822	05+156.8	06+15.62	07+072.7	08+097.6
09+29.87	10+0.010	11+12.43					
01+0109.	02+0266.	03+0230.	04+6.447	05+160.2	06+18.65	07+072.8	08+097.6
09+29.87	10+0.010	11+12.43					
01+0109.	02+0266.	03+0245.	04+6.040	05+161.2	06+19.65	07+073.0	08+097.6
09+29.86	10+0.000	11+12.42					
01+0109.	02+0266.	03+0300.	04+5.389	05+162.8	06+16.72	07+073.1	08+097.6
09+29.85	10+0.000	11+12.42					
01+0115.	02+0266.	03+0300.	04+6.174	05+160.2	06+17.86	07+072.9	08+097.6
09+29.86	10+0.020	11+12.42					
01+0109.	02+0266.	03+0315.	04+5.794	05+162.0	06+15.55	07+073.2	08+097.6
09+29.85	10+0.000	11+12.43					
01+0109.	02+0266.	03+0330.	04+6.149	05+160.3	06+16.33	07+073.4	08+097.6
09+29.84	10+0.000	11+12.43					
01+0109.	02+0266.	03+0345.	04+6.295	05+156.2	06+15.28	07+073.5	08+097.6
09+29.84	10+0.010	11+12.43					
01+0109.	02+0266.	03+0400.	04+07.34	05+157.2	06+15.27	07+073.7	08+097.6
09+29.83	10+0.000	11+12.42					
01+0115.	02+0266.	03+0400.	04+6.394	05+158.9	06+15.79	07+073.5	08+097.6
09+29.84	10+0.010	11+12.42					
01+0109.	02+0266.	03+0415.	04+6.017	05+158.2	06+18.87	07+073.8	08+097.6
09+29.83	10+0.000	11+12.43					
01+0109.	02+0266.	03+0430.	04+6.255	05+161.6	06+16.36	07+073.9	08+097.6
09+29.83	10+0.000	11+12.42					
01+0109.	02+0266.	03+0445.	04+4.769	05+162.2	06+18.85	07+073.9	08+097.5
09+29.83	10+0.000	11+12.42					
01+0109.	02+0266.	03+0500.	04+6.275	05+156.1	06+15.50	07+074.0	08+097.5
09+29.82	10+0.000	11+12.42					
01+0115.	02+0266.	03+0500.	04+5.829	05+159.5	06+17.63	07+073.9	08+097.6
09+29.83	10+0.000	11+12.42					
01+0109.	02+0266.	03+0515.	04+6.369	05+164.2	06+15.02	07+074.1	08+097.6
09+29.82	10+0.000	11+12.42					
01+0109.	02+0266.	03+0530.	04+07.39	05+160.2	06+14.99	07+074.2	08+097.6
09+29.82	10+0.000	11+12.42					
01+0109.	02+0266.	03+0545.	04+07.45	05+172.0	06+14.67	07+074.4	08+097.6
09+29.82	10+0.000	11+12.42					
01+0109.	02+0266.	03+0600.	04+6.929	05+163.3	06+17.91	07+074.6	08+097.7
09+29.81	10+0.000	11+12.42					
01+0115.	02+0266.	03+0600.	04+07.03	05+164.9	06+16.28	07+074.3	08+097.6
09+29.82	10+0.000	11+12.42					
01+0109.	02+0266.	03+0615.	04+07.27	05+162.3	06+16.45	07+074.7	08+097.7
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0630.	04+07.56	05+161.0	06+14.56	07+074.6	08+097.7
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0645.	04+6.316	05+165.7	06+19.13	07+074.6	08+097.8
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0700.	04+07.39	05+162.2	06+16.23	07+074.6	08+098.0
09+29.80	10+0.000	11+12.42					
01+0115.	02+0266.	03+0700.	04+07.13	05+162.8	06+16.76	07+074.6	08+097.8
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0715.	04+6.880	05+162.1	06+17.16	07+074.7	08+098.0
09+29.80	10+0.000	11+12.42					
01+0109.	02+0266.	03+0730.	04+08.46	05+173.3	06+15.84	07+074.9	08+098.0
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0745.	04+08.69	05+182.3	06+17.83	07+074.9	08+098.2
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0800.	04+07.22	05+196.8	06+19.43	07+074.9	08+098.3
09+29.81	10+0.000	11+12.42					
01+0115.	02+0266.	03+0800.	04+07.81	05+178.6	06+21.67	07+074.8	08+098.1
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0815.	04+09.00	05+189.1	06+17.92	07+074.8	08+098.4
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0830.	04+09.41	05+187.5	06+16.82	07+074.6	08+098.6
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0845.	04+07.48	05+189.3	06+18.50	07+074.6	08+098.8
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0900.	04+09.13	05+181.7	06+17.13	07+074.6	08+098.9
09+29.81	10+0.000	11+12.42					
01+0115.	02+0266.	03+0900.	04+08.75	05+186.9	06+17.87	07+074.6	08+098.7
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0915.	04+07.52	05+190.4	06+16.80	07+074.7	08+099.1
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0930.	04+6.946	05+197.6	06+21.13	07+075.0	08+099.1
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+0945.	04+07.24	05+205.9	06+20.74	07+075.9	08+099.0
09+29.81	10+0.000	11+12.44					
01+0109.	02+0266.	03+1000.	04+07.41	05+192.0	06+18.24	07+077.4	08+098.1
09+29.82	10+0.000	11+12.54					
01+0115.	02+0266.	03+1000.	04+07.28	05+196.4	06+20.22	07+075.7	08+098.8
09+29.81	10+0.000	11+12.54					
01+0109.	02+0266.	03+1015.	04+08.38	05+187.9	06+22.62	07+077.2	08+096.7
09+29.82	10+0.000	11+12.47					

01+0109.	02+0266.	03+1030.	04+08.91	05+174.9	06+19.86	07+075.8	08+095.9
09+29.81	10+0.000	11+12.50					
01+0109.	02+0266.	03+1045.	04+07.95	05+170.6	06+19.10	07+075.5	08+095.4
09+29.81	10+0.000	11+12.49					
01+0109.	02+0266.	03+1100.	04+08.65	05+173.4	06+19.49	07+075.6	08+094.4
09+29.81	10+0.000	11+12.42					
01+0115.	02+0266.	03+1100.	04+08.47	05+176.6	06+21.35	07+076.0	08+095.6
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+1115.	04+08.02	05+172.9	06+19.94	07+075.9	08+093.7
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+1130.	04+08.83	05+183.9	06+19.10	07+076.1	08+093.2
09+29.81	10+0.000	11+12.42					
01+0109.	02+0266.	03+1145.	04+10.12	05+185.1	06+19.95	07+076.1	08+092.8
09+29.80	10+0.000	11+12.43					
01+0109.	02+0266.	03+1200.	04+09.46	05+170.1	06+17.38	07+076.0	08+092.8
09+29.79	10+0.000	11+12.42					
01+0115.	02+0266.	03+1200.	04+09.11	05+178.0	06+20.21	07+076.0	08+093.1
09+29.80	10+0.000	11+12.42					
01+0109.	02+0266.	03+1215.	04+10.56	05+163.6	06+16.50	07+076.2	08+092.6
09+29.79	10+0.000	11+12.42					
01+0109.	02+0266.	03+1230.	04+10.30	05+165.7	06+19.40	07+076.2	08+092.7
09+29.79	10+0.000	11+12.42					
01+0109.	02+0266.	03+1245.	04+09.46	05+159.7	06+19.40	07+076.3	08+092.8
09+29.78	10+0.000	11+12.42					
01+0109.	02+0266.	03+1300.	04+10.76	05+169.0	06+19.43	07+076.3	08+092.7
09+29.78	10+0.000	11+12.42					
01+0115.	02+0266.	03+1300.	04+10.27	05+164.5	06+19.02	07+076.2	08+092.7
09+29.78	10+0.000	11+12.42					
01+0109.	02+0266.	03+1315.	04+11.11	05+164.4	06+18.34	07+075.9	08+093.0
09+29.77	10+0.000	11+12.42					
01+0109.	02+0266.	03+1330.	04+10.28	05+156.1	06+15.27	07+075.2	08+093.8
09+29.77	10+0.000	11+12.42					
01+0109.	02+0266.	03+1345.	04+10.72	05+158.1	06+16.41	07+075.2	08+094.6
09+29.76	10+0.000	11+12.42					
01+0109.	02+0266.	03+1400.	04+09.82	05+169.2	06+16.49	07+075.6	08+094.8
09+29.75	10+0.000	11+12.42					
01+0115.	02+0266.	03+1400.	04+10.48	05+161.9	06+17.45	07+075.5	08+094.1
09+29.76	10+0.000	11+12.42					
01+0109.	02+0266.	03+1415.	04+11.12	05+176.7	06+18.54	07+075.9	08+094.5
09+29.75	10+0.000	11+12.42					
01+0109.	02+0266.	03+1430.	04+09.37	05+173.0	06+19.61	07+076.0	08+094.1
09+29.74	10+0.000	11+12.42					
01+0109.	02+0266.	03+1445.	04+11.08	05+175.1	06+16.42	07+075.8	08+093.8
09+29.74	10+0.000	11+12.42					
01+0109.	02+0266.	03+1500.	04+10.06	05+175.5	06+20.10	07+075.9	08+093.7
09+29.73	10+0.000	11+12.42					
01+0115.	02+0266.	03+1500.	04+10.41	05+175.1	06+18.76	07+075.9	08+094.0
09+29.74	10+0.000	11+12.42					
01+0109.	02+0266.	03+1515.	04+12.19	05+170.2	06+15.98	07+075.9	08+093.4
09+29.73	10+0.000	11+12.41					
01+0109.	02+0266.	03+1530.	04+11.84	05+171.0	06+16.43	07+075.7	08+093.5
09+29.73	10+0.000	11+12.41					
01+0109.	02+0266.	03+1545.	04+10.32	05+174.3	06+19.20	07+075.6	08+093.9
09+29.73	10+0.000	11+12.41					
01+0109.	02+0266.	03+1600.	04+11.34	05+166.8	06+18.16	07+075.4	08+093.8
09+29.72	10+0.000	11+12.40					
01+0115.	02+0266.	03+1600.	04+11.42	05+170.6	06+17.69	07+075.7	08+093.7
09+29.73	10+0.000	11+12.40					
01+0109.	02+0266.	03+1615.	04+12.60	05+167.1	06+16.88	07+075.2	08+094.0
09+29.71	10+0.000	11+12.40					
01+0109.	02+0266.	03+1630.	04+10.60	05+161.1	06+16.64	07+075.2	08+094.1
09+29.71	10+0.000	11+12.40					
01+0109.	02+0266.	03+1645.	04+10.99	05+165.3	06+19.51	07+075.2	08+093.9
09+29.70	10+0.000	11+12.40					
01+0109.	02+0266.	03+1700.	04+10.18	05+165.4	06+19.74	07+075.2	08+094.1
09+29.69	10+0.000	11+12.40					
01+0115.	02+0266.	03+1700.	04+11.09	05+164.7	06+18.37	07+075.2	08+094.0
09+29.70	10+0.000	11+12.40					
01+0109.	02+0266.	03+1715.	04+10.15	05+160.3	06+17.45	07+075.0	08+094.3
09+29.69	10+0.000	11+12.40					
01+0109.	02+0266.	03+1730.	04+11.84	05+163.9	06+18.00	07+074.8	08+094.6
09+29.69	10+0.000	11+12.40					
01+0109.	02+0266.	03+1745.	04+10.26	05+161.8	06+17.33	07+074.8	08+094.8
09+29.68	10+0.000	11+12.40					
01+0109.	02+0266.	03+1800.	04+11.51	05+164.0	06+16.12	07+075.0	08+095.0
09+29.68	10+0.000	11+12.40					
01+0115.	02+0266.	03+1800.	04+10.94	05+162.5	06+17.31	07+074.9	08+094.7
09+29.68	10+0.000	11+12.40					
01+0109.	02+0266.	03+1815.	04+11.96	05+164.8	06+16.95	07+075.3	08+095.2
09+29.67	10+0.000	11+12.40					
01+0109.	02+0266.	03+1830.	04+13.07	05+169.2	06+16.18	07+075.5	08+095.3
09+29.67	10+0.000	11+12.39					
01+0109.	02+0266.	03+1845.	04+11.47	05+166.0	06+17.26	07+075.8	08+095.3
09+29.66	10+0.000	11+12.39					
01+0109.	02+0266.	03+1900.	04+11.50	05+173.1	06+17.36	07+075.9	08+095.0
09+29.66	10+0.000	11+12.38					
01+0115.	02+0266.	03+1900.	04+12.00	05+168.3	06+17.24	07+075.6	08+095.2
09+29.67	10+0.000	11+12.38					
01+0109.	02+0266.	03+1915.	04+12.80	05+170.3	06+17.62	07+075.7	08+094.7

09+29.66	10+0.000	11+12.38					
01+0109.	02+0266.	03+1930.	04+12.79	05+172.0	06+15.99	07+075.7	08+094.6
09+29.66	10+0.000	11+12.38					
01+0109.	02+0266.	03+1945.	04+15.07	05+171.7	06+15.91	07+075.8	08+094.8
09+29.66	10+0.000	11+12.38					
01+0109.	02+0266.	03+2000.	04+13.71	05+178.5	06+16.59	07+075.8	08+095.2
09+29.67	10+0.000	11+12.38					
01+0115.	02+0266.	03+2000.	04+13.59	05+173.1	06+16.84	07+075.8	08+094.8
09+29.66	10+0.000	11+12.38					
01+0109.	02+0266.	03+2015.	04+13.95	05+185.9	06+18.28	07+075.7	08+095.4
09+29.67	10+0.000	11+12.38					
01+0109.	02+0266.	03+2030.	04+13.45	05+186.8	06+16.83	07+075.5	08+095.4
09+29.67	10+0.000	11+12.38					
01+0109.	02+0266.	03+2045.	04+13.25	05+181.8	06+17.06	07+075.5	08+095.4
09+29.67	10+0.000	11+12.38					
01+0109.	02+0266.	03+2100.	04+12.78	05+179.5	06+18.87	07+075.4	08+095.4
09+29.67	10+0.000	11+12.38					
01+0115.	02+0266.	03+2100.	04+13.36	05+183.5	06+18.03	07+075.5	08+095.4
09+29.67	10+0.000	11+12.38					
01+0109.	02+0266.	03+2115.	04+10.96	05+179.5	06+17.26	07+075.4	08+095.5
09+29.67	10+0.000	11+12.37					
01+0109.	02+0266.	03+2130.	04+10.07	05+178.2	06+21.52	07+075.5	08+095.5
09+29.66	10+0.000	11+12.38					
01+0109.	02+0266.	03+2145.	04+10.90	05+181.8	06+16.58	07+075.6	08+095.4
09+29.67	10+0.000	11+12.38					
01+0109.	02+0266.	03+2200.	04+10.12	05+188.1	06+18.70	07+075.5	08+095.2
09+29.68	10+0.000	11+12.38					
01+0115.	02+0266.	03+2200.	04+10.51	05+181.9	06+18.98	07+075.5	08+095.4
09+29.67	10+0.000	11+12.38					
01+0109.	02+0266.	03+2215.	04+10.79	05+188.4	06+15.97	07+075.4	08+095.0
09+29.68	10+0.000	11+12.38					
01+0109.	02+0266.	03+2230.	04+08.69	05+177.8	06+16.07	07+075.3	08+094.8
09+29.68	10+0.000	11+12.38					
01+0109.	02+0266.	03+2245.	04+07.90	05+180.2	06+16.38	07+075.2	08+094.7
09+29.68	10+0.000	11+12.38					
01+0109.	02+0266.	03+2300.	04+07.65	05+182.3	06+16.15	07+075.1	08+094.6
09+29.68	10+0.000	11+12.37					
01+0115.	02+0266.	03+2300.	04+08.76	05+182.2	06+16.61	07+075.3	08+094.8
09+29.68	10+0.000	11+12.37					
01+0109.	02+0266.	03+2315.	04+07.63	05+229.2	06+35.48	07+075.0	08+094.4
09+29.68	10+0.030	11+12.37					
01+0109.	02+0266.	03+2330.	04+08.95	05+276.6	06+23.19	07+073.8	08+094.3
09+29.69	10+0.000	11+12.37					
01+0109.	02+0266.	03+2345.	04+07.30	05+295.8	06+15.12	07+072.1	08+094.3
09+29.69	10+0.010	11+12.37					
01+0109.	02+0266.	03+2400.	04+6.381	05+296.4	06+17.72	07+071.5	08+094.6
09+29.70	10+0.060	11+12.36					
01+0115.	02+0266.	03+2400.	04+07.56	05+277.2	06+35.73	07+073.1	08+094.4
09+29.69	10+0.100	11+12.36					
01+0109.	02+0267.	03+0015.	04+6.530	05+300.9	06+21.25	07+071.0	08+094.9
09+29.69	10+0.040	11+12.36					
01+0109.	02+0267.	03+0030.	04+5.595	05+301.7	06+21.65	07+070.6	08+095.2
09+29.69	10+0.000	11+12.36					
01+0109.	02+0267.	03+0045.	04+4.978	05+305.6	06+20.05	07+69.92	08+095.4
09+29.70	10+0.000	11+12.36					
01+0109.	02+0267.	03+0100.	04+4.658	05+302.7	06+16.31	07+69.52	08+095.3
09+29.70	10+0.000	11+12.36					
01+0115.	02+0267.	03+0100.	04+5.440	05+302.7	06+20.00	07+070.3	08+095.2
09+29.69	10+0.040	11+12.36					
01+0109.	02+0267.	03+0115.	04+4.624	05+298.8	06+15.88	07+69.35	08+095.2
09+29.70	10+0.010	11+12.36					
01+0109.	02+0267.	03+0130.	04+3.510	05+279.1	06+14.33	07+69.37	08+095.2
09+29.71	10+0.000	11+12.35					
01+0109.	02+0267.	03+0145.	04+2.706	05+271.0	06+16.52	07+69.56	08+095.2
09+29.71	10+0.000	11+12.35					
01+0109.	02+0267.	03+0200.	04+3.030	05+270.3	06+17.48	07+69.58	08+095.3
09+29.72	10+0.000	11+12.35					
01+0115.	02+0267.	03+0200.	04+3.467	05+279.8	06+19.74	07+69.47	08+095.2
09+29.71	10+0.010	11+12.35					
01+0109.	02+0267.	03+0215.	04+2.677	05+266.3	06+20.49	07+69.65	08+095.5
09+29.73	10+0.000	11+12.35					
01+0109.	02+0267.	03+0230.	04+3.376	05+268.9	06+18.26	07+69.80	08+095.6
09+29.73	10+0.000	11+12.35					
01+0109.	02+0267.	03+0245.	04+07.54	05+281.5	06+17.72	07+68.89	08+095.5
09+29.73	10+0.000	11+12.35					
01+0109.	02+0267.	03+0300.	04+09.37	05+289.9	06+17.31	07+67.54	08+094.8
09+29.74	10+0.000	11+12.35					
01+0115.	02+0267.	03+0300.	04+5.740	05+276.7	06+20.80	07+68.97	08+095.4
09+29.73	10+0.000	11+12.35					
01+0109.	02+0267.	03+0315.	04+10.96	05+295.4	06+16.86	07+66.72	08+094.5
09+29.74	10+0.000	11+12.34					
01+0109.	02+0267.	03+0330.	04+10.35	05+302.0	06+17.45	07+65.79	08+094.5
09+29.75	10+0.000	11+12.34					
01+0109.	02+0267.	03+0345.	04+08.96	05+304.9	06+19.32	07+64.84	08+094.4
09+29.76	10+0.000	11+12.34					
01+0109.	02+0267.	03+0400.	04+12.84	05+303.9	06+14.25	07+63.42	08+093.4
09+29.76	10+0.000	11+12.34					
01+0115.	02+0267.	03+0400.	04+10.78	05+301.5	06+17.45	07+65.19	08+094.2
09+29.75	10+0.000	11+12.34					

01+0109.	02+0267.	03+0415.	04+10.88	05+298.2	06+16.13	07+62.35	08+093.6
09+29.77	10+0.000	11+12.34					
01+0109.	02+0267.	03+0430.	04+10.72	05+306.8	06+18.05	07+61.47	08+093.9
09+29.78	10+0.000	11+12.33					
01+0109.	02+0267.	03+0445.	04+11.78	05+297.6	06+16.38	07+60.58	08+092.2
09+29.79	10+0.000	11+12.33					
01+0109.	02+0267.	03+0500.	04+09.76	05+300.5	06+15.45	07+60.05	08+092.0
09+29.80	10+0.000	11+12.32					
01+0115.	02+0267.	03+0500.	04+10.79	05+300.8	06+16.92	07+61.11	08+092.9
09+29.78	10+0.000	11+12.32					
01+0109.	02+0267.	03+0515.	04+08.54	05+304.2	06+16.86	07+59.80	08+091.9
09+29.80	10+0.000	11+12.32					
01+0109.	02+0267.	03+0530.	04+08.71	05+306.0	06+19.57	07+59.67	08+092.1
09+29.80	10+0.000	11+12.32					
01+0109.	02+0267.	03+0545.	04+08.98	05+305.4	06+23.46	07+59.69	08+092.0
09+29.81	10+0.000	11+12.32					
01+0109.	02+0267.	03+0600.	04+09.80	05+302.6	06+20.75	07+59.58	08+091.8
09+29.82	10+0.000	11+12.31					
01+0115.	02+0267.	03+0600.	04+09.01	05+304.5	06+20.32	07+59.69	08+092.0
09+29.81	10+0.000	11+12.31					
01+0109.	02+0267.	03+0615.	04+09.81	05+302.4	06+18.04	07+59.36	08+091.3
09+29.83	10+0.000	11+12.31					
01+0109.	02+0267.	03+0630.	04+09.43	05+314.0	06+28.66	07+59.10	08+089.8
09+29.83	10+0.010	11+12.31					
01+0109.	02+0267.	03+0645.	04+08.79	05+333.9	06+28.95	07+58.40	08+089.4
09+29.85	10+0.000	11+12.32					
01+0109.	02+0267.	03+0700.	04+09.07	05+329.3	06+33.25	07+57.63	08+086.3
09+29.86	10+0.000	11+12.31					
01+0115.	02+0267.	03+0700.	04+09.28	05+319.5	06+30.42	07+58.62	08+089.2
09+29.84	10+0.010	11+12.31					
01+0109.	02+0267.	03+0715.	04+08.47	05+338.0	06+28.50	07+57.41	08+081.1
09+29.86	10+0.010	11+12.30					
01+0109.	02+0267.	03+0730.	04+08.71	05+340.6	06+26.18	07+57.00	08+078.9
09+29.86	10+0.000	11+12.30					
01+0109.	02+0267.	03+0745.	04+09.15	05+324.4	06+33.37	07+56.76	08+080.3
09+29.87	10+0.000	11+12.30					
01+0109.	02+0267.	03+0800.	04+09.89	05+344.3	06+29.55	07+56.84	08+077.1
09+29.88	10+0.000	11+12.30					
01+0115.	02+0267.	03+0800.	04+09.06	05+337.0	06+30.40	07+57.00	08+079.3
09+29.87	10+0.010	11+12.30					
01+0109.	02+0267.	03+0815.	04+07.76	05+315.7	06+30.03	07+56.69	08+077.5
09+29.89	10+0.000	11+12.30					
01+0109.	02+0267.	03+0830.	04+10.18	05+319.9	06+27.84	07+56.48	08+077.5
09+29.90	10+0.000	11+12.30					
01+0109.	02+0267.	03+0845.	04+10.32	05+337.0	06+30.64	07+56.54	08+076.9
09+29.91	10+0.000	11+12.30					
01+0109.	02+0267.	03+0900.	04+10.49	05+349.1	06+26.00	07+56.55	08+076.5
09+29.92	10+0.000	11+12.30					
01+0115.	02+0267.	03+0900.	04+09.69	05+330.5	06+31.67	07+56.56	08+077.1
09+29.90	10+0.000	11+12.30					
01+0109.	02+0267.	03+0915.	04+10.27	05+329.6	06+33.59	07+57.49	08+075.6
09+29.92	10+0.000	11+12.30					
01+0109.	02+0267.	03+0930.	04+10.12	05+336.3	06+31.14	07+58.52	08+074.4
09+29.94	10+0.000	11+12.31					
01+0109.	02+0267.	03+0945.	04+09.38	05+331.2	06+35.24	07+58.78	08+073.9
09+29.94	10+0.000	11+12.32					
01+0109.	02+0267.	03+1000.	04+09.76	05+344.8	06+29.66	07+59.85	08+071.9
09+29.95	10+0.000	11+12.32					
01+0115.	02+0267.	03+1000.	04+09.88	05+335.6	06+32.99	07+58.66	08+074.0
09+29.94	10+0.000	11+12.32					

ambient test started 10:05
stack test started 10:06
on 9/23/92 (Julian day 267).

01+0109.	02+0267.	03+1015.	04+13.37	05+344.1	06+27.18	07+59.78	08+070.4
09+29.96	10+0.000	11+12.33					
01+0109.	02+0267.	03+1030.	04+13.33	05+354.5	06+22.92	07+60.03	08+69.34
09+29.97	10+0.000	11+12.34					
01+0109.	02+0267.	03+1045.	04+12.03	05+333.0	06+34.36	07+60.75	08+68.56
09+29.98	10+0.000	11+12.34					
01+0109.	02+0267.	03+1100.	04+10.63	05+338.6	06+30.12	07+61.12	08+68.04
09+29.99	10+0.000	11+12.34					
01+0115.	02+0267.	03+1100.	04+12.34	05+342.8	06+29.93	07+60.42	08+69.09
09+29.97	10+0.000	11+12.34					
01+0109.	02+0267.	03+1115.	04+12.96	05+350.9	06+28.28	07+61.29	08+67.34
09+30.00	10+0.000	11+12.34					
01+0109.	02+0267.	03+1130.	04+10.81	05+338.4	06+34.63	07+61.97	08+66.81
09+30.00	10+0.000	11+12.34					
01+0109.	02+0267.	03+1145.	04+09.56	05+351.7	06+30.37	07+62.14	08+67.21
09+30.01	10+0.000	11+12.34					
01+0109.	02+0267.	03+1200.	04+12.75	05+357.9	06+25.46	07+62.08	08+65.23
09+30.01	10+0.000	11+12.34					
01+0115.	02+0267.	03+1200.	04+11.52	05+349.9	06+30.63	07+61.87	08+66.65
09+30.00	10+0.000	11+12.34					
01+0109.	02+0267.	03+1215.	04+12.10	05+351.6	06+25.38	07+62.08	08+64.92
09+30.02	10+0.000	11+12.34					
01+0109.	02+0267.	03+1230.	04+12.29	05+351.9	06+26.81	07+62.46	08+63.23
09+30.02	10+0.000	11+12.34					
01+0109.	02+0267.	03+1245.	04+12.86	05+4.246	06+19.72	07+62.54	08+60.35
09+30.02	10+0.000	11+12.34					
01+0109.	02+0267.	03+1300.	04+12.64	05+359.0	06+21.78	07+62.67	08+59.71
09+30.03	10+0.000	11+12.34					
01+0115.	02+0267.	03+1300.	04+12.47	05+356.8	06+24.14	07+62.44	08+62.05

09+30.02	10+0.000	11+12.34					
01+0109.	02+0267.	03+1315.	04+10.57	05+2.034	06+32.10	07+63.10	08+58.38
09+30.03	10+0.000	11+12.34					
01+0109.	02+0267.	03+1330.	04+11.12	05+3.941	06+21.30	07+63.58	08+57.64
09+30.04	10+0.000	11+12.34					
01+0109.	02+0267.	03+1345.	04+10.82	05+0.805	06+22.57	07+63.40	08+56.37
09+30.04	10+0.000	11+12.34					
01+0109.	02+0267.	03+1400.	04+11.04	05+4.198	06+25.15	07+63.65	08+55.27
09+30.04	10+0.000	11+12.33					
01+0115.	02+0267.	03+1400.	04+10.89	05+2.754	06+25.58	07+63.43	08+56.92
09+30.04	10+0.000	11+12.33					
01+0109.	02+0267.	03+1415.	04+10.11	05+350.4	06+30.75	07+63.86	08+55.31
09+30.04	10+0.000	11+12.34					
01+0109.	02+0267.	03+1430.	04+09.48	05+351.9	06+24.89	07+63.97	08+54.77
09+30.04	10+0.000	11+12.34					
01+0109.	02+0267.	03+1445.	04+10.35	05+336.1	06+34.50	07+63.99	08+53.96
09+30.04	10+0.000	11+12.34					
01+0109.	02+0267.	03+1500.	04+08.80	05+347.4	06+31.09	07+64.11	08+54.32
09+30.04	10+0.000	11+12.33					
01+0115.	02+0267.	03+1500.	04+09.69	05+346.6	06+31.05	07+63.98	08+54.59
09+30.04	10+0.000	11+12.33					
01+0109.	02+0267.	03+1515.	04+09.56	05+347.4	06+35.43	07+64.44	08+53.56
09+30.04	10+0.000	11+12.33					
01+0109.	02+0267.	03+1530.	04+10.34	05+354.6	06+27.61	07+64.18	08+53.55
09+30.04	10+0.000	11+12.32					
01+0109.	02+0267.	03+1545.	04+09.30	05+349.6	06+30.84	07+64.32	08+53.45
09+30.04	10+0.000	11+12.32					
01+0109.	02+0267.	03+1600.	04+09.77	05+354.1	06+25.19	07+64.03	08+53.05
09+30.04	10+0.000	11+12.33					
01+0115.	02+0267.	03+1600.	04+09.74	05+351.5	06+30.09	07+64.24	08+53.40
09+30.04	10+0.000	11+12.33					
01+0109.	02+0267.	03+1615.	04+08.82	05+330.6	06+31.48	07+64.13	08+52.67
09+30.04	10+0.000	11+12.32					
01+0109.	02+0267.	03+1630.	04+09.67	05+333.2	06+34.53	07+63.98	08+52.47
09+30.04	10+0.000	11+12.32					
01+0109.	02+0267.	03+1645.	04+10.18	05+345.7	06+26.12	07+63.59	08+52.76
09+30.05	10+0.000	11+12.32					
01+0109.	02+0267.	03+1700.	04+08.76	05+339.2	06+35.70	07+63.39	08+52.45
09+30.05	10+0.000	11+12.32					
01+0115.	02+0267.	03+1700.	04+09.36	05+337.3	06+32.64	07+63.77	08+52.59
09+30.05	10+0.000	11+12.32					
01+0109.	02+0267.	03+1715.	04+09.43	05+353.7	06+28.97	07+63.17	08+52.01
09+30.05	10+0.000	11+12.32					
01+0109.	02+0267.	03+1730.	04+08.58	05+340.2	06+29.15	07+62.65	08+52.14
09+30.06	10+0.000	11+12.31					
01+0109.	02+0267.	03+1745.	04+09.52	05+351.8	06+17.23	07+62.14	08+52.95
09+30.06	10+0.000	11+12.30					
01+0109.	02+0267.	03+1800.	04+07.45	05+345.0	06+29.14	07+61.76	08+53.87
09+30.06	10+0.000	11+12.30					
01+0115.	02+0267.	03+1800.	04+08.74	05+347.8	06+27.07	07+62.43	08+52.74
09+30.06	10+0.000	11+12.30					

OLD BETHPAGE LANDFILL
GROUNDWATER TREATMENT FACILITY

First Year Annual Summary Report

Second Quarter

APPENDIX I

MODELING DATA

```
** INPUT FILE NAME: AS2R1.INP

CO STARTING
   TITLEONE  LKBOBA - ISC2, 2ND QUARTER, AS TESTED ON SEPT.23,1992, RUN-1
   MODELOPT  DFAULT  RURAL  CONC
   AVERTIME  1  PERIOD
   POLLUTID  VOCs
   TERRHGTS  ELEV
   ELEVUNIT  FEET
   FLAGPOLE  1
   RUNORNOT  RUN
   ERRORFIL  ERRORS.OUT
CO FINISHED

SO STARTING
   LOCATION  LKBAS  POINT  0.0   0.0   42.8
**          SOURCE  EMISSION  STACK  EXIT   EXIT     STACK
**      PARAMETERS      RATE     HT  TEMP  SPEED  DIAMETER
** --------------  --------   ----  ----  -----  --------
   SRCPARAM  LKBAS      1.00   16.7  286.5  5.05      1.02

   BUILDHGT  LKBAS   36*8.38
   BUILDWID  LKBAS   14.4 15.0 18.0 22.5 24.8 25.5 26.3 27.0
             LKBAS   25.5 24.0 24.0 25.5 26.3 26.7 25.5 24.0
             LKBAS   21.0 18.0 14.4 15.0 18.0 22.5 24.8 25.5
             LKBAS   26.3 27.0 25.5 24.0 24.0 25.5 26.3 26.7
             LKBAS   25.5 24.0 21.0 18.0
   SRCGROUP  ALL
SO FINISHED

RE STARTING

** UPWIND & DOWNWIND SAMPLING LOCATIONS ***********
RE DISCCART   0.00     4.57  140. 1.
RE DISCCART  34.29  -106.68  130. 1.

RE FINISHED

ME STARTING
   INPUTFIL  AS2.MET
   ANEMHGHT  37.5 FEET
   SURFDATA  12345  1992
   UAIRDATA  12345  1992
   WDROTATE 180
ME FINISHED

OU STARTING
** RECTABLE     1  FIRST
** MAXTABLE     1  50
   DAYTABLE-  .  1
OU FINISHED

************************************
*** SETUP Finishes Successfully ***
************************************
```

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

**Model Uses RURAL Dispersion.

**Model Uses Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for RURAL Mode

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 1 Source(s); 1 Source Group(s); and 2 Receptor(s)

**The Model Assumes A Pollutant Type of: VOCS

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
Model Outputs Tables of PERIOD Averages by Receptor
Model Outputs Tables of Concurrent Short Term Values by Receptor for Each Day Processed (DAYTABLE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 11.43 ; Decay Coef. = .0000 ; Rot. Angle = 180.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = .10000E+07
Output Units = MICROGRAMS/M**3

**Input Runstream File: APPN1-2.INP ; **Output Print File: APPN1-2.OUT
**Detailed Error/Message File: ERRORS.OUT

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BUILDING EXISTS	EMISSION RATE SCALAR VARY BY
LKBAS	0	.10000E+01	.0	.0	42.8	16.70	286.50	5.05	1.02	YES	

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID	SOURCE IDs
ALL	LKBAS ,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: LKBAS

IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW	WAK	IFV	BH	BW
1	8.4,	14.4,	0	2	8.4,	15.0,	0	3	8.4,	18.0,	0	4	8.4,	22.5,	0	5	8.4,	24.8,	0	6	8.4,	25.5,
7	8.4,	26.3,	0	8	8.4,	27.0,	0	9	8.4,	25.5,	0	10	8.4,	24.0,	0	11	8.4,	24.0,	0	12	8.4,	25.5,
13	8.4,	26.3,	0	14	8.4,	26.7,	0	15	8.4,	25.5,	0	16	8.4,	24.0,	0	17	8.4,	21.0,	0	18	8.4,	18.0,
19	8.4,	14.4,	0	20	8.4,	15.0,	0	21	8.4,	18.0,	0	22	8.4,	22.5,	0	23	8.4,	24.8,	0	24	8.4,	25.5,
25	8.4,	26.3,	0	26	8.4,	27.0,	0	27	8.4,	25.5,	0	28	8.4,	24.0,	0	29	8.4,	24.0,	0	30	8.4,	25.5,
31	8.4,	26.3,	0	32	8.4,	26.7,	0	33	8.4,	25.5,	0	34	8.4,	24.0,	0	35	8.4,	21.0,	0	36	8.4,	18.0,

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(.0, 4.6, 42.7, 1.0); (34.3, -106.7, 39.6, 1.0);

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

* SOURCE-RECEPTOR COMBINATIONS LESS THAN 1.0 METER OR 3*ZLB *
IN DISTANCE. CALCULATIONS MAY NOT BE PERFORMED.

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)	DISTANCE (METERS)
LKBAS	.0	4.6	4.57

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE FIRST 8 HOURS OF METEOROLOGICAL DATA ***

FILE: AS2.MET   FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1)
SURFACE STATION NO.: 12345   UPPER AIR STATION NO.: 12345
NAME: UNKNOWN   NAME: UNKNOWN
YEAR: 1992   YEAR: 1992

YEAR	MONTH	DAY	HOUR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	URBAN
92	9	23	11	352.3	5.52	288.9	3	800.0	800.0
92	9	23	12	359.4	5.15	289.7	3	800.0	800.0
92	9	23	13	6.3	5.57	290.1	3	1300.0	1300.0
92	9	23	14	12.3	4.87	290.6	3	1300.0	1300.0
92	9	23	15	356.1	4.33	290.9	3	1300.0	1300.0
92	9	23	16	1.0	4.35	291.1	3	1300.0	1300.0
92	9	23	17	346.8	4.18	290.8	3	1300.0	1300.0
92	9	23	18	357.3	3.91	290.1	2	1300.0	1300.0

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 11 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	24.19208

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 12 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	3.05456

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 13 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	.10348

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 14 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	.00148

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 15 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	9.72664

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 16 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	1.64411

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 17 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	58.83062

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** CONCURRENT 1-HR AVERAGE CONCENTRATION VALUES ENDING WITH HOUR 18 FOR DAY 267 ***
FOR SOURCE GROUP: ALL
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	20.30573

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE PERIOD (8 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): LKBAS ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
.00	4.57	.00000	34.29	-106.68	14.73234

*** MODELING OPTIONS USED: CONC RURAL ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8 HRS) RESULTS ***

** CONC OF VOCS IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC		RECEPTOR (XR, YR, ZELEV, ZFLAG)				OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	14.73234	AT (	34.29,	-106.68,	39.62,	1.00)	DC	
	2ND HIGHEST VALUE IS	.00000	AT (	.00,	.00,	.00,	.00)		
	3RD HIGHEST VALUE IS	.00000	AT (	.00,	.00,	.00,	.00)		
	4TH HIGHEST VALUE IS	.00000	AT (	.00,	.00,	.00,	.00)		
	5TH HIGHEST VALUE IS	.00000	AT (	.00,	.00,	.00,	.00)		
	6TH HIGHEST VALUE IS	.00000	AT (	.00,	.00,	.00,	.00)		

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** MODELING OPTIONS USED: CONC   RURAL ELEV   FLGPOL DFAULT

*** Message Summary For ISC2 Model Execution ***

--------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   0 Warning Message(s)
A Total of   0 Informational Message(s)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
*** NONE ***

****
*** ISCST2 Finishes Successfully ***
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