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report. 9320308 . 2007 05. FinalCMS .pdf

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Project Site numbers will be proceeded by the following:

Municipal Brownfields - B
Superfund - HW
Spills - SP
ERP - E
VCP - V
BCP - C

TRC

Customer-Focused Solutions

Corrective Measures Study

Final Report

Prepared for:

AKZO NOBEL

Akzo Nobel Polymer Chemicals LLC
2153 Lockport-Olcott Road
Burt, New York

Prepared by:

TRC Environmental Corporation
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
(978) 970-5600

May 2003

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APPENDICES

1. INTRODUCTION

1.1 Status of the RCRA Facility Investigation (RFI)

The RFI was completed in 2002, except for 2 deferred solid waste management units (SWMUs). SWMUs 8 and 15 are deferred for determinations until the future, when scheduling permits investigations to be completed.

The RFI was performed at the Akzo Nobel Polymer Chemicals LLC. (Akzo Nobel) facility in Burt, New York, to investigate the nature and extent of contamination, if any, associated with SWMUs and AOCs, as described in detail in the facility's Part 373 Permit. TRC Environmental Corporation (TRC) was retained by Akzo Nobel to develop and implement the RCRA Facility Investigation. The Phase I RFI field work was completed in 1996. The Phase II RFI field work was completed in 1999-2000. Akzo Nobel submitted the Phase II RCRA Facility Investigation Report to NYSDEC in December 2000.

NYSDEC's letter dated March 8, 2001indicated that the NYSDEC had determined the RFI was substantially complete. However, the NYSDEC requested Akzo Nobel complete the additional investigatory work necessary to fully complete the RFI while proceeding with the CMS. NYSDEC's letter dated August 24, 2001 listed the activities that remained to be completed by Akzo Nobel in order to complete the RFI (excepting for the deferred units discussed above). The NYSDEC indicated that, assuming ground water elevation data were deemed adequate, the installation of monitor wells MW-9, MW-9B, and MW-4B, and the completion of 4 additional rounds of ground water sampling of this expanded ground water monitoring well network would complete the RFI. The NYSDEC required an RFI addendum be prepared and submitted after 2 sampling rounds were completed.

Akzo Nobel completed the required additional studies, and submitted the RFI addendum to the NYSDEC in July 2002. NYSDEC's October 25, 2002 letter indicated the RFI is complete. NYSDEC required the installation of additional monitoring wells MW-10 and MW-10B, and indicated the sampling of the new wells would be required in the future.

1.2 Status of the RCRA Corrective Measures Study (CMS)

Corrective measure studies have been completed, with the exception of a deferred SWMU. SWMU 17, a fuel oil contaminated soil area, is deferred for Corrective Measures until access beneath Building 2 (SWMU 15) is feasible.

NYSDEC's letter dated March 8, 2001 requested a Corrective Measures Study (CMS) work plan be prepared and submitted.

This CMS work plan was prepared by TRC on behalf of Akzo Nobel in accordance with the requirements set forth in Akzo Nobel's 6 New York Code of Rules and Regulations (NYCRR) Part 373 Permit (Module II) and the Scope of Work for a Corrective Measure Study appendix. Akzo Nobel submitted the CMS work plan in May 2001. NYSDEC's August 24, 2001 letter indicated the CMS final report was to be submitted after 4 quarters of ground water monitoring had been completed. The CMS confirmation sampling field work was initiated in November 2001 and completed in October 2002. The additional wells MW-10 and MW-10B required by the NYSDEC were installed in December 2002.

This CMS final report has been prepared by TRC on behalf of Akzo Nobel in accordance with the May 2001 CMS work plan, as amended by the NYSDEC August 24, 2001 letter.

1.3 Report Organization

This CMS final report contains seven sections: (1) Introduction; (2) Background; (3) Confirmation Studies Results; (4) Conditions Requiring Corrective Action; (5) Identification, evaluation, and selection of corrective measures; (6) Selected Corrective Measure Alternative, and (7) Schedule for Corrective Measures Implementation.

Section 2, Facility Background, lists the various studies completed and presents a synopsis of the RFI findings.

Section 3, Confirmation Studies Results, presents and assesses the additional data gathered in support of remedy analysis during the CMS field study period.

Section 4, Conditions requiring Corrective Action, integrates the environmental conditions that warrant corrective action, based on studies completed to date, and assesses the corrective measures prerequisite data into the site conceptual model that forms the basis for the remedial strategy.

Section 5, Identification, Evaluation, And Selection Of Corrective Measures, presents the identified and screened corrective measures technologies, and identified corrective measures alternatives. It includes the alternatives evaluation, and estimated costs for corrective action.

Section 6, Selected Corrective Measure Alternative, presents the selected alternative for corrective action implementation.

Section 7, Schedule for Corrective Measures Implementation, discusses the activities that will finalize the scope and schedule of corrective measures actions.

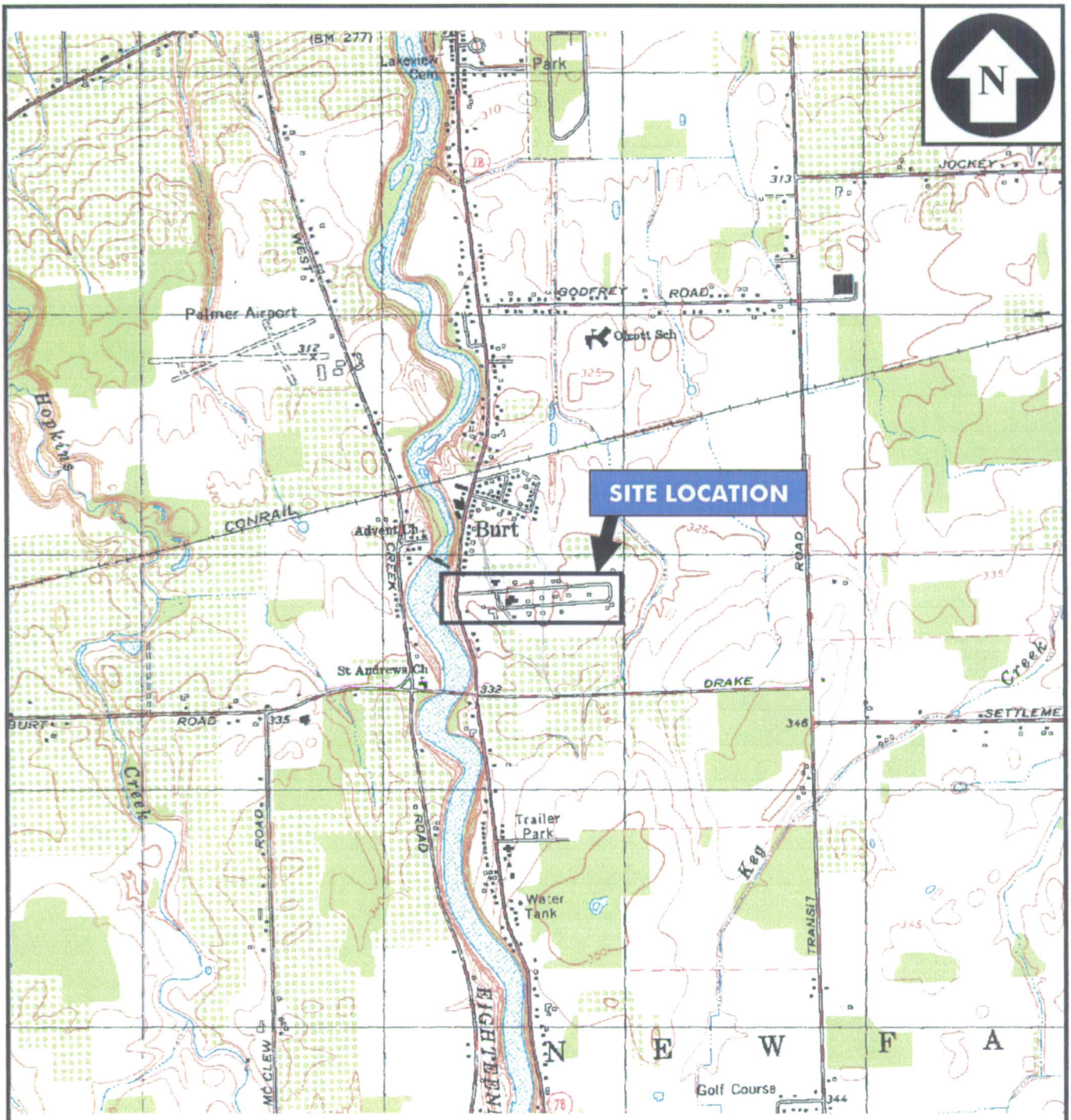
2. BACKGROUND

2.1 Facility Background

Akzo Nobel Polymer Chemicals LLC (Akzo Nobel) is currently operating its Burt, New York, facility under a 6 New York Code of Rules and Regulations (NYCRR) Part 373 Permit; therefore, it is subject to Corrective Action (CA) under 6 NYCRR Section 373 - 2.6. The CA module (Module II) of the 6 NYCRR Part 373 Permit requires corrective action to evaluate releases to the environment that have or may have occurred from past waste management activities.

The 350 acre Akzo Nobel property is located at 2153 Lockport-Olcott Road in the Hamlet of Burt, Niagara County, New York (see Figure 1). Property lines and dimensions for the active portion of the facility are depicted in Figure 2, the facility location map. Akzo Nobel produced organic peroxides including benzoyl peroxide, methyl ethyl ketone peroxide, actyl acetone peroxide, and 2,4-dichlorobenzoyl peroxide at the Burt, New York facility.

The production portion of the facility encompasses approximately 30 acres, and approximately 80 acres of the property are fenced. Areas associated with Akzo Nobel operations include: buildings, hazardous waste container storage pads, inactive landfills, an inactive burning cage, a closed clay storage pad storage area, venturi scrubbers, a fume scrubber, drum storage areas, a closed waste sulfuric acid storage tank, closed underground storage tank (UST) locations, a fire pond, and numerous structures associated with the wastewater treatment facility and process sewer.



BASE MAP IS A PORTION OF THE FOLLOWING 7.5' USGS TOPOGRAPHIC QUADRANGLE: NEWFANE, NY, 1978

0 2000 4000

scale in feet

QUADRANGLE LOCATION

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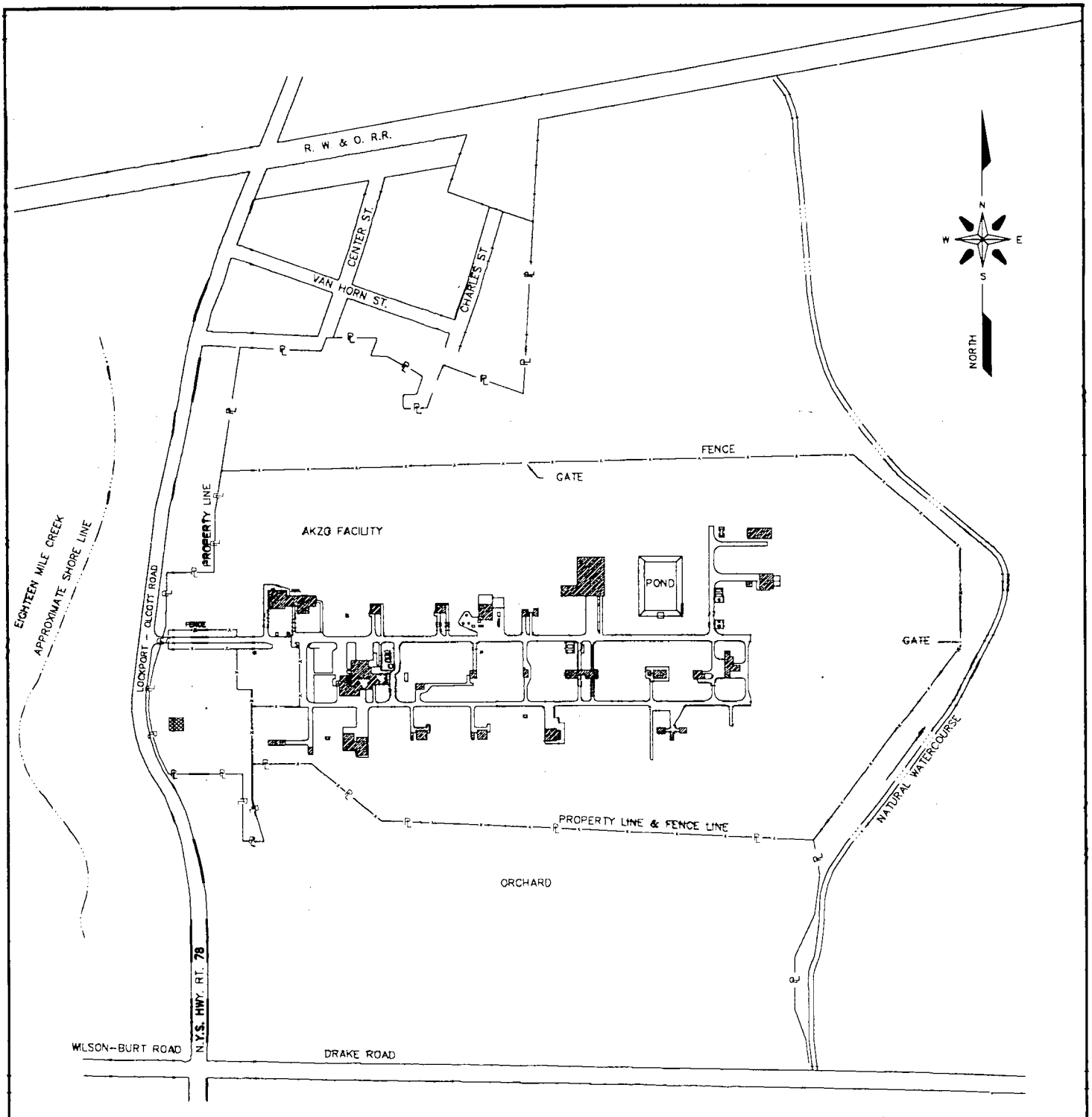
BURT, NEW YORK

FIGURE 1
SITE LOCATION MAP

Date: 2/03 | PROJ. NO. 19045



NOTES:

1. AVERAGE GRADE LEVEL ≈ 325' ABOVE SEA LEVEL.
2. REF. U.S. GEOLOGICAL SURVEY (NEWFANE N-4315 W-7837/75)

ASSUMED BENCH – HYDRANT WEST RIM BOLT = 325.00 (APPROXIMATES USC & GS DATUM)

GRAPHIC SCALE

500 0 500 1000

(IN FEET)

1 inch = 500 ft.

19045\PHASE II RFI\FACILITY

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FIGURE 2
FACILITY LOCATION MAP

Date: 2/03 | Project No. 19045

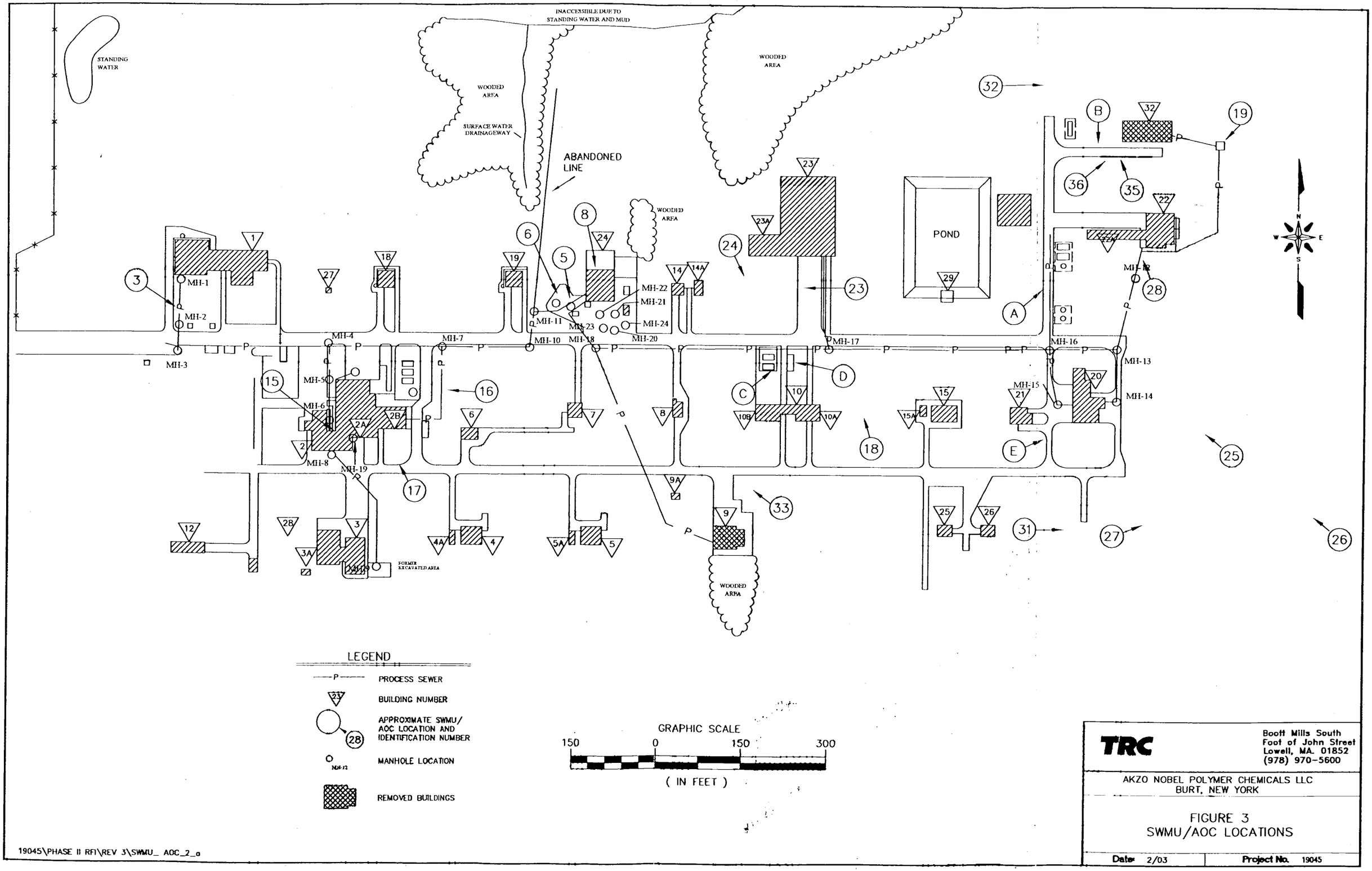
Akzo Nobel announced on April 6, 2001 that organic peroxide manufacturing operations at the Burt, NY facility were to be phased out in two years. The Burt facility will remain in operation as a warehouse and distribution center following the phase out of production activities. Chemical production was terminated April 10th, 2003. Subsequent to chemical production shut down, RCRA regulated units (above-ground tanks and storage areas) will be closed, deferred SWMUs investigated, and corrective measures will be implemented, as needed.

2.2 Documents, Studies, and Investigations

Prior Investigations were summarized in the previous submittals listed below.

- RCRA Facility Assessment - Sampling Visit Work Plan, September 1994,
- RCRA Facility Assessment - Sampling Visit Report, December 1994,
- RCRA Facility Investigation Description of Current Conditions Report, September 1995,
- RCRA Facility Investigation Pre-Investigation Evaluation of Corrective Measures Report, September 1995,
- RCRA Facility Investigation Work Plan, June 1996,
- RCRA Facility Investigation Report, April 1997,
- RCRA Facility Assessment Sampling Visit Addendum, April 1997,
- RCRA Facility Investigation Report Addendum, October 1998,
- Phase II RFI Work Plan, March 1999,
- Phase II RFI Work Plan Addendum, June 1999,
- Phase II RFI Report, December 2000,
- Corrective Measures Study Work Plan, May 2001, and
- RCRA Facility Investigation Addendum, July 2002.

Figure 3 illustrates SWMU and AOC locations for which investigations/evaluations were required. Table 1 provides a list of all SWMUs identified for further action during the VSI and their current status as of the date of submittal of this report.



19045\PHASE II RFI\REV 3\SWMU_ AOC_2_a

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FIGURE 3
SWMU/AOC LOCATIONS

Date: 2/03 | Project No. 19045

Table 1. Regulatory Status of SWMUs and AOCs		
SWMU/ AOC	**Description**	**Determination[a]**
1	Hazardous Waste Storage Pad -Area 1	No Further Action Req'd
2	Hazardous Waste Storage Pad -Area 2	No Further Action Req'd
3 ([b,c,d])	Process Sewer	Subject to CMS
4	Destruction Tank	No Further Action Req'd
5 ([b,c,d])	East Influent Well	Subject to CMS[c]
6 ([b,c,d])	West Influent Well	Subject to CMS[c]
7	Holding Tank	No Further Action Req'd
8 ([b])	Equalization Basin	RFI Deferred to 2003/2004
9	Settling Channel	No Further Action Req'd
10	Filter Carts	No Further Action Req'd
11	Primary Clarifier	No Further Action Req'd
12	East Sludge Tank	No Further Action Req'd
13	West Sludge Tank	No Further Action Req'd
14	Process Reactor	No Further Action Req'd
15 ([b])	Building 2 Sump	RFI Deferred to 2003/2004
16 ([b,d])	Building 2B Separator	Subject to CMS
17 ([b,c,d])	Former UST No. 2 Area	CMS deferred to 2003/2004
18 ([b,d])	Former UST No. 9 Area	No Further Action Req'd
19 ([b,d])	Sewer Pre-Treatment Pit	Subject to CMS
20	Inside Building 2B Accumulation Area	No Further Action Req'd
21	Outside Building 2B Accumulation Area	No Further Action Req'd
22	QC Laboratory Accumulation Area	No Further Action Req'd
23 ([b,c])	Burning Cage	Subject to CMS
24 ([b,c])	Landfill Site No. 1	Subject to CMS

Table 1. Regulatory Status of SWMUs and AOCs		
SWMU/ AOC	**Description**	**Determination[a]**
25 ([b])	Landfill Site No. 2	No Further Action Req'd
26 ([b])	Landfill Site No. 3	No Further Action Req'd
27 ([b])	Former Clay Pad Storage Area	No Further Action Req'd
28 ([b])	Dimethyl Phthalate Meter Leak	No Further Action Req'd
29	Venturi Scrubber	No Further Action Req'd
30	Fume Scrubber	No Further Action Req'd
31 ([b,f])	Building 16 Drum Storage Area	Subject to CMS
32 ([b])	Debris Pile	No Further Action Req'd
33 ([b,d])	Former Waste Sulfuric Acid Tank Area	No Further Action Req'd
34	Empty Drum Storage Area No. 1	No Further Action Req'd
35 ([b])	Empty Drum Storage Area No. 2	No Further Action Req'd
36 ([b])	Empty Drum Storage Area No. 3	No Further Action Req'd
37	Truck Trailer Storage Area	No Further Action Req'd
A ([b])	Dimethyl Phthalate Spill Area	No Further Action Req'd
B ([b,d])	Building 32 Fuel Line Leak	No Further Action Req'd
C ([b,d])	Former Underground Storage Tank No. 11 Area	No Further Action Req'd
D ([b,d])	Former Underground Storage Tank No. 12 Area	No Further Action Req'd
E ([b,e])	Former Underground Storage Tank No. 20 Area	No Further Action Req'd

([a])Original determination based on Akzo Nobel's July 10, 1995 responses to NYSDEC comments from Thaddeus Moskal, P.E. dated June 13, 1995, updated in RFI reports completed to date.

([b])Evaluated during RFA-SV.

([c])Added to RFI scope voluntarily by Akzo Nobel in July 1996 following preliminary RFA work.

([d])Resampled during TRC RFA-SV; see April 1997 SV report addendum.

([e])Characterization completed during TRC RFI; see April 1997 report.

([f]) See Akzo Nobel October 1998 RFI Addendum

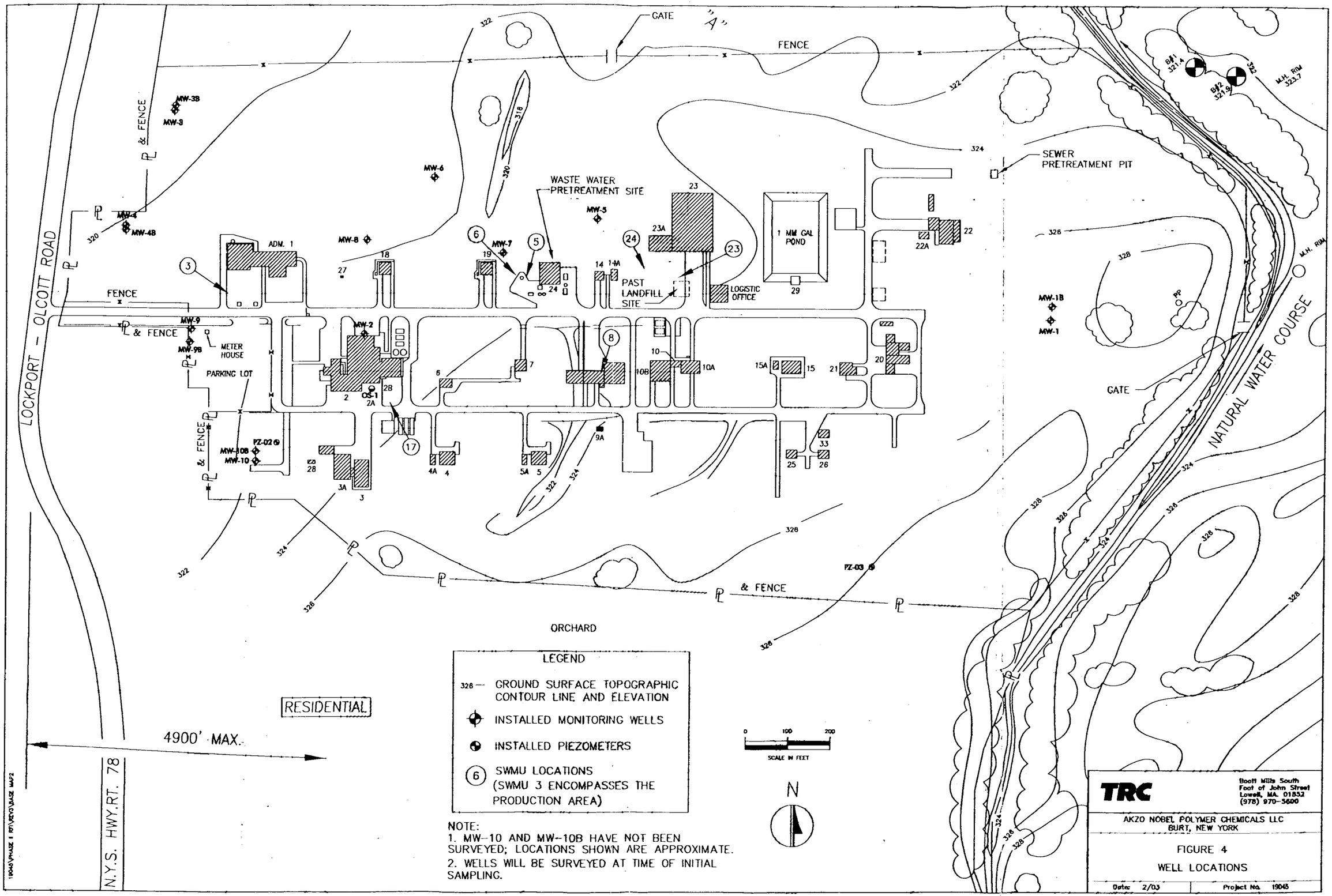
3. CONFIRMATION STUDIES RESULTS

The results of the additional investigations completed during the CMS (additional to results previously reported in the July 2002 RFI Addendum) are presented and discussed in this section.

3.1 Site-Wide Ground Water Flow Direction Addendum

Prior investigations documented the inferred direction of ground water flow, based on ground water elevation determinations made during monitoring of the well network depicted in Figure 4. Separate overburden and bedrock ground water flow direction determinations have been completed, and vertical ground water gradients have been defined. Ground water monitoring was conducted via all ground water monitoring wells at the Akzo Nobel Burt, NY facility during four confirmation sampling events conducted in December 2001, April 2002, August 2002, and October 2002.

Based on the RFI data, the direction of overburden ground water flow was generally west-northwest. The most pronounced overburden ground water gradient was to the west-northwest of the developed portion of the Akzo Nobel facility, with a low horizontal overburden ground water gradient across the remainder of the site. A slight overburden ground water divide may be in evidence at the site; overburden ground water gradients to the west slope to the west-northwest. A lesser gradient to the north and north-east from this slight divide indicate the potential for overburden ground water flow in these secondary directions as well. Overburden ground water elevation contours measured during the August 2002 and October 2002 CMS field work are consistent with the RFI findings; contours are presented in Figures 5 and 6.


GATE
"A"
FENCE
MW-3B
MW-3
& FENCE
MW-4
MW-4B
MW-6
WASTE WATER
PRETREATMENT SITE
MW-5
MW-8
MW-7
ADM. 1
PAST
LANDFILL
SITE
LOGISTIC
OFFICE
1 MM GAL
POND
SEWER
PRETREATMENT PIT
MW-1B
MW-1
MW-9
MW-9B
METER
HOUSE
PARKING LOT
MW-2
MW-10B
MW-10
PZ-02
PZ-03
LOCKPORT - OLCOTT ROAD
N.Y.S. HWY.RT. 78
4900' MAX.
RESIDENTIAL
ORCHARD
NATURAL WATER COURSE
M.H. RIM
B#1
321.4
B#2
321.9
M.H. RIM
323.7
LEGEND
GROUND SURFACE TOPOGRAPHIC CONTOUR LINE AND ELEVATION
INSTALLED MONITORING WELLS
INSTALLED PIEZOMETERS
SWMU LOCATIONS
(SWMU 3 ENCOMPASSES THE PRODUCTION AREA)
0 100 200
SCALE IN FEET
N
NOTE:
1. MW-10 AND MW-10B HAVE NOT BEEN SURVEYED; LOCATIONS SHOWN ARE APPROXIMATE.
2. WELLS WILL BE SURVEYED AT TIME OF INITIAL SAMPLING.
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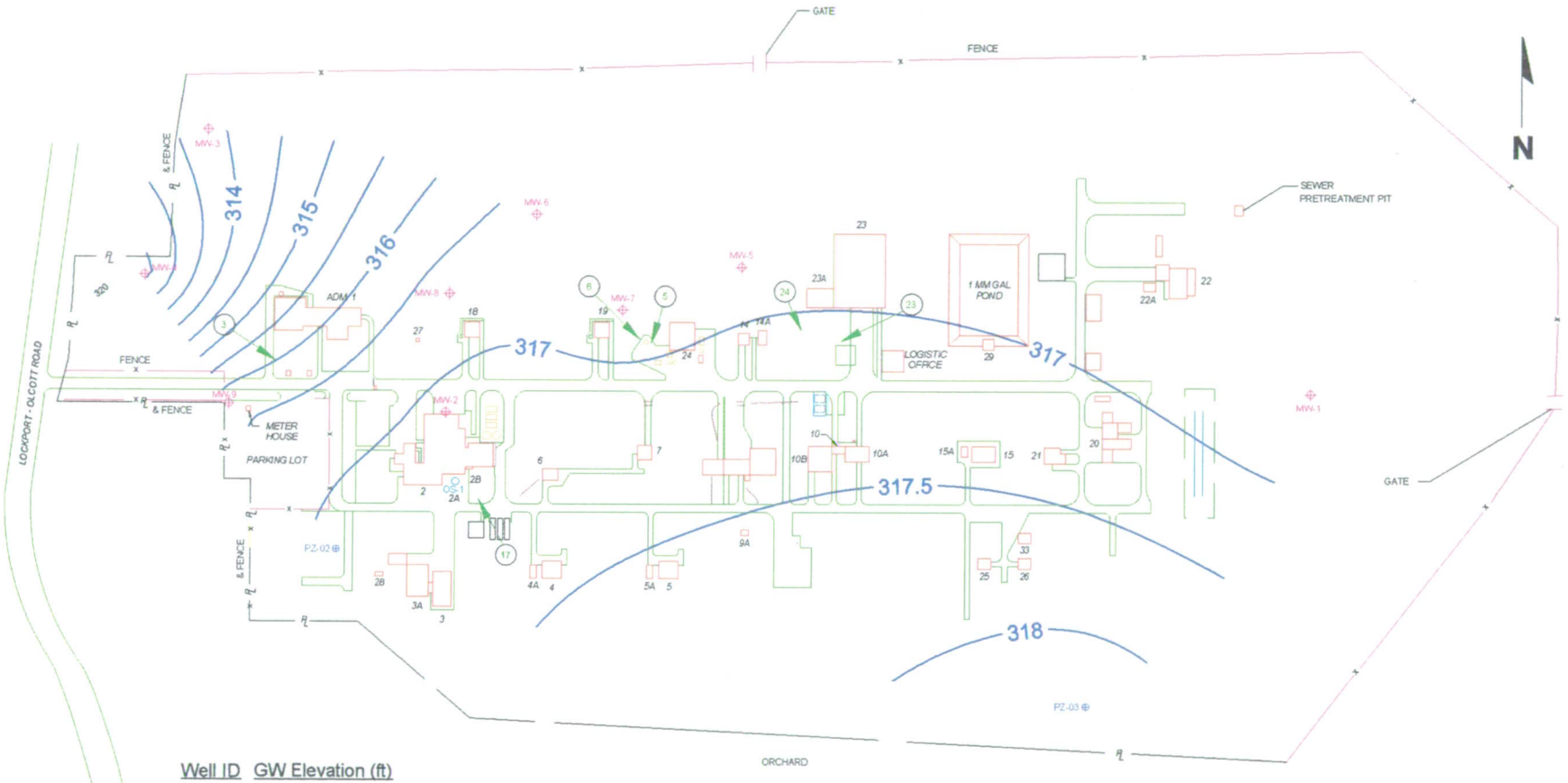
BURT, NEW YORK
FIGURE 4
WELL LOCATIONS
Date: 2/03
Project No. 19045



Well ID	GW Elevation (ft)
MW-1	316.54
MW-2	317.12
MW-3	313.87
MW-4	312.36
MW-5	316.87
MW-6	316.70
MW-7	316.78
MW-8	316.76
MW-9	316.34
OS-1	317.15
PZ-02	317.13
PZ-03	318.31

Graphic Scale

0 ft 200 ft

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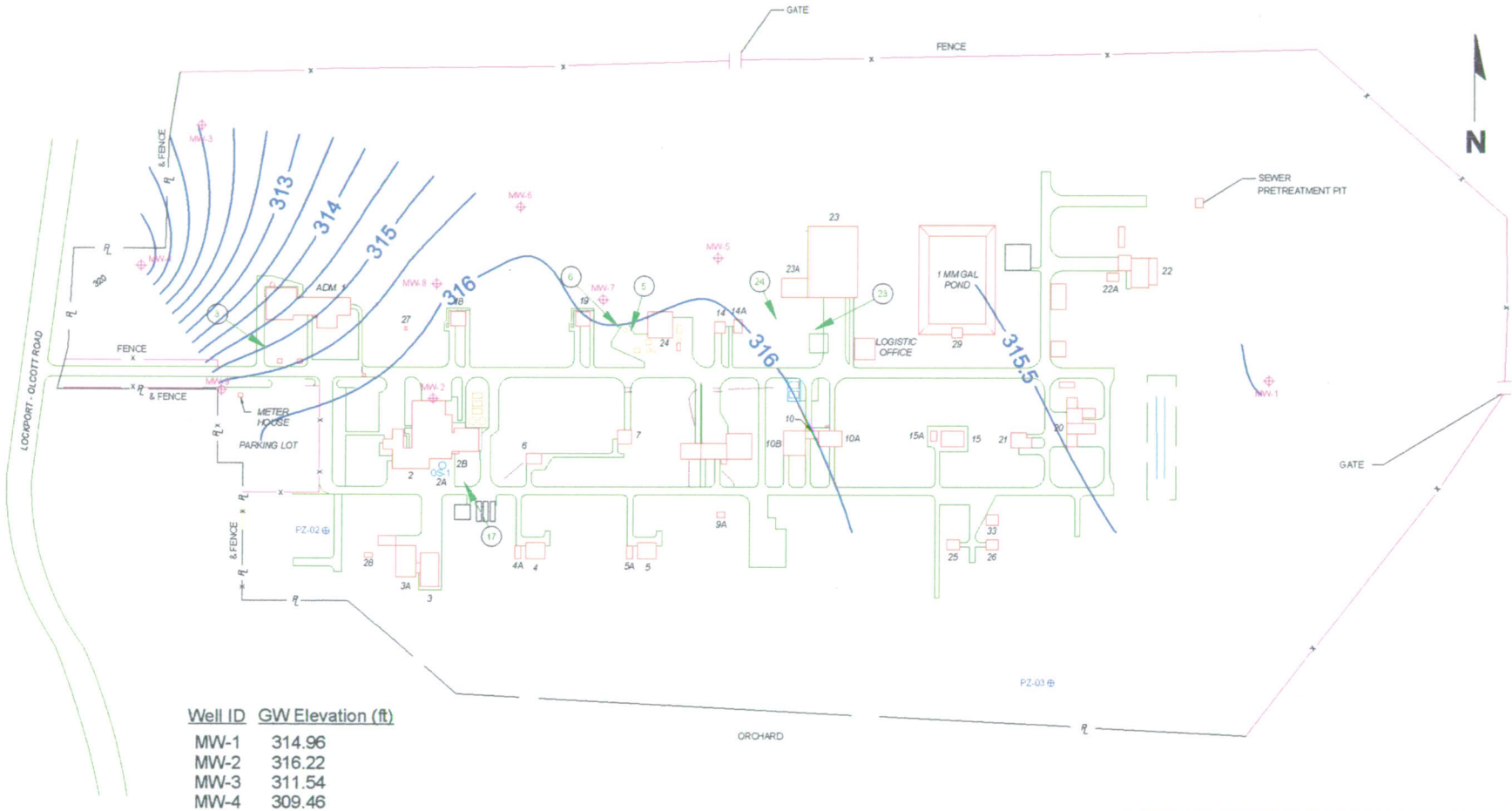
Figure 5
Overburden Ground Water Elevation Contours
August 2002

Date: 2/03 | Project No. 19045



Well ID	GW Elevation (ft)
MW-1	314.96
MW-2	316.22
MW-3	311.54
MW-4	309.46
MW-5	315.96
MW-6	315.89
MW-7	315.91
MW-8	315.92
MW-9	315.75
OS-1	316.25
PZ-02	316.25
PZ-03*	Dry

Graphic Scale

0 ft 200 ft

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BURT, NEW YORK

Figure 6
Overburden Ground Water Elevation Contours
October 2002

Date: 2/03 | Project No. 19045

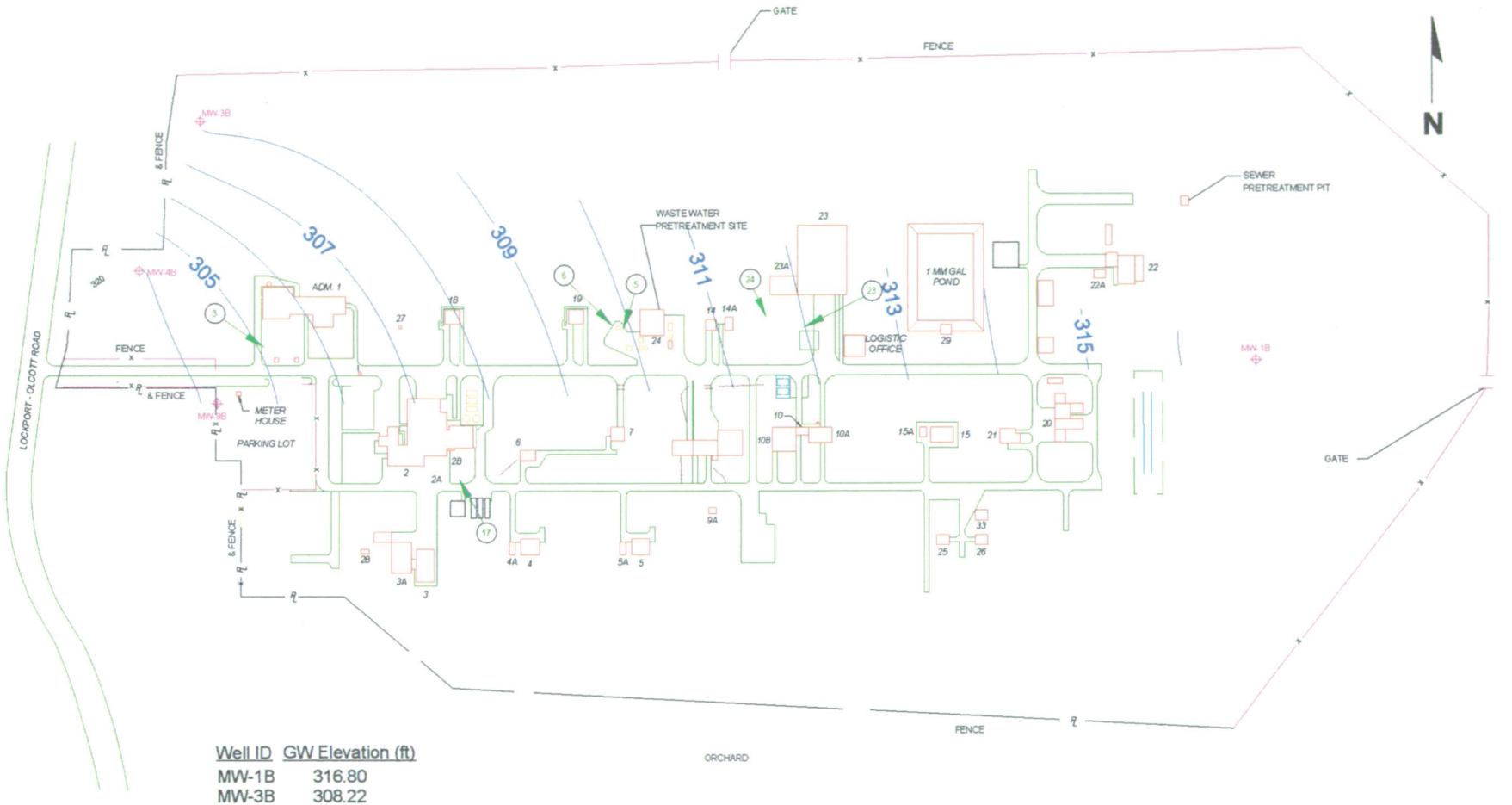
During the CMS field work, bedrock ground water flow determinations were made via the four bedrock wells installed at the site. The direction of bedrock ground water flow was inferred west-southwest; bedrock ground water elevation interpretations from data generated in August 2002 and October 2002 are illustrated in Figures 7 and 8.

Vertical gradients were examined via the installation of the MW-1, MW-1B cluster to the east of, and the MW-3, MW-3B plus MW-4, MW-4B, MW-9, MW-9B clusters to the west of the developed portion of the facility. Data generated during the four elevation rounds of the CMS field work are presented in Table 2.

Table 2. Measured Vertical Gradients

Date	Cluster	Gradient, ft.
12/18/01	MW-1,1B	0.03
	MW-3,3B	-8.33
	MW-4,4B	-6.87
	MW-9,9B	-10.35
4/8/02	MW-1,1B	0.23
	MW-3,3B	-8.36
	MW-4,4B	-10.08
	MW-9,9B	-13.26
8/26/02	MW-1,1B	0.26
	MW-3,3B	-5.65
	MW-4,4B	-8.45
	MW-9,9B	-12.24
10/8/02	MW-1,1B	0.69
	MW-3,3B	-3.72
	MW-4,4B	-3.82
	MW-9,9B	-9.91

A constant upward vertical gradient continued to be detected at the MW-1, MW-1B cluster, with the CMS field work data consistent in gradient direction with the Phase II RFI data. The data suggest recharge, possibly associated with the ground water divide noted above, occurs up gradient of the MW-1 cluster location.



Well ID	GW Elevation (ft)
MW-1B	316.80
MW-3B	308.22
MW-4B	303.91
MW-9B	304.10

Graphic Scale

0 ft 200 ft

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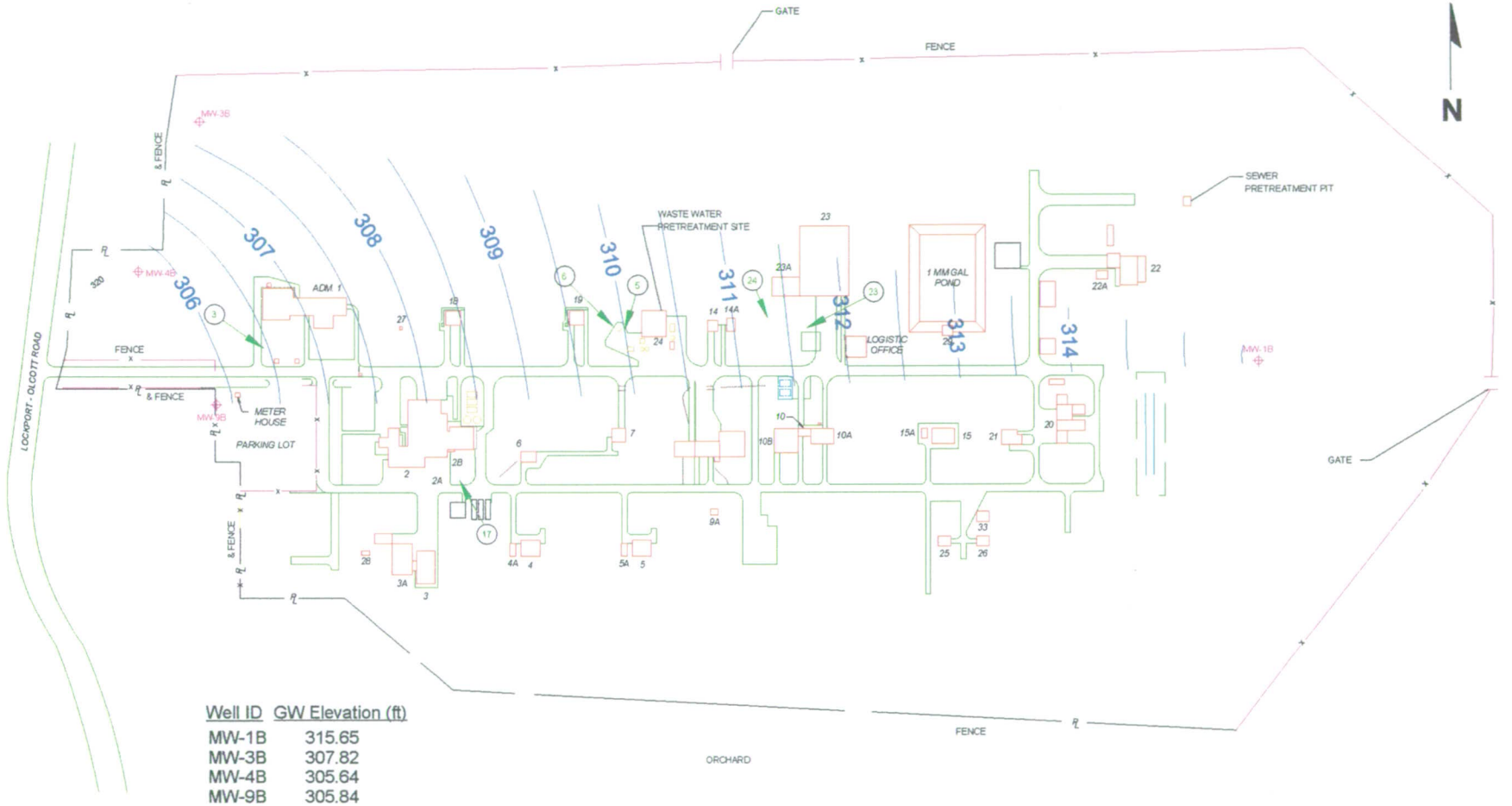
Figure 7
Bedrock Ground Water Elevation Contours
August 2002

Date: 2/03 | Project No. 19045



Well ID	GW Elevation (ft)
MW-1B	315.65
MW-3B	307.82
MW-4B	305.64
MW-9B	305.84

Graphic Scale

0 ft 200 ft

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Figure 8
Bedrock Ground Water Elevation Contours
October 2002

Date: 2/03 | Project No. 19045

A pronounced downward vertical gradient was previously detected at the MW-3, MW-3B; MW-4, MW-4B and MW-9, MW-9B clusters, and was confirmed during the August 2002 and October 2002 elevation determinations. The CMS field work provided additional confirmation that a pronounced downward vertical gradient is in effect on the western boundary of the site. This downward vertical gradient may be the result of a nearby bedrock ground water discharge area (the eighteenmile creek downstream of the base of the dam immediately NW of the site) west of the MW-3B, MW-4B, and MW-9B line of wells, and the drop in the apparent bedrock (and overlying fine lacustrine sediments and thin till layer) surface to the east. The degree of hydraulic communication thus may be limited, based upon measured ground water gradients, and observations of a dry and dense till layer at the bedrock/overburden interface at MWs-3,3B; MWs-4,4B; and MWs-9,9B cluster locations. The 2001 CMS drilling activity identified glacial till materials at the MW-9B location from 10 to 19.6 ft BGS where bedrock was encountered. This represents a larger thickness of till than was observed in previous borings at the site. The till unit observed at MW-4B exists from 12 to 15.8 ft. In both the MW-9B and 4B locations a dry, dense till unit exists at the bedrock /overburden interface. These findings are consistent with the findings at MW-3B installed during the Phase II RFI.

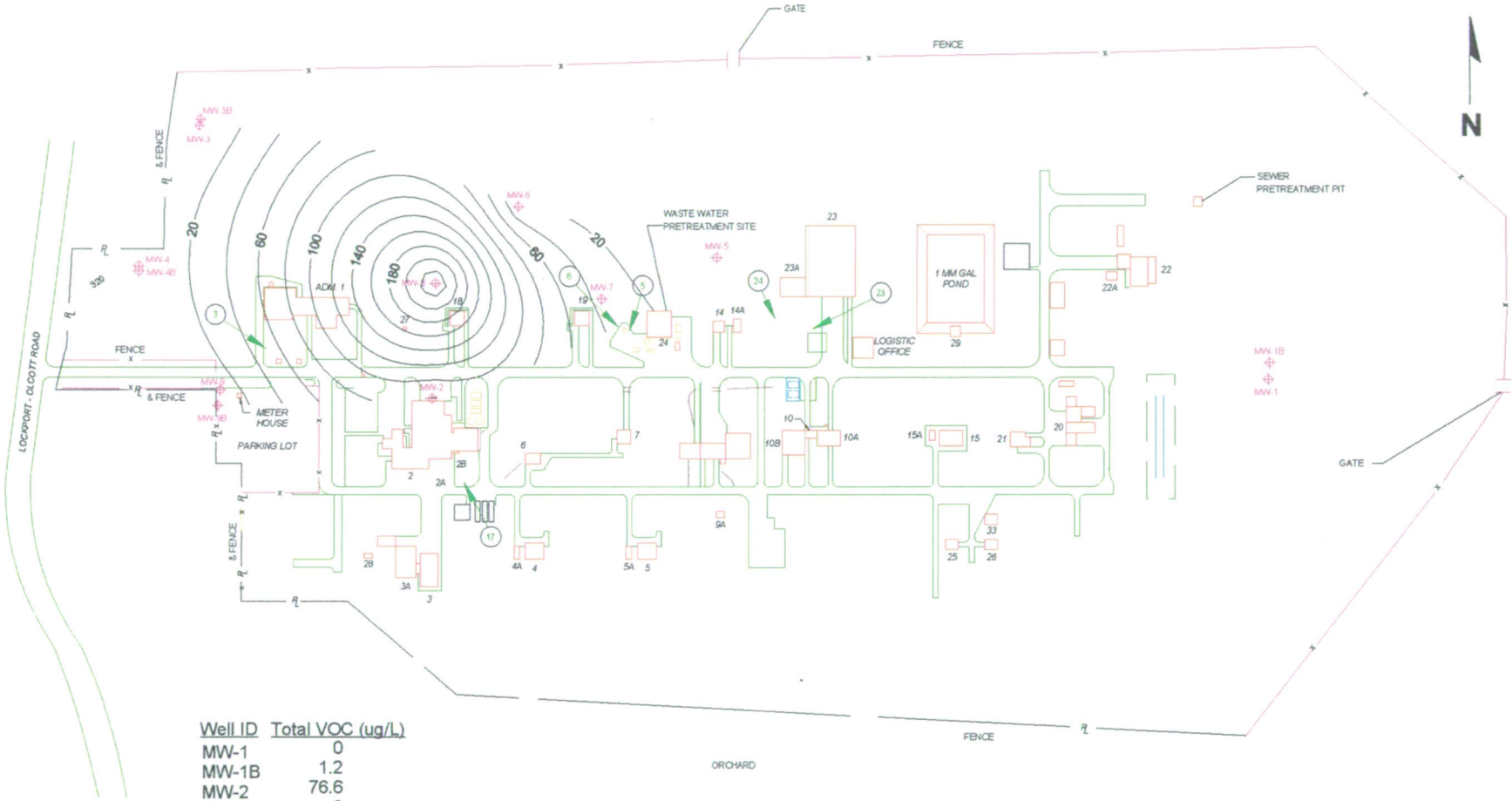
3.2 Ground Water Quality Addendum

The nature and extent of contamination in the uppermost aquifer ground water was evaluated via installation, and testing for VOC contamination, of a monitoring well network, illustrated in Figure 4, comprised of the wells listed in Table 3.

Table 3. Ground Water Monitoring Wells Installed During the RFI			
Well	**Depth or Unit**	**Slug Tested**	**Analytical Parameters and Sampling Frequency**
Background wells MW-1, MW-1B	Overburden MW-1; Bedrock MW-1B	Overburden MW-1; Bedrock MW-1B	Water quality testing via EPA Method 8260B, field parameters, One sample each well per quarter for one year in Phase II RFI, plus 4 quarters in CMS
Source Area wells MW-2, MW-5, MW-7, And MW-8	Overburden MW-2, MW-5, MW-7, MW-8	Overburden MW-5, MW-7, MW-8	Water quality testing via EPA Method 8260B, field parameters, One sample each well per quarter for one year in Phase II RFI, plus 4 quarters in CMS
Down gradient offset well MW-6	Overburden MW-6	Not Tested	Water quality testing via EPA Method 8260B, field parameters, Three samples for one year in Phase II RFI, plus 4 quarters in CMS
Downgradient boundary wells MW-3, MW-3B, MW-4, MW-4B, MW-9, MW-9B	Overburden MW-3, MW-4, MW-9; Bedrock MW-3B, MW-4B, MW-9B	Overburden MW-3, MW-4, MW-9; Bedrock MW-3B, MW-4B, MW-9B	Water quality testing via EPA Method 8260B, field parameters, One sample each well per quarter for one year in Phase II RFI, plus 4 quarters in CMS

All wells and OS-1 (installed at SWMU 17, see Figures 3 & 4) were evaluated for LNAPL presence with an interface probe prior to purging. No LNAPL was found. Table 4 summarizes the results of analysis of ground water samples collected during the Phase II RFI and CMS field work. Total volatile organic compound isopleths for each CMS sampling event are presented in Figures 9-12. Graphs of contaminant trends over time in specific monitoring wells are presented in Figures 13-24.

It should be noted that PZ-02 and PZ-03 provide overburden ground water elevation data but were not constructed as monitoring wells, and therefore no definition of ground water quality to the south of the industrialized portion of the Akzo Nobel facility was completed since the ground water field screening definition of extent of volatile organic compound ground water impact completed during the RFI found no evidence of volatile organic contamination to the south (see the RFI Report, April 1997). However, PZ-03 has generally exhibited the highest ground water elevation per round, and PZ-03 and PZ-02 appear to be up gradient of the industrialized section of the facility in most overburden ground water elevation rounds. The addition of MW-10 and MW-10B to the south of PZ-02 will provide additional water quality data in this location in the future.



Well ID	Total VOC (ug/L)
MW-1	0
MW-1B	1.2
MW-2	76.6
MW-3	0
MW-3B	0
MW-4	0
MW-4B	0
MW-5	0
MW-6	20.6
MW-7	33.3
MW-8	241.7
MW-9	9.5
MW-9B	0

Graphic Scale

0 ft 200 ft

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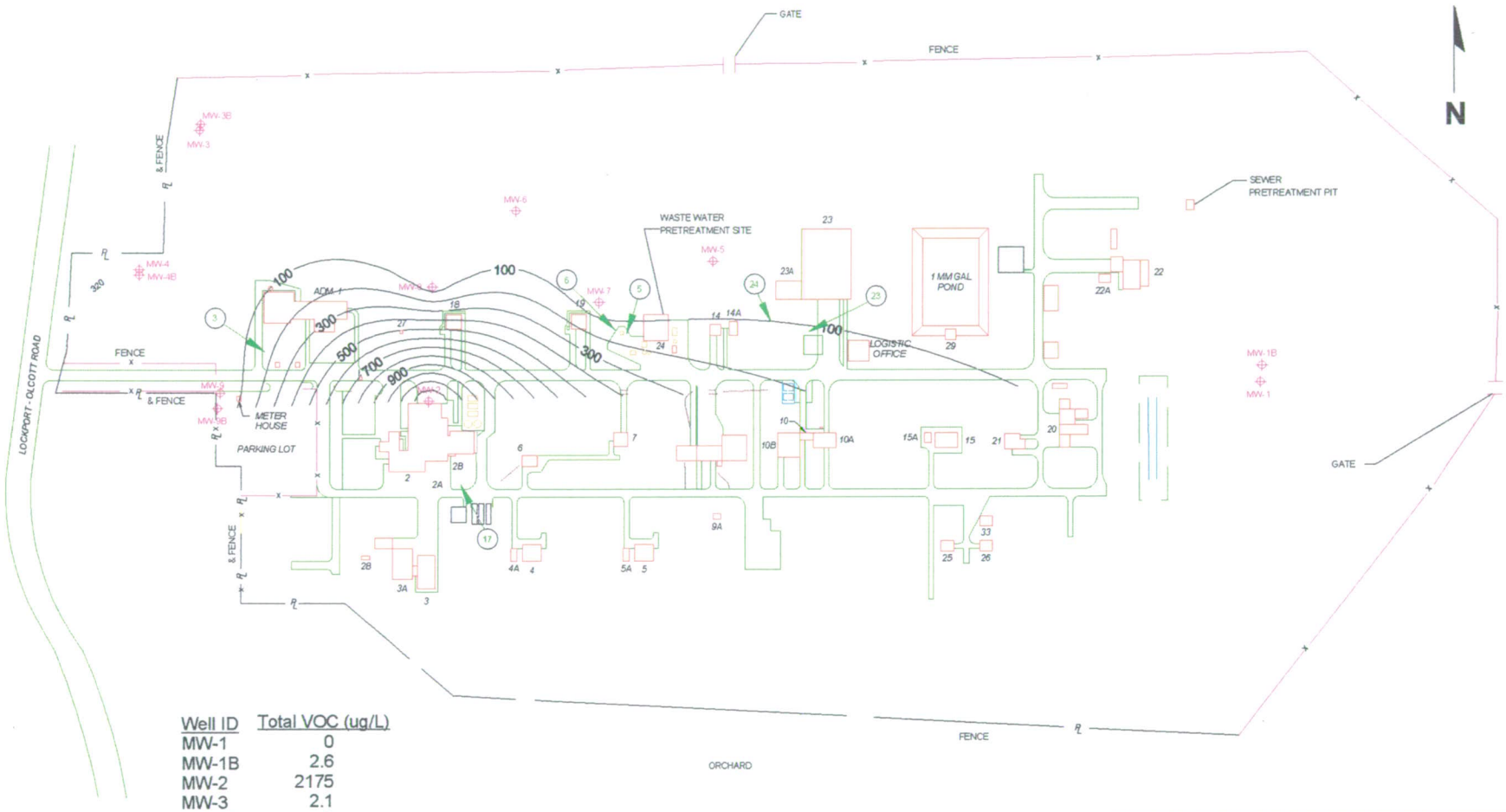
Figure 9
Total Volatile Organic Compound Isopleth
December 2001

Date: 2/03 | Project No. 19045



Well ID	Total VOC (ug/L)
MW-1	0
MW-1B	2.6
MW-2	2175
MW-3	2.1
MW-3B	0
MW-4	0
MW-4B	0
MW-5	0
MW-6	0
MW-7	11.4
MW-8	33.1
MW-9	6.7
MW-9B	0

Graphic Scale

0 ft 200 ft

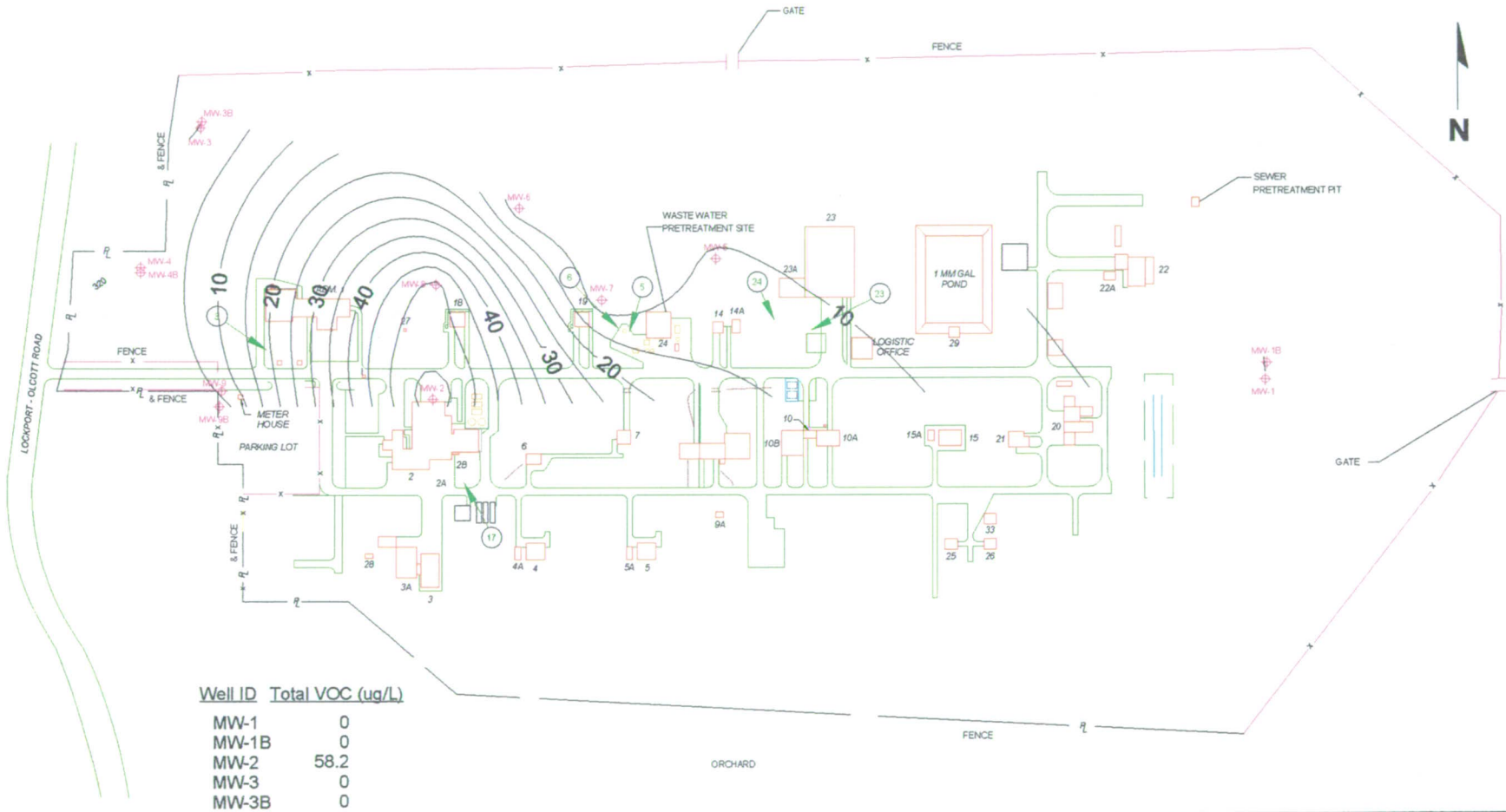
TRC

Boott Mills South
Foot of John Street
Lowell, MA. 01852
(978) 970-5600

AKZO NOBEL CHEMICAL, INC.
BURT, NEW YORK

Figure 10
Total Volatile Organic Compound Isopleth
April 2002

Date: 2/03 | Project No. 19045



Well ID	Total VOC (ug/L)
MW-1	0
MW-1B	0
MW-2	58.2
MW-3	0
MW-3B	0
MW-4	0
MW-4B	0
MW-5	11
MW-6	7.2
MW-7	7
MW-8	52.1
MW-9	6.9
MW-9B*	0

note: * Well not contoured

Graphic Scale

0 ft 200 ft

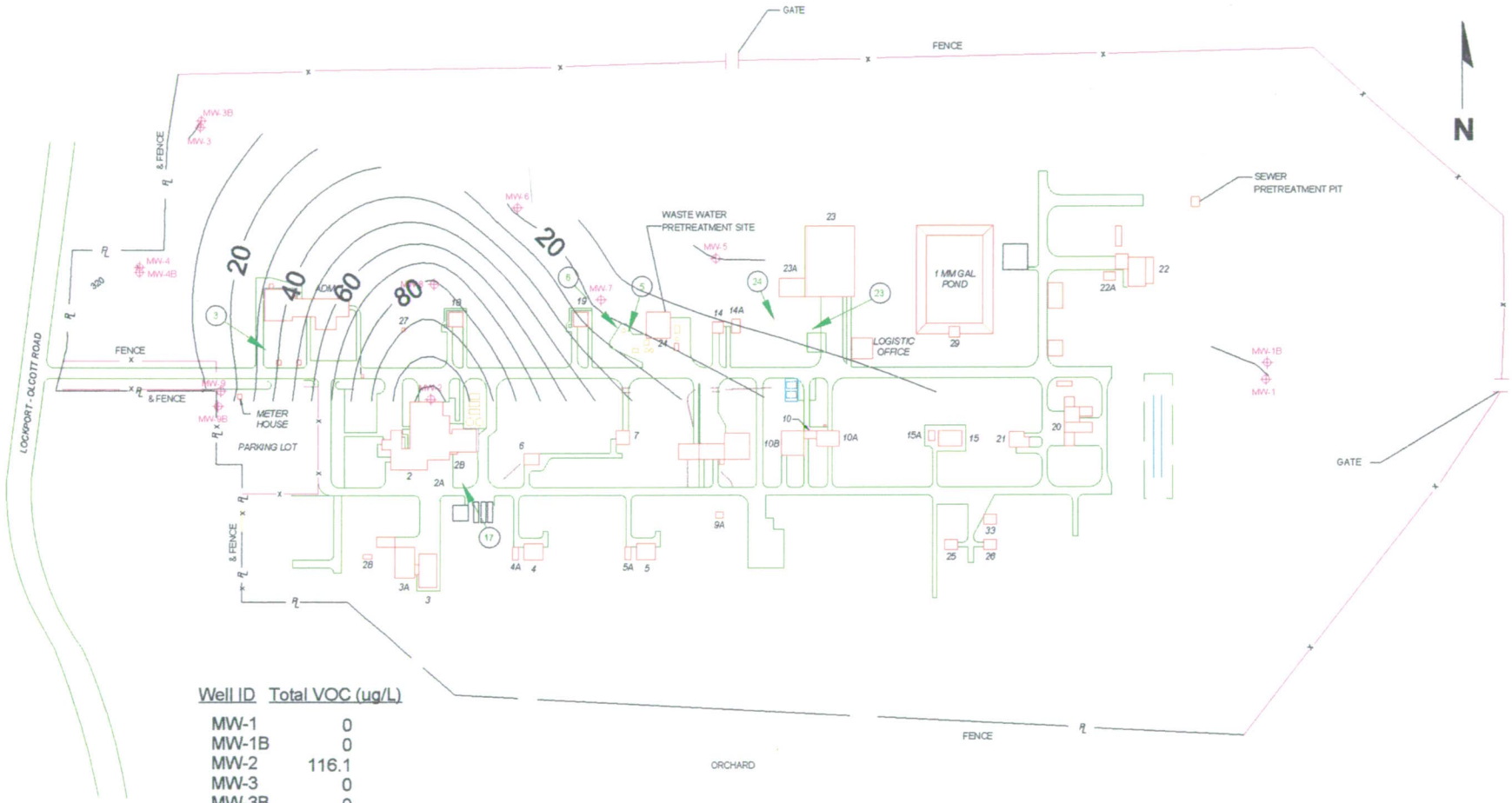
TRC

Boott Mills South
Foot of John Street
Lowell, MA. 01852
(978) 970-5600

AKZO NOBEL CHEMICAL, INC.
BURT, NEW YORK

Figure 11
Total Volatile Organic Compound Isopleth
August 2002

Date: 2/03 | Project No. 19045



Well ID	Total VOC (ug/L)
MW-1	0
MW-1B	0
MW-2	116.1
MW-3	0
MW-3B	0
MW-4	0
MW-4B	0
MW-5	0
MW-6	17.5
MW-7	15.6
MW-8	83.9
MW-9	11.2
MW-9B*	0

note: * Well not contoured

Graphic Scale

0 ft 200 ft

TRC

Boott Mills South
Foot of John Street
Lowell, MA. 01852
(978) 970-5600

AKZO NOBEL CHEMICAL, INC.
BURT, NEW YORK

Figure 12
Total Volatile Organic Compound Isopleth
October 2002

Date: 2/03 | Project No. 19045

Figure 13
Selected Concentration Trends at Well MW-2
(not including Toluene)

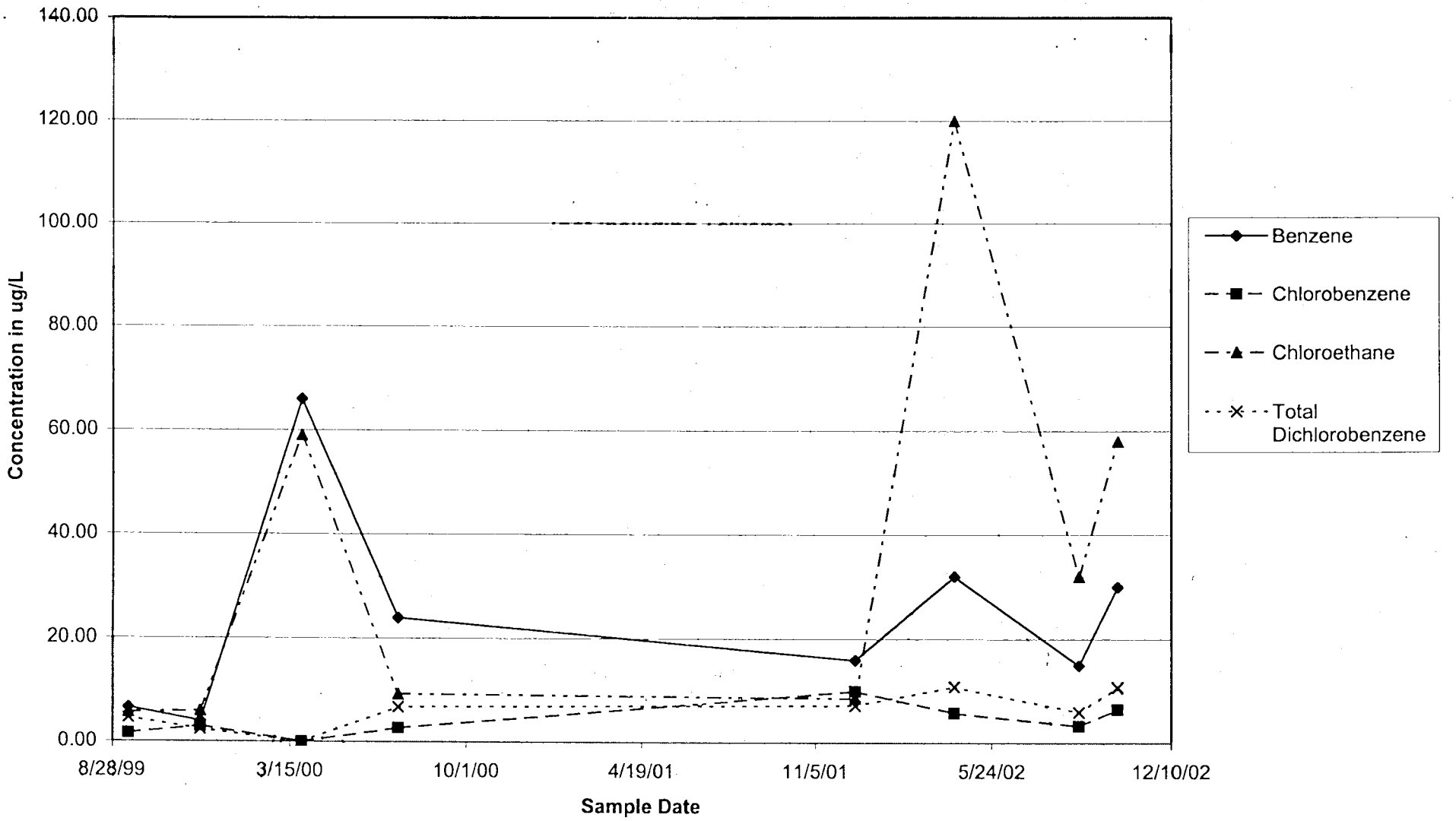


Figure 14
Toluene Concentration Trends at Well MW-2

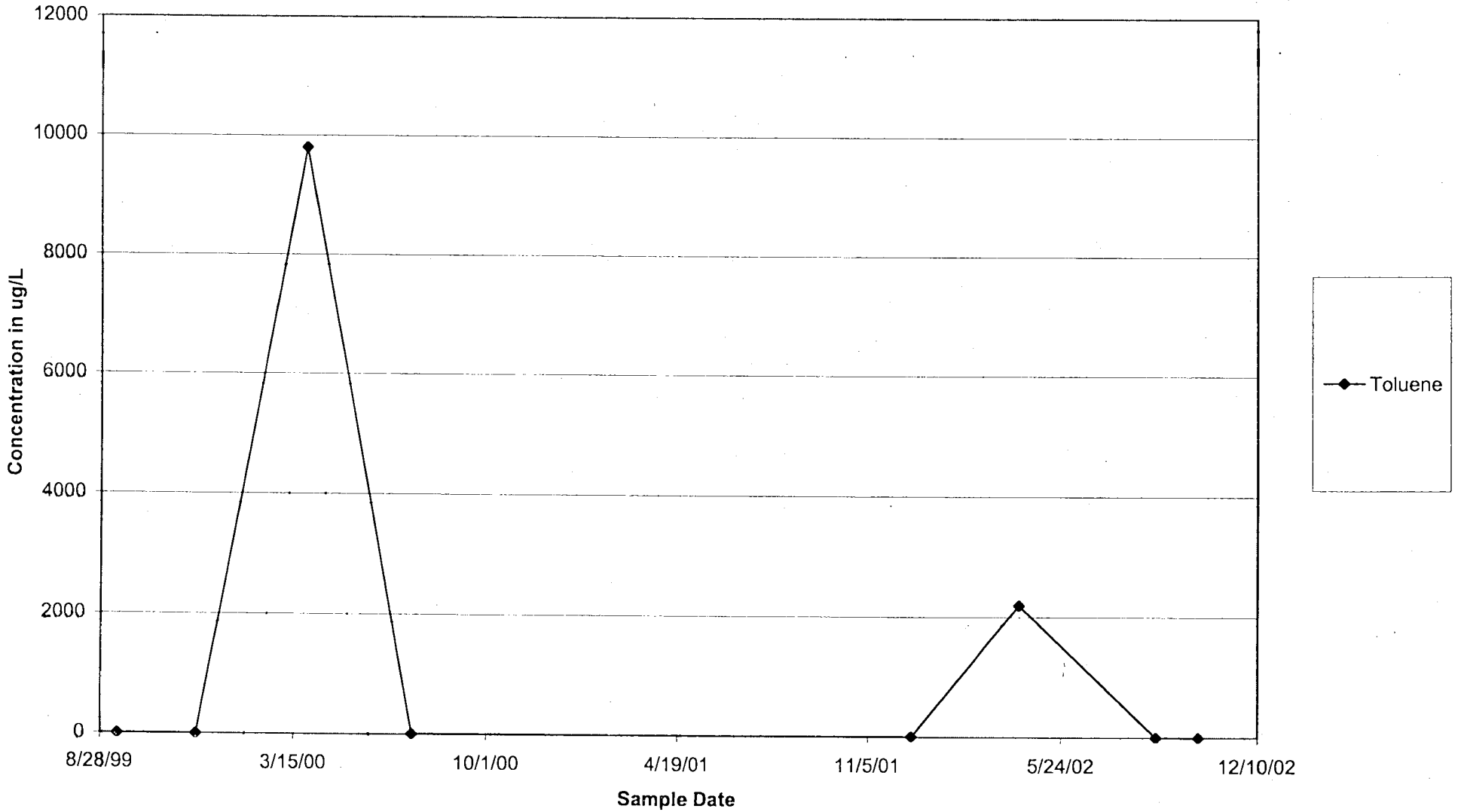


Figure 15
Selected Concentration Trends at Well MW-5

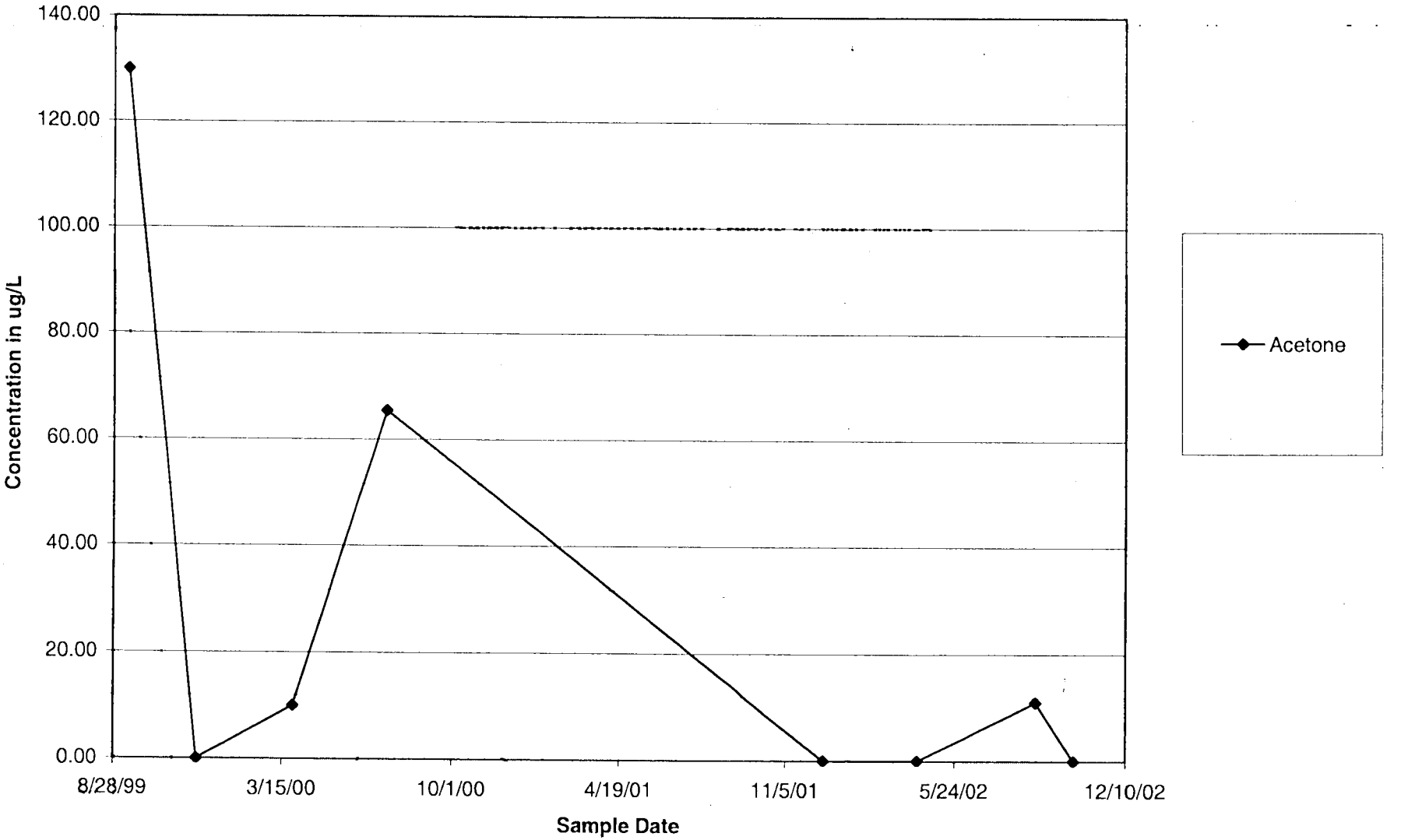


Figure 16
Selected Concentration Trends at Well MW-6

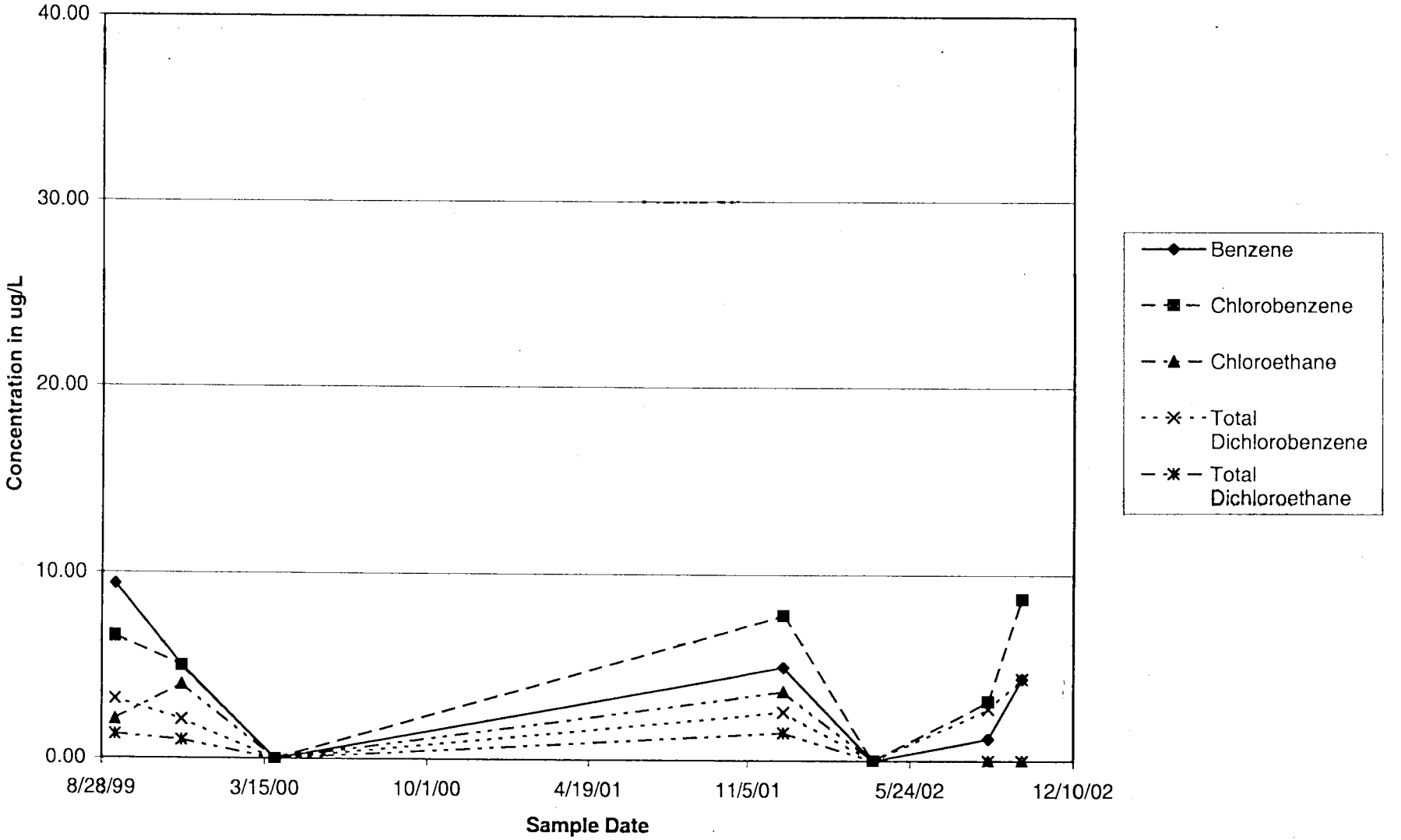


Figure 17
Selected Concentration Trends at MW-7
Acetone and 2-butanone

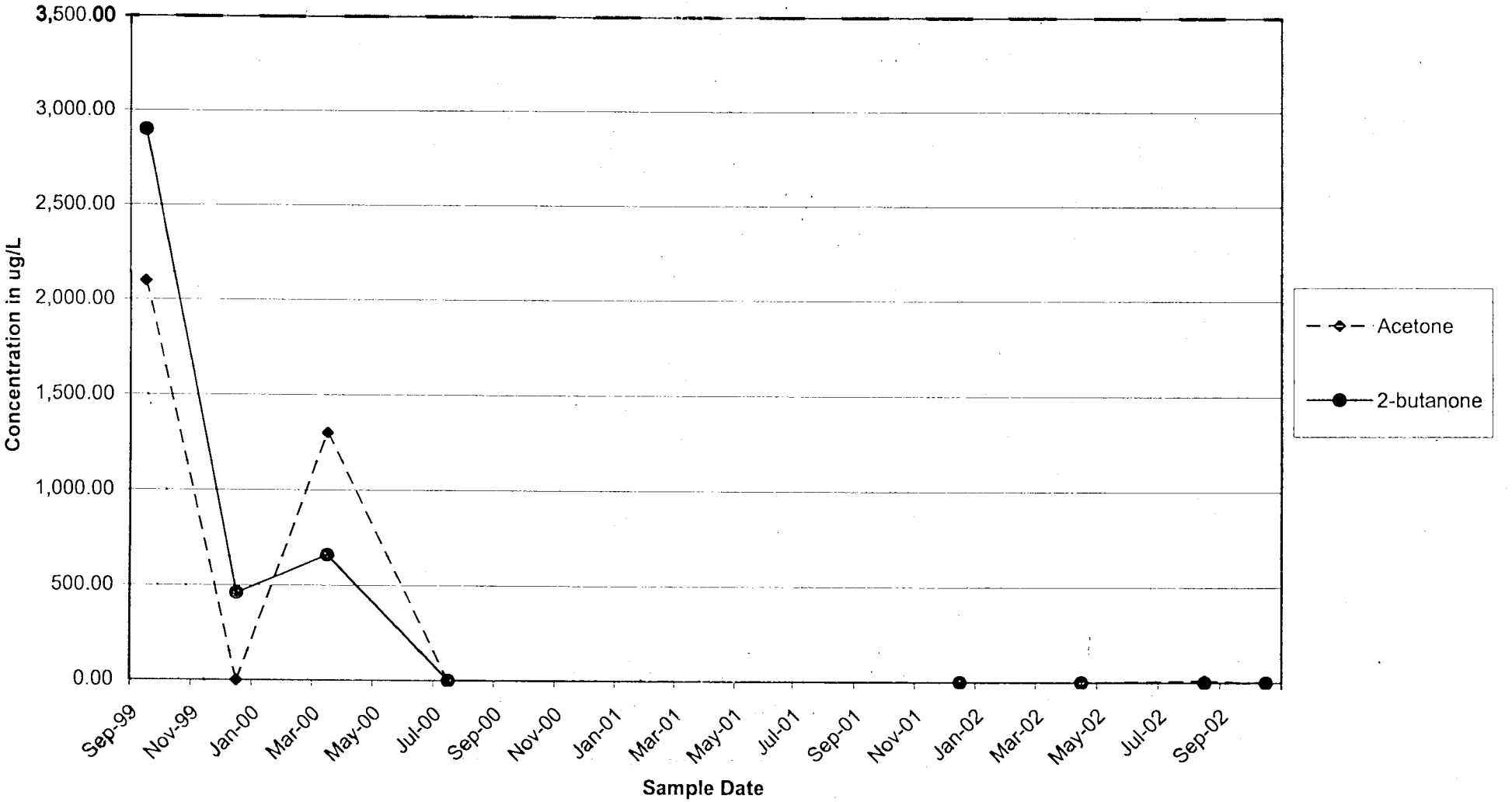


Figure 18
Selected Concentration Trends at Well MW-7
(minus Acetone and 2-butanone)

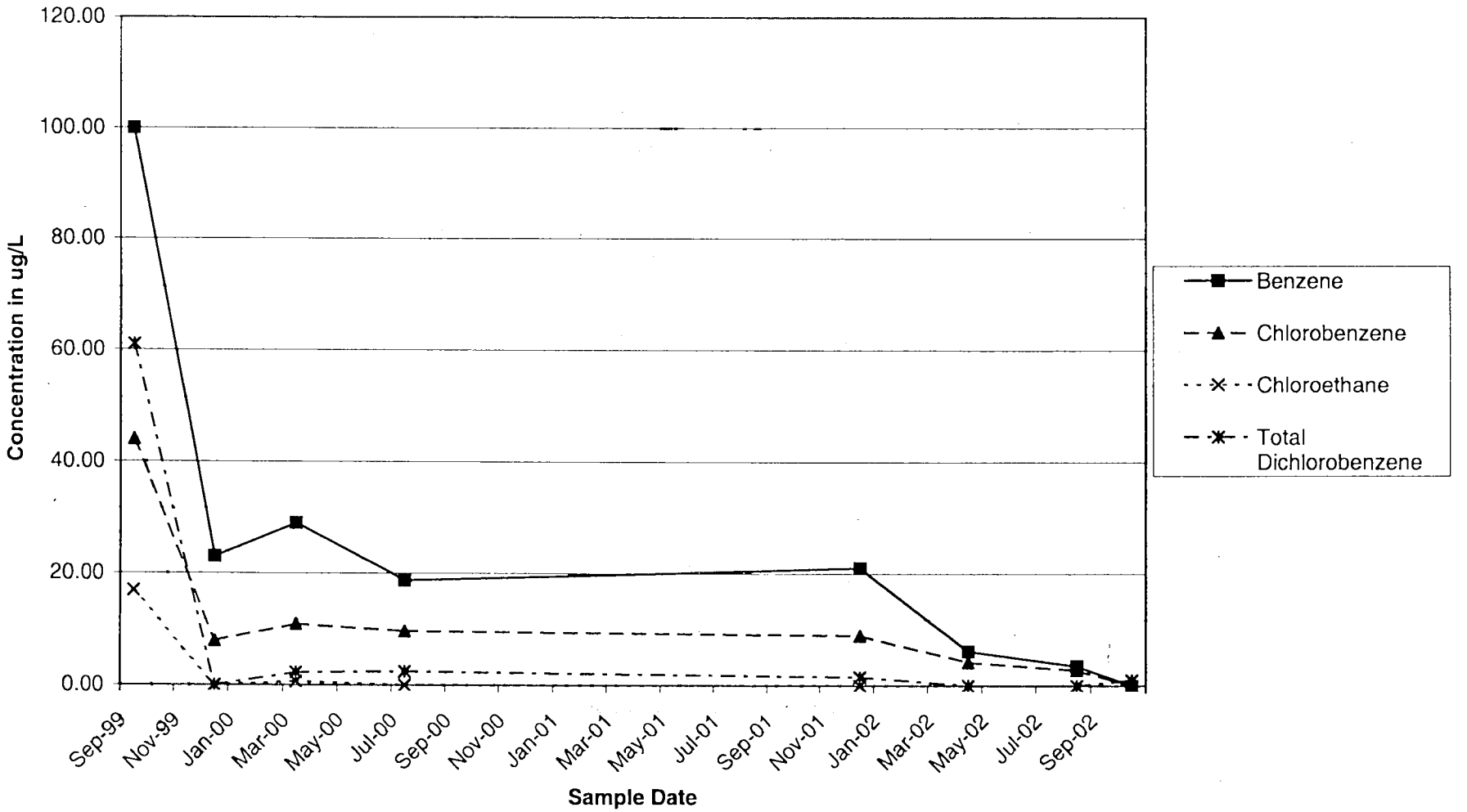


Figure 19
Selected Concentration Trends at Well MW-8

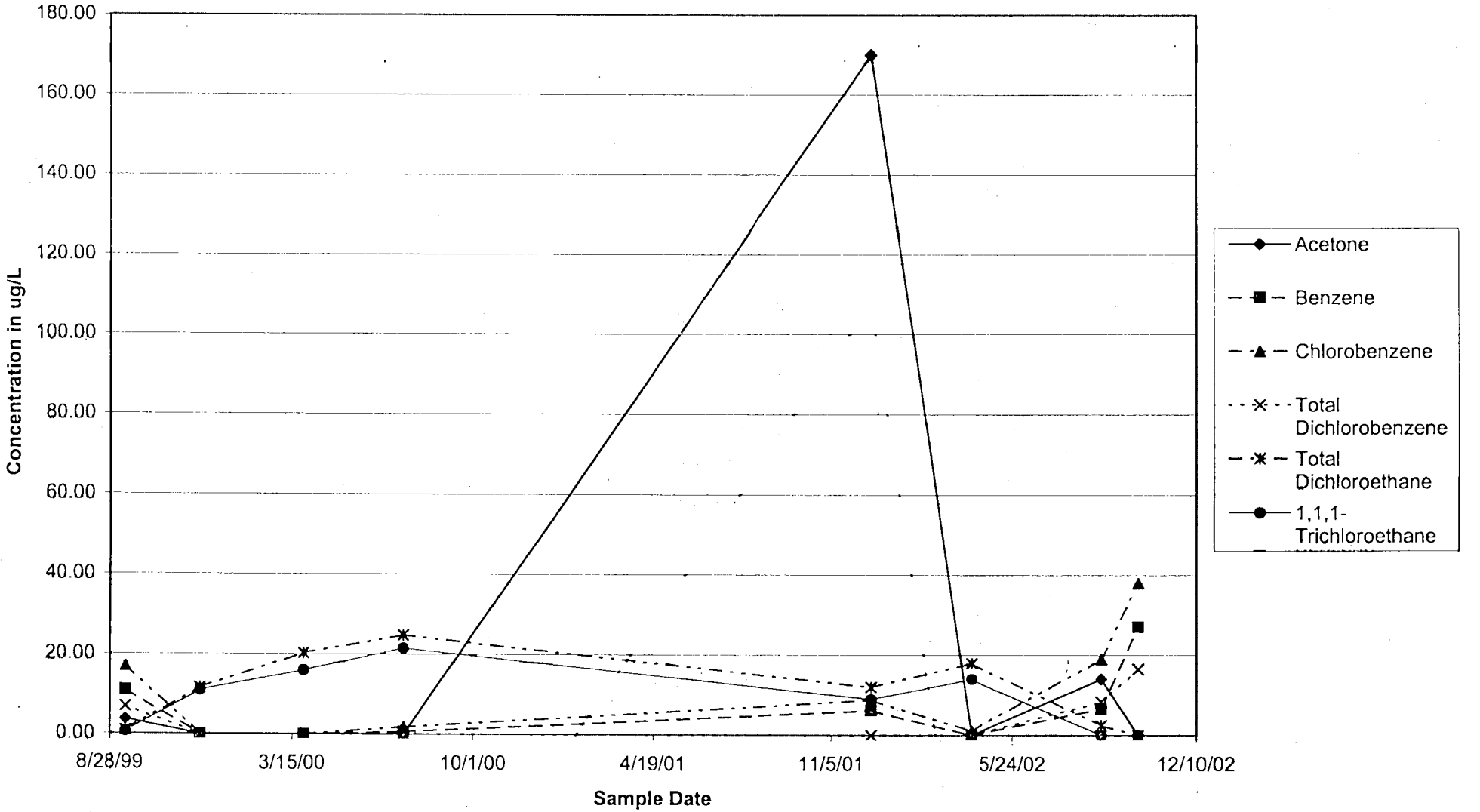


Figure 20
Selected Concentration Trends at Well MW-9

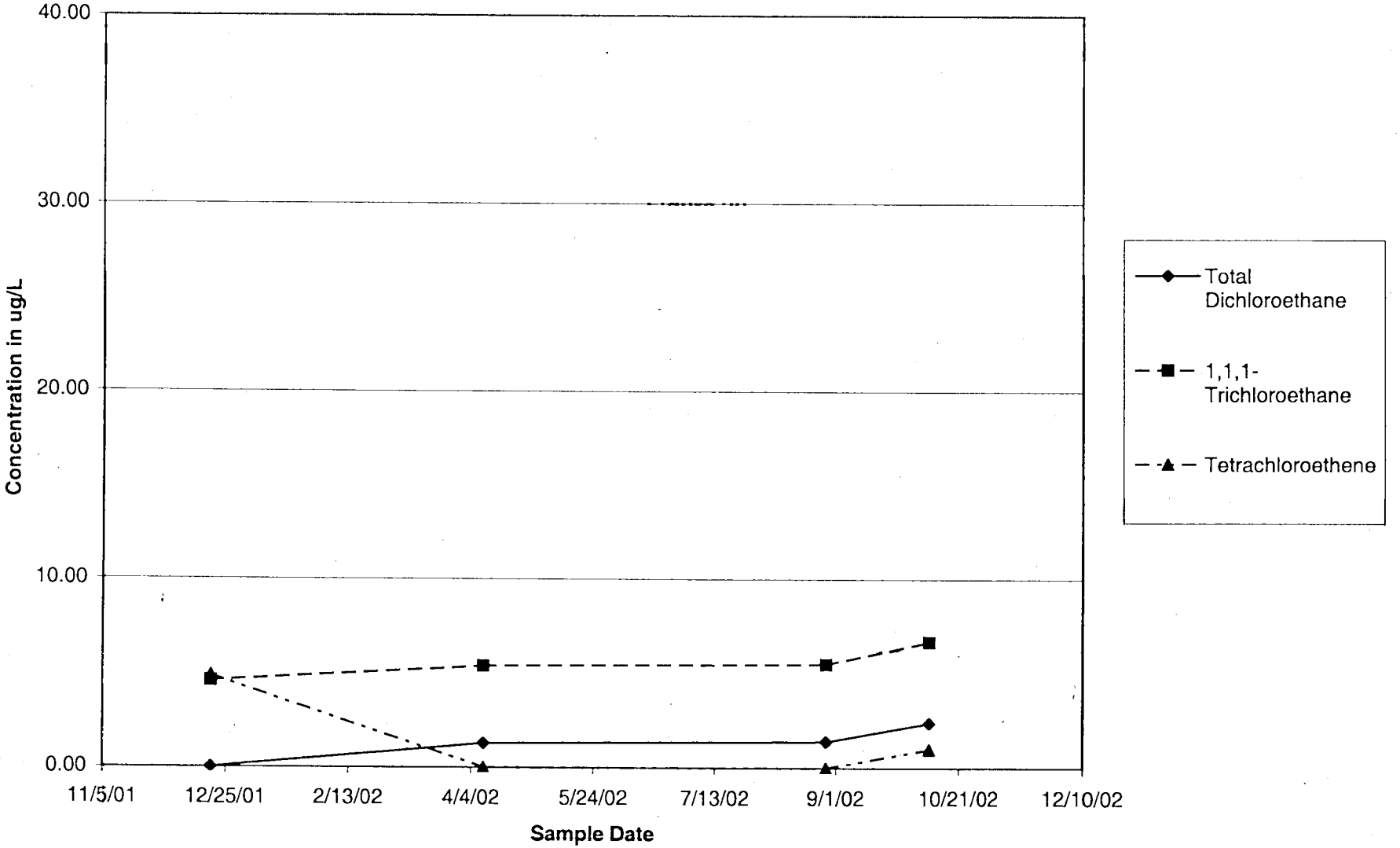


Figure 21
Total VOC Concentration Trends

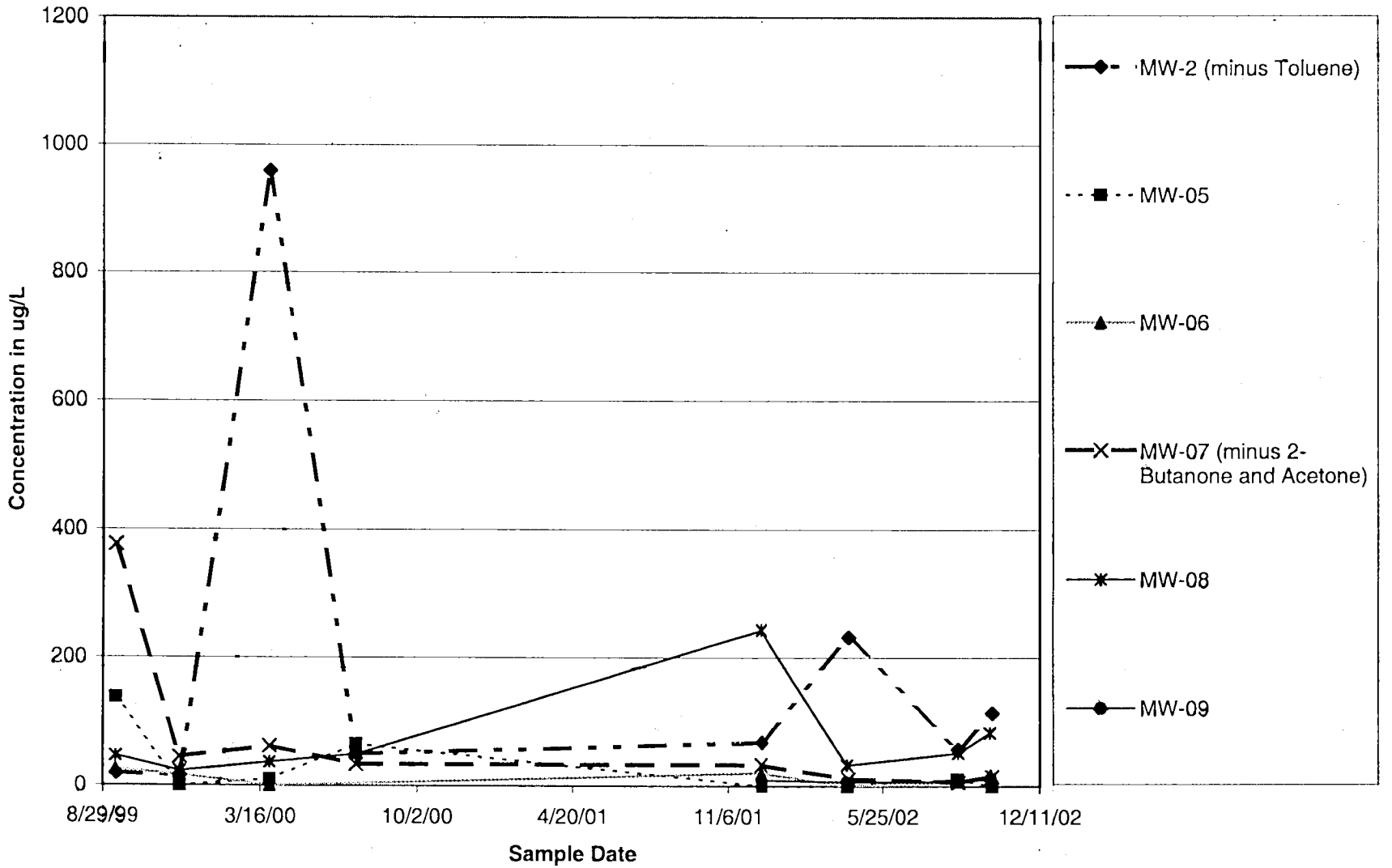


Figure 22
Total VOC Concentration Trends for Wells MW-02 and MW-07

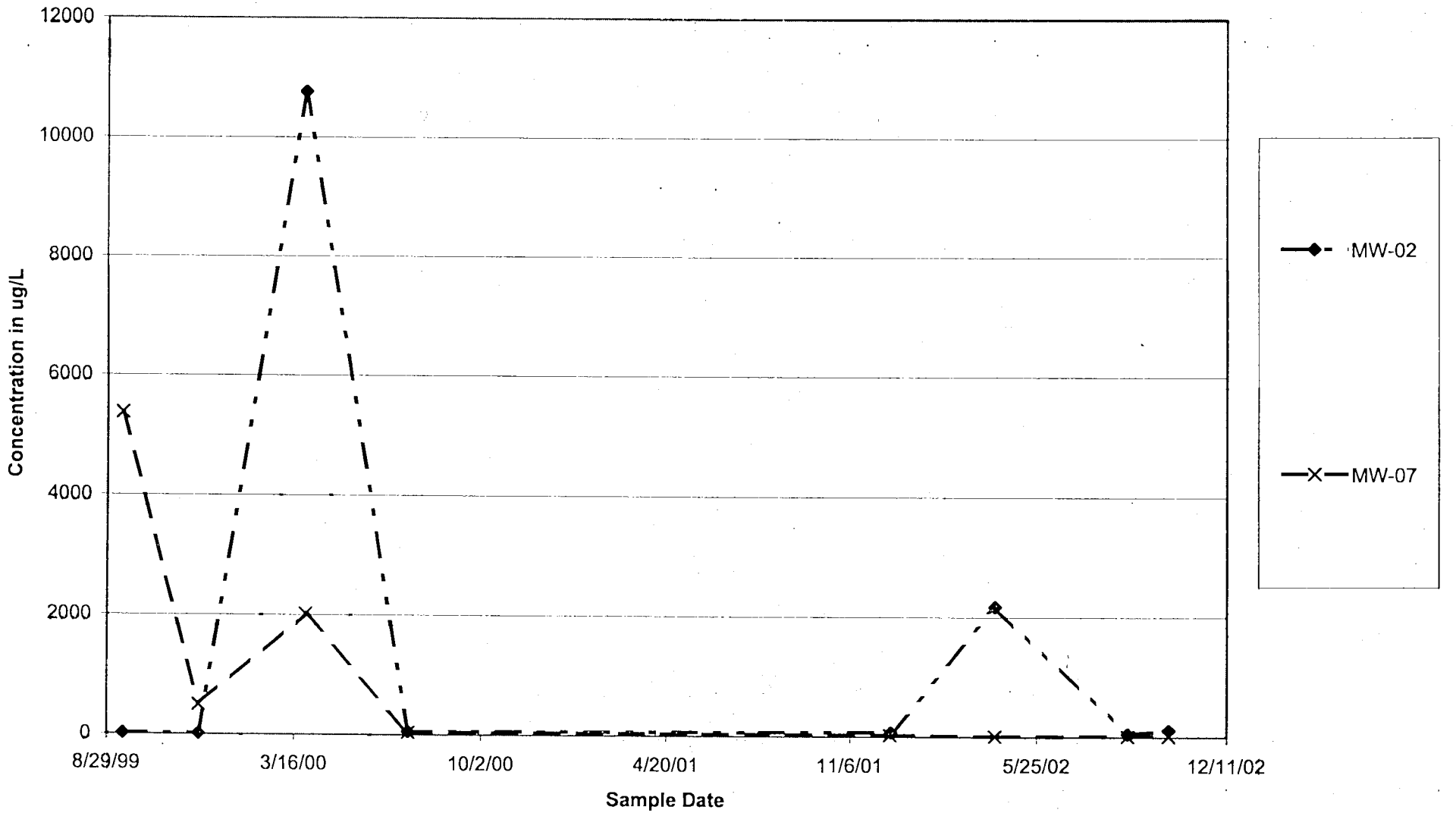


TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-01	MW-01	MW-01	MW-01	MW-01	MW-01	MW-01	MW-01
Lab Sample ID	GW	992342A-07	993238A-11	367935	E73162-11	519592	543922	580722	591719
Date Sampled	Standards	09/14/99	12/5/99	3/28/00	7/16/00	12/19/01	4/11/02	8/28/02	10/08/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	C	A	C	C	C	C
Compound									
Acetone	50	< 5.4 UJ	< 6 UJ	R	< 5.0 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	0.2	< 0.2 U	< 0.70 UJ	< 0.50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1 U	< 1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 5.7 U	< 2 U	R	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 0.4 U	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 0.4 U	< 0.4 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 0.3 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 0.6 U	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 1 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 0.1 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	1.5 J	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	1.6 J	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	0.4	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 0.2 UJ	< 0.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	0.2	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	0.4	< 0.2 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-1B	MW-1B	MW-1B	MW-1B	MW-1B	MW-1B	MW-1B	MW-1B
Lab Sample ID	GW	992342A-06	993238A-10	387936	E73162-12	519591	543923	580715	591718
Date Sampled	Standards	09/14/99	12/5/99	3/28/00	7/16/00	12/19/01	4/11/02	8/29/02	10/08/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	C	A	C	C	C	C
Compound									
Acetone	50	< 26 UJ	< 22 UJ	28 J	6.7	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	1.1	0.9	1.7	0.57	1.2	2.6	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1 U	< 1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 16 U	< 8 U	8.2 J	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 0.4 U	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 0.4 U	< 0.4 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 0.3 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 0.7 U	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 1.5 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 0.1 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	2.3 J	0.3	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 0.2 UJ	< 0.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	0.4	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 0.2 U	< 0.2 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-02		MW-02		MW-02		MW-02		MW-02	
Lab Sample ID	GW	992342A-15		993238A-12		367934		E73162-3		519604	
Date Sampled	Standards	09/15/99		12/5/99		3/28/00		7/16/00		12/20/01	
Dilution	Revised 3/22/99	1.00		1.00		100		1.00		1.00	
Units		ug/L		ug/L		ug/L		ug/L		ug/L	
Lab Identity		S		S		C		A		C	
Compound											
Acetone	50	< 2.5	UJ	< 8	UJ	< 1000	UJ	< 5.0	U	< 10	U
Benzene	1	0.6		4		66	J	23.9		16	
Bromodichloromethane	50	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
Bromoform	5	< 0.1	U	< 0.1	U	< 100	U	< 1.0	U	< 1.0	U
Bromomethane	5	< 1	U	< 1	U	< 100	U	< 1.0	U	< 1.0	U
2-Butanone	50	< 3.3	U	< 2	U		R	< 5.0	U	< 5.0	U
Carbon Disulfide	50	< 0.4	U	< 0.4	U	< 5.0	U	< 5.0	U	< 5.0	U
Carbon Tetrachloride	5	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
Chlorobenzene	5	1.6		3		< 100	U	2.7		10	
Chloroethane	5	5.7		7.6		59	J	9.3		8.6	
2-Chloroethylvinylether	5	< 0.3	UJ	< 0.3	U	< 100	U	< 1.0	U	< 10	U
Chloroform	7	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
Chloromethane	5	< 0.6	U	< 0.6	U	< 100	U	< 1.0	U	< 1.0	U
Dibromochloromethane	50	< 0.1	U	< 0.1	U	< 100	U	< 1.0	U	< 1.0	U
1,2-Dichlorobenzene	3	2.1		1		< 100	U	30		33	
1,3-Dichlorobenzene	3	1.6		0.9		< 100	U	2.4		2.6	
1,4-Dichlorobenzene	3	0.9		0.5		< 100	U	1.4		1.3	
1,1-Dichloroethane	5	< 0.1	U	0.5		630		1.3		1.3	
1,2-Dichloroethane	0.6	< 0.6	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
1,1-Dichloroethene	5	< 0.3	U	< 0.3	U	< 100	U	< 1.0	U	< 1.0	U
cis-1,2-Dichloroethene	5	< 0.2	U	< 0.2	U	70	J	< 1.0	U	< 1.0	U
trans-1,2-Dichloroethene	5	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
Dichloromethane	5	< 0.1	UJ	< 0.3	U	< 100	U	< 1.0	U	2.5	
1,2-Dichloropropane	1	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
cis-1,3-Dichloropropene	0.4*	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
trans-1,3-Dichloropropene	0.4*	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
Ethylbenzene	5	< 0.3	U	< 0.3	U	< 100	U	3.8		1.9	
2-Hexanone	50	< 0.4	UJ	< 0.4	U	< 500	U	< 5.0	U	< 5.0	U
4-Methyl-2-Pentanone	50	< 0.4	UJ	< 0.4	U	< 500	U	< 5.0	U	< 5.0	U
Styrene	5	< 0.3	U	< 0.3	U	< 100	U	< 1.0	U	< 1.0	U
1,1,2,2-Tetrachloroethane	5	< 0.2	UJ	< 0.2	UJ	< 100	U	< 1.0	U	< 1.0	U
Tetrachloroethene	5	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
Toluene	5	< 0.2	U	0.3		3600		810		57.2	
1,1,1-Trichloroethane	5	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
1,1,2-Trichloroethane	1	< 0.2	U	< 0.2	U	< 100	U	< 1.0	U	< 1.0	U
Trichloroethene	5	< 0.3	U	< 0.3	U	< 100	U	< 1.0	U	< 1.0	U
Vinyl Acetate	5	< 1.2	UJ	< 1.0	U	< 100	U	< 1.0	U	< 2.0	U
Vinyl Chloride	2	< 0.3	U	< 0.3	U	62	J	< 1.0	U	< 1.0	U
Xylene (total)	5	0.5		0.4		72	J	2.4		2.9	

Data validation qualifiers applied by TRC; CMS data not validated
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*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-02		MW-02		MW-02		MW-02	
Lab Sample ID	GW	543924		543924		580717		591725	
Date Sampled	Standards	4/11/02		4/11/02		8/29/02		10/11/02	
Dilution	Revised 3/22/99	1.00		20		1.00		1.00	
Units		ug/L		ug/L		ug/L		ug/L	
Lab Identity		C		C		C		C	
Compound									
Acetone	50	< 10	U	< 200	U	< 10	U	< 10	U
Benzene	1	92		34		15		30	
Bromodichloromethane	50	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Bromoform	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Bromomethane	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
2-Butanone	50	< 5.0	U	< 100	U	< 5.0	U	< 5.0	U
Carbon Disulfide	50	< 5.0	U	< 100	U	< 5.0	U	< 5.0	U
Carbon Tetrachloride	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Chlorobenzene	5	58		< 20	U	3.3		6.5	
Chloroethane	5	120		110		32		56	
2-Chloroethylvinylether	5	< 10	U	< 200	U	< 5.0	U	< 5.0	U
Chloroform	7	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Chloromethane	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Dibromochloromethane	50	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
1,2-Dichlorobenzene	3	43		< 20	U	2.6		5.1	
1,3-Dichlorobenzene	3	4.9		< 20	U	2.2		3.0	
1,4-Dichlorobenzene	3	1.8		< 20	U	1.2		1.7	
1,1-Dichloroethane	5	4.3		< 20	U	< 1.3	U	< 1.3	U
1,2-Dichloroethane	0.6	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
1,1-Dichloroethene	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
cis-1,2-Dichloroethene	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
trans-1,2-Dichloroethene	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Dichloromethane	5	2.8		< 20	U	< 1.0	U	< 1.0	U
1,2-Dichloropropane	1	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
cis-1,3-Dichloropropene	0.4*	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
trans-1,3-Dichloropropene	0.4*	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Ethylbenzene	5	16		< 20	U	1.9		1.5	
2-Hexanone	50	< 5.0	U	< 100	U	< 5.0	U	< 5.0	U
4-Methyl-2-Pentanone	50	< 5.0	U	< 100	U	< 5.0	U	< 5.0	U
Styrene	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
1,1,2,2-Tetrachloroethane	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Tetrachloroethene	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Toluene	5	1100	E	2000		< 1.0	U	1.2	
1,1,1-Trichloroethane	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
1,1,2-Trichloroethane	1	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Trichloroethene	5	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Vinyl Acetate	5	< 2.0	U	< 40	U	< 5.0	U	< 5.0	U
Vinyl Chloride	2	< 1.0	U	< 20	U	< 1.0	U	< 1.0	U
Xylene (total)	5	402		361		< 1.0	U	8.4	

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TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-03	MW-03	MW-03	MW-03	MW-03	MW-03	MW-03	MW-03
Lab Sample ID	GW	992342A-03	993238A-04	367927	E73162-6	519593	543925	580720	591726
Date Sampled	Standards	09/13/99	12/5/99	3/28/00	7/16/00	12/19/01	4/11/02	8/28/02	10/10/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	C	A	C	C	C	C
Compound									
Acetone	50	< 4.2 UJ	< 6 UJ	< 10 UJ	< 5.0 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	0.5	< 0.2 U	< 0.7 UJ	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1 U	< 1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 3.4 U	< 2 U	R	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 0.4 U	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 0.4 U	< 0.4 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 0.3 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 0.6 U	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	0.6	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 0.1 UJ	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 0.2 UJ	< 0.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	0.4	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	0.4	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 0.2 U	< 0.2 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

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NA=NOT APPLICABLE
*=Applies to sum of cis and trans

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UJ = Not Detected, Detection Limit Estimated
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TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-3B	MW-3B	MW-3B	MW-3B	MW-3B	MW-3B	MW-3B	MW-3B
Lab Sample ID	GW	992342A-04	993238A-03	367928	E73162-7	519594	543542	580721	591727
Date Sampled	Standards	09/13/99	12/5/99	3/28/00	7/16/00	12/19/01	4/10/02	8/28/02	10/10/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	C	A	C	C	C	C
Compound									
Acetone	50	< 2.8 UJ	< 6 UJ	< 10 UJ	< 5.0 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	< 0.2 U	< 0.2 U	< 0.7 UJ	< .50 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5*	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1 U	< 1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 2 U	< 2 U	R	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 0.4 U	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 0.4 U	< 0.4 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 0.3 UJ	< 0.3 U	< 1.0 U	R	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 0.6 U	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	0.4 J	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	0.5 J	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 0.1 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 0.2 UJ	< 0.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 0.2 U	< 0.2 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-04	MW-04	MW-04	MW-04	MW-04	MW-04	MW-04	MW-04
Lab Sample ID	GW	992342A-16	993238A-02	367926	E73162-5	519596	543543	580718	591728
Date Sampled	Standards	09/15/99	12/5/99	3/28/00	7/16/00	12/19/01	4/10/02	8/28/02	10/10/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	C	A	C	C	A	A
Compound									
Acetone	50	< 4.9 UJ	< 6 UJ	< 10 UJ	< 5.0 U	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	< 0.2 U	< 0.2 U	< .70 UJ	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1 U	< 1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 3.8 U	< 2 U	R	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 0.4 U	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 0.4 U	< 0.4 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 0.3 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 1.2 U	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 1.3 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 0.1 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 0.2 U	< 0.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	0.4	< 0.2 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-04B	MW-04B	MW-04B	MW-04B
Lab Sample ID	GW	519595	543544	580719	591729
Date Sampled	Standards	12/19/01	4/10/02	8/28/02	10/10/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L
Lab Identity		C	C	A	A
Compound					
Acetone	50	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-05	MW-05	MW-05	MW-05	MW-05	MW-05	MW-05	MW-05
Lab Sample ID	GW	992342A-08	993238A-09	367933	E73162-10	519605	543545	580712	591730
Date Sampled	Standards	09/14/99	12/5/99	3/28/00	7/16/00	12/20/01	4/10/02	8/28/02	10/11/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	C	A	C	C	C	C
Compound									
Acetone	50	130 J	< 86 UJ	10 J	65.4	< 10 U	< 10 U	11	< 10 U
Benzene	1	< 0.2 U	< 0.2 U	< 0.7 UJ	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1 U	< 1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 6.1 U	< 2 U	R	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 0.4 U	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	0.6	< 0.4 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 0.3 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 1.3 U	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	0.4	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 0.7 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 0.1 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	2.2 J	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	3.5 J	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	1 J	< 0.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 0.2 U	< 0.2 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-06		MW-06		MW-06		MW-06		MW-06		MW-06		MW-06	
Lab Sample ID	GW	992342A-09		993238A-06		367930		519600		543546		578411		591722	
Date Sampled	Standards	09/14/99		12/5/99		3/28/00		12/19/01		4/09/02		8/29/02		10/09/02	
Dilution	Revised 3/22/99	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Units		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Lab Identity		S		C		S		C		C		C		C	
Compound															
Acetone	50	< 5.8	UJ	< 6	UJ	< 10	UJ	< 10	U	< 10	U	< 10	U	< 10	U
Benzene	1	9.5		5		< 0.7	UJ	6		< 1.0	U	12		4.4	
Bromodichloromethane	50	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Bromoform	5	< 0.1	U	< 0.1	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Bromomethane	5	< 1	U	< 1	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
2-Butanone	50	< 3.4	U	< 2	U		R	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Carbon Disulfide	50	< 0.4	U	< 0.4	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Carbon Tetrachloride	5	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Chlorobenzene	5	466		5		< 1.0	U	7.8		< 1.0	U	3.2		6.7	
Chloroethane	5	2.1		4		< 1.0	U	3.7		< 1.0	U	< 1.0	U	< 1.0	U
2-Chloroethylvinylether	5	< 0.3	UJ	< 0.3	U	< 1.0	U	< 10	U	< 10	U	< 10	U	< 10	U
Chloroform	7	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Chloromethane	5	< 0.6	U	< 0.6	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Dibromochloromethane	50	< 0.1	U	< 0.1	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,2-Dichlorobenzene	3	1.6		1		< 1.0	U	1.4		< 1.0	U	1.6		2.0	
1,3-Dichlorobenzene	3	0.6		0.4		< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	1.0	
1,4-Dichlorobenzene	3	1		0.7		< 1.0	U	1.2		< 1.0	U	1.2		1.4	
1,1-Dichloroethane	5	1.3		1		< 1.0	U	1.5		< 1.0	U	< 1.0	U	< 1.0	U
1,2-Dichloroethane	0.6	< 0.6	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1-Dichloroethene	5	< 0.3	U	< 0.3	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
cis-1,2-Dichloroethene	5	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
trans-1,2-Dichloroethene	5	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Dichloromethane	5	< 0.1	UJ	< 0.3	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,2-Dichloropropane	1	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
cis-1,3-Dichloropropene	0.4*	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
trans-1,3-Dichloropropene	0.4*	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Ethylbenzene	5	0.3		< 0.3	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
2-Hexanone	50	< 0.4	UJ	< 0.4	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
4-Methyl-2-Pentanone	50	1.2	J	< 0.4	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U
Styrene	5	0.2	J	< 0.3	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1,2,2-Tetrachloroethane	5	< 0.2	UJ	< 0.2	UJ	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Tetrachloroethene	5	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Toluene	5	0.5		< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1,1-Trichloroethane	5	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
1,1,2-Trichloroethane	1	< 0.2	U	< 0.2	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Trichloroethene	5	< 0.3	U	< 0.3	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Vinyl Acetate	5	< 1.2	UJ	< 1.0	U	< 1.0	U	< 2.0	U	< 2.0	U	< 5.0	U	< 5.0	U
Vinyl Chloride	2	< 0.3	U	< 0.3	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U
Xylene (total)	5	1.1		< 0.2	U	< 2.0	U	< 1.0	U	< 1.0	U	< 1.0	U	< 1.0	U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-07	MW-7D	MW-07	MW-7D	MW-07	MW-07D
Lab Sample ID	GW	992342A-11	992342A-12	993238A-07	993238A-08	387931	387932
Date Sampled	Standards	09/14/99	09/14/99	12/5/99	12/5/99	3/28/00	3/28/00
Dilution	Revised 3/22/99	20.0	20.0	10.0	10.0	1.00	20
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	S	S	C	C
Compound							
Acetone	50	2100 J	1600 J	< 990 UJ	< 1200 UJ	1300 J	1400 J
Benzene	1	100	74	23	26	29 J	30 J
Bromodichloromethane	50	< 4.2 U	< 4.2 U	< 2 U	< 2 U	< 1.0 U	< 20 U
Bromoform	5	< 1.6 U	< 1.6 U	< 0.8 U	< 0.8 U	< 1.0 U	< 20 U
Bromomethane	5	< 19 U	< 19 U	< 10 U	< 10 U	< 1.0 U	< 20 U
2-Butanone	50	2900	2300	460	460	660 J	660 J
Carbon Disulfide	50	9.3 J	4.8 J	< 4 U	< 4 U	< 5.0 U	< 100 U
Carbon Tetrachloride	5	< 3.8 U	< 3.8 U	< 2 U	< 2 U	< 1.0 U	< 20 U
Chlorobenzene	5	44	34	8	9	11 J	11 J
Chloroethane	5	17 J	< 7.6 UJ	< 4 U	< 4 U	.65 J	< 20 U
2-Chloroethylvinylether	5	< 6.8 UJ	< 6.8 UJ	< 3 U	< 3 U	< 1.0 U	< 20 U
Chloroform	7	< 4.6 U	< 4.6 U	< 2 U	< 2 U	< 1.0 U	< 20 U
Chloromethane	5	12	< 11 U	< 6 U	< 6 U	< 1.0 U	< 20 U
Dibromochloromethane	50	< 2.8 U	< 2.8 U	< 1 U	< 1 U	< 1.0 U	< 20 U
1,2-Dichlorobenzene	3	25 J	72 J	< 2 U	< 2 U	1.8 J	< 20 U
1,3-Dichlorobenzene	3	17 J	< 5 UJ	< 2 U	< 2 U	0.5 J	< 20 U
1,4-Dichlorobenzene	3	9 J	< 5.4 UJ	< 3 U	< 3 U	< 1.0 U	< 20 U
1,1-Dichloroethane	5	< 2.4 U	< 2.4 U	< 1 U	< 1 U	< 1.0 U	< 20 U
1,2-Dichloroethane	0.6	< 4.2 U	< 4.2 U	< 2 U	< 2 U	< 1.0 U	< 20 U
1,1-Dichloroethene	5	< 5.4 U	< 5.4 U	< 3 U	< 3 U	< 1.0 U	< 20 U
cis-1,2-Dichloroethene	5	8.6 J	< 3.8 UJ	< 2 U	< 2 U	0.68 J	< 20 U
trans-1,2-Dichloroethene	5	< 4.2 U	< 4.2 U	< 2 U	< 2 U	< 1.0 U	< 20 U
Dichloromethane	5	< 2 UJ	< 2 UJ	< 13 U	< 14 U	1.8	< 20 U
1,2-Dichloropropane	1	< 3.4 U	< 3.4 U	< 2 U	< 2 U	< 1.0 U	< 20 U
cis-1,3-Dichloropropene	0.4*	< 4.2 U	< 4.2 U	< 2 U	< 2 U	< 1.0 U	< 20 U
trans-1,3-Dichloropropene	0.4*	< 3.4 U	< 3.4 U	< 2 U	< 2 U	< 1.0 U	< 20 U
Ethylbenzene	5	11	< 5.6 U	< 3 U	< 3 U	0.66 J	< 20 U
2-Hexanone	50	< 7.6 UJ	< 7.6 UJ	< 4 U	< 4 U	< 5.0 U	< 100 U
4-Methyl-2-Pentanone	50	44 J	23 J	9	< 4 U	10	< 100 U
Styrene	5	6.9	< 5.6 U	< 3 U	< 3 U	< 1.0 U	< 20 U
1,1,2,2-Tetrachloroethane	5	< 4.4 U	< 4.4 UJ	< 2 UJ	< 2 UJ	< 1.0 U	< 20 U
Tetrachloroethene	5	< 4.2 U	< 4.2 U	< 2 U	< 2 U	< 1.0 U	< 20 U
Toluene	5	6 J	10 J	5	4	4.9 J	< 20 U
1,1,1-Trichloroethane	5	< 4 U	< 4 U	< 2 U	< 2 U	< 1.0 U	< 20 U
1,1,2-Trichloroethane	1	< 4.2 U	< 4.2 U	< 2 U	< 2 U	< 1.0 U	< 20 U
Trichloroethene	5	8.8	< 5.4 U	< 3 U	< 3 U	< 1.0 U	< 20 U
Vinyl Acetate	5	< 24 UJ	< 24 UJ	< 12 U	< 12 U	< 1.0 U	< 20 U
Vinyl Chloride	2	< 6.8 U	< 6.8 U	< 3 U	< 3 U	< 1.0 U	< 20 U
Xylene (total)	5	34 J	< 4.8 UJ	< 2 U	< 2 U	< 1.1 J	< 20 U

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UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-07	MW-07D	MW-07	MW-07D	MW-07	MW-07D
Lab Sample ID	GW	E73162-8	E73162-9	E73162-8	E73162-9	519601	519602
Date Sampled	Standards	7/16/00	7/16/00	7/16/00	7/16/00	12/19/01	12/19/01
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		A	A	A	A	C	C
Compound							
Acetone	50	10.3	10.4	10.3	10.4	< 10 U	< 10 U
Benzene	1	18.8	18.8	18.8	18.8	21	22
Bromodichloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	9.7	9.5	9.7	9.5	9.0	6.9
Chloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U
Chloroform	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	1.7	1.5	1.7	1.5	1.5	1.4
1,3-Dichlorobenzene	3	0.35 J	0.32 J	0.35 J	0.32 J	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	0.42 J	0.40 J	0.42 J	0.40 J	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	0.34 J	< 1.0 J	0.34 J	< 1.0 J	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	0.52 J	0.51 J	0.52 J	0.51 J	< 1.0 U	< 1.0 U
2-Hexanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	1.3	1.3	1.3	1.3	1.8	1.8
1,1,1-Trichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U
Vinyl Chloride	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	0.81 J	0.68 J	0.81 J	0.68 J	< 1.0 U	< 1.0 U

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TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-07	MW-07D	MW-07	MW-07D	MW-07	MW-07D
Lab Sample ID	GW	543926	543927	578410	578409	591731	591732
Date Sampled	Standards	4/11/02	4/11/02	8/29/02	8/29/02	10/11/02	10/11/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		C	C	C	C	C	C
Compound							
Acetone	50	< 10 U	< 10 U	10	12	< 10 U	< 10 U
Benzene	1	6.2	6.3	3.5	3.8	0.70	0.61
Bromodichloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	4.2	4.3	2.8	3.2	0.63	0.65
Chloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 10 U	< 10 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Chloroform	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	1.0
1,3-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

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J= Estimated
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TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-08	MW-08	MW-08	MW-08	MW-08	MW-08	MW-08	MW-08
Lab Sample ID	GW	992342A-10	993238A-05	387929	E73162-4	519599	543547	578408	591720
Date Sampled	Standards	09/14/99	12/5/99	3/28/00	7/16/00	12/19/01	4/9/02	8/29/02	10/08/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lab Identity		S	S	C	A	C	C	C	C
Compound									
Acetone	50	3.7 J	< 32 UJ	< 10 UJ	< 5.0 U	170	< 10 U	14	< 10 U
Benzene	1	11	< 0.2 U	< 0.7 UJ	0.62	62	< 1.0 U	6.6	27
Bromodichloromethane	50	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1 U	< 1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 6.5 U	< 2 U	R	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 0.4 U	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	17	< 0.3 U	< 1.0 U	1.8	38	1.1	19	36
Chloroethane	5	3	< 0.4 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	1.3
2-Chloroethylvinylether	5	< 0.3 UJ	< 0.3 U	< 1.0 U	< 1.0 U	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 0.2 U	0.4	0.55 J	0.57 J	1.5	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 0.6 U	< 0.6 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 0.1 U	< 0.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	37	< 0.2 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	5.0	9.6
1,3-Dichlorobenzene	3	1.3	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	3.4
1,4-Dichlorobenzene	3	1.9	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.8	3.5
1,1-Dichloroethane	5	2	10	19	22	12	18	2.5	< 1.0 U
1,2-Dichloroethane	0.6	5.5	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 0.3 U	0.6	1.3	2.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 0.1 UJ	< 0.3 U	< 1.0 U	< 1.0 U	29	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	0.4 J	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 0.4 UJ	< 0.4 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 0.2 U	< 0.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 0.2 U	< 0.2 U	< 1.0 U	0.35 J	4.6	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	0.9	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.1
1,1,1-Trichloroethane	5	0.6	11	16	21	9.0	14	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 0.2 U	< 0.2 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 1.2 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 0.3 U	< 0.3 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	0.4	< 0.2 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-09	MW-09	MW-09	MW-09
Lab Sample ID	GW	519598	543548	580713	591721
Date Sampled	Standards	12/19/01	4/9/02	8/28/02	10/09/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L
Lab Identity		C	C	C	C
Compound					
Acetone	50	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 1.0 U	1.3	1.4	2.4
1,2-Dichloroethane	0.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	4.9	< 1.0 U	< 1.0 U	1.0
Toluene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	4.6	5.4	5.5	6.7
1,1,2-Trichloroethane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	1.1
Vinyl Acetate	5	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Vinyl Chloride	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
NS=NOT SAMPLED
NA=NOT APPLICABLE
*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

TABLE 4
GROUND WATER DATA SUMMARY

Client ID	6 NYCRR 703.5	MW-09B	MW-09B	MW-09B	MW-09B
Lab Sample ID	GW	519597	543549	580716	591723
Date Sampled	Standards	12/19/01	4/9/02	8/29/02	10/09/02
Dilution	Revised 3/22/99	1.00	1.00	1.00	1.00
Units		ug/L	ug/L	ug/L	ug/L
Lab Identity		C	C	C	C
Compound					
Acetone	50	< 10 U	< 10 U	< 10 U	< 10 U
Benzene	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromodichloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromoform	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromomethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Butanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Disulfide	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Carbon Tetrachloride	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chlorobenzene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chloroethylvinylether	5	< 10 U	< 10 U	< 5.0 U	< 5.0 U
Chloroform	7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Chloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dibromochloromethane	50	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	0.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,2-Dichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Dichloromethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloropropane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
cis-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
trans-1,3-Dichloropropene	0.4*	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
4-Methyl-2-Pentanone	50	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Styrene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2,2-Tetrachloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,2-Trichloroethane	1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Trichloroethene	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl Acetate	5	< 2.0 U	< 2.0 U	< 5.0 U	< 5.0 U
Vinyl Chloride	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Xylene (total)	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Data validation qualifiers applied by TRC; CMS data not validated
S=STL; C=CAS; A=Accutest
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*=Applies to sum of cis and trans

U=Not Detected
J = Estimated
UJ = Not Detected, Detection Limit Estimated
R=Rejected

3.2.1 Ground Water Quality Trends

Data presented in Table 4 indicate that, in general, ground water quality determined via conduct of four quarterly sampling rounds during the CMS field work are consistent with the ground water quality data generated during the Phase II RFI. An impaired area of overburden ground water exists within a defined area within the industrialized portion of the Akzo Nobel facility. Ground water quality is essentially the same or improved since 1999 in wells MW-1, MW-3, MW-3B, MW-4, MW-5, MW-6, and MW-7. As illustrated in figures 17 and 18, the ground water quality at MW-7 has shown a marked improvement since the early monitoring rounds. Acetone concentrations have declined sharply, and 2-Butanone was not detected in ground water from MW-7 in the last five sampling events. At MW-5, acetone has also declined markedly over the CMS study period, as illustrated in Figure 15. No volatile organic compounds have been detected in MW-1 ground water for the past 7 sampling rounds. For well MW-1B, benzene (the sole detected VOC in MW-1B ground water at < 1 ppb to 2.6 ppb over the first six rounds of sampling) and other volatile organic compounds were not detected in the August 2002 and October 2002 sampling rounds.

MW-8 ground water benzene, chlorobenzene, and dichlorobenzene concentrations exceeded their prior recorded maximum values and their respective 6NYCRR 703.5 ground water standards during the October 2002 sampling round. However, no additional compounds to those previously detected in ground water from MW-8 were reported. As illustrated in Figure 19, acetone was a significant, transient contaminant at MW-8.

MW-2 ground water quality from the 2001 and 2002 sampling events was generally consistent with past sampling rounds, as illustrated in Figures 13 and 14. The spring (April) 2002 sampling event data indicate the recurrence of toluene, benzene and chloroethane at elevated concentrations, comparable to that reported from the spring (late March) 2000 sampling round. Other BTEX compounds (xylenes, ethylbenzene, and benzene) were also detected present above their respective 6NYCRR 703.5 Ground Water Standards (hereafter referred to as ground water standards) during the April 2002 sampling event. Chlorobenzene was detected in all CMS field

work sampling rounds, exceedances of the respective ground water standard was noted for chlorobenzene and dichlorobenzenes in the most recent sampling rounds.

Data presented in Table 4 indicate that no volatile organic contaminants were detected in ground water in the upper bedrock at locations monitored by MW-4B and MW-9B. These results are consistent with the findings of the last 7 sampling rounds conducted at bedrock well MW-3B, which is also located on the down gradient western edge of the facility monitoring well network. Thus the additional data confirm the prior conclusions regarding the absence of site contaminants in the upper bedrock ground water down gradient of the contaminated overburden ground water areas within the central portions of the facility.

Data presented in Table 4 and Figure 20 indicate that ground water quality in the overburden at the location monitored by MW-9 (west and hydraulically down gradient of the previously installed MW-2) had detections of volatile organic contaminants limited to four chlorinated aliphatic compounds during the four rounds of ground water monitoring conducted during the CMS field work. These chlorinated aliphatic hydrocarbon compounds were present at trace concentrations below the ground water standards, except for the detection of 1,1,1-trichloroethane at 6.7 ppb, which slightly exceeded the ground water standard of 5 ppb. Of the compounds detected at MW-9, only 1,1-dichloroethane has been detected at MW-2. However, three of the four compounds (tetrachloroethene, 1,1-dichloroethane, and 1,1,1-trichloroethane) were detected at higher concentrations during quarterly sampling events at MW-8, which is also up gradient of MW-9. Thus the additional data support the conclusion that MW-9 is an appropriately placed down gradient overburden monitoring well, and that ground water at this location contained a reduced number, at equivalent or reduced concentration, of site contaminants down gradient of the contaminated overburden ground water areas within the central portions of the site. The wells MW-3, MW-4, and MW-9 represent a series of down gradient boundary overburden monitoring wells that effectively provide for down gradient extent monitoring of overburden ground water contamination detected in the central portion of the facility.

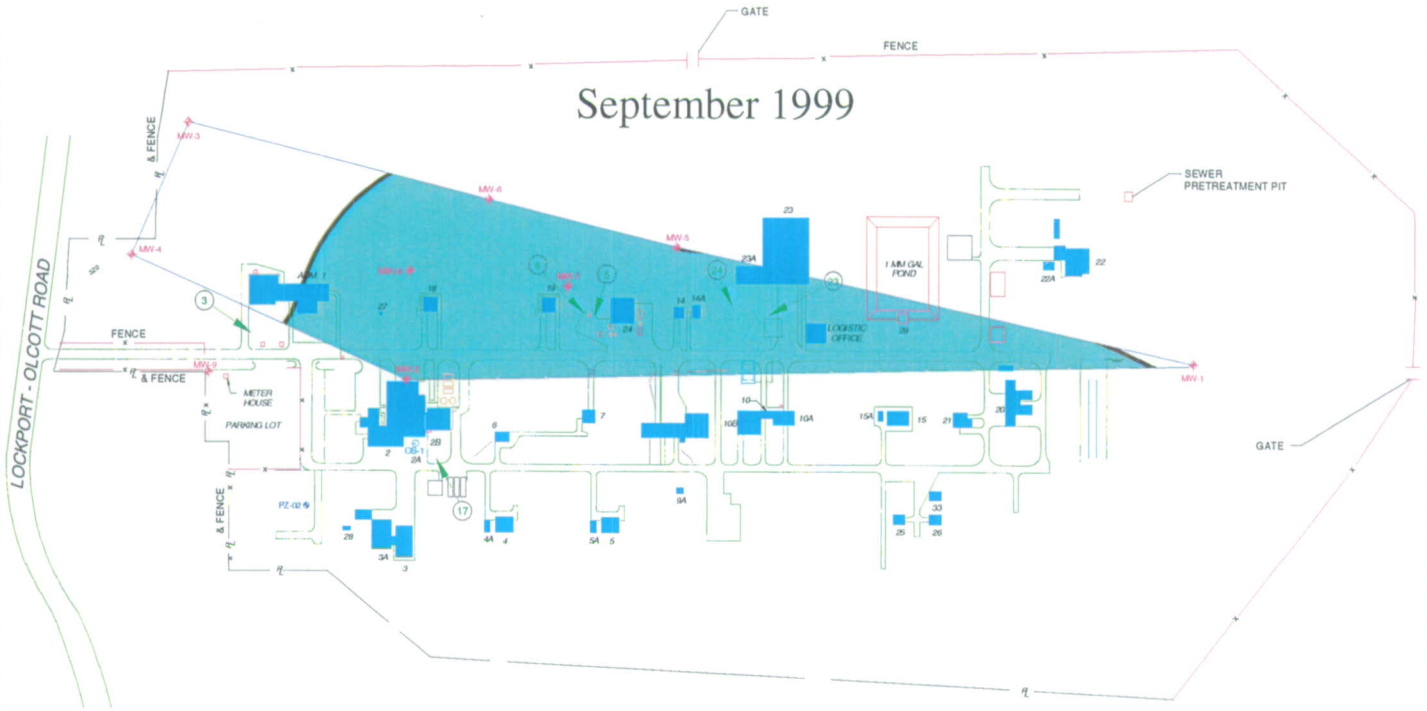
Total VOC isopleths from each sampling round are included in Figures 9 to 12. These figures illustrate total VOC contours for final two rounds of sampling during the CMS field work are consistent with prior representations of extent of ground water contamination for these contaminants of concern.

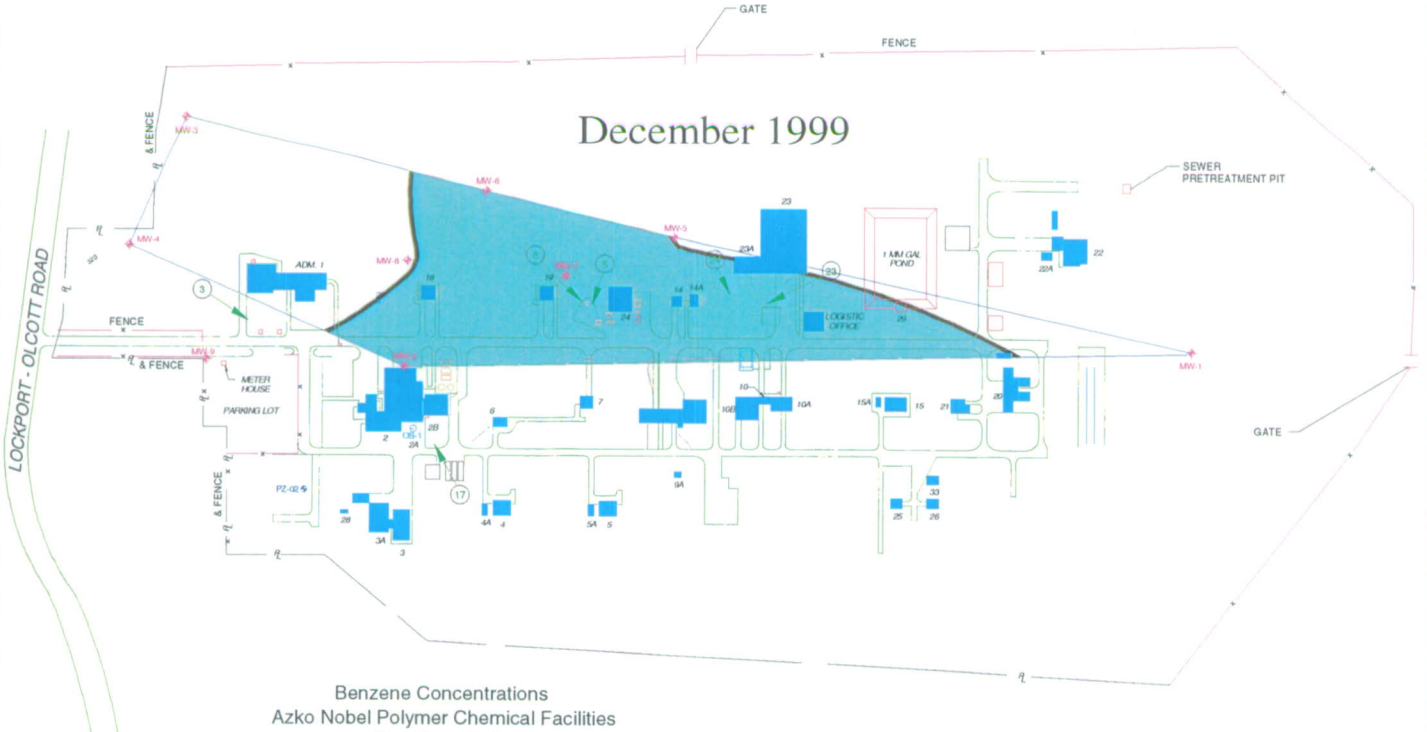
The total VOC plume exhibits considerable variability from sampling round to sampling round. The significant decline in total VOCs at MW-7 since early 2000 has resulted in MW-2 and MW-8 ground water samples exhibiting the highest VOC concentrations. The two elevated toluene detections in MW-2 (March 2000, April 2002) significantly alter the total VOC plume map for those sampling rounds. While down gradient overburden ground water at wells MW-3, MW-4 remain free of VOCs, the addition of MW-9 to the monitoring well network has helped refine the leading edge of the VOC plume.

A summary of volatile organic compound detection frequency is summarized in Table 5. Data in Table 5 was used to select compounds with the highest detection frequency, ground water standard exceedance frequency, and well frequency for contaminant plume mapping. Benzene, chlorobenzene, and acetone were selected, and contaminant plume in excess of applicable ground water standard was estimated using Kriging gridding methods and Surfer7® software. Figures 23 to 25 present the sequence contaminant plume mapping for each of these contaminants over the 8 sampling rounds completed in the 1999-2002 time frame. It should be noted that the installation of MW-9 in 2001 has refined the contouring for the final 4 sampling rounds. As discussed earlier, no monitoring wells exist to the south of the MW-9 to MW-1 transect, due to absence of evidence of contamination during the Phase I RFI, and data regarding ground water quality to the south during the 1999-2002 time frame are not available.

Table 5
Commonly Detected Contaminants in Ground Water
Statistics

	Standard	# of Valid Analytical Results	# of Dectections Recorded	# of detections > GW Standards	# of Wells in which Detected	Dectection Frequency	Exceedance Frequency	Well Frequency
Acetone	50	88	13	5	4	0.15	0.06	0.31
Benzene	1	89	33	27	5	0.37	0.30	0.38
2-Butanone	50	81	4	3	1	0.05	0.04	0.08
Carbon Disulfide	50	89	1	0	0	0.01	0.00	0.00
Chlorobenzene	5	89	26	16	3	0.29	0.18	0.23
Chloroethane	5	89	16	8	2	0.18	0.09	0.15
Chloroform	7	89	3	0	0	0.03	0.00	0.00
Chloromethane	5	89	1	1	1	0.01	0.01	0.08
1,2-Dichlorobenzene	3	89	21	8	2	0.24	0.09	0.15
1,3-Dichlorobenzene	3	89	16	5	3	0.18	0.06	0.23
1,4-Dichlorobenzene	3	89	18	2	2	0.20	0.02	0.15
1,1-Dichloroethane	5	89	19	6	2	0.21	0.07	0.15
1,2-Dichloroethane	0.6	89	3	2	1	0.03	0.02	0.08
1,1-Dichloroethene	5	89	2	0	0	0.02	0.00	0.00
cis-1,2-Dichloroethene	5	89	4	3	1	0.04	0.03	0.08
trans-1,2-Dichloroethene	5	89	1	0	0	0.01	0.00	0.00
Dichloromethane	5	89	3	2	1	0.03	0.02	0.08
Ethylbenzene	5	89	9	2	1	0.10	0.02	0.08
2-Hexanone	50	89	5	0	0	0.06	0.00	0.00
4-Methyl-2-Pentanone	50	89	6	0	0	0.07	0.00	0.00
Styrene	5	89	3	0	0	0.03	0.00	0.00
1,1,2,2-Tetrachloroethane	5	89	3	0	0	0.03	0.00	0.00
Tetrachloroethene	5	89	2	0	0	0.02	0.00	0.00
Toluene	5	89	19	6	1	0.21	0.07	0.08
1,1,1-Trichloroethane	5	89	10	8	1	0.11	0.09	0.08
Trichloroethene	5	89	3	1	1	0.03	0.01	0.08
Vinyl Chloride	2	89	1	1	1	0.01	0.01	0.08
Xylene (total)	5	65	10	3	1	0.15	0.05	0.08





Benzene Concentrations
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	September 1999[1]	December 1999[1]
MW-01	0.2	ND
MW-02	6.6	4
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	9.4	5
MW-07	100	23
MW-08	11	ND
MW-09	---[2]	---[2]

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

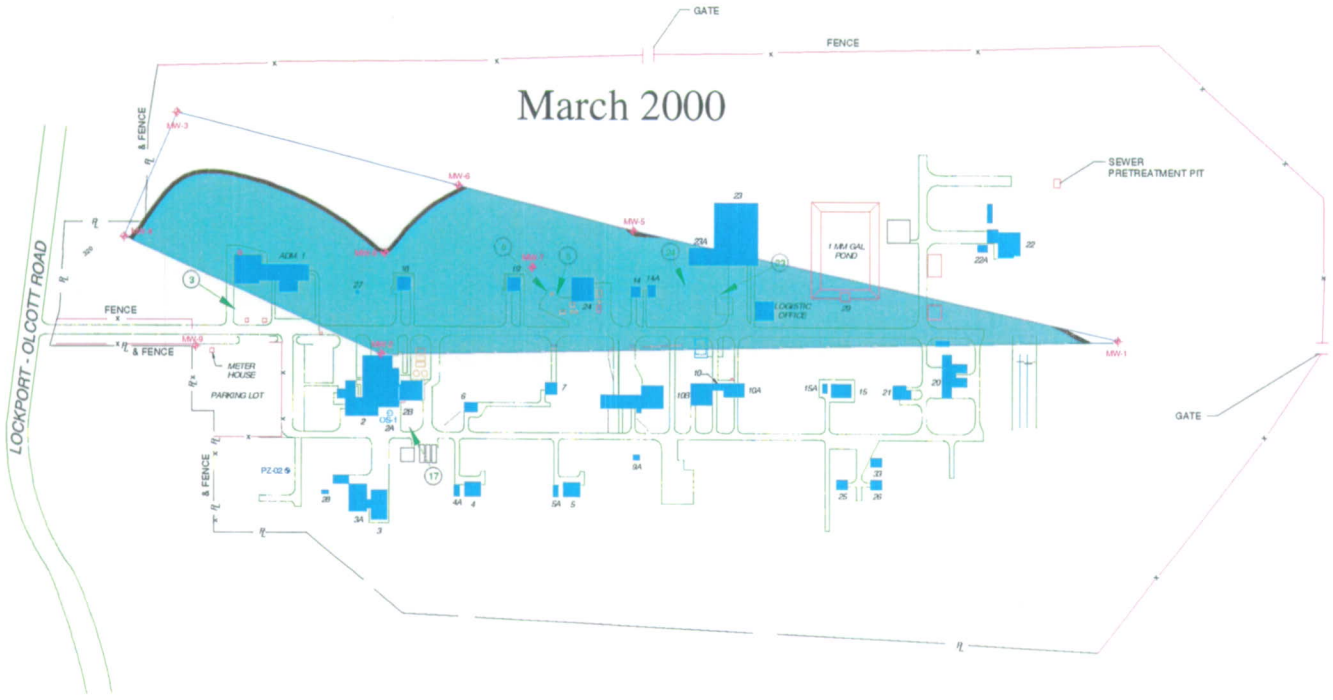
AKZO NOBEL POLYMER CHEMICALS, LLC
BURT, NEW YORK

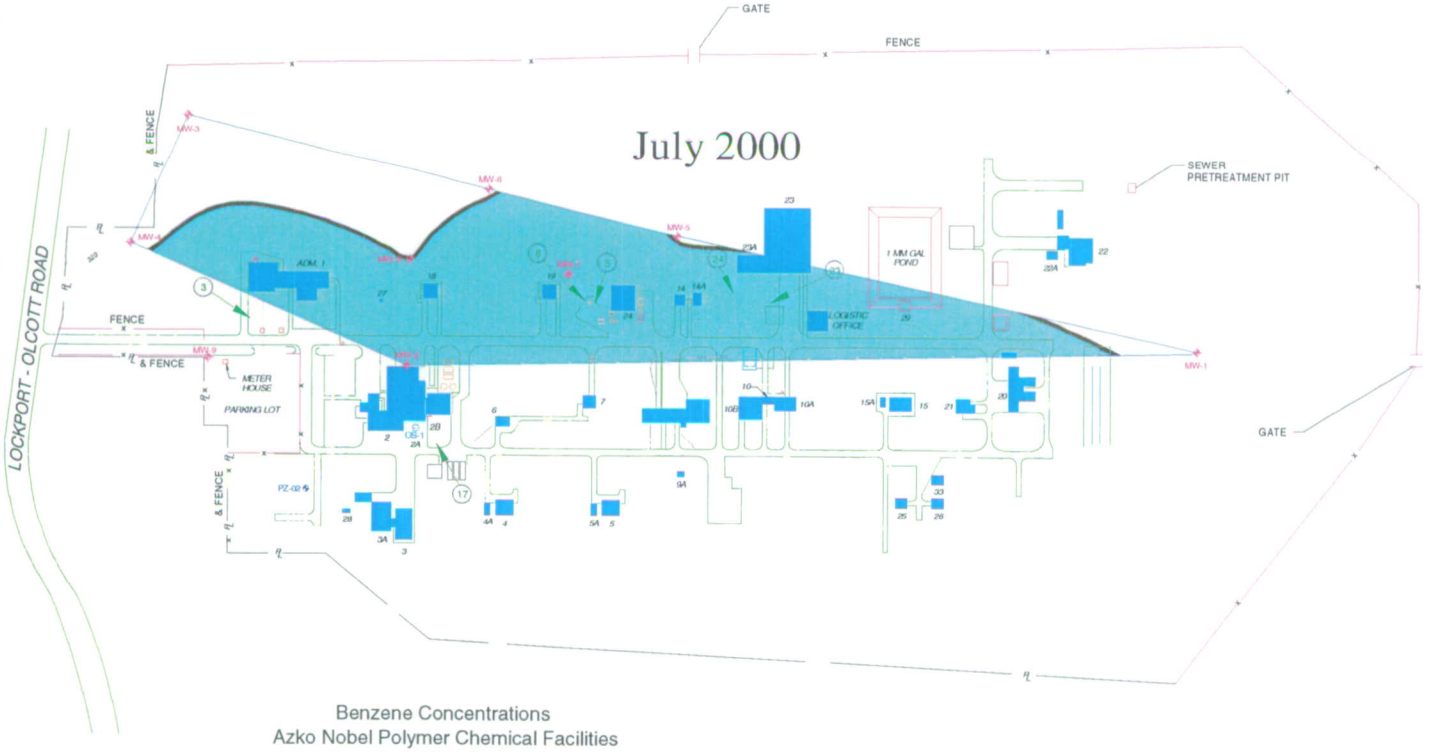
> 1 ug/L Benzene Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 23

Page 1 of 4





Benzene Concentrations
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	March 2000[1]	July 2000[1]
MW-01	ND	ND
MW-02	66	23.9
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	ND	ND
MW-07	29	18.8
MW-08	ND	0.62
MW-09	---[2]	---[2]

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

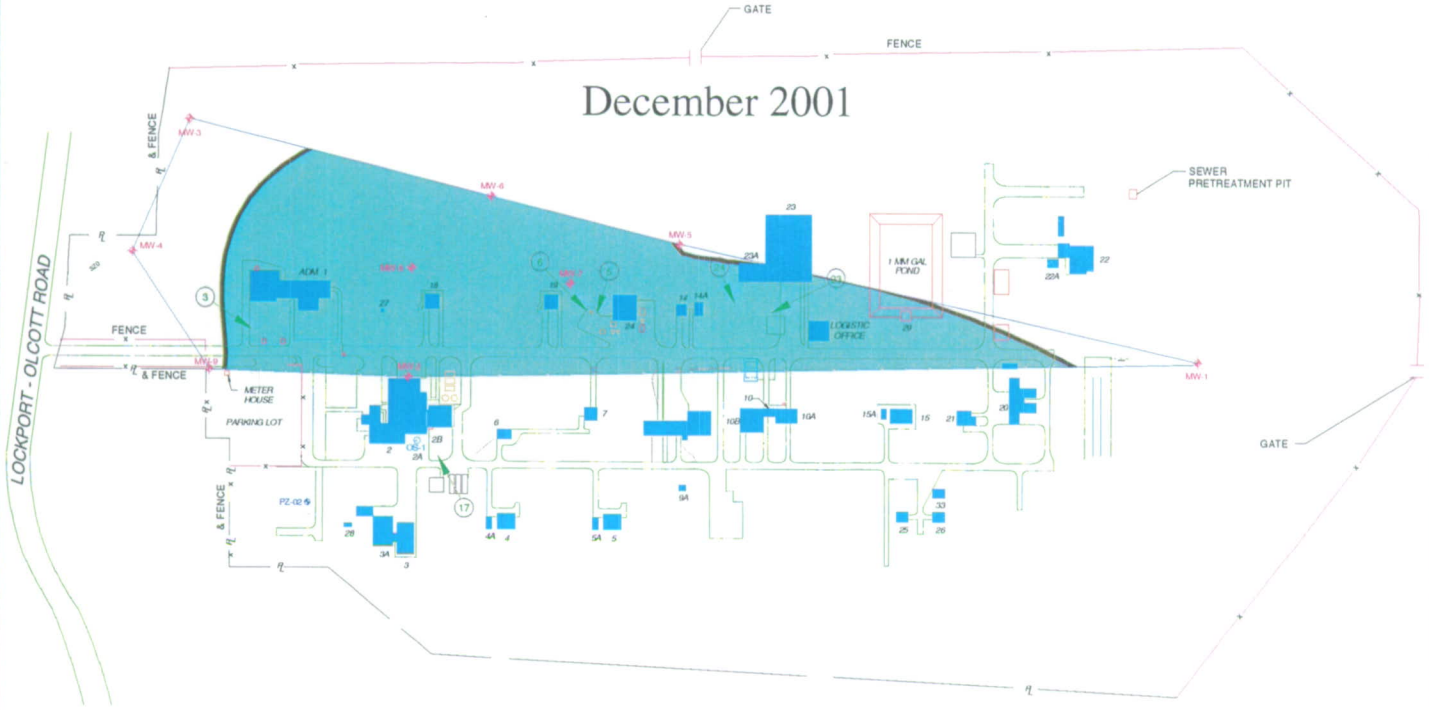
AKZO NOBEL POLYMER CHEMICAL, LLC
BURT, NEW YORK

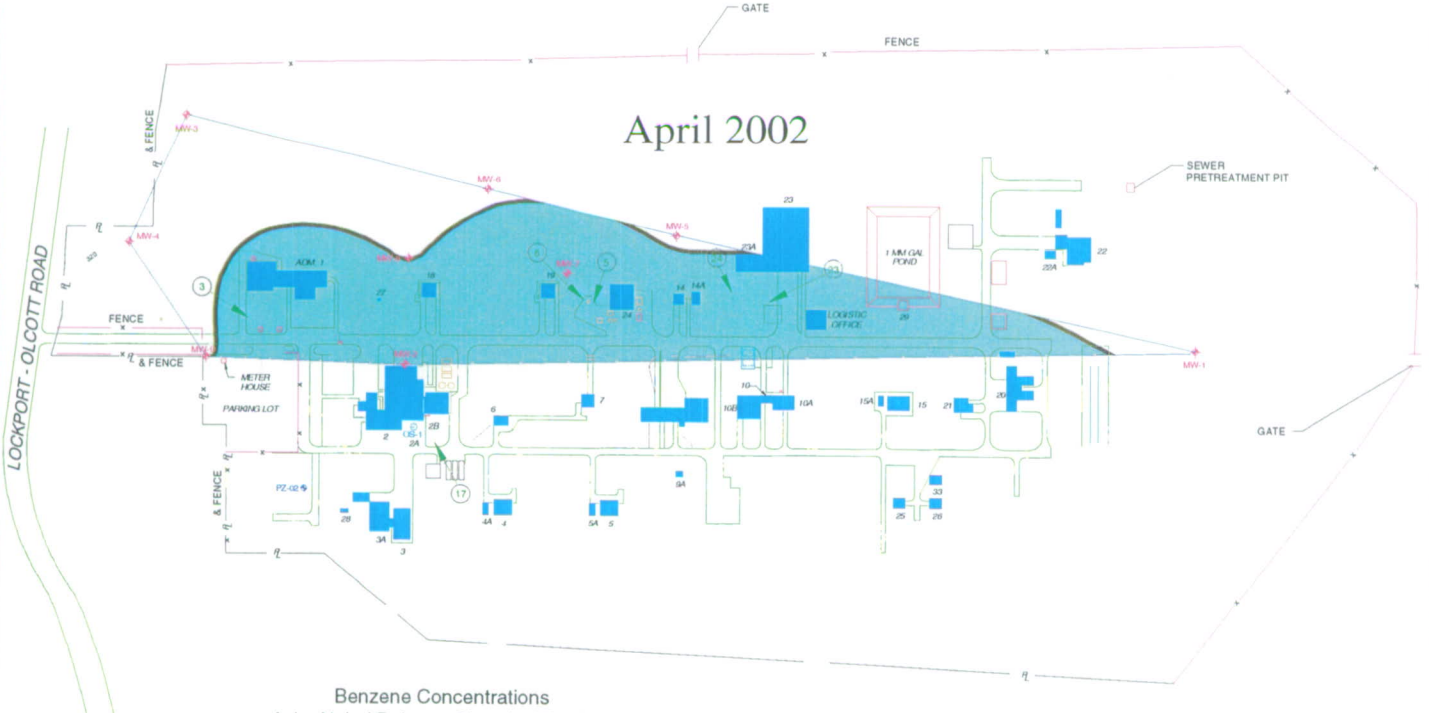
> 1 ug/L Benzene Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 23

Page 2 of 4





Benzene Concentrations
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	December 2001[1]	April 2002[1]
MW-01	ND	ND
MW-02	16	32
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	5	ND
MW-07	21	6.2
MW-08	6.2	ND
MW-09	ND	ND

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

AKZO NOBEL POLYMER CHEMICAL, LLC
BURT, NEW YORK

> 1 ug/L Benzene Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 23

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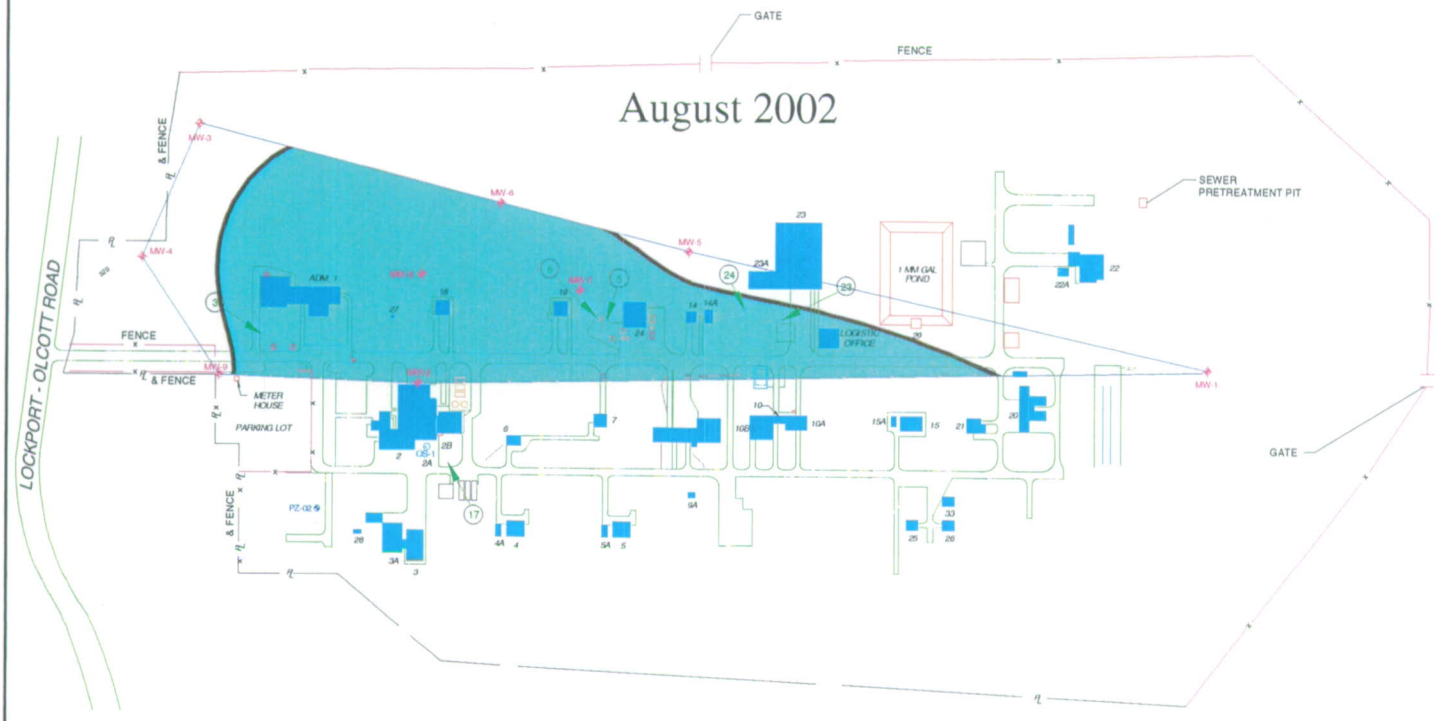
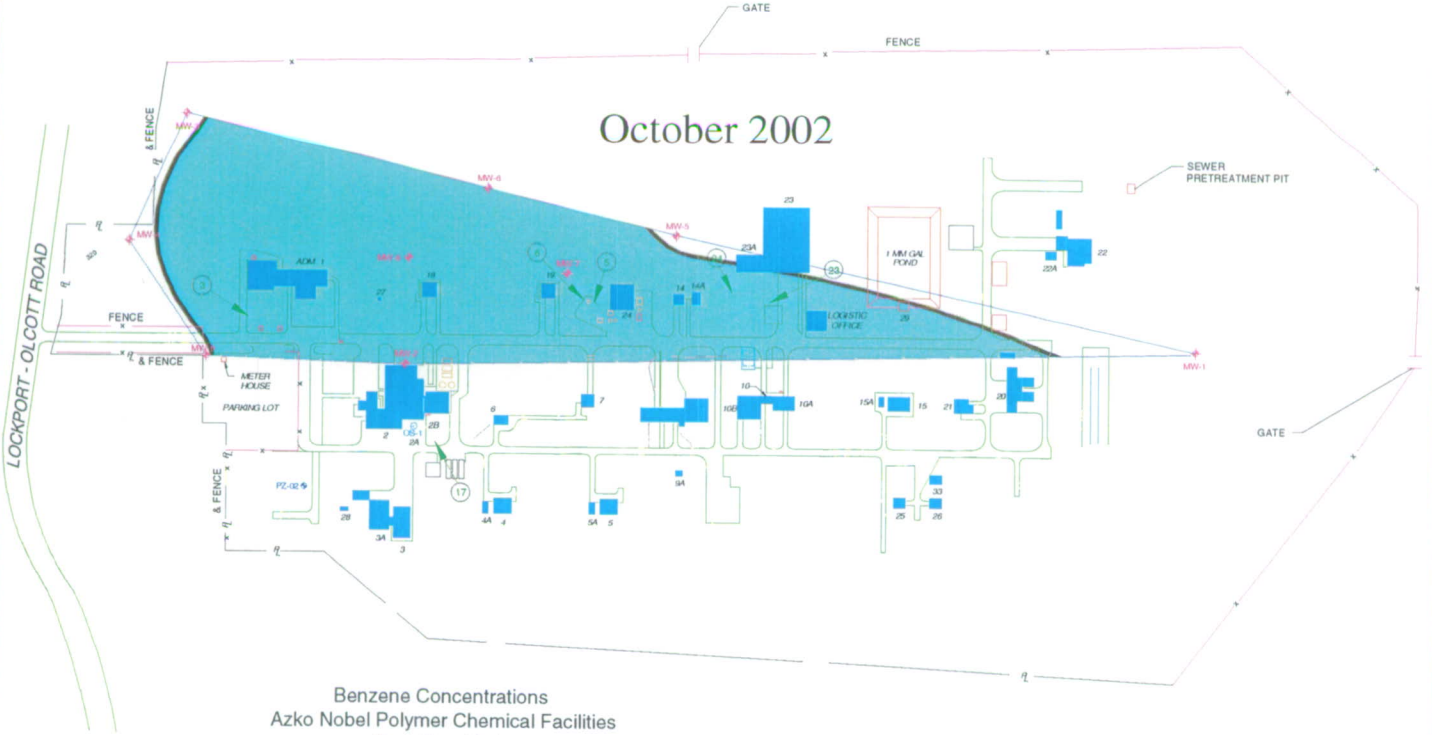




Benzene Concentrations
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	August 2002[1]	October 2002[1]
MW-01	ND	ND
MW-02	15	30
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	1.2	4.4
MW-07	3.5	8
MW-08	6.6	27
MW-09	ND	ND

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

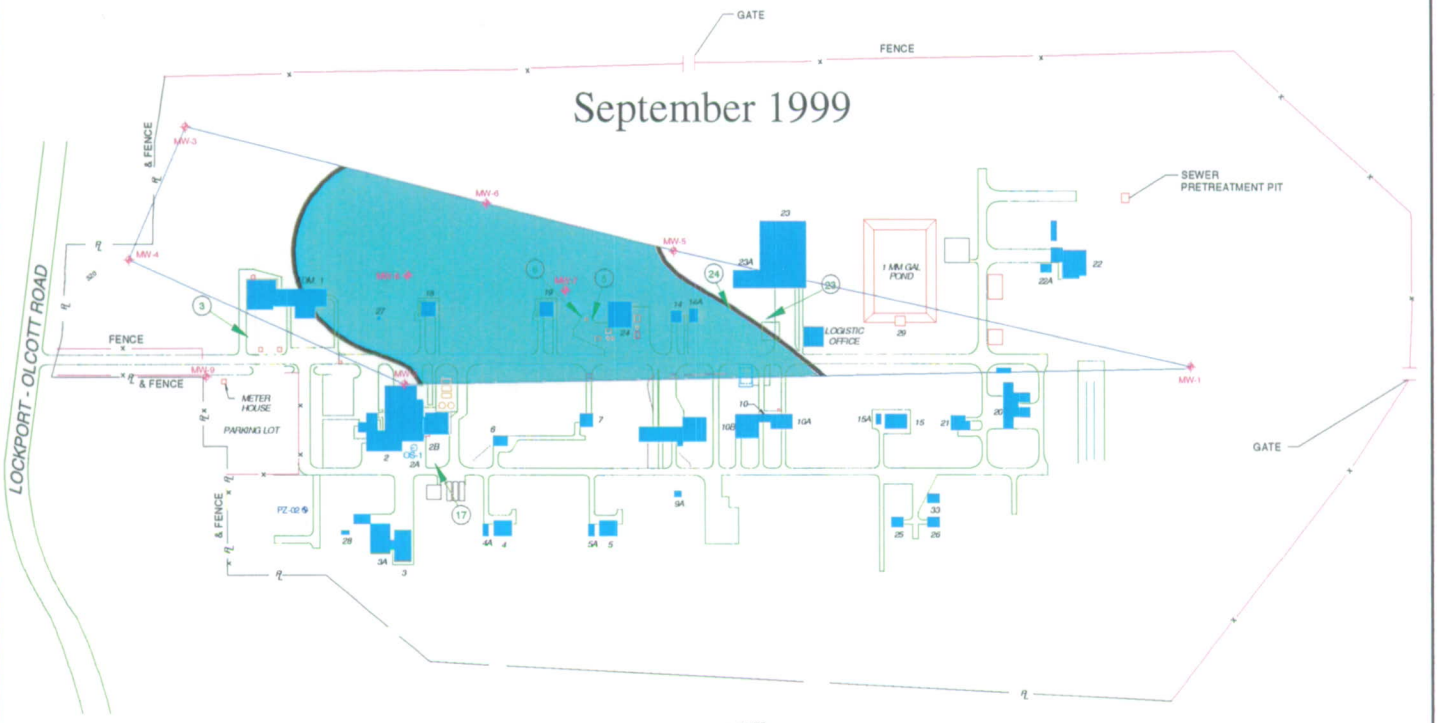
AKZO NOBEL POLYMER CHEMICAL, LLC
BURT, NEW YORK

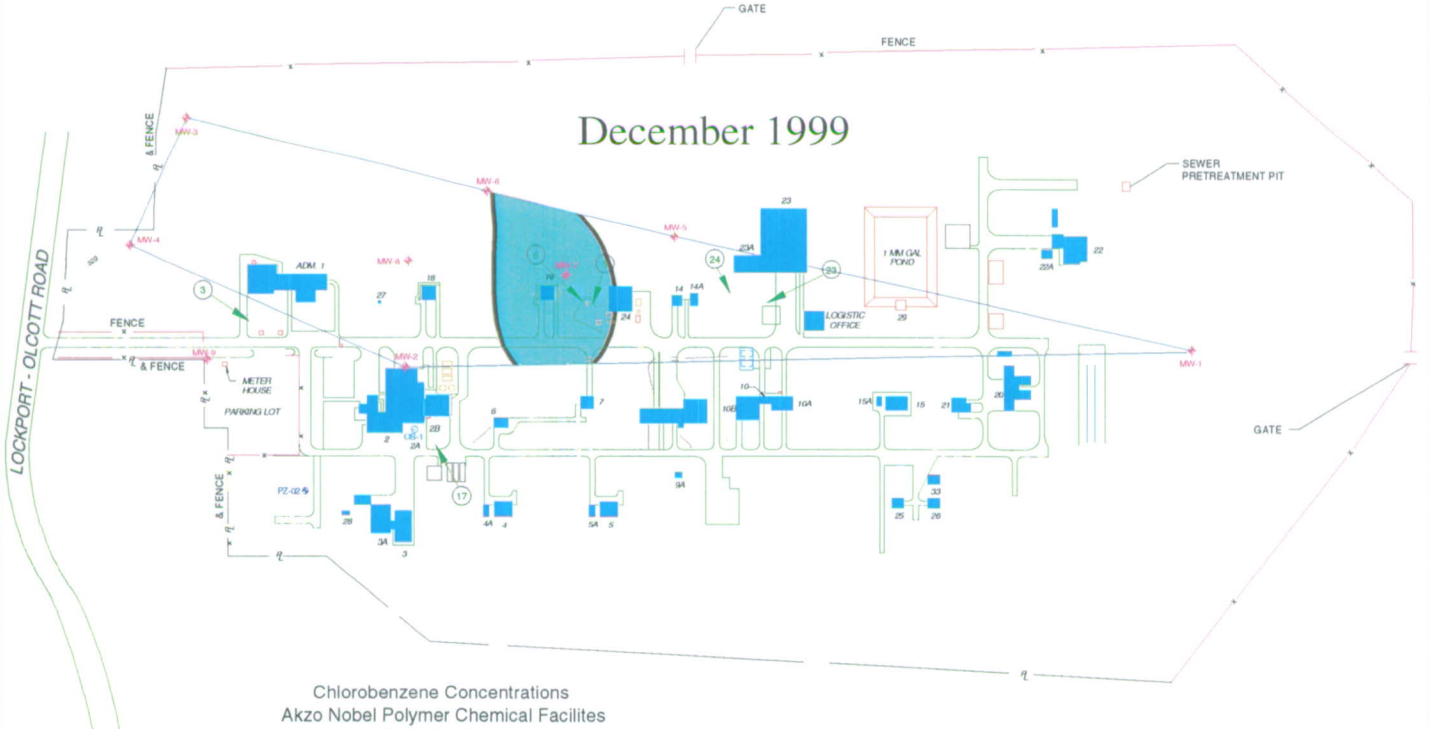
> 1 ug/L Benzene Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 23

Page 4 of 4





Chlorobenzene Concentrations
Akzo Nobel Polymer Chemical Facilites
Burt, New York

Well Number	September 1999[1]	December 1999[1]
MW-01	ND	ND
MW-02	2	3
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	6.6	5
MW-07	44	8
MW-08	17	ND
MW-09	---[2]	---[2]

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

AKZO NOBEL POLYMER CHEMICALS, LLC
BURT, NEW YORK

> 5 ug/L Chlorobenzene Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 24

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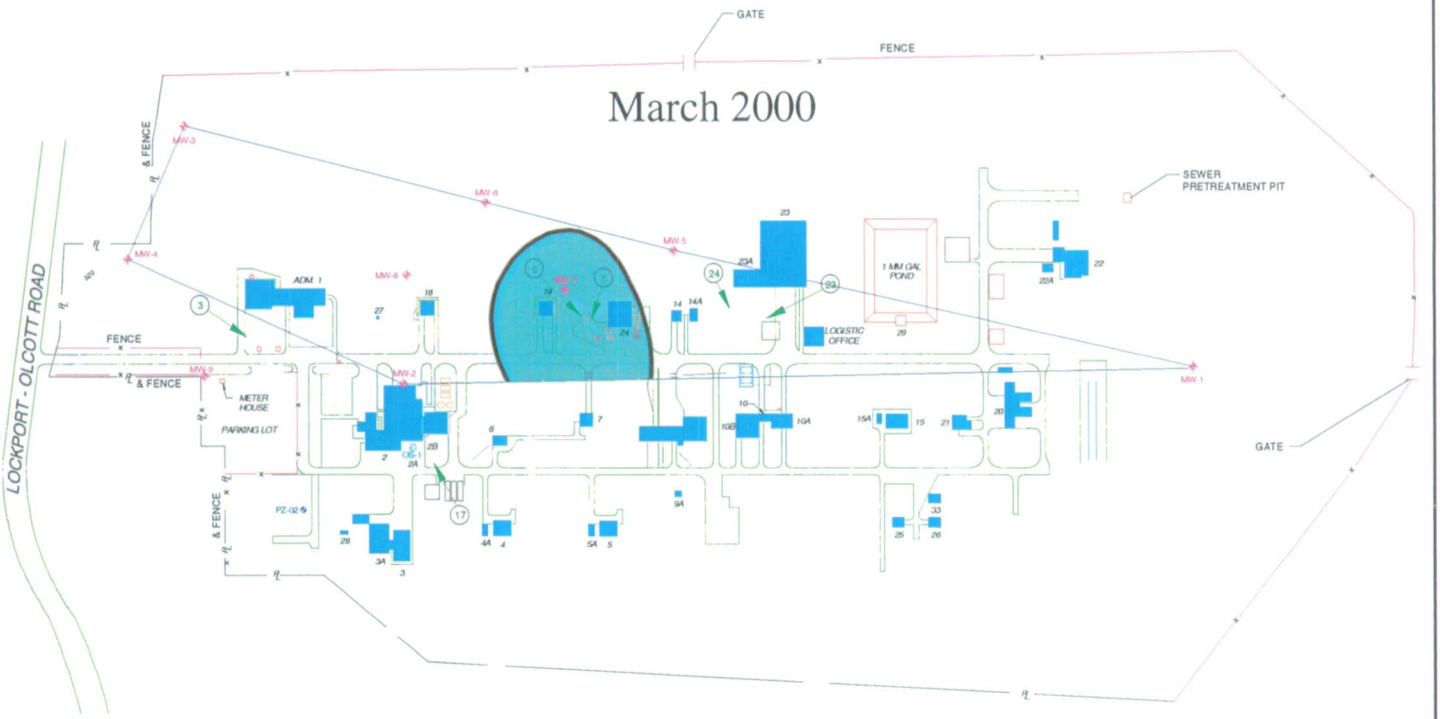

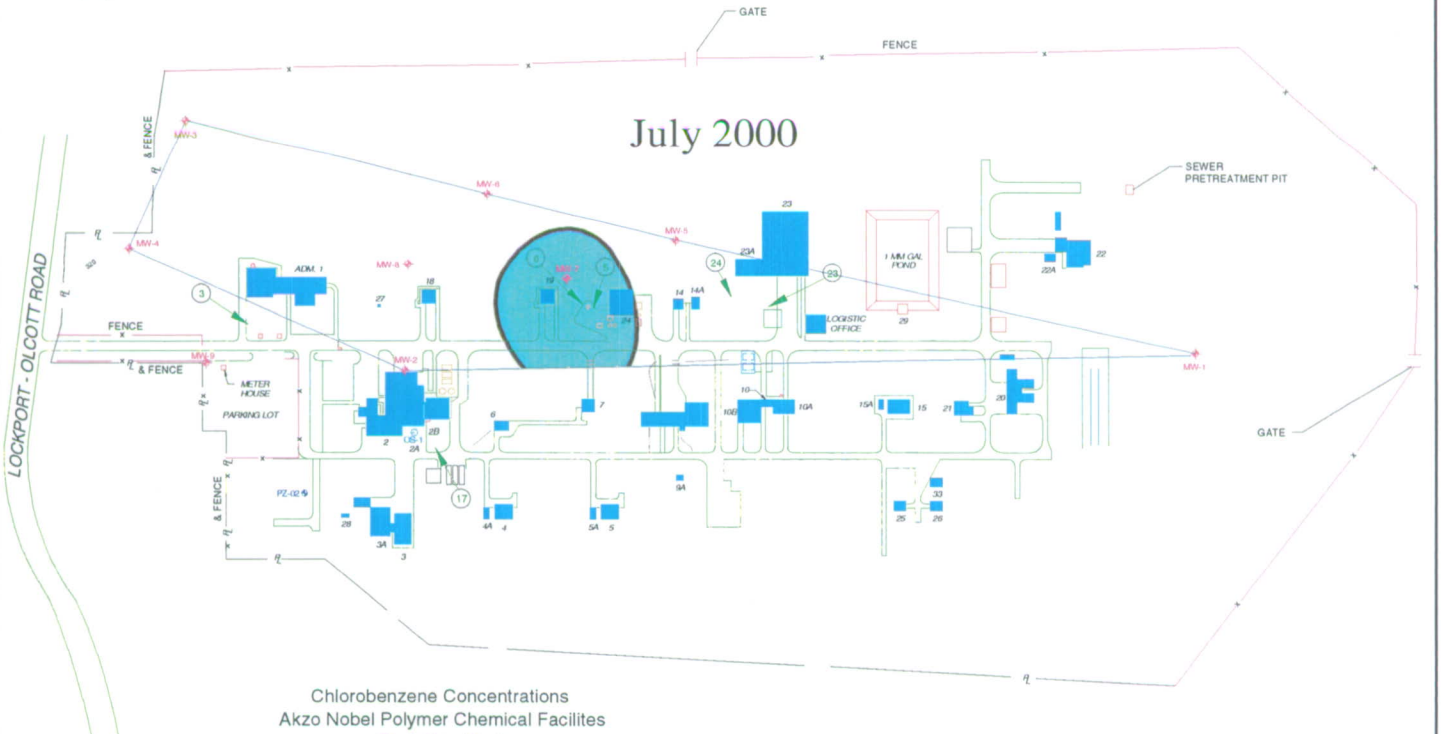

Chlorobenzene Concentrations
Akzo Nobel Polymer Chemical Facilites
Burt, New York

Well Number	March 2000[1]	July 2000[1]
MW-01	ND	ND
MW-02	ND	ND
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	ND	ND
MW-07	11	10
MW-08	ND	2
MW-09	---[2]	---[2]

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

AKZO NOBEL POLYMER CHEMICALS, LLC
BURT, NEW YORK

> 5 ug/L Chlorobenzene Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 24

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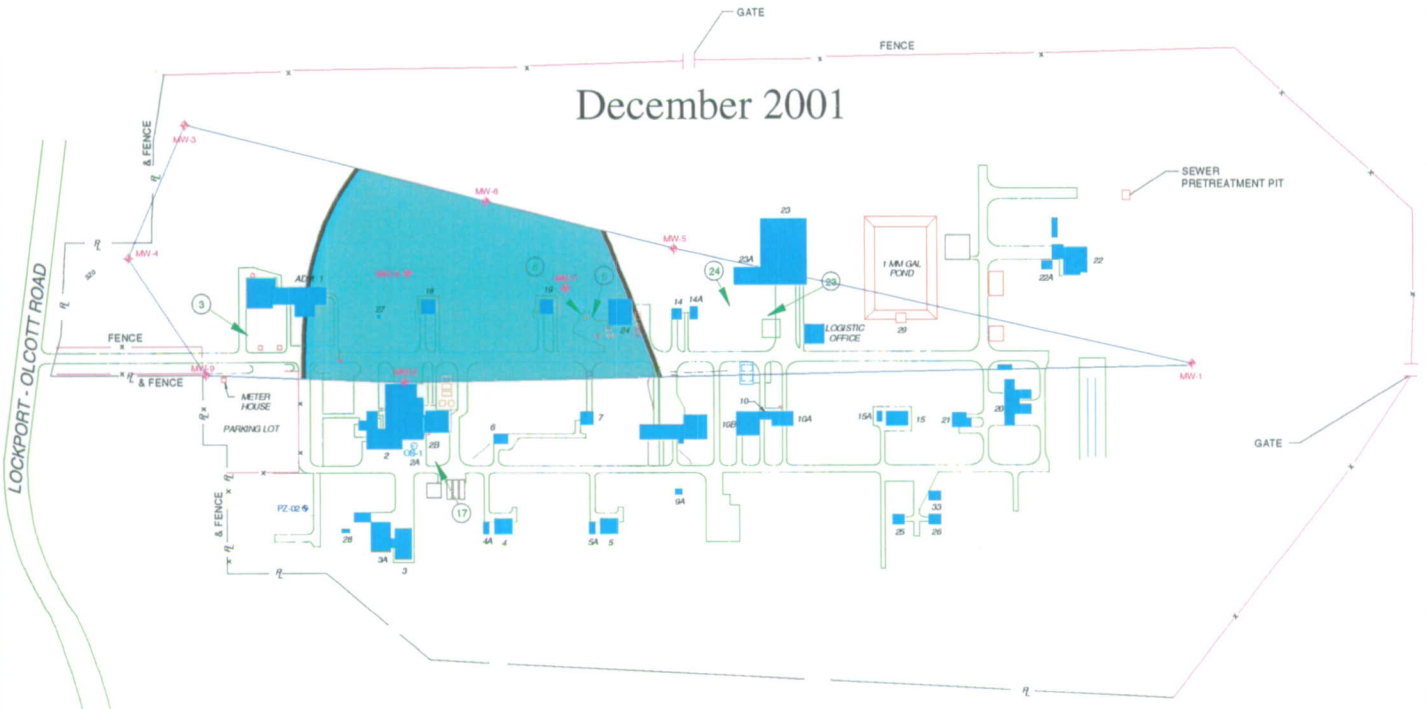

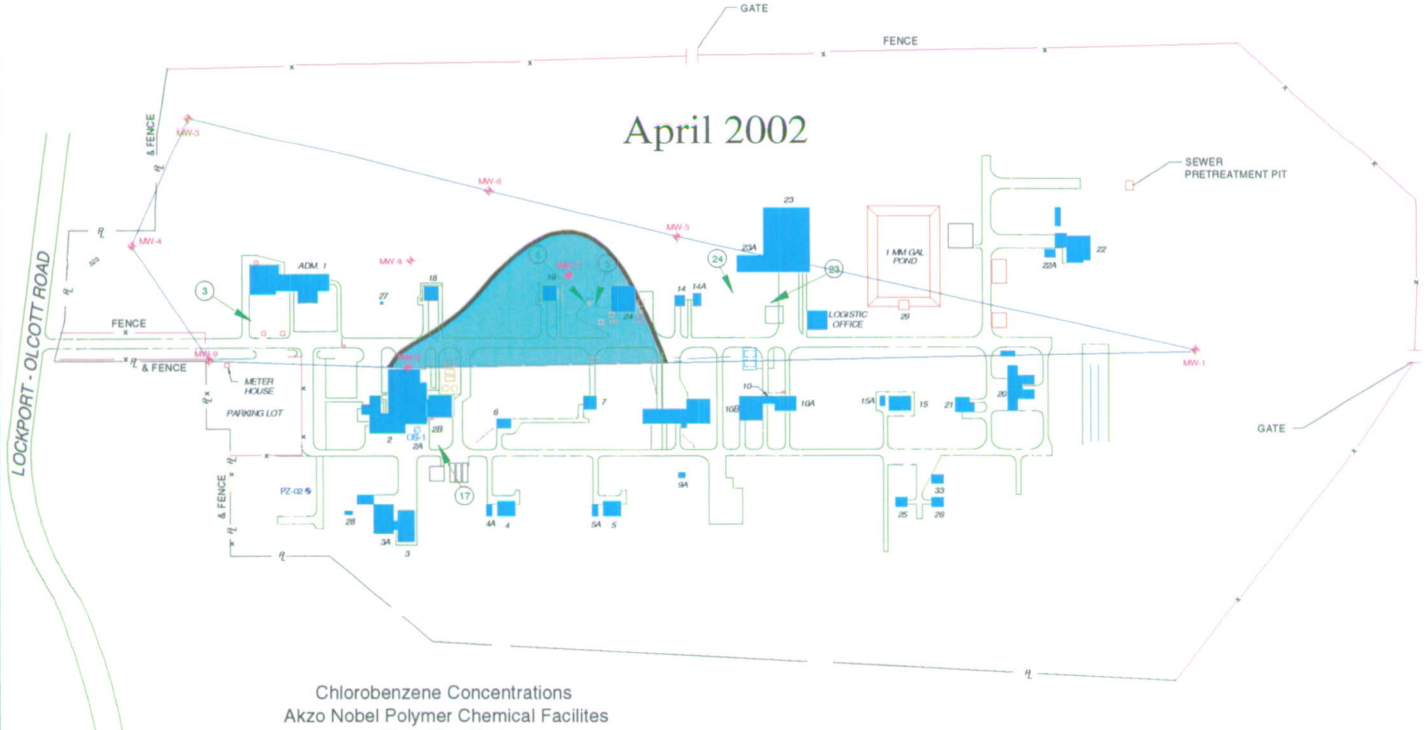

Chlorobenzene Concentrations
Akzo Nobel Polymer Chemical Facilites
Burt, New York

Well Number	December 2001[1]	April 2002[1]
MW-01	ND	ND
MW-02	10	6
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	7.8	ND
MW-07	10	9
MW-08	9	1
MW-09	ND	ND

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

AKZO NOBEL POLYMER CHEMICALS, LLC
BURT, NEW YORK

> 5 ug/L Chlorobenzene Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 24

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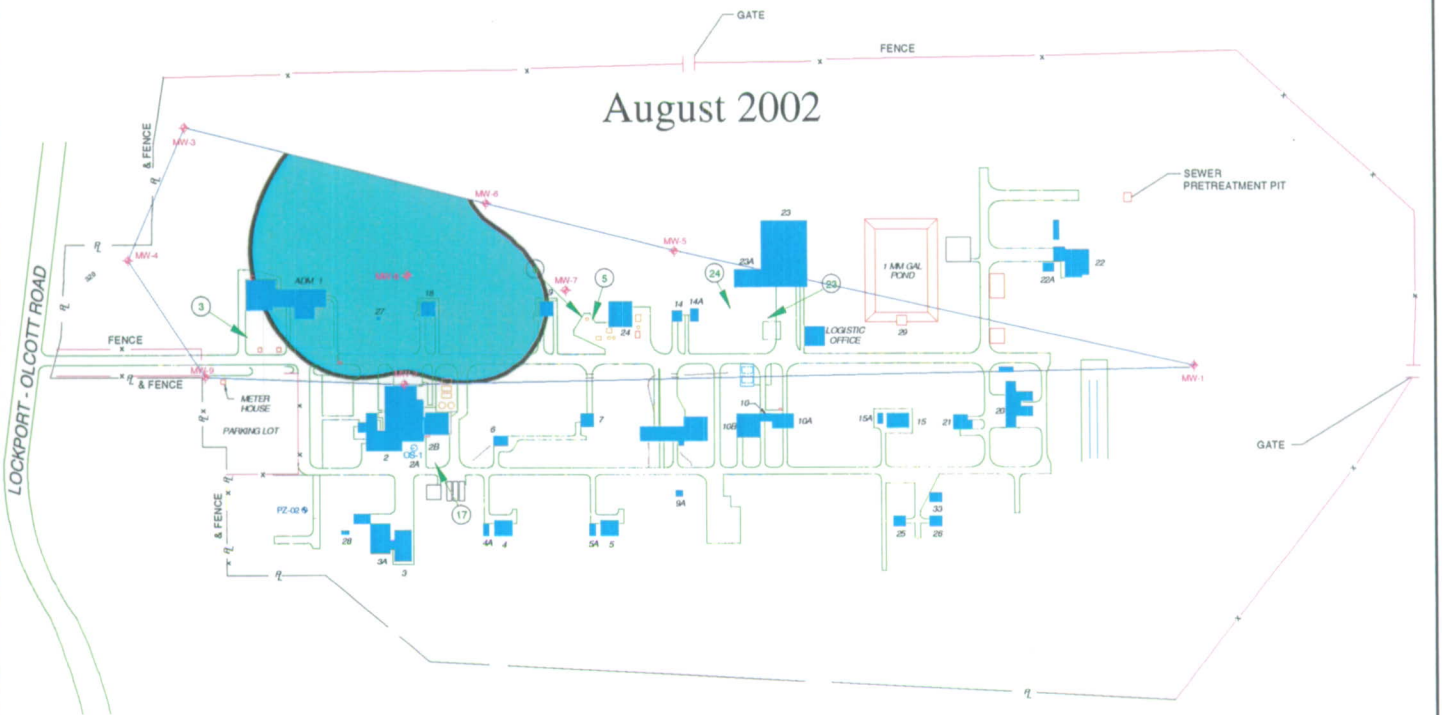

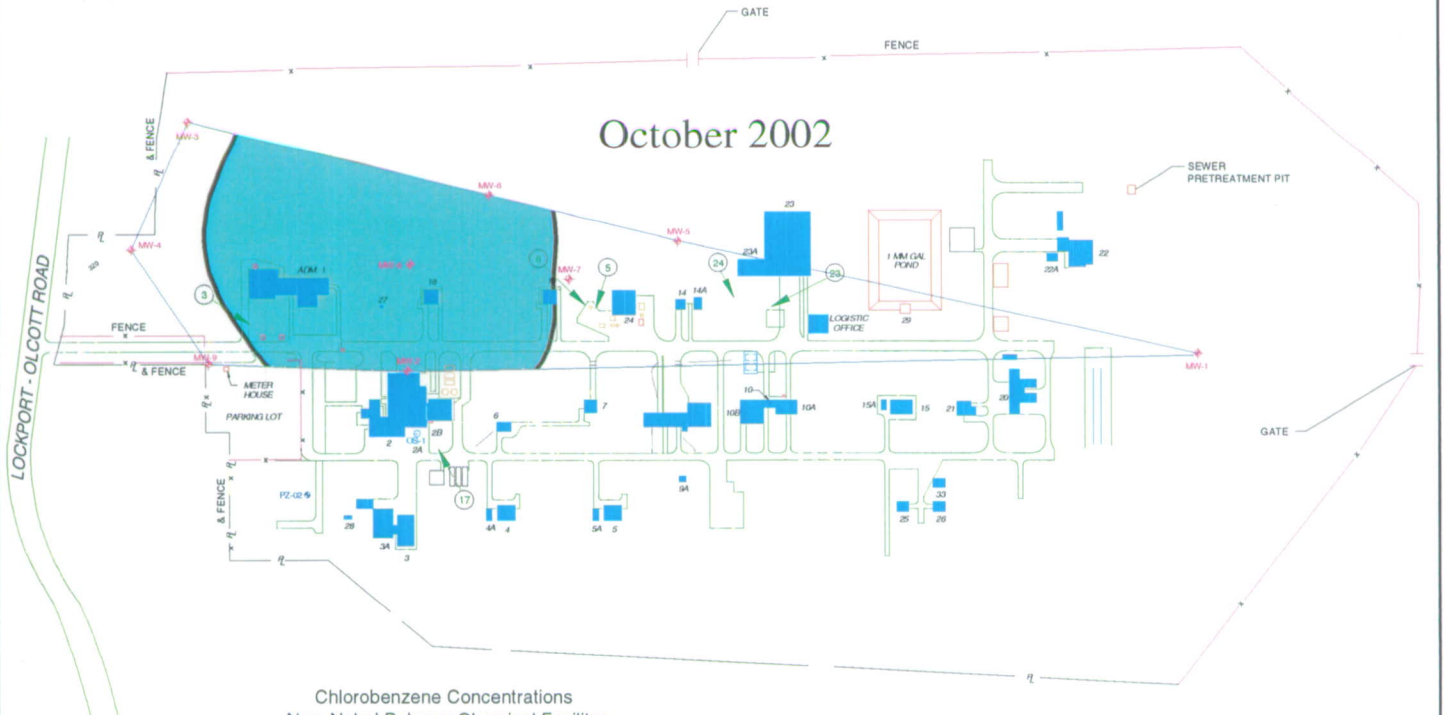

Chlorobenzene Concentrations
Akzo Nobel Polymer Chemical Facilites
Burt, New York

Well Number	August 2002[1]	October 2002[1]
MW-01	ND	ND
MW-02	3	7
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	3.2	8.7
MW-07	4	3
MW-08	19	38
MW-09	ND	ND

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

AKZO NOBEL POLYMER CHEMICALS, LLC.
BURT, NEW YORK

> 5 ug/L Chlorobenzene Plume Sequence

TRC
Boott Mills South
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FIGURE 24

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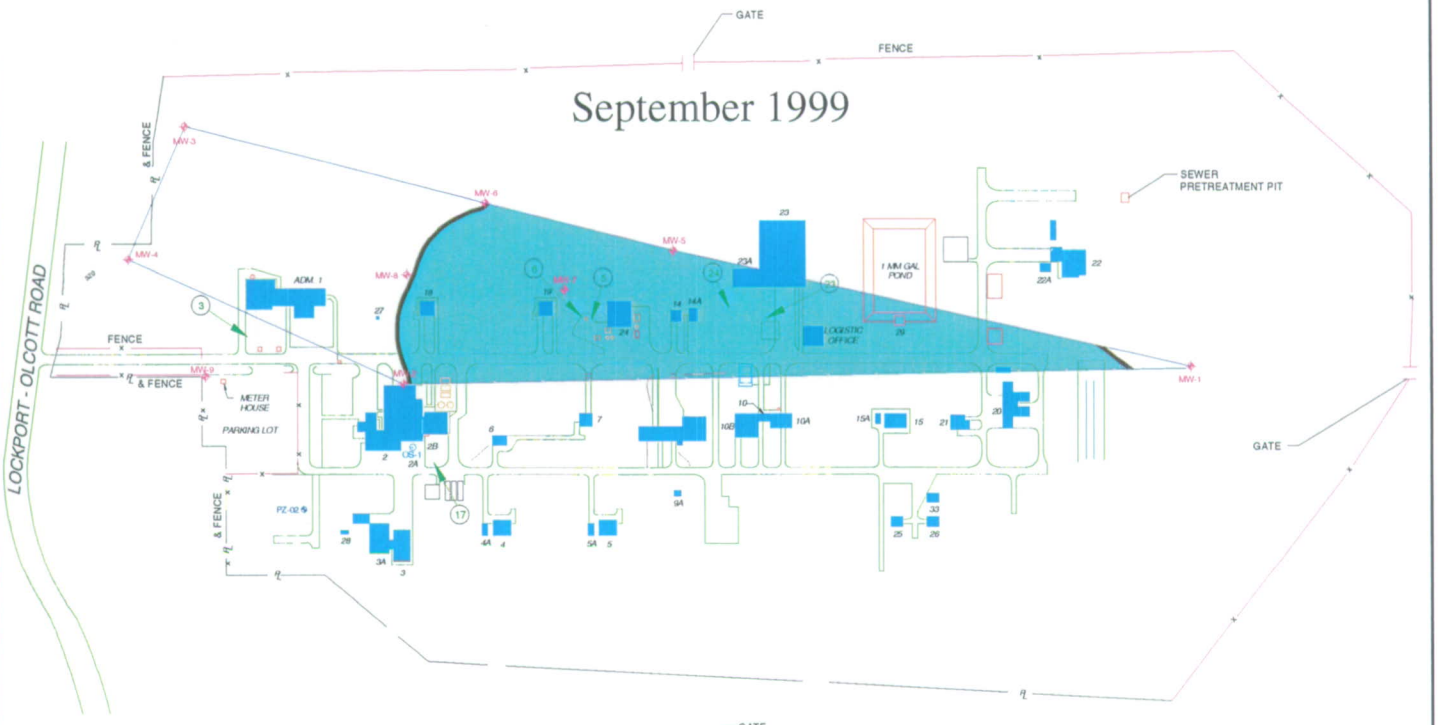

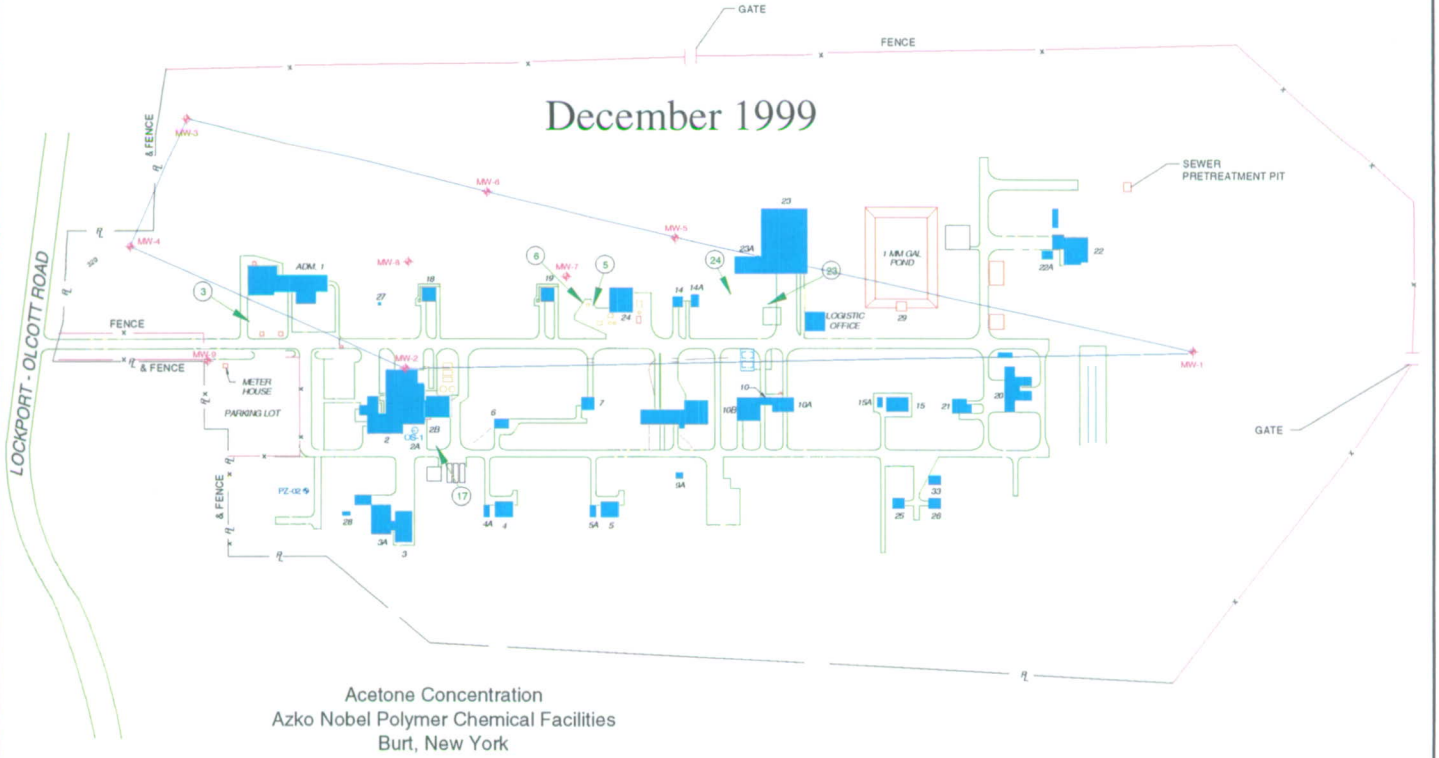

Acetone Concentration
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	September 1999[1]	December 1999[1]
MW-01	6.7	ND
MW-02	ND	ND
MW-03	ND	ND
MW-04	ND	ND
MW-05	130	ND
MW-06	ND	ND
MW-07	2100	ND
MW-08	4	ND
MW-09	---[2]	---[2]

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

AKZO NOBEL POLYMER CHEMICAL, LLC
BURT, NEW YORK

> 50 ug/L Acetone Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 25

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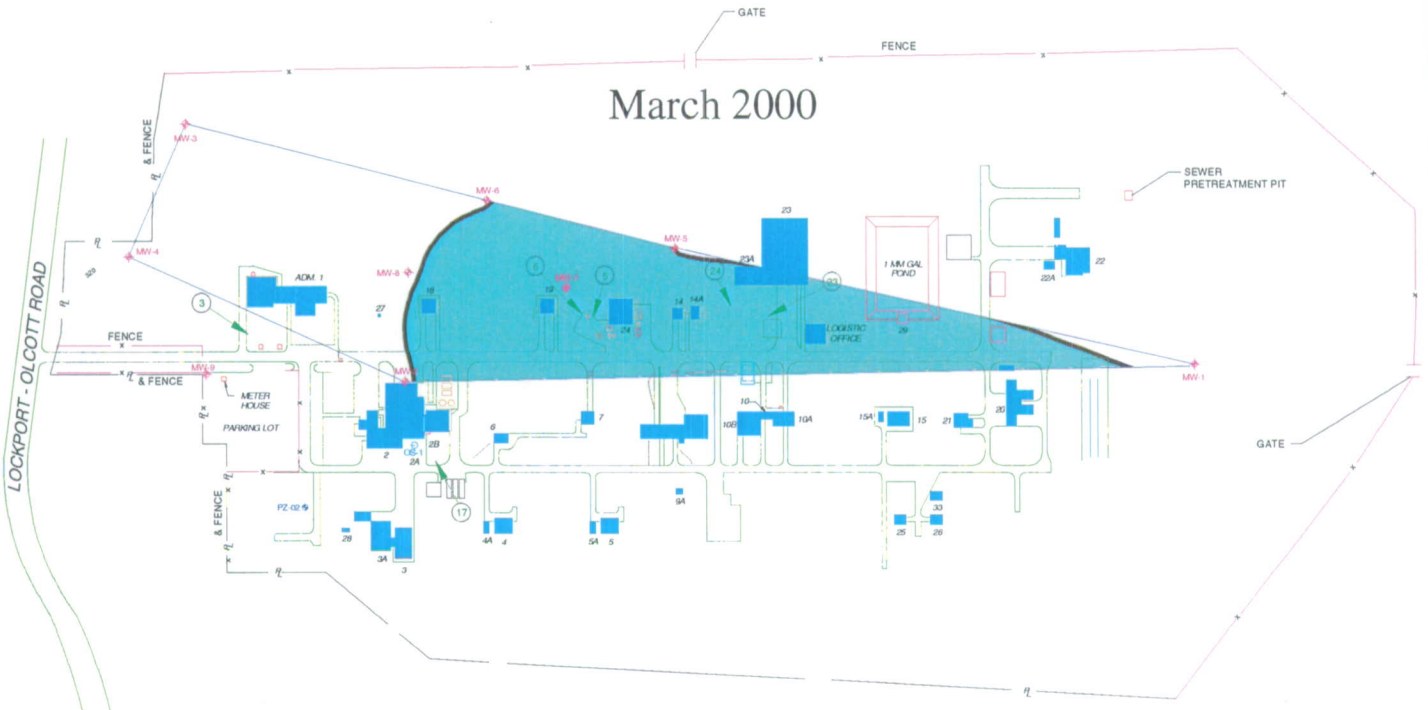
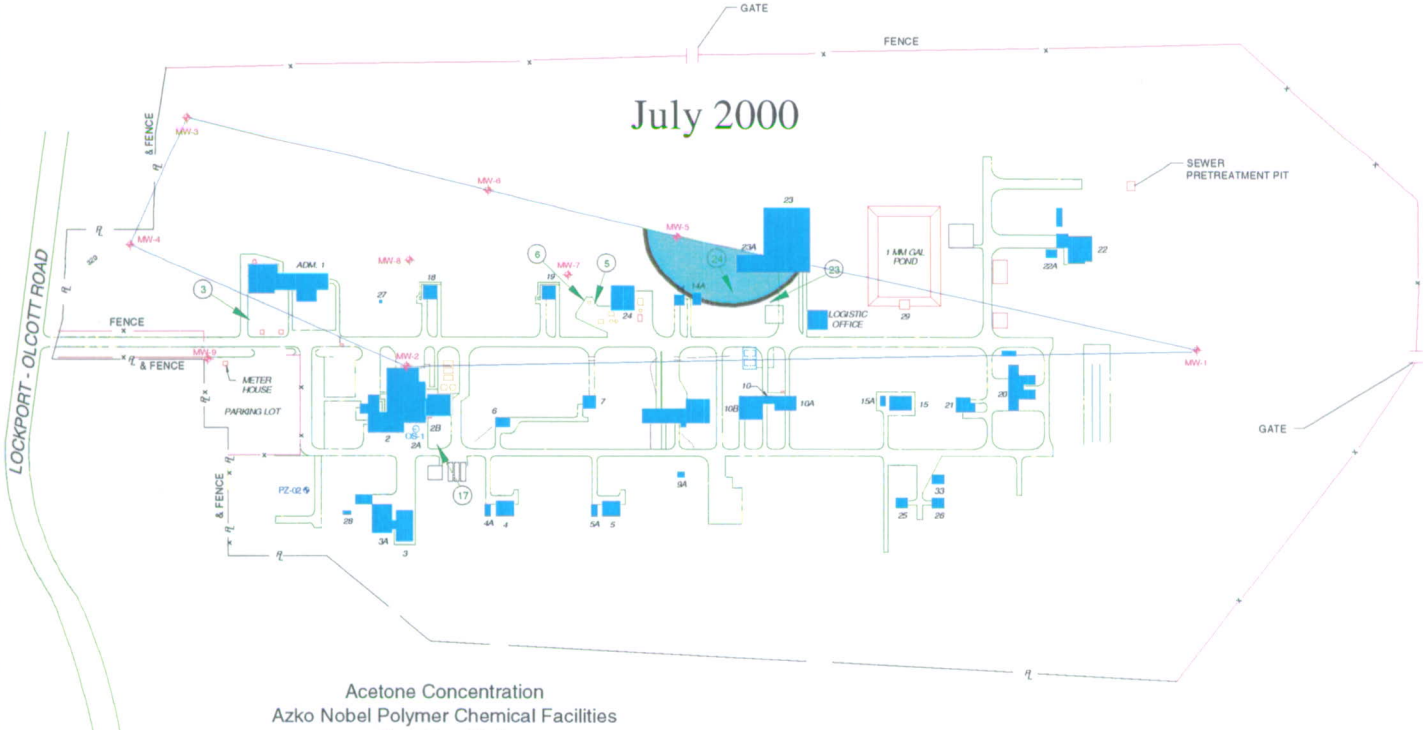




Acetone Concentration
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	March 2000[1]	July 2000[1]
MW-01	28	7
MW-02	ND	ND
MW-03	ND	ND
MW-04	ND	ND
MW-05	10	65.4
MW-06	ND	ND
MW-07	1300	10.3
MW-08	ND	ND
MW-09	---[2]	---[2]

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

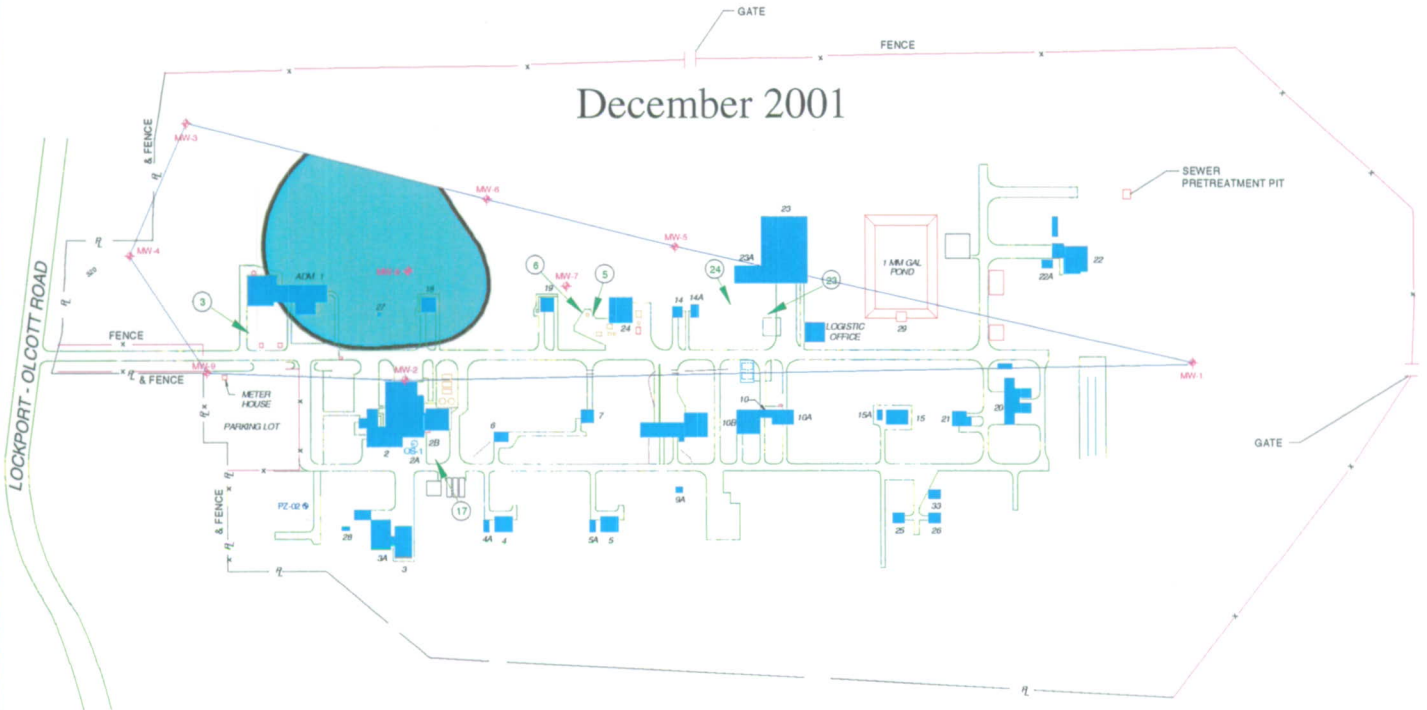
AKZO NOBEL POLYMER CHEMICAL, LLC
BURT, NEW YORK

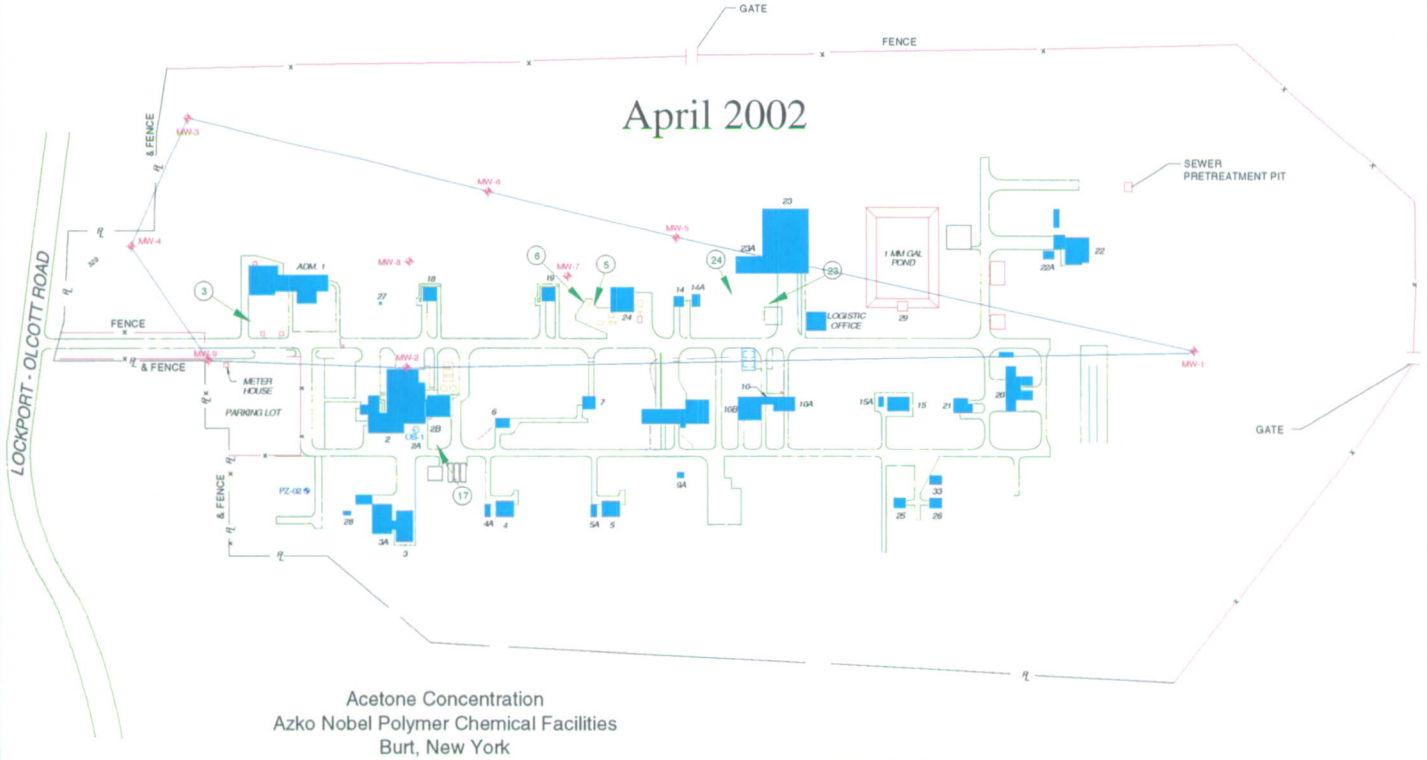
> 50 ug/L Acetone Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 25

Page 2 of 4





Acetone Concentration
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	December 2001[1]	April 2002[1]
MW-01	ND	ND
MW-02	ND	ND
MW-03	ND	ND
MW-04	ND	ND
MW-05	ND	ND
MW-06	ND	ND
MW-07	ND	ND
MW-08	170	ND
MW-09	ND	ND

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

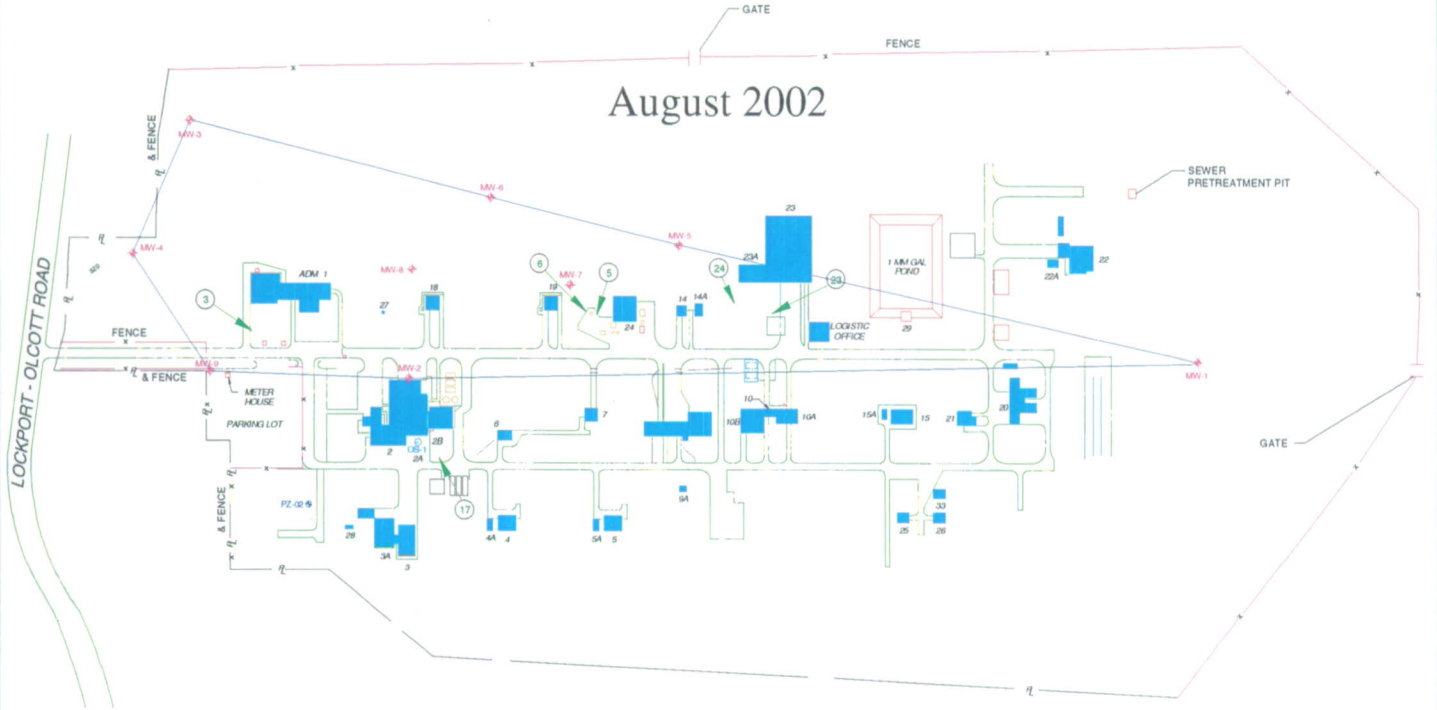
AKZO NOBEL POLYMER CHEMICAL, LLC
BURT, NEW YORK

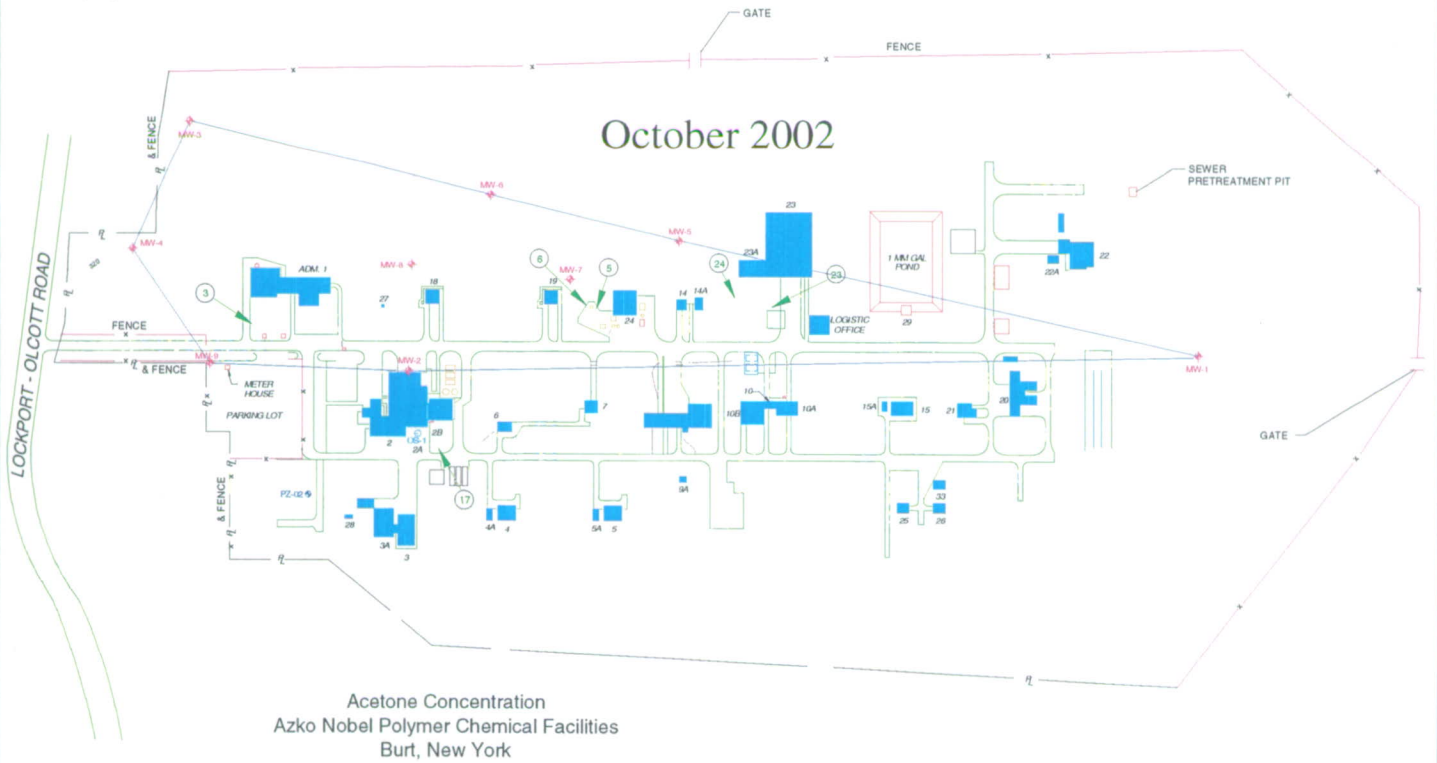
> 50 ug/L Acetone Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 25

Page 3 of 4





Acetone Concentration
Azko Nobel Polymer Chemical Facilities
Burt, New York

Well Number	August 2002[1]	October 2002[1]
MW-01	ND	ND
MW-02	ND	ND
MW-03	ND	ND
MW-04	ND	ND
MW-05	11	ND
MW-06	ND	ND
MW-07	10	ND
MW-08	14	ND
MW-09	ND	ND

Notes:

ND Non-Detect
[1] All values in ug/L
[2] Testing at Well MW-09 began in December 2001

AKZO NOBEL POLYMER CHEMICAL, LLC
BURT, NEW YORK

> 50 ug/L Acetone Plume Sequence

TRC
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852
978-970-5600

FIGURE 25

Page 4 of 4

The benzene plume sequence maps indicate the estimated extent of the benzene plume in the western down gradient flow direction remained relatively stable; the down gradient extent of the leading edge of the 1 ppb contour has fluctuated over the course of the 8 sampling rounds, advancing and retreating and advancing over time. The centroid of the plume may or may not have advanced down gradient to a limited extent over the study period; the earlier data interpretations do not have ground water data for MW-9, which limits conclusions in this regard. The overall plume mass has remained relatively stable over the study period. The estimated extent of the benzene plume in the eastern down gradient flow direction has declined over time.

The acetone plume sequence maps indicate the disappearance of the acetone plume over the course of the 8 sampling rounds. The estimated extent of the acetone plume in the eastern down gradient flow direction declined most rapidly. The down gradient extent of the leading edge of the 50 ppb contour has fluctuated over the course of the first 5 sampling rounds, prior to its disappearance in the last 3 sampling rounds.

The chlorobenzene plume sequence maps indicate the estimated extent of the chlorobenzene plume in the western down gradient flow direction remained relatively stable; the down gradient extent of the leading edge of the 5 ppb contour has fluctuated over the course of the 8 sampling rounds, advancing and retreating and advancing over time. The chlorobenzene plume does not appear in the eastern down gradient flow direction. The centroid of the chlorobenzene plume has shifted down gradient from MW-7 to MW-8.

The data available to date, gathered during 1999-2002, indicate the combined effects of abiotic and biotic attenuation appear to limit the extent of contaminants in ground water to a finite area of the overburden within the property boundary and within the limited industrialized section of the Akzo Nobel facility.

3.2.2 Vinyl Chloride

Vinyl chloride was not detected in any monitoring well during the four sampling rounds conducted during the CMS field work. Vinyl chloride was detected in ground water from MW-2

in the March 2000 ground water sampling round. Vinyl chloride has not been detected in any other monitoring well, nor in MW-2 in any prior or subsequent ground water sampling event. The four CMS field work rounds of additional ground water sampling confirm the RFI addendum conclusion that vinyl chloride is not a contaminant of concern at the site.

3.2.3 Ground Water Contaminants of Concern Summary

Table 4 presents ground water standards to which detected sample concentrations are compared. Integrated results of the RFI field investigations including the supplemental ground water sampling conducted during the CMS field work were compared to the current ground water standard presented in Table 6 to identify contaminants of concern and SWMUs/AOCs with which ground water standards exceedances are associated. Results of that comparison are presented below in Table 6. Table 6 presents contaminants for which an exceedance in ground water was noted on more than one occasion during the studies completed to date; compounds detected only once to date over the course of the 8 sampling rounds (chloromethane, styrene and vinyl chloride) have been removed from the table, since no re-detects have been noted in the data. TCE was detected twice in the first sampling round, and has not been detected since, so it has also been removed from Table 6.

Table 6. Contaminants of Concern in Ground Water

Contaminant of Concern	SWMU/AOC Where Contaminant Detected Above 6 NYCRR 703.5 Standards
Acetone	Phase 1-SWMU 3 process sewer
	Phase 1-SWMU 24 and downgradient area
	Phase 2-MW-5 down gradient of SWMU 24
	Phase 2-MW-7 down gradient of SWMU 5/6
	CMS-MW-8 down gradient of western developed portion of site

Table 6. Contaminants of Concern in Ground Water	
Contaminant of Concern	**SWMU/AOC Where Contaminant Detected Above 6 NYCRR 703.5 Standards**
Benzene	Phase 1-SWMU 5/6 hotspot between Bldgs. 18 and 19
	Phase 1-SWMU 17
	Phase 2-Bedrock well MW-1B
	Phase 2-MW-7 down gradient of SWMU 5/6
	Phase 2-MW-6 and MW-8 down gradient of western developed portion of site
	Phase 2-MW-2 down gradient of SWMU 17 and building 2,2A,2B
2-Butanone	Phase 2-MW-7 down gradient of SWMU 5/6
Chloroethane	Phase 2-MW-2 down gradient of SWMU 17 and building 2,2A,2B
Chlorobenzene	Phase 1-SWMU 5/6 hotspot between Bldgs. 18 and 19
	Phase 2-MW-7 down gradient of SWMU 5/6
	Phase 2-MW-6 and MW-8 down gradient of western developed portion of site
	CMS-MW-2 down gradient of SWMU 17 and building 2,2A,2B
1,1-Dichloroethane	Phase 1-Western end of SWMU 5/6 hotspot
	Phase 2- MW-8 down gradient of western developed portion of site
	Phase 2-MW-2 down gradient of SWMU 17 and building 2,2A,2B
1,2-Dichloroethane	Phase 2- MW-8 down gradient of western developed portion of site
	Phase 2- MW-3 down gradient of western developed portion of site, one detection at the action level
1,2-Dichlorobenzene	Phase 2-MW-7 down gradient of SWMU 5/6
	Phase 2- MW-8 down gradient of western developed portion of site
	Phase 2-MW-2 down gradient of SWMU 17 and building 2,2A,2B

Table 6. Contaminants of Concern in Ground Water	
Contaminant of Concern	**SWMU/AOC Where Contaminant Detected Above 6 NYCRR 703.5 Standards**
1,3-Dichlorobenzene	Phase 1-East of Building 3
	Phase 2-MW-7 down gradient of SWMU 5/6
1,4-Dichlorobenzene	Phase 2-MW-7 down gradient of SWMU 5/6
1,2-Dichloroethene (cis)	Phase 2-MW-7 down gradient of SWMU 5/6
	Phase 2-MW-2 down gradient of SWMU 17 and building 2,2A,2B
Ethylbenzene	Phase 1-SWMU 17
	Phase 2-MW-7 down gradient of SWMU 5/6
	CMS-MW-2 down/ gradient of SWMU 17 and building 2,2A,2B
Toluene	Phase 1-SWMU 17
	Phase 2-MW-7 down gradient of SWMU 5/6
	Phase 2-MW-2 down gradient of SWMU 17 and building 2,2A,2B
1,1,1-Trichloroethane	Phase 1-Downgradient of SWMU 5/6
	Phase 2- MW-8 down gradient of western developed portion of site
	CMS-MW-9 down gradient of western developed portion of site
Xylenes	Phase 1-SWMU 17
	Phase 2-MW-7 down gradient of SWMU 5/6
	Phase 2-MW-2 down gradient of SWMU 17 and building 2,2A,2B
Naphthalene	Phase 1-SWMU 17
Methylene Chloride (Dichloromethane)	CMS-MW-2 down gradient of SWMU 17 and building 2,2A,2B
	CMS-MW-8 down gradient of western developed portion of site

The additional data generated during the CMS field work is generally consistent with that developed during the Phase II RFI, and continue to support the conclusions regarding ground water flow patterns, and that ground water contamination appears limited to within the Akzo Nobel, Burt, NY parcel. As indicated in Table 4, and summarized in Table 6 above, only one additional compound was found present in ground water above its applicable ground water standard (methylene chloride) during the four rounds of ground water sampling conducted since the Phase II RFI was completed. Methylene chloride was detected in ground water in the first two rounds of CMS ground water sampling; no methylene chloride was detected in ground water from the final two CMS ground water sampling rounds.

3.2.4 Ground Water Geochemical Data Discussion

The December 2000 Phase II RFI Report concluded the presence of lowered dissolved oxygen content, the presence of reducing conditions, and elevated carbon dioxide content in near-source area wells provided hydrogeologic and geochemical evidence of biological degradation processes in effect at the facility.

The CMS Work Plan identified natural attenuation as a portion of the proposed remedy for contamination of ground water, and committed to generating additional data during the CMS field work as needed to determine the feasibility of natural attenuation of contaminants in ground water within a point of compliance within the facility boundary.

Additional data used to indirectly assess biodegradation at specific locations within the facility were gathered during the CMS. Hydrolysis, elimination, and biological attenuation factors (reductive dechlorination, direct aerobic and anaerobic mineralization, cometabolic aerobic degradation) are of primary interest. Data generated to specifically evaluate electron donors included total organic carbon (TOC). Laboratory and field test analytes added to the investigation to specifically evaluate electron acceptors included nitrate, manganese (IV), iron (III), sulfate, and carbon dioxide plus endpoint compounds methane, ethane, and ethene, plus chloride. Field measurements for alkalinity, Eh, DO, CO_2, pH and temperature provided needed

information regarding potential natural attenuation upgradient, within, and down gradient of the known area of ground water contamination at the Akzo Nobel Burt, NY facility.

The additional data collected through 2002 confirmed the RFI ground water quality indicator conclusions and provided a substantially expanded dataset useful in establishing the geochemical conditions at the facility. This section discusses the geochemical data and its relevance to corrective measures at the Akzo Nobel facility.

3.2.4.1 Natural attenuation background discussion

Natural attenuation in ground-water systems results from the integration of several subsurface attenuation mechanisms that are classified as either destructive or nondestructive. Biodegradation is the most important destructive attenuation mechanism, but abiotic destruction of some compounds also occurs. Nondestructive attenuation mechanisms include sorption, dispersion, dilution from recharge, and volatilization.

This discussion focuses on destructive attenuation mechanisms.

3.2.4.1.1 Abiotic degradation mechanisms

Table 7 summarizes the various abiotic mechanisms reported in the literature that may result in the degradation of synthetic organic compounds that are contaminants of concern at the Akzo Nobel facility. While data are not available for all contaminants found in ground water at Akzo, based on the data presented in Table 7, it can be concluded that abiotic destructive mechanisms are not likely to contribute significantly to degradataion of the majority of these contaminants.

Table 7. Aerobic Degradation Mechanisms	
Compound	**Compound Degradation Mechanism**
Dichloroethenes (DCE)	None
1,1,1- trichloroethane (TCA)	hydrolysis, dehydrohalogenation
1,1-dichloroethane (1,1-DCA)	None
Chloroethane	hydrolysis
Chlorobenzenes	None
Benzene	None
Toluene	None
Ethylbenzene	None
Xylenes	None
Methylene Chloride	None

3.2.4.1.2 biological degradation mechanisms

Numerous laboratory and field studies have shown that microorganisms indigenous to the subsurface environment can biodegrade a variety of organic compounds. During biodegradation, dissolved contaminants are ultimately transformed into harmless byproducts such as carbon dioxide, chloride, methane, and water. In some cases, intermediate products of these transformations may be more hazardous than the original compound; however, they may in turn also be more easily degraded. Each class of compounds differs in its biodegradation mechanism. Biological degradation mechanisms tend to dominate in most ground-water systems, depending on the type of contaminant and the ground-water chemistry. Biological degradation mechanisms are discussed in this section.

Biodegradation pathways differ by compound class. For example, biodegradation of fuel hydrocarbons, especially benzene, toluene, ethylbenzene, and xylenes (BTEX), is mainly limited by electron acceptor availability, and generally will proceed until all of the contaminants biochemically accessible to the microbes are destroyed. As indicated in the

reference text *Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater,* Air Force Center for Environmental Excellence (AFCEE) (Wiedemeier *et al.*, 1995d), there is generally an adequate supply of electron acceptors in virtually all hydrogeologic environments. In contrast, the more highly chlorinated solvents such as tetrachloroethene (PCE) and trichloroethene (TCE) typically are biodegraded under natural conditions via reductive dechlorination, a process that requires both electron acceptors (the chlorinated aliphatic hydrocarbons) and an adequate supply of electron donors. Electron donors include fuel hydrocarbons or other types of organic carbon. If the subsurface environment is depleted of electron donors before the chlorinated aliphatic hydrocarbons are removed, biological reductive dechlorination will cease.

This is the most significant difference between the processes of fuel hydrocarbon and chlorinated aliphatic hydrocarbon biodegradation. For this reason, it is more difficult to predict the long-term behavior of chlorinated aliphatic hydrocarbon plumes than fuel hydrocarbon plumes.

3.2.4.1.3 Biodegradation assessment for Classes of compounds of concern in ground water at the Akzo Nobel facility

A number of classes of compounds have been detected in ground water samples from the Akzo Nobel facility at a frequency and magnitude that requires corrective measures.

Fuel hydrocarbon contaminants of concern include BTEX compounds and naphthalene. Chlorinated aliphatic contaminants of concern include methylene chloride, dichloroethanes, and cis 1,2-dichloroethene. The chlorinated aromatic mono and dichlorobenzenes are contaminants of concern. Two ketone compounds formerly of concern no longer appear to be present at appreciable concentrations.

Table 8 summarizes the various biotic mechanisms that result in the degradation of synthetic organic compounds that are contaminants of concern at the Akzo Nobel facility.

Table 8. Biotic Degradation Mechanisms	
Compound	**Compound Degradation Mechanism**
DCE	Reductive dechlorination, direct biological oxidation
TCA	Reductive dechlorination
1,2-DCA	Reductive dechlorination, direct biological oxidation
1,1-DCA	Reductive dechlorination, direct biological oxidation
Chloroethane	Reductive dechlorination
Chlorobenzenes	Direct biological oxidation, reductive dechlorination, cometabolism
Benzene	Direct biological oxidation
Toluene	Direct biological oxidation
Ethylbenzene	Direct biological oxidation
Xylenes	Direct biological oxidation
Methylene Chloride	Direct biological oxidation

Direct Biological Oxidation

Many organic compounds including natural organic carbon, chlorobenzenes, BTEX and naphthalene, methylene chloride, and possibly the less oxidized chlorinated compounds such as DCE, 1,2-DCA, can be used as primary growth substrates (electron donor) for microbial metabolism.

Fuel hydrocarbons (BTEX and naphthalene) are rapidly biodegraded when they are utilized as the primary electron donor for microbial metabolism under aerobic conditions. Biodegradation of fuel hydrocarbons occurs naturally when sufficient oxygen (or other electron acceptors) and nutrients are available in the ground water. The rate of natural biodegradation is generally limited by the lack of oxygen or other electron acceptors. Chlorinated benzenes with up to 4 chlorine atoms (i.e., chlorobenzene, dichlorobenzenes) also have been shown to be readily biodegradable under aerobic conditions.

Biodegradation of fuel hydrocarbons will occur under anaerobic conditions in most, if not all, ground-water environments via denitrification, manganese (IV) reduction, iron (III) reduction, sulfate reduction, and methanogenesis.

Thus in regions of the ground water regime where sufficient dissolved oxygen is present, chlorobenzènes, BTEX and naphthalene biodegradation is expected. Where insufficient dissolved oxygen conditions prevail, BTEX and naphthalene biodegradation will proceed (at a reduced rate from that under aerobic conditions), and chlorobenzenes will not biodegrade.

In general, the chlorinated aliphatic contaminants of concern (1,1-DCA; 1,2-DCA; TCA, chloroethane) are not susceptible to direct biological oxidation.

Cometabolism

When a chlorinated compound such as chlorobenzene is biodegraded via cometabolism, the degradation is catalyzed by an enzyme or cofactor that is fortuitously produced by the organisms for other purposes. Cometabolism is best documented in aerobic environments. This mechanism is potentially applicable to chlorobenzenes at the Akzo Nobel facility.

Reductive Dechlorination

The most important process for the natural biodegradation of the chlorinated aliphatic contaminants of concern (1,1-DCA; 1,2-DCA; TCA, chloroethane) is reductive dechlorination. During this process, the chlorinated hydrocarbon is used as an electron acceptor, not as a source of carbon, and a chlorine atom is removed and replaced with a hydrogen atom. Reductive dechlorination of chlorinated solvent compounds is associated with the accumulation of "daughter products" and an increase in the concentration of chloride ions. The rate of reductive dechlorination decreases as the degree of chlorination decreases.

Reductive dechlorination has been demonstrated under nitrate- and iron-reducing conditions, but the most rapid biodegradation rates, affecting the widest range of chlorinated aliphatic hydrocarbons, occur under sulfate-reducing and methanogenic conditions. Because chlorinated aliphatic hydrocarbon compounds are used as electron acceptors during reductive

dechlorination, there must be an appropriate source of carbon for microbial growth in order for this process to occur. Potential carbon sources include natural organic matter, fuel hydrocarbons, or other introduced organic compounds.

3.2.4.1.4 Geochemical Data background

Table 9 provides a summary of the data use for specific geochemical measurements, and provides background on how such measurements can aide in the interpretation of subsurface conditions encountered at the Akzo Nobel facility. The data collected during the CMS field work are presented in Tables 10 and 11. The geochemical measurements are categorized as either metabolic byproducts of a degradation reaction sequence, electron acceptors of significance in consideration of direct oxidation degradation of organics, and other indicators of contamination or contaminant-derived presence/abundance, or measures of environmental conditions that impact biological degradation rates.

Table 9. Geochemical Measurement Data Use

Analysis	Data Use
Alkalinity	General quality indicator; measures buffering capacity of the ground water; increased due to biodegradation of organic compounds
Chloride	General quality indicator; final product of chlorinated solvent reduction, may be used as a tracer
Conductivity	General quality indicator; measure of dissolved ion pattern that may indicate solubilization of otherwise insoluble ions from biological processes
Iron (II), or dissolved Fe	Ferric iron in the matrix is used as an electron acceptor and solubilized to ferrous iron (Iron II) during anaerobic biodegradation of organics
Manganese (II), or dissolved Mn	Manganese (IV) in the matrix is used as an electron acceptor and solubilized to Manganese (II) during anaerobic biodegradation of organics
Methane, Ethane, Ethene	The presence of methane suggests organics degradation via methanogenesis. Ethane and ethene data are used where chlorinated solvents are suspected of undergoing biological transformation.

Table 9. Geochemical Measurement Data Use	
Analysis	**Data Use**
Nitrate	Substrate for microbial respiration if oxygen is depleted. The electron acceptor consumed after oxygen is depleted.
Nitrite	Product of nitrate reduction. Produced only under anaerobic conditions, and rarely observed.
Ammonia	Product of nitrite reductions. Subject to a variety of influences due to multiple generation/depletion pathways.
ORP	Oxidation – Reduction Potential (Eh) is calculated by adding a correction factor specific to the electrode used. The ORP of ground water influences and is influenced by the nature of the biologically mediated degradation of contaminants; the ORP (expressed as Eh) of ground water may range from more than 800 mV to less than -400 mV.
DO	Dissolved oxygen concentration indicates if aerobic or anaerobic conditions prevail; concentrations less than 1 mg/L generally indicate an anaerobic pathway.
pH	General water quality indicator; Aerobic and anaerobic biological processes are pH-sensitive. Should be in the 5-9 range for biodegradation.
Sulfate	Used as an electron acceptor after dissolved oxygen and nitrate have been depleted in the microbiological treatment zone
Carbon dioxide	While influenced by alkalinity buffering, increased carbon dioxide with decreased dissolved oxygen indicates organic biodegradation has occurred.
Dissolved organic carbon	A measure of the total organic matter dissolved in ground water that may be available for degradation.

Table 10
Overburden Ground Water Indicator Data Summary

		Sample Round	12/01	12/01	12/01	12/01	12/01	12/01	12/01	12/01	12/01	12/01
		Formation	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
		Well	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-7dupe	MW-8	MW-9
Metabolic By-Products												
Consituent	**Significance**	**Units**										
Ethane	metabolic end product of reductive dehalogenation of ethanes	ppm	<1	<500	<1	<1	<1	<100	<200	<200	<200	<5
Ethylene	**metabolic end product of reductive** dehalogenation of ethenes	**ppm**	**<1**	**<500**	**<1**	**<1**	**<1**	**<100**	**<200**	**<200**	**<200**	**<5**
Methane	indicator of anaerobic conditions and methanogenic bacteria which reduce CO2	ppm	2.3	8500	<2	<2	<2	1800	6700	5500	3600	130
carbon dioxide (field test)	increases due to biodegradation of organic compounds	mg/l	25	40	30	15	20	40	60	65	100	35
ferrous iron	dissolved iron can be a product of bacterial iron reduction	mg/l	<0.1	29.7	0.11	<0.1	0.329	<0.10	0.249	0.219	24.3	0.159
ferrous iron (field test)	dissolved iron can be a product of bacterial iron reduction	mg/l	0.2	3.2	0.2	0.4	0.2	0.8	2.0	2.0	4.8	0.2
diss manganese	dissolved manganese can be a product of bacterial manganese reduction	mg/l	na	na	na	na	na	na	na	na	na	na
chloride	may be produced from biological dechlorination and a conservative tracer	mg/l	6.2	7610	28.9	188	93.4	675	1640	1700	3090	193
Nitrite Nitrogen	product of nitrate reduction under anaerobic conditions; rarely observed	mg/l	<.01	<0.01	0.0187	<0.01	<0.01	<0.01	<0.01	0.0113	0.0122	0.0341
Electron Acceptors												
Consituent	**Significance**	**Units**										
dissolved oxygen	highest energy-yielding electron acceptor	mg/l	10.06	1.39	2.68	1.9	1.21	0.41	3.3	na	0.84	0.73
Nitrate Nitrogen	second-highest energy-yielding electron acceptor	mg/l	0.108	<0.05	<0.05	0.108	1.82	<0.05	<0.05	<0.05	0.158	1.82
sulfate (field test)	electron acceptor used after Fe(III) and Mn (IV)	mg/l	100	<50	>200	80	80	<50	<50	<50	70	150
Other												
Consituent	**Significance**	**Units**										
total organic carbon	a measure of the total organic matter in water available for degradation	ppm	2.77	185	7.65	2.54	3.01	4.72	17.5	17.4	115	2.18
alkalinity (field test)	indicator of buffering capacity of water, and increases due to biodegradation of organic compounds	mg/l	120	240	120	120	180	240	240	240	180	120
Eh	a meaure of the oxidative-reductive potential of the environment; negative is reducing, positive is oxidizing		160.6	-74.7	69.8	-49.8	47.1	-96.7	-100.5	na	-80.6	161.8
specific conductance	a measure of ions in solution	umhos/cm	420	21604	650	990	1141	3296	6617	na	35620	1799
Temperature	Biodegradation should proceed more rapidly at higher GW temperatures.	C	11.09	12.87	11.39	11.54	11.77	11.65	11.78	11.78	13.07	12.38
pH	Should be in the 5-9 range for biodegradation	std. Units	7.74	6.38	7.34	7.42	7.23	7.51	7.31	7.31	6.41	7.17

Notes:
na - Not Analyzed

Table 10
Overburden Ground Water Indicator Data Summary

		Sample Round Formation Well	4/02 Overburden MW-1	4/02 Overburden MW-2	4/02 Overburden MW-3	4/02 Overburden MW-4	4/02 Overburden MW-5	4/02 Overburden MW-6	4/02 Overburden MW-7	4/02 Overburden MW-7dupe	4/02 Overburden MW-8	4/02 Overburden MW-9
Metabolic By-Products												
Consituent	**Significance**	**Units**										
Ethane	metabolic end product of reductive dehalogenation of ethanes	ppm	<1	<500	<1	<1	<1	<5	<500	<500	<100	<100
Ethylene	metabolic end product of reductive dehalogenation of ethenes	ppm	<1	<500	<1	<1	<1	<5	<500	<500	<100	<100
Methane	indicator of anaerobic conditions and methanogenic bacteria which reduce CO2	ppm	<2	18000	<2	<2	<2	150	10000	9800	2300	2000
carbon dioxide (field test)	increases due to biodegradation of organic compounds	mg/l	25	75	25	30	20	25	30	25	150	45
ferrous iron	dissolved iron can be a product of bacterial iron reduction	mg/l	na	na	na	na	na	na	na	na	na	na
ferrous iron (field test)	dissolved iron can be a product of bacterial iron reduction	mg/l	<0.1	4.0	<0.1	<0.1	0.1	0.3	0.9	0.9	5.0	<0.1
diss manganese	dissolved manganese can be a product of bacterial manganese reduction	mg/l	0.0552	1.95	0.0612	0.0926	0.151	0.404	0.117	0.116	2.42	0.189
chloride	may be produced from biological dechlorination and a conservative tracer	mg/l	6.81	435	29.5	38.9	119	49.6	615	606	763	470
Nitrite Nitrogen	product of nitrate reduction under anaerobic conditions; rarely observed	mg/l	<0.01	0.0552	0.0264	<0.01	<0.01	<0.01	0.0219	0.0226	0.0201	<0.01
Electron Acceptors												
Consituent	**Significance**	**Units**										
dissolved oxygen	highest energy-yielding electron acceptor	mg/l	9	0.21	7.45	NM	1.2	1.5	1.5	na	0.6	4.1
Nitrate Nitrogen	second-highest energy-yielding electron acceptor	mg/l	<0.05	<0.05	<0.05	<0.05	5.72	0.072	<0.05	<0.05	1.23	9.58
sulfate (field test)	electron acceptor used after Fe(III) and Mn (IV)	mg/l	75	<50	>200	80	90	<50	200	200	<50	150
Other												
Consituent	**Significance**	**Units**										
total organic carbon	a measure of the total organic matter in water available for degradation	ppm	1.19	15.7	<1	1.94	2.32	5.66	10.4	9	2.85	1.33
alkalinity (field test)	indicator of buffering capacity of water, and increases due to biodegradation of organic compounds	mg/l	180	210	220	200	180	200	240	240	>240	240
Eh	a meaure of the oxidative-reductive potential of the environment; negative is reducing, positive is oxidizing		128	-72	237	161	168	89	-77	na	17	110
specific conductance	a measure of ions in solution	umhos/cm	493	1890	774	608	869	1290	2555	na	9600	1180
Temperature	Biodegradation should proceed more rapidly at higher GW temperatures.	C	7.52	11.74	7.6	8.64	8.33	8.89	7.94	7.94	9.02	8.8
pH	Should be in the 5-9 range for biodegradation.	std. Units	7.48	7.04	7.54	7.69	7.02	7.47	7.68	7.68	6.89	7.31

Notes:

na - Not Analyzed

Table 10
Overburden Ground Water Indicator Data Summary

Sample Round	8/02	8/02	8/02	8/02	8/02	8/02	8/02	8/02	8/02	8/02
Formation	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
Well	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-7dupe	MW-8	MW-9
Metabolic By-Products										
Consituent / **Significance** / **Units**										
Ethane — metabolic end product of reductive dehalogenation of ethanes — ppm	<1.0	<250	<1.0	<1.0	<1.0	<100	<100	<100	<500	<50
Ethylene — metabolic end product of reductive dehalogenation of ethenes — ppm	<1.0	<250	<1.0	<1.0	<1.0	<100	<100	<100	<500	<50
Methane — indicator of anaerobic conditions and methanogenic bacteria which reduce CO2 — ppm	3	8400	<2.0	<2.0	<2.0	2600	3200	3600	14000	950
carbon dioxide (field test) — increases due to biodegradation of organic compounds — mg/l	56	70	58	34	68	46	40	na	140	40
ferrous iron — dissolved iron can be a product of bacterial iron reduction — mg/l	na	na	na	na	na	na	na	na	na	na
ferrous iron (field test) — dissolved iron can be a product of bacterial iron reduction — mg/l	<0.1	.4	<0.1	<0.1	<0.1	0.1	0.5	na	5.5	<0.1
diss manganese — dissolved manganese can be a product of bacterial manganese reduction — mg/l	<0.01	1.94	0.0658	0.72	0.116	0.59	0.0546	0.0566	1.68	0.182
chloride — may be produced from biological dechlorination and a conservative tracer — mg/l	6.91	110	29	114	144	306	456	474	2320	396
Nitrite Nitrogen — product of nitrate reduction under anaerobic conditions; rarely observed — mg/l	0.0138	0.0102	0.0168	0.0276	0.0138	<0.01	<0.01	<0.01	<0.01	<0.01
Electron Acceptors										
Consituent / **Significance** / **Units**										
dissolved oxygen — highest energy-yielding electron acceptor — mg/l	2.1	0.2	6.8	4.7	0.2	0.8	0.9	na	2.2	3.9
Nitrate Nitrogen — second-highest energy-yielding electron acceptor — mg/l	<0.05	0.142	<0.05	0.332	0.28	<0.05	<0.05	0.0522	<0.05	10.6
sulfate (field test) — electron acceptor used after Fe(III) and Mn (IV) — mg/l	85	<50	>200	90	>200	>200	>200	na	<50	125
Other										
Consituent / **Significance** / **Units**										
total organic carbon — a measure of the total organic matter in water available for degradation — ppm	1.65	3.58	1.51	2.07	2.26	5.05	8.36	8.47	7.67	1.35
alkalinity (field test) — indicator of buffering capacity of water, and increases due to biodegradation of organic compounds — mg/l	200	200	240	200	240	>240	>240	na	200	>240
Eh — a meaure of the oxidative-reductive potential of the environment; negative is reducing, positive is oxidizing	196	-211	121	137	61	-179	-240	na	-187	107
specific conductance — a measure of ions in solution — umhos/cm	516	1715	740	876	1045	1756	2223	na	7799	1114
Temperature — Biodegradation should proceed more rapidly at higher GW temperatures. — C	11.85	19	14.22	15.09	14.39	15.03	15.27	15.27	15	14.64
pH — Should be in the 5-9 range for biodegradation. — std. Units	7	6.81	7	7.18	6.73	7.46	7.76	7.76	6.84	6.97

Notes:

na - Not Analyzed

Table 10
Overburden Ground Water Indicator Data Summary

		Sample Round	10/02	10/02	10/02	10/02	10/02	10/02	10/02	10/02	10/02	10/02
		Formation	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden	Overburden
		Well	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-7dupe	MW-8	MW-9
Metabolic By-Products												
Constituent	**Significance**	**Units**										
Ethane	metabolic end product of reductive dehalogenation of ethanes	ppm	<1.0	<500	<1.0	na	<1.0	<200	<200	<250	<500	<50
Ethylene	metabolic end product of reductive dehalogenation of ethenes	ppm	<1.0	<500	<1.0	na	<1.0	<200	<200	<250	<500	<50
Methane	indicator of anaerobic conditions and methanogenic bacteria which reduce CO2	ppm	2.2	11000	<2.0	na	2.3	4600	7200	7900	18000	1000
carbon dioxide (field test)	increases due to biodegradation of organic compounds	mg/l	45	100	40	na	40	30	35	30	>250	45
ferrous iron	dissolved iron can be a product of bacterial iron reduction	mg/l	<0.1	11.3	<0.1	na	<0.1	0.496	1.5	1.31	58.6	<0.1
ferrous iron (field test)	dissolved iron can be a product of bacterial iron reduction	mg/l	<0.1	4	<0.1	na	<0.1	0.3	0.3	0.3	6	<0.1
diss manganese	dissolved manganese can be a product of bacterial manganese reduction	mg/l	0.0267	3.27	0.0768	na	0.256	0.761	0.0624	0.0575	4.9	0.134
chloride	may be produced from biological dechlorination and a conservative tracer	mg/l	5.92	436	28.3	na	139	317	530	556	8000	369
Nitrite Nitrogen	product of nitrate reduction under anaerobic conditions; rarely observed	mg/l	<0.01	0.018	<0.01	na	0.0184	<0.01	0.0637	0.0465	0.061	<0.01
Electron Acceptors												
Constituent	**Significance**	**Units**										
dissolved oxygen	highest energy-yielding electron acceptor	mg/l	0.3	0.6	4.6	2.8	0.4	0.4	0.8	na	0.8	1.5
Nitrate Nitrogen	second-highest energy-yielding electron acceptor	mg/l	<0.05	<0.05	0.17	na	0.129	<0.05	<0.05	0.104	<0.05	7.63
sulfate (field test)	electron acceptor used after Fe(III) and Mn (IV)	mg/l	80	<50	>200	na	200	200	<50	<50	<50	125
Other												
Constituent	**Significance**	**Units**										
total organic carbon	a measure of the total organic matter in water available for degradation	ppm	1.15	3.62	1.47	na	2.25	5.6	10.3	na	8.77	1.44
alkalinity (field test)	indicator of buffering capacity of water, and increases due to biodegradation of organic compounds	mg/l	200	240	200	na	240	>240	>240	>240	200	220
Eh	a meaure of the oxidative-reductive potential of the environment; negative is reducing, positive is oxidizing		-5	-124	75	112	206	-127	-149	na	-99	207
specific conductance	a measure of ions in solution	umhos/cm	560	2609	817	940	1050	1917	2637	na	23260	1431
Temperature	Biodegradation should proceed more rapidly at higher GW temperatures.	C	12.44	18.36	14.42	14.77	14.75	15.14	15.5	15.5	15.66	16.22
pH	Should be in the 5-9 range for biodegradation.	std. Units	8.03	6.9	7.37	7	6.99	7.61	7.86	7.86	6.56	7.17

Notes:

na - Not Analyzed

Table 11
Bedrock Ground Water Indicator Data Summary

		Sample Round	12/01	12/01	12/01	12/01	4/02	4/02	4/02	4/02
		Formation	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock
		Well	MW-1B	MW-3B	MW-4B	MW-9B	MW-1B	MW-3B	MW-4B	MW-9B
Metabolic By-Products										
Consituent	Significance	Units								
Ethane	metabolic end product of reductive dehalogenation of ethanes	ppm	<1	<2	<1	<1	2.1	<5	<1	<1
Ethylene	metabolic end product of reductive dehalogenation of ethenes	ppm	<1	<2	<1	<1	1.1	<5	<1	<1
Methane	indicator of anaerobic conditions and methanogenic bacteria which reduce CO2	ppm	<1	54	2.2	4.3	5.3	49	2.4	10
carbon dioxide (field test)	increases due to biodegradation of organic compounds	mg/l	5	25	20	5	10	20	20	10
ferrous iron	dissolved iron can be a product of bacterial iron reduction	mg/l	<0.1	0.209	0.289	0.309	na	na	na	na
ferrous iron (field test)	dissolved iron can be a product of bacterial iron reduction	mg/l	0.8	1.0	0.6	0.4	2.1	0.5	0.1	0.4
diss manganese	dissolved manganese can be a product of bacterial manganese reduction	mg/l	na	na	na	na	0.57	0.0326	0.138	0.0696
chloride	may be produced from biological dechlorination and a conservative tracer	mg/l	338	58	352	31.7	334	62.8	286	52.4
Nitrite Nitrogen	product of nitrate reduction under anaerobic conditions; rarely observed	mg/l	<0.01	0.0151	0.0304	0.0221	<0.01	<0.01	<0.01	<0.01
Electron Acceptors										
Consituent	Significance	Units								
dissolved oxygen	highest energy-yielding electron acceptor	mg/l	0.85	0.31	0.6	0.87	0.5	0.35	0.14	1.83
Nitrate Nitrogen	second-highest energy-yielding electron acceptor	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
sulfate (field test)	electron acceptor used after Fe(III) and Mn (IV)	mg/l	>200	55	>200	>200	>200	65	>200	>200
Other										
Consituent	Significance	Units								
total organic carbon	a measure of the total organic matter in water available for degradation	ppm	12	5.67	1.58	2.58	3.62	1.61	<1	1.38
alkalinity (field test)	indicator of buffering capacity of water, and increases due to biodegradation of organic compounds	mg/l	40	120	80	40	20	170	180	120
Eh	a meaure of the oxidative-reductive potential of the environment; negative is reducing, positive is oxidizing		-322.8	-198.2	-225.3	-6.9	-571	-148	99	56
specific conductance	a measure of ions in solution	umhos/cm	2023	348	1877	1648	2878	466	2921	1875
Temperature	Biodegradation should proceed more rapidly at higher GW temperatures.	C	10.93	11.91	11.76	11.86	9.13	10.15	11.02	12.28
pH	Should be in the 5-9 range for biodegradation.	std Units	10.12	8.31	9.5	9.21	8.54	7.94	8.09	8.71

Notes:

na - Not Analyzed
ND - Not Detected

Table 11
Bedrock Ground Water Indicator Data Summary

		Sample Round Formation Well	8/02 Bedrock MW-1B	8/02 Bedrock MW-3B	8/02 Bedrock MW-4B	8/02 Bedrock Mw-9B	10/02 Bedrock MW-1B	10/02 Bedrock MW-3B	10/02 Bedrock Mw-4b	10/02 Bedrock MW-9B
Metabolic By-Products										
Consituent	Significance	Units								
Ethane	metabolic end product of reductive dehalogenation of ethanes	ppm	<1.0	<2.5	<1.0	<1.0	1.2	< 2.5	< 1.0	< 1.0
Ethylene	metabolic end product of reductive dehalogenation of ethenes	ppm	<1.0	<2.5	<1.0	<1.0	1.2	< 2.5	< 1.0	< 1.0
Methane	indicator of anaerobic conditions and methanogenic bacteria which reduce CO2	ppm	3.9	81	4.7	9	6.7	64	4.6	8.4
carbon dioxide (field test)	increases due to biodegradation of organic compounds	mg/l	14	16	26	28	5	15	15	10
ferrous iron	dissolved iron can be a product of bacterial iron reduction	mg/l	11.2	1.51	9.81	3.96	3.56	6.35	1.92	2.76
ferrous iron (field test)	dissolved iron can be a product of bacterial iron reduction	mg/l	0.2-0.4	ND	ND	0.4-0.6	ND	0.5	ND	ND
diss manganese	dissolved manganese can be a product of bacterial manganese reduction	mg/l	0.327	0.0294	0.111	0.114	0.0543	0.0381	0.324	0.0327
chloride	may be produced from biological dechlorination and a conservative tracer	mg/l	319	54.6	606	46.3	301	48.2	191	28.4
Nitrite Nitrogen	product of nitrate reduction under anaerobic conditions; rarely observed	mg/l	<0.01	<0.10	<0.01	<0.01	0.0196	0.0118	0.0248	<0.01
Electron Acceptors										
Consituent	Significance	Units								
dissolved oxygen	highest energy-yielding electron acceptor	mg/l	2.13	0.22	4.89	2.97	0.55	0.16	2.26	0.34
Nitrate Nitrogen	second-highest energy-yielding electron acceptor	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.161	<0.05	<0.05
sulfate (field test)	electron acceptor used after Fe(III) and Mn (IV)	mg/l	>200	55	>200	>200	>200	<50	>200	>200
Other										
Consituent	Significance	Units								
total organic carbon	a measure of the total organic matter in water available for degradation	ppm	1.45	<1.0	<1.0	1.38	<1.0	<1.00	<1.00	2.54
alkalinity (field test)	indicator of buffering capacity of water, and increases due to biodegradation of organic compounds	mg/l	80	220	200	80	20	150	180	120
Eh	a measure of the oxidative-reductive potential of the environment; negative is reducing, positive is oxidizing		-41.5	-102.4	98.6	-80.7	-276	-211	-99	-163
specific conductance	a measure of ions in solution	umhos/cm	2734	429	1628	1623	3130	463	2580	1667
Temperature	Biodegradation should proceed more rapidly at higher GW temperatures.	C	11.03	10.09	11.17	12.04	11.1	11.63	11.23	12.02
pH	Should be in the 5-9 range for biodegradation.	std. Units	7.9	7.73	8.02	8.27	9.16	8.03	8.01	8.27

Notes:

na - Not Analyzed

ND - Not Detected

3.2.4.2 Well-specific ground water geochemical data evaluation

In order to evaluate the data for trends over time, the metabolic byproducts, electron acceptors, and other indicator data are reviewed on a well-specific basis.

3.2.4.2.1 Overburden Wells

MW-1

Metabolic byproducts – Data show consistency from sample round to sample round. Metabolic byproducts are either absent or consistent with concentrations typically encountered in unimpacted ground water.

Units = ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<1	<1	2.8	25	<0.1	0.2	NA	6.2	<0.01
4/02	<1	<1	<2	25	NA	<0.1	0.0552	6.81	<0.01
8/02	<1	<1	3	56	NA	<0.1	<0.01	6.91	0.0138
10/02	<1	<1	2.2	45	<0.1	<0.1	0.0267	5.92	<0.01

Electron Acceptors – Data indicate a depletion of dissolved oxygen over the study period. Other electron acceptor concentrations are relatively stable over time.

Units = ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	10.06	0.108	100
4/02	9	<0.05	75
8/02	2.1	<0.05	85
10/02	0.3	<0.05	80

Other indicators – Most indicator concentrations remain relatively stable over time. Redox potential data indicate a shift from strongly oxidizing conditions to neutral conditions in the last sampling event of the study period.

Units = various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	2.77	120	160.6	420
4/02	1.19	180	128	496
8/02	1.65	200	196	516
10/02	1.15	200	-5	560

MW-2

Metabolic byproducts – Metabolic byproducts are consistently present at significant levels. No overall time trends are apparent in the data set.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<500	<500	8500	40	29.7	3.2	NA	7610	<0.01
4/02	<500	<500	16000	75	NA	4	1.95	435	0.0552
8/02	<250	<250	6400	70	NA	4	1.94	110	0.0102
10/02	<500	<500	11000	100	11.3	4	3.27	436	0.018

Electron Acceptors – Electron acceptors are consistently depleted over the study period. Dissolved oxygen was higher in the first sampling event, but remained below 1 ppm for the remainder of the study period.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	1.39	<0.05	<50
4/02	0.21	<0.05	<50
8/02	0.2	0.142	<50
10/02	0.6	<0.05	<50

Other indicators – Total organic carbon and specific conductance were significantly higher in the first sampling event; subsequent to the first event, organic carbon continued to decline over time. Other indicator concentrations remained relatively consistent over time.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	185	240	-74.7	21604
4/02	15.7	210	-72	1890
8/02	3.58	200	-211	1715
10/02	3.62	240	-124	2609

MW-3

Metabolic byproducts – Data show consistency from sample round to sample round. Metabolic byproducts are either absent or consistent with concentrations typically encountered in unimpacted ground water. Nitrite detections were just above the method detection limit (MDL).

Units = ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<1	<1	<2	30	0.11	0.2	NA	28.9	0.0187
4/02	<1	<1	<2	25	NA	ND	0.0612	29.5	0.0264
8/02	<1	<1	<2	58	NA	ND	0.0658	29	0.0168
10/02	<1	<1	<2	40	<0.1	ND	0.0768	28.3	<0.01

Electron Acceptors – Data indicate electron acceptor concentrations are relatively stable over time, with sufficient dissolved oxygen to support aerobic biologic activity, a general absence of nitrate nitrogen, and abundant sulfate.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	2.68	<0.05	>200
4/02	7.45	<0.05	>200
8/02	6.8	<0.05	>200
10/02	4.6	0.17	>200

Other indicators- Most indicator concentrations remain relatively stable over time. Redox potential data show variability but consistently oxidizing conditions are indicated.

Units = various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	7.65	120	69.8	650
4/02	<1	220	237	774
8/02	1.51	240	121	740
10/02	1.47	200	75	817

MW-4

Metabolic byproducts – Limited data exist for MW-4 due to poor recharge. Metabolic byproducts are either absent or consistent with concentrations typically encountered in unimpacted ground water.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<1	<1	<2	15	<0.1	0.4	NA	188	<0.01
4/02	<1	<1	<2	30	NA	ND	0.0926	38.9	<0.01
8/02	<1	<1	<2	34	NA	ND	0.72	114	0.0276
10/02	NA	NA	NA	NA	NA	NA	NA	NA	NA

Electron Acceptors – Data indicate electron acceptor concentrations are variable over time; however, due to slow recharge, data are limited. Dissolved oxygen is consistently present at concentrations supportive of aerobic biological activity.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	1.9	0.106	80
4/02	NM	<0.05	80
8/02	4.7	0.332	90
10/02	2.8	NA	NA

Other indicators- Most indicator concentrations remain relatively stable over time. Redox potential data show variability but consistently oxidizing conditions are indicated.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	2.54	120	-49.8	990
4/02	1.94	200	161	608
8/02	2.07	200	137	876
10/02	NA	NA	112	940

MW-5

Metabolic byproducts – Metabolic byproducts are either present at low concentrations, or absent, or consistent with concentrations typically encountered in unimpacted ground water. Nitrite was detected just above the MDL.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<1	<1	<2	20	0.329	0.2	NA	93.4	<0.01
4/02	<1	<1	<2	20	NA	0.1	0.151	119	<0.01
8/02	<1	<1	<2	68	NA	ND	0.116	144	0.0138
10/02	<1	<1	2.3	40	<0.1	ND	0.256	139	0.0184

Electron Acceptors – Data indicate electron acceptor concentrations are variable over time. The data from the first two sampling rounds are similar, as are the data from the last two sampling rounds. While the behavior of dissolved oxygen and nitrogen are consistent with depletion of dissolved oxygen as the primary electron acceptor, sulfate data show an increase in sulfate present in the latter two sampling events.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	1.21	1.82	80
4/02	1.2	5.72	90
8/02	0.2	0.26	>200
10/02	0.4	0.129	200

Other indicators – Most indicator concentrations remain relatively stable over time. Redox potential data show variability but consistently oxidizing conditions are indicated.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	3.01	180	47.1	1141
4/02	2.32	180	168	869
8/02	2.26	240	61	1045
10/02	2.25	240	206	1050

MW-6

Metabolic byproducts – Metabolic byproducts are present at moderate concentrations, with the data relatively consistent over time with the exception of significantly lower concentrations during the second sampling event. Nitrite was not detected.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<100	<100	1800	40	<0.10	0.6	NA	675	<0.01
4/02	<5	<5	150	25	NA	0.3	0.404	49.6	<0.01
8/02	<100	<100	2600	46	NA	0.1	0.59	306	<0.01
10/02	<200	<200	4600	30	0.496	0.3	0.761	317	<0.01

Electron Acceptors – Data indicate electron acceptor concentrations are relatively consistent over time for dissolved oxygen and nitrate. While the behavior of dissolved oxygen and nitrogen are consistent with depletion of dissolved oxygen as the primary electron acceptor, sulfate data show an increase in sulfate present in the latter two sampling events.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	0.41	<0.05	<50
4/02	1.5	0.072	<50
8/02	0.8	<0.05	>200
10/02	0.4	<0.05	200

Other indicators – Most indicator concentrations remain relatively stable over time. Redox potential data show variability but predominantly reducing conditions are indicated.

Units = various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	4.72	240	-96.7	3296
4/02	5.66	200	89	1290
8/02	5.05	>240	-179	1756
10/02	5.6	>240	-127	1917

MW-7

Metabolic byproducts – Metabolic byproducts are present at significant concentrations, with the data exhibiting variability over time but not in any discernable general seasonal trend.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<200	<200	6700	60	0.249	2.0	NA	1640	<0.01
4/02	<500	<500	10000	30	NA	0.9	0.117	615	0.0219
8/02	<100	<100	3200	40	NA	0.5	0.0546	456	<0.01
10/02	<200	<200	7200	35	1.5	0.3	0.0624	530	0.0637

Electron Acceptors – Data indicate electron acceptor concentrations are variable over time. Dissolved oxygen concentrations declined over the study period. Nitrate nitrogen was not detected in any sampling round. Sulfate data show a wide range of values.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	3.3	<0.05	<50
4/02	1.5	<0.05	200
8/02	0.9	<0.05	>200
10/02	0.8	<0.05	<50

Other indicators – Most indicator concentrations remain relatively stable over time. Redox potential data show consistently reducing conditions; alkalinity is consistently high, as are total organic carbon and specific conductance values.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	17.5	240	-100.5	6617
4/02	10.4	240	-77	2555
8/02	8.36	>240	-240	2223
10/02	10.3	>240	-149	2637

MW-8

Metabolic byproducts – Metabolic byproducts are present at significant concentrations, with the data relatively consistent over time with the exception of significantly higher concentrations during the final sampling event.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<200	<200	3600	100	24.3	4.8	NA	3090	0.0122
4/02	<100	<100	2300	150	NA	5.0	2.42	763	0.0201
8/02	<500	<500	14000	140	NA	5.5	1.68	2320	<0.01
10/02	<500	<500	18000	>250	58.6	6	4.9	8000	0.061

Electron Acceptors – Data indicate electron acceptor concentrations are consistently over time for dissolved oxygen and sulfate. The second sampling event for nitrate is anomalous.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	0.84	0.158	70
4/02	0.6	1.23	<50
8/02	2.2	<0.05	<50
10/02	0.8	<0.05	<50

Other indicators – Most indicator concentrations exhibit variability over time. Redox potential data show variability but predominantly reducing conditions are indicated.

Units = various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	115	180	-80.6	35620
4/02	2.85	>240	17	9600
8/02	7.67	200	-187	7799
10/02	8.77	200	-99	23260

MW-9

Metabolic byproducts – Metabolic byproducts are present at moderate concentrations, with the data relatively consistent over time.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<5	<5	130	35	0.159	0.2	NA	193	0.0341
4/02	<100	<100	2000	45	NA	ND	0.189	470	<0.01
8/02	<50	<50	950	40	NA	ND	0.182	396	<0.01
10/02	<50	<50	1000	45	<0.1	ND	0.134	369	<0.01

Electron Acceptors – Data indicate electron acceptor concentrations are relatively consistent over time for sulfate. While the behavior of dissolved oxygen and nitrogen are consistent with depletion of dissolved oxygen as the primary electron acceptor in the first sampling event, data subsequent to the first sampling event show consistently higher concentrations of the primary and secondary electron acceptors.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	0.73	1.82	150
4/02	4.1	9.58	150
8/02	3.9	10.6	125
10/02	1.5	7.63	125

Other indicators – Most indicator concentrations remain relatively stable over time.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	2.18	120	161.6	1799
4/02	1.33	240	110	1180
8/02	1.35	>240	107	1114
10/02	1.44	220	207	1431

3.2.4.2.2 Bedrock Wells

MW-1B

Metabolic byproducts – Data show consistency from sample round to sample round. Ethane and ethene, metabolic endproducts from anaerobic reductive dehalogenation, were detected at trace concentrations. The presence of these compounds in bedrock ground water at MW-1B indicates a source for these compounds in the recharge area or ground water flow field for the ground water intercepted at well MW-1B. Other metabolic byproduct data (e.g. chloride) are consistent with this hypothesis, while concentrations of gas byproducts (methane, carbon dioxide) are relatively low, which is consistent with a more distant source.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<1	<1	<1	5	<0.1	0.8	NA	338	<0.01
4/02	2.1	1.1	5.3	10	NA	2.1	0.57	334	<0.01
8/02	<1	<1	3.9	14	11.2	0.2-0.4	0.327	319	<0.01
10/02	1.2	1.2	6.7	5	3.56	ND	0.0543	301	0.0196

Electron Acceptors – Data indicate electron acceptor concentrations are relatively consistent over time for sulfate. Dissolved oxygen concentrations, with the exception of one sampling event, are consistent with the anaerobic conditions generally encountered in bedrock ground water at the Akzo Nobel facility. Nitrate was absent.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	0.85	<0.05	>200
4/02	0.5	<0.05	>200
8/02	2.13	<0.05	>200
10/02	0.55	<0.05	>200

Other indicators – Most indicator concentrations remain relatively stable over time. However, dissolved organic carbon concentrations declined over the course of the 4 sampling events. The Eh data indicate strongly reducing conditions at MW-1B. While pH is relatively basic for ground water at MW-1B, particularly in the first sampling round, the data are consistent with elevated pH at MW-1B as previously reported in the Phase II RFI Report. It should be noted all Akzo Nobel bedrock ground water pH has been found to be basic.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	12	40	-322.8	2023
4/02	3.62	20	-571	2878
8/02	1.45	80	-41.5	2734
10/02	<1.0	20	-276	3130

MW-3B

Metabolic byproducts – Data show consistency from sample round to sample round. Methane is present in MW-3B ground water at approximately an order of magnitude greater than other Akzo bedrock well ground water. The other metabolic byproducts are either absent or consistent with concentrations typically encountered in unimpacted ground water. Nitrite detections were below, or just above the MDL.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<2	<2	54	25	0.209	1	NA	58	0.0151
4/02	<5	<5	49	20	NA	0.5	0.0326	62.8	<0.01
8/02	<2.5	<2.5	81	16	1.51	ND	0.0294	54.5	<0.10
10/02	< 2.5	< 2.5	64	15	6.35	0.5	0.0381	48.2	0.0118

Electron Acceptors – Data indicate electron acceptor concentrations are relatively consistent over time for sulfate. Sulfate concentrations are notably lower than that of other Akzo bedrock ground water datasets. The behavior of dissolved oxygen and nitrogen are consistent with depletion of dissolved oxygen as the primary electron acceptor, as is suggested by the sulfate data. Nitrate is generally absent.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	0.31	<0.05	55
4/02	0.35	<0.05	65
8/02	0.22	<0.05	55
10/02	0.16	0.161	<50

Other indicators – Most indicator concentrations remain relatively stable over time. However, dissolved organic carbon concentrations declined over the course of the 4 sampling events.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	5.67	120	-198.2	348
4/02	1.61	170	-148	466
8/02	<1.00	220	-102.4	429
10/02	<1.00	150	-211	463

MW-4B

Metabolic byproducts – Data show consistency from sample round to sample round. Chloride data are comparable to chloride data from MW-1B, and may indicate MW-4B is down gradient of an area of chlorinated organic compound reduction, since chloride can function as a conservative tracer in ground water. However, metabolic byproducts are either absent or consistent with concentrations typically encountered in unimpacted ground water. Nitrite detections were just above the MDL.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<1	<1	2.2	20	0.289	0.6	NA	352	0.0304
4/02	<1	<1	2.4	20	NA	0.1	0.138	286	<0.01
8/02	<1	<1	4.7	26	9.81	ND	0.111	606	<0.01
10/02	<1	<1	4.6	15	1.92	ND	0.324	191	0.0248

Electron Acceptors – Data indicate electron acceptor concentrations are relatively consistent over time for sulfate; nitrate was not detected. Dissolved oxygen data indicate a range of concentrations that suggest the ground water regime at MW-4B can be aerobic and anaerobic at times.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	0.6	<0.05	>200
4/02	0.14	<0.05	>200
8/02	4.89	<0.05	>200
10/02	2.26	<0.05	>200

Other indicators – Specific conductance data remain relatively stable over time. The Eh data exhibited variability and are consistent with the dissolved oxygen data regarding reducing-oxidizing condition shifts during the 4 sampling events. The dissolved organic carbon concentrations declined over the course of the 4 sampling events.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	1.58	80	-225.3	1877
4/02	<1.00	180	99	2921
8/02	<1.00	200	98.6	1628
10/02	<1.00	180	-99	2580

MW-9B

Metabolic byproducts – Data show consistency from sample round to sample round. Metabolic byproducts are either absent or consistent with concentrations typically encountered in unimpacted ground water. Nitrite detections were below to just above the MDL.

Units= ppm	Ethane	Ethylene	Methane	Carbon dioxide (field test)	Ferrous iron	Ferrous iron (field test)	Dissolved Manganese	Chloride	Nitrite Nitrogen
12/01	<1	<1	4.3	5	0.309	0.4	NA	31.7	0.0221
4/02	<1	<1	10	10	NA	0.4	0.0696	52.4	<0.01
8/02	<1	<1	9	26	3.96	0.4-0.6	0.114	46.3	<0.01
10/02	<1	<1	8.4	10	2.76	ND	0.0327	28.4	<0.01

Electron Acceptors – Data indicate electron acceptor concentrations are relatively consistent over time for sulfate. Dissolved oxygen concentrations, with the exception of one sampling event, are consistent with the anaerobic conditions generally encountered in bedrock ground water at the Akzo Nobel facility. Nitrate was absent.

Units= ppm	Dissolved oxygen	Nitrate Nitrogen	Sulfate (field test)
12/01	0.87	<0.05	>200
4/02	1.83	<0.05	>200
8/02	2.97	<0.05	>200
10/02	0.34	<0.05	>200

Other indicators – Most indicator concentrations remain relatively stable over time.

Units= various	Total organic carbon (ppm)	Alkalinity (field test) (ppm)	Eh (mV)	Specific conductance (umhos/cm)
12/01	2.58	40	-6.9	1648
4/02	1.38	120	56	1875
8/02	1.38	80	-80.7	1623
10/02	2.54	120	-163	1667

3.2.4.2.3 Summary of Geochemical Observations and conclusions

The overall geochemical datasets presented for the overburden and bedrock ground water monitoring wells in Tables 10 and 11 were discussed by well above. Table 12 summarizes the observations and conclusions.

Table 12. Geochemical Data Observations and Conclusions

Analysis	Data Use	Observations	Conclusions
Alkalinity	General quality indicator; measures buffering capacity of the ground water; increased due to biodegradation of organic compounds	Highest in MW-2, 5, 6, 7 & 8 industrialized area wells	Alkalinity data indicate biodegradation in source area, and support conclusion that limited connectivity between upper bedrock and overburden ground water is likely present.
Chloride	General quality indicator; final product of chlorinated solvent reduction, may be used as a tracer	Bedrock chloride is consistent MW-1B,4B, and MW-3B,9B, but the 2 groups differ by an order of magnitude Significantly elevated in MW-2, MW-8 near-source wells	Chloride data indicate chlorinated aliphatic biodegradation in source areas. May indicate bedrock locations MW 1B, 4B are monitoring similar intervals, as are MW-3B,9B.

Table 12. Geochemical Data Observations and Conclusions			
Analysis	**Data Use**	**Observations**	**Conclusions**
Conductivity	General quality indicator; measure of dissolved ion pattern that may indicate solubilization of otherwise insoluble ions from biological processes	Elevated conductance in ground water at the MW-2, MW-6, MW-7, MW-8 section of the facility, and a much reduced specific conductance in the western and eastern down gradient ground water monitoring locations	Conductivity data indicate solubilization of ions in source areas, an indication of biological degradation under reducing, anaerobic conditions has occurred.
Iron (II), or dissolved Fe	Ferric iron in the matrix is used as an electron acceptor and solubilized to ferrous iron (Iron II) during anaerobic biodegradation of organics	Significantly elevated ferrous iron concentrations were noted in MW-2,8 near-source wells	Ferrous iron data indicate iron is/was utilized as an electron acceptor in contaminant source areas at the site.
Manganese (II), or dissolved Mn	Manganese (IV) in the matrix is used as an electron acceptor and solubilized to Manganese (II) during anaerobic biodegradation of organics	Significantly elevated Mn (II) concentrations were noted in MW-2,8 near-source wells	Manganese (II) data indicate manganese is/was utilized as an electron acceptor in contaminant source areas at the site.
Methane, Ethane, Ethene	The presence of methane suggests organics degradation via methanogenesis. Ethane and ethene data are used where chlorinated solvents are suspected of undergoing biological transformation.	Ethane, ethene were detected only in MW-1B. Elevated methane in ground water recorded at the MW-2 and MW-8 locations	Methanogenesis usually only occurs after depletion of oxygen, nitrate, sulfate electron acceptors. Strong indicator of biodegradation and anaerobic conditions in contaminant source areas at the site.
Nitrate	Substrate for microbial respiration if oxygen is depleted. The electron acceptor consumed after oxygen is depleted.	Nitrate data indicates that, excepting the MW-9 location, little nitrate is present in ground water at the Akzo Nobel facility. Most of the measurements were either reported below, at, or slightly above the lab DL.	Indicate nitrate is not a significant electron acceptor at the facility due to a lack of availability.

Table 12. Geochemical Data Observations and Conclusions			
Analysis	**Data Use**	**Observations**	**Conclusions**
ORP	Oxidation – Reduction Potential (Eh) is calculated by adding a correction factor specific to the electrode used. The ORP of ground water influences and is influenced by the nature of the biologically mediated degradation of contaminants; the ORP (expressed as Eh) of ground water may range from more than 800 mV to less than -400 mV.	Low Eh at bedrock well MW-1B indicates strong reducing conditions in comparison to other bedrock wells. The data indicate a reducing ground water environment is located in the vicinity of MW-2, MW-5, MW-6, MW-7 and MW-8. This reducing environment is bounded by oxidizing conditions in ground water at down gradient monitoring well locations	Consistent results in near-source wells indicate reducing conditions prevail at these locations. Positive results at up and down gradient wells MW-1,3 and 9 indicate oxidizing conditions exist at these locations at the site.
DO	Dissolved oxygen concentration indicates if aerobic or anaerobic conditions prevail; concentrations less than 1 mg/L generally indicate an anaerobic pathway.	Dissolved oxygen concentrations are indicative of anaerobic conditions in the ground water regime in the vicinity of MW-2, MW-5, MW-6, MW-7 and MW-8. Aerobic conditions prevail down gradient to the west.	Dissolved oxygen depression is evidence oxygen utilization throughout the site area for biological degradation processes in ground water. MW-8 may be an active anaerobic area. The presence of dissolved oxygen most recently at MW-7 may indicate less active aerobic biodegradation is taking place at this location.
pH	General water quality indicator; Aerobic and anaerobic biological processes are pH-sensitive. Should be in the 5-9 range for biodegradation.	Within the typical range in overburden ground water Basic in bedrock ground water	Ground water pH is within the range acceptable for microbes capable of biodegradation of contaminants of concern.

Table 12. Geochemical Data Observations and Conclusions			
Analysis	**Data Use**	**Observations**	**Conclusions**
Sulfate	Used as an electron acceptor after dissolved oxygen and nitrate have been depleted in the microbiological treatment zone	The data indicate consistent depleted sulfate concentrations at MW-2 and MW-8. Sulfate concentrations are not depleted in down gradient well locations. Sulfate depletion noted in MW-3B	Sulfate depletion is evidence that sulfate is being used as an electron acceptor during biodegradation of solvent compounds.
Carbon dioxide	While influenced by alkalinity buffering, increased carbon dioxide with decreased dissolved oxygen indicates organic biodegradation has occurred.	Elevated carbon dioxide locations coincide with areas of depleted dissolved oxygen, moderated to some extent at locations of highest methane.	Carbon dioxide levels indicate active organic compound reduction via biological action at this location
Dissolved organic carbon	A measure of the total organic matter dissolved in ground water that may be available for degradation.	Organic carbon is most prevalent in the area immediately down gradient of the known fuel oil contaminated area (SWMU 17) and within the MW-2, MW-6, MW-7, MW-8 industrialized area of the facility. Overburden concentrations should be sufficient for electron donor use in reductive dechlorination	Indicates a declining trend in source area, which may indicate use as electron donor in anaerobic degradation processes.

3.2.4.3 Indicator data assessment

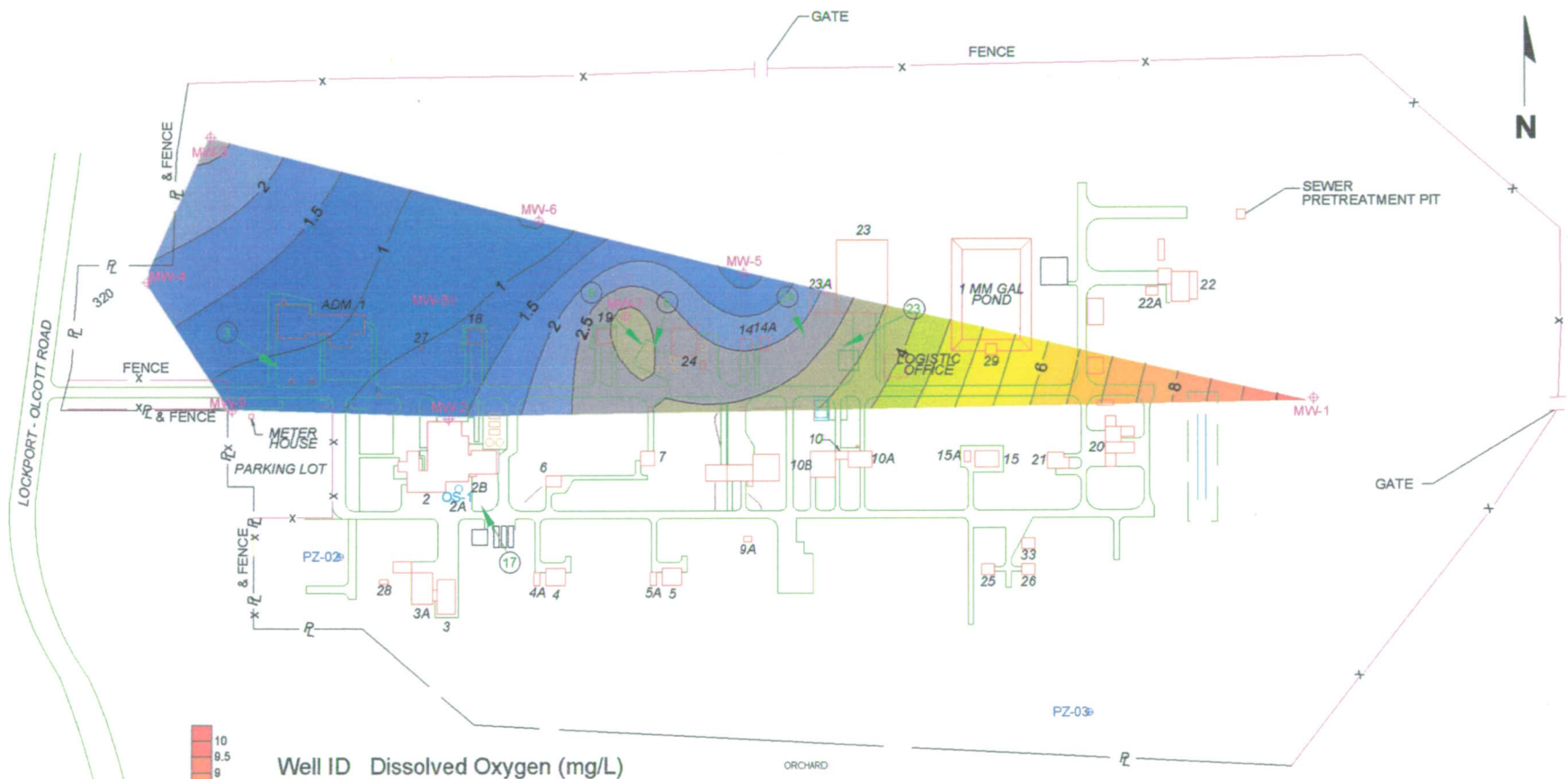
An indicator data assessment was performed for the overburden ground water regime. The dataset was examined to determine if data variability between sampling events provided any evidence of seasonality or time-related trends. For a number of the geochemical parameters, examination of the data revealed that no significant variability was evident, and thus generation of average values for these parameters would provide for a reasonable representation of pattern of abundance across the Akzo Nobel facility. For other parameters, seasonal variability precluded a combined representation, and datasets must be evaluated by individual sampling event.

Metabolic byproduct data were generally consistent over time, and thus conclusions regarding the relative abundance of metabolic byproducts can be made across sampling events. The MW-7 data exhibit some variability that must be considered in reaching conclusions regarding nitrite in ground water at this well location.

Electron acceptor data for one group of monitoring well data (MWs-2,3,8 & 9) were generally consistent over time, while data for other monitoring wells (MWs-1,4,5,6 & 7) exhibited some variability that should be considered when evaluating generalizations with regards to the relative abundance of electron acceptors in ground water at these well locations.

Other indicator data were generally consistent over time, and thus conclusions regarding the relative abundance of these indicator data can be made across sampling events. The MW-2 and MW-8 specific conductance data exhibit some variability that must be considered in reaching conclusions regarding indicators in ground water at these well locations.

Figures 26-38 present the isopleth maps for dissolved oxygen, redox potential (as measured by Eh), dissolved organic carbon, carbon dioxide, alkalinity, chloride, dissolved (ferrous) iron, dissolved (manganous) manganese, and methane. Quarterly isopleths were prepared for dissolved oxygen, while averaged results isopleths were prepared for the other parameters.



Well ID	Dissolved Oxygen (mg/L)
MW-1	10.06
MW-2	1.39
MW-3	2.68
MW-4	1.9
MW-5	1.21
MW-6	0.41
MW-7	3.3
MW-8	0.84
MW-9	0.73

Graphic Scale

0 ft 200 ft

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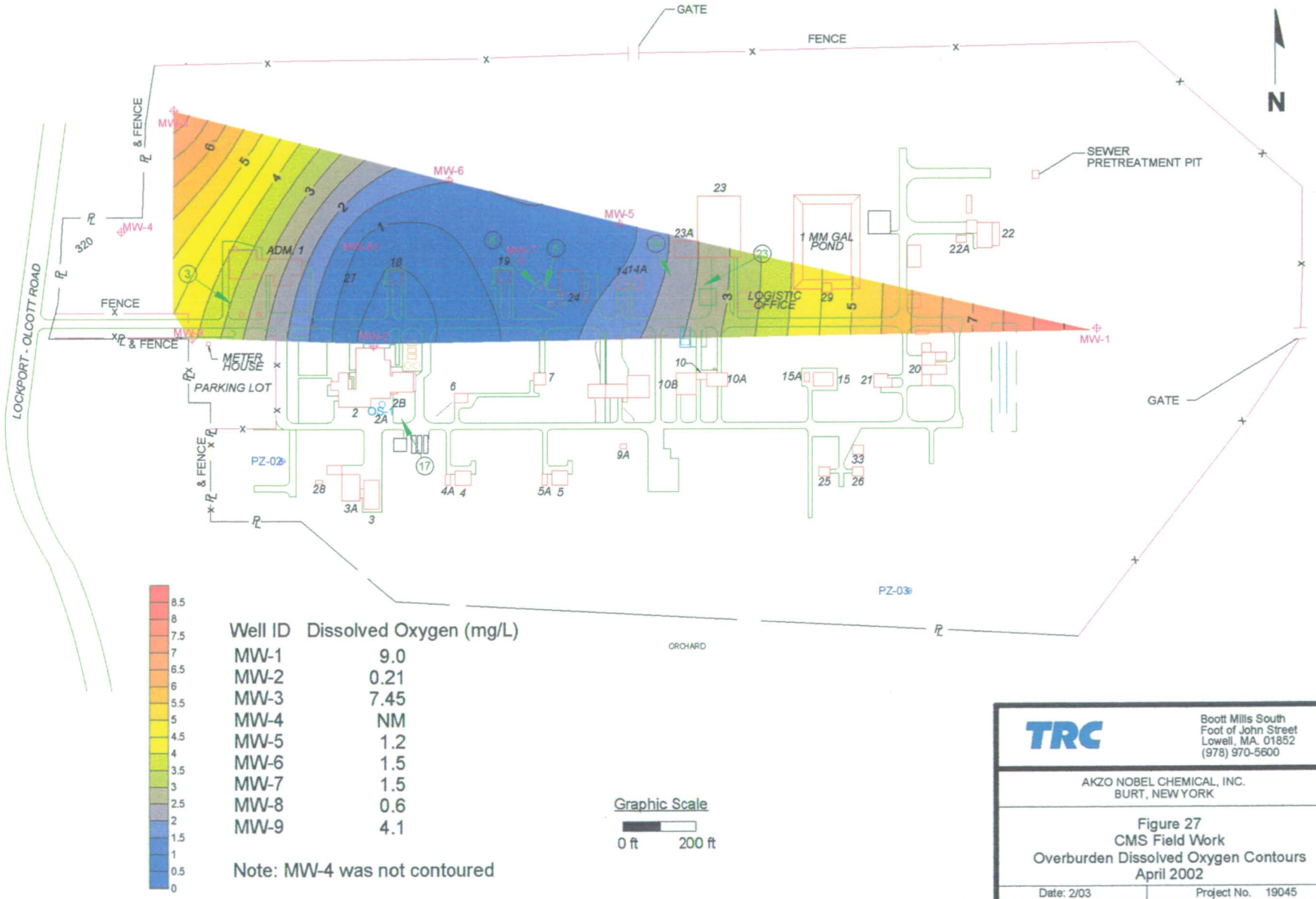
Figure 26
CMS Field Work
Overburden Dissolved Oxygen Contours
December 2001

Date: 2/03 | Project No. 19045



Well ID	Dissolved Oxygen (mg/L)
MW-1	9.0
MW-2	0.21
MW-3	7.45
MW-4	NM
MW-5	1.2
MW-6	1.5
MW-7	1.5
MW-8	0.6
MW-9	4.1

Note: MW-4 was not contoured

Graphic Scale

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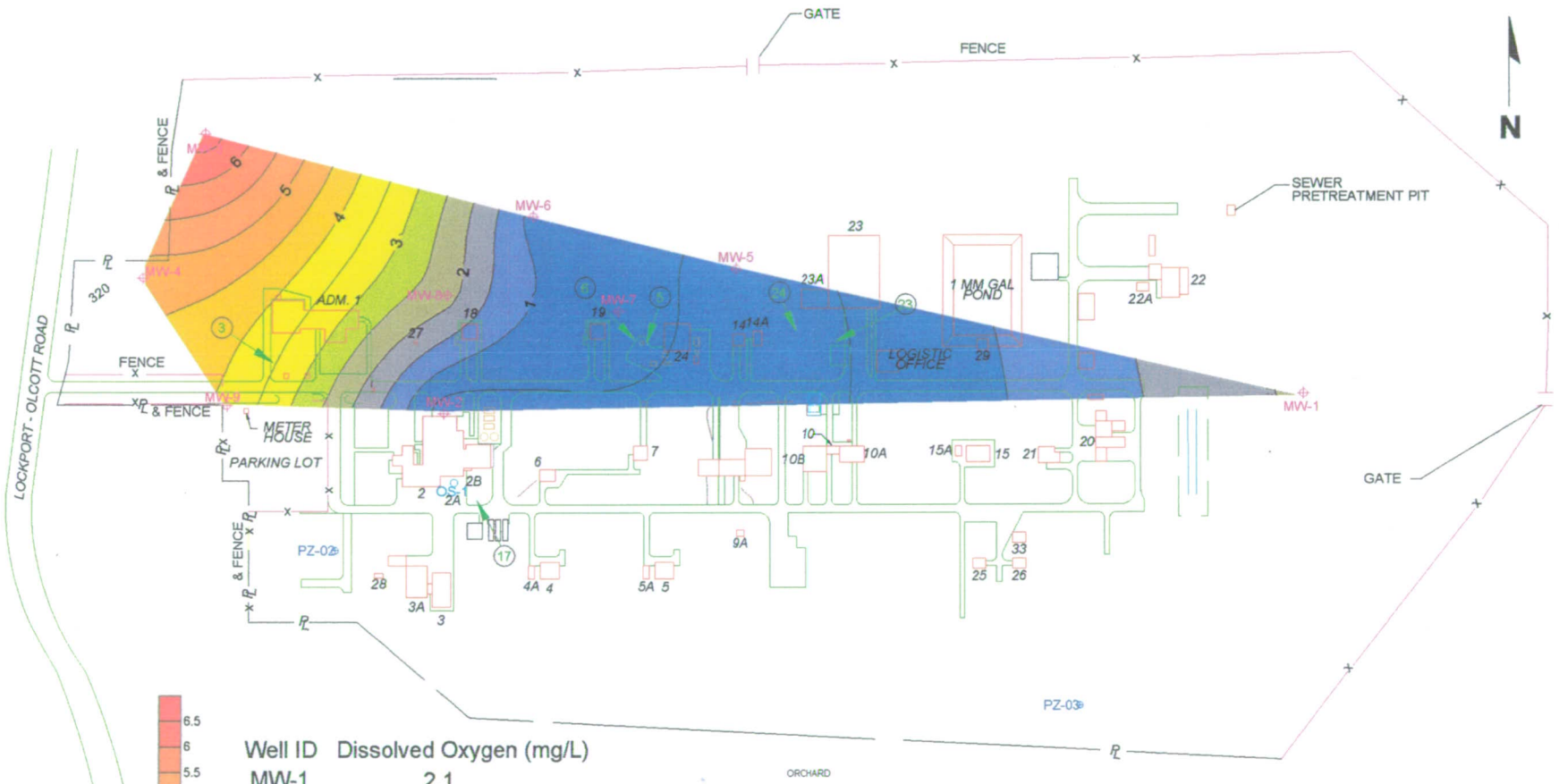
Figure 27
CMS Field Work
Overburden Dissolved Oxygen Contours
April 2002

Date: 2/03 | Project No. 19045



Well ID	Dissolved Oxygen (mg/L)
MW-1	2.1
MW-2	0.2
MW-3	6.8
MW-4	4.7
MW-5	0.2
MW-6	0.8
MW-7	0.9
MW-8	2.2
MW-9	3.9

Graphic Scale
0 ft 200 ft

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Figure 28
CMS Field Work
Overburden Dissolved Oxygen Contours
August 2002

Date: 2/03 | Project No. 19045

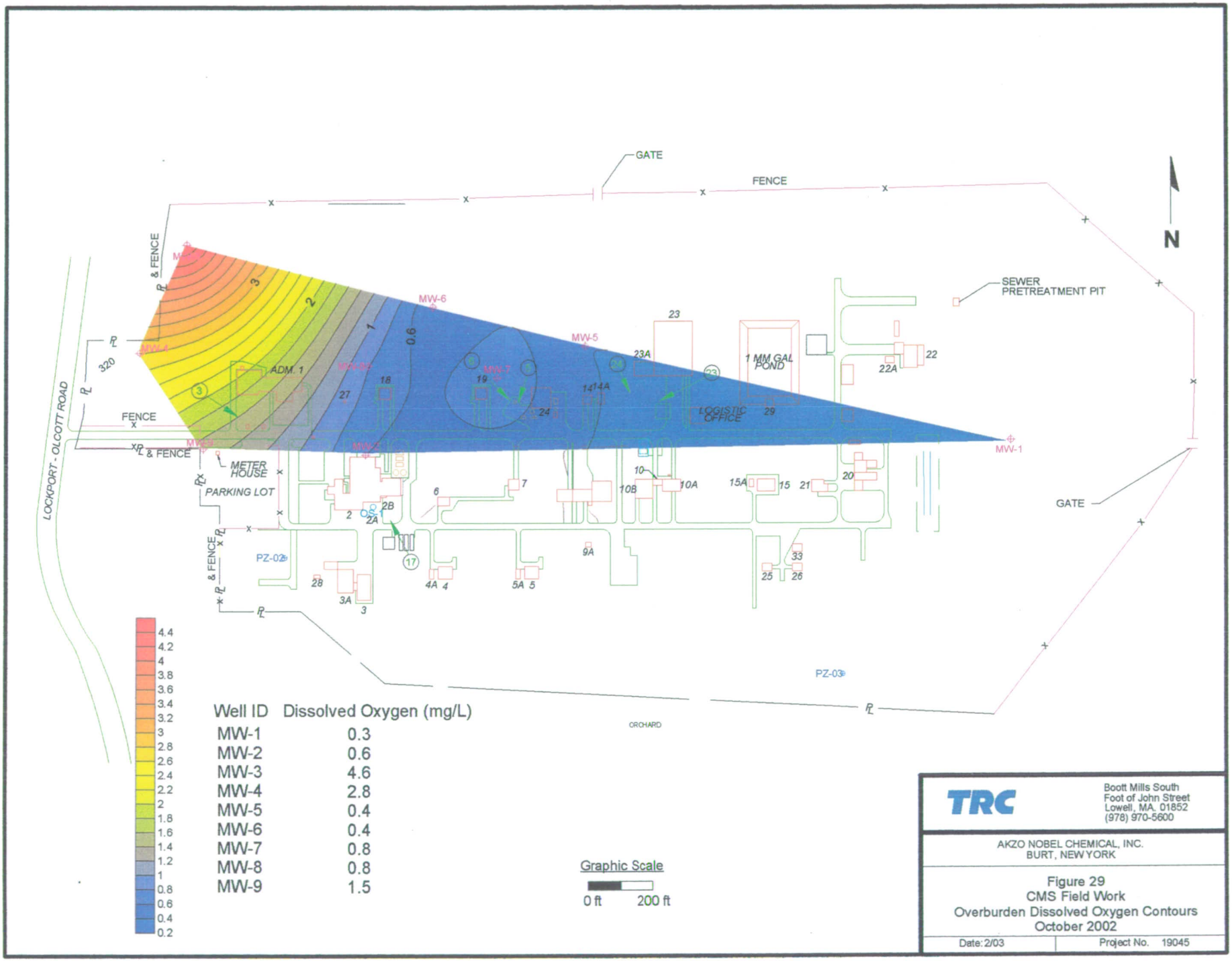
GATE
FENCE
N
SEWER PRETREATMENT PIT
LOCKPORT - OLCOTT ROAD
ADM. 1
METER HOUSE
PARKING LOT
LOGISTIC OFFICE
1 MM GAL POND
GATE
PZ-02
PZ-03
ORCHARD
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
Well ID Dissolved Oxygen (mg/L)
MW-1 0.3
MW-2 0.6
MW-3 4.6
MW-4 2.8
MW-5 0.4
MW-6 0.4
MW-7 0.8
MW-8 0.8
MW-9 1.5
Graphic Scale
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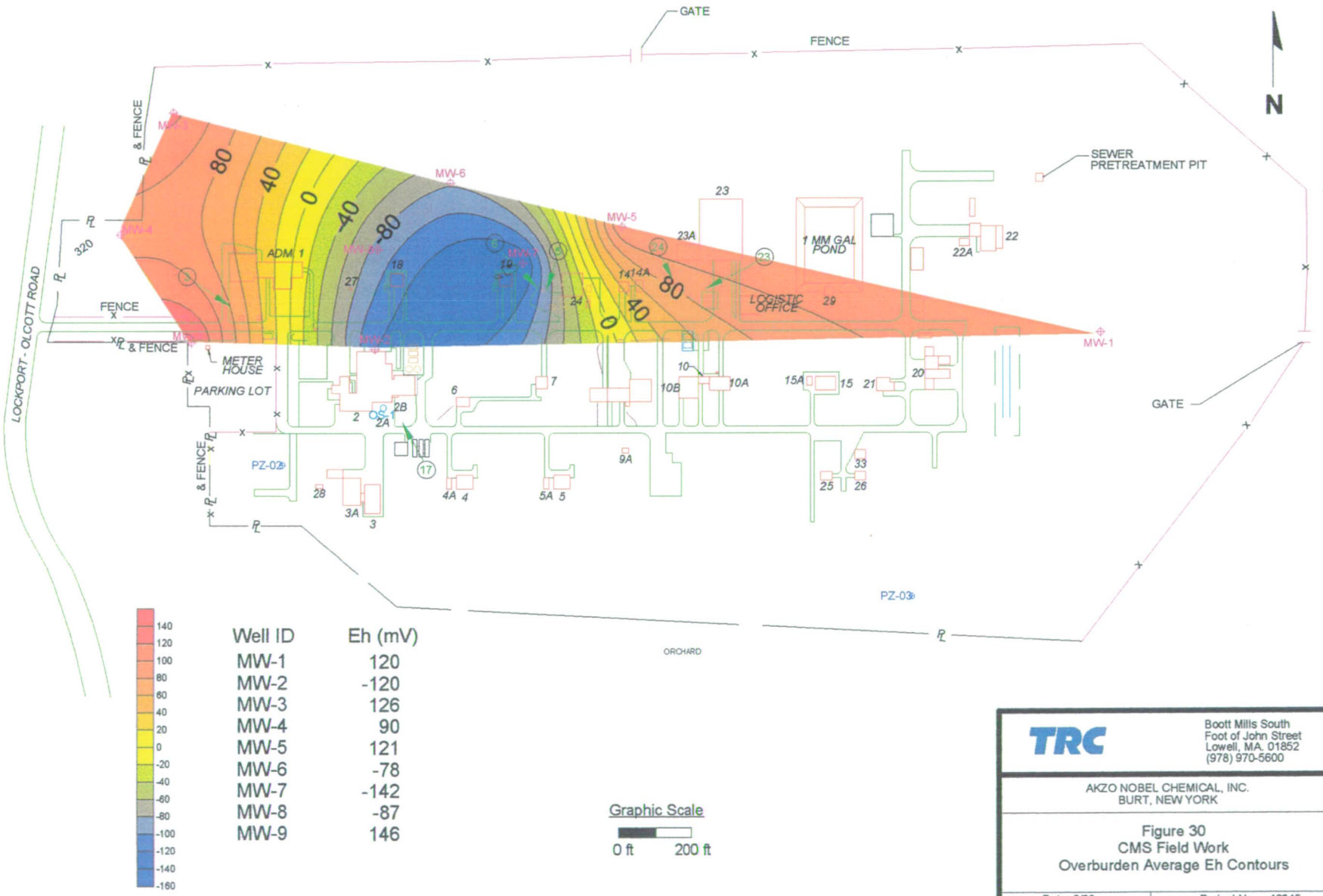
Figure 29
CMS Field Work
Overburden Dissolved Oxygen Contours
October 2002
Date: 2/03
Project No. 19045



Well ID	Eh (mV)
MW-1	120
MW-2	-120
MW-3	126
MW-4	90
MW-5	121
MW-6	-78
MW-7	-142
MW-8	-87
MW-9	146

Graphic Scale

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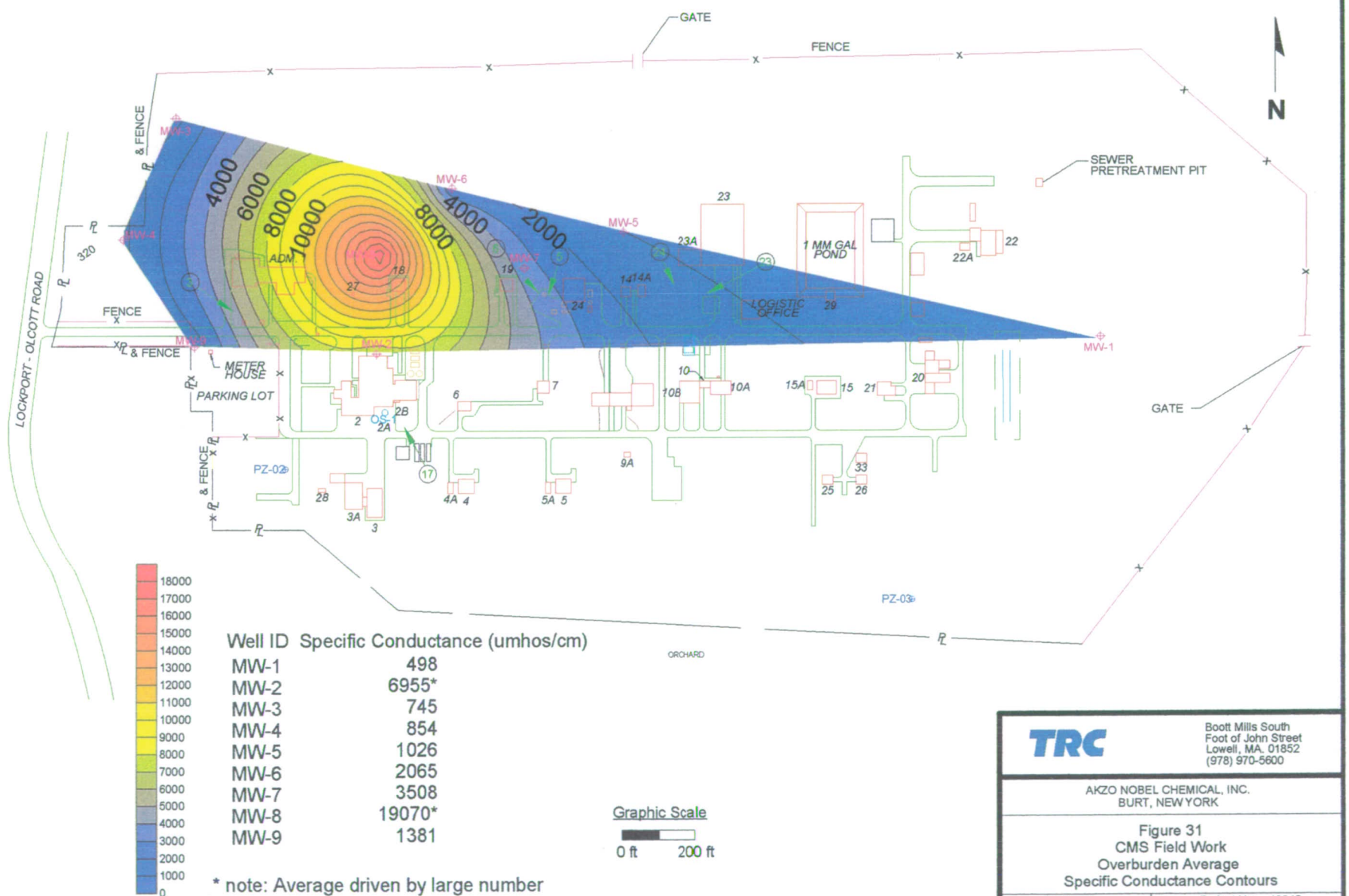
Figure 30
CMS Field Work
Overburden Average Eh Contours

Date: 2/03 | Project No. 19045



Well ID	Specific Conductance (umhos/cm)
MW-1	498
MW-2	6955*
MW-3	745
MW-4	854
MW-5	1026
MW-6	2065
MW-7	3508
MW-8	19070*
MW-9	1381

* note: Average driven by large number

Graphic Scale

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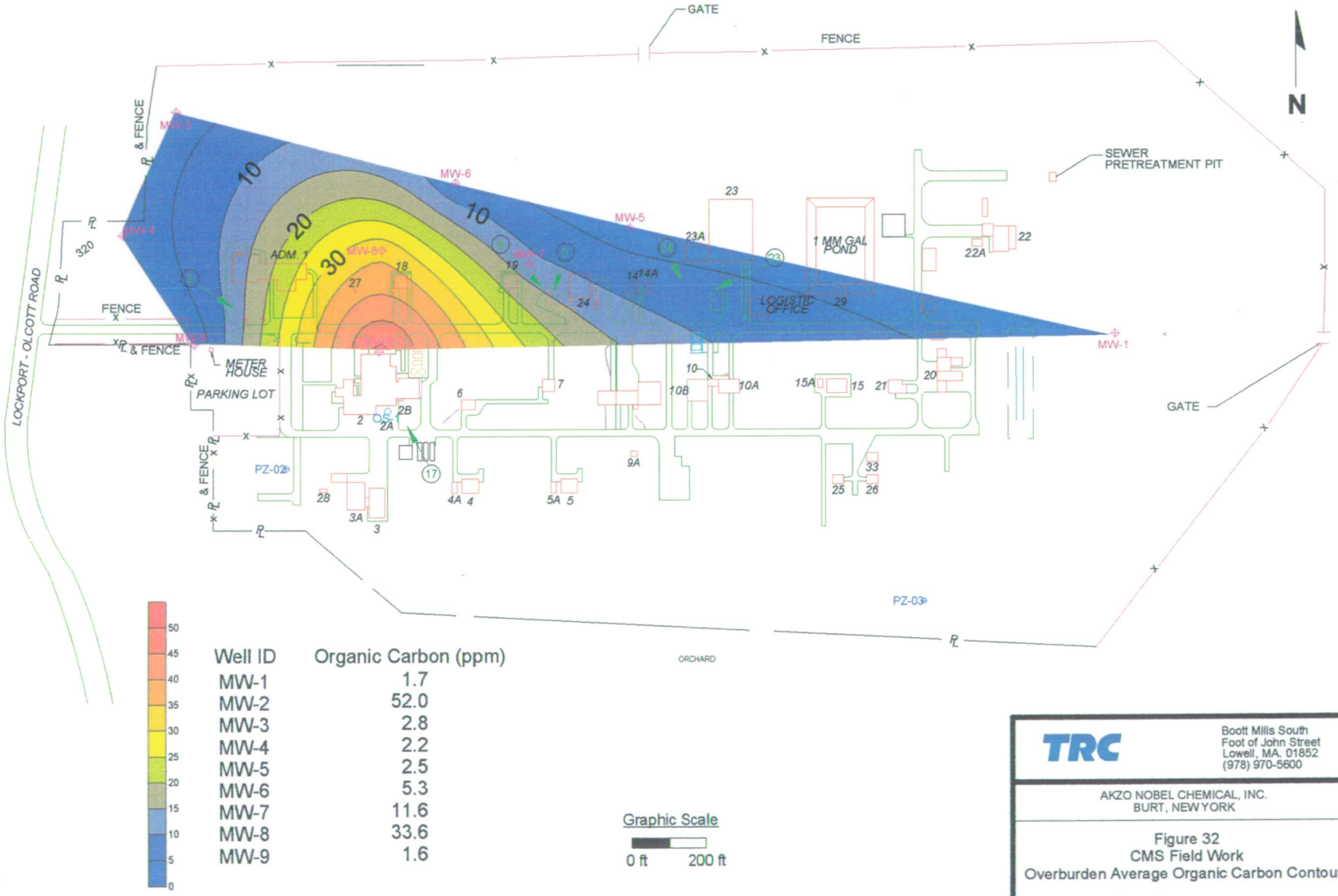
Figure 31
CMS Field Work
Overburden Average
Specific Conductance Contours

Date: 2/03 | Project No. 19045



Well ID	Organic Carbon (ppm)
MW-1	1.7
MW-2	52.0
MW-3	2.8
MW-4	2.2
MW-5	2.5
MW-6	5.3
MW-7	11.6
MW-8	33.6
MW-9	1.6

Graphic Scale

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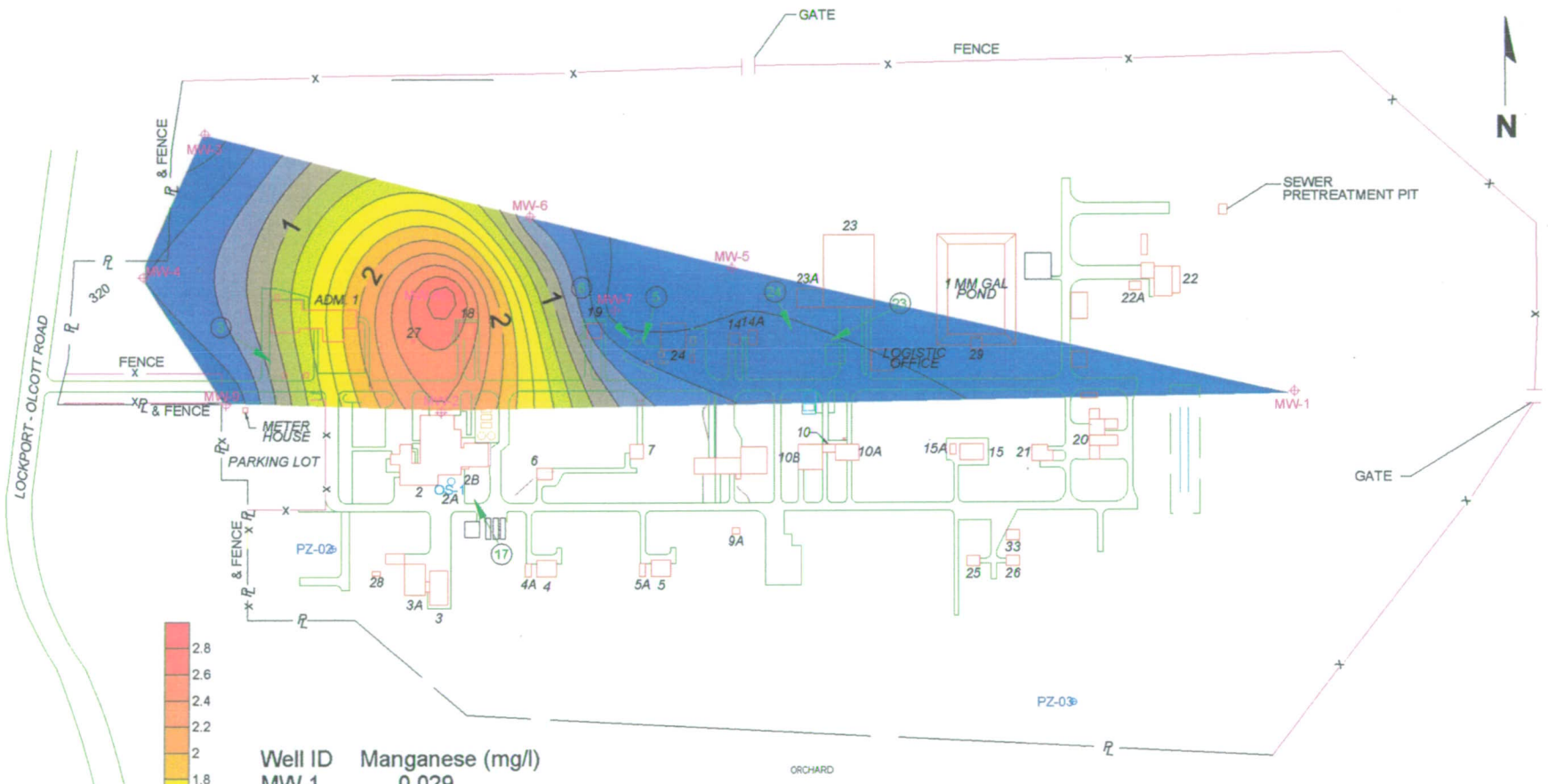
Figure 32
CMS Field Work
Overburden Average Organic Carbon Contours

Date: 2/03 | Project No. 19045



Well ID	Manganese (mg/l)
MW-1	0.029
MW-2	2.387
MW-3	0.068
MW-4	0.406
MW-5	0.174
MW-6	0.585
MW-7	0.078
MW-8	3.000
MW-9	0.168

Graphic Scale

0 ft 200 ft

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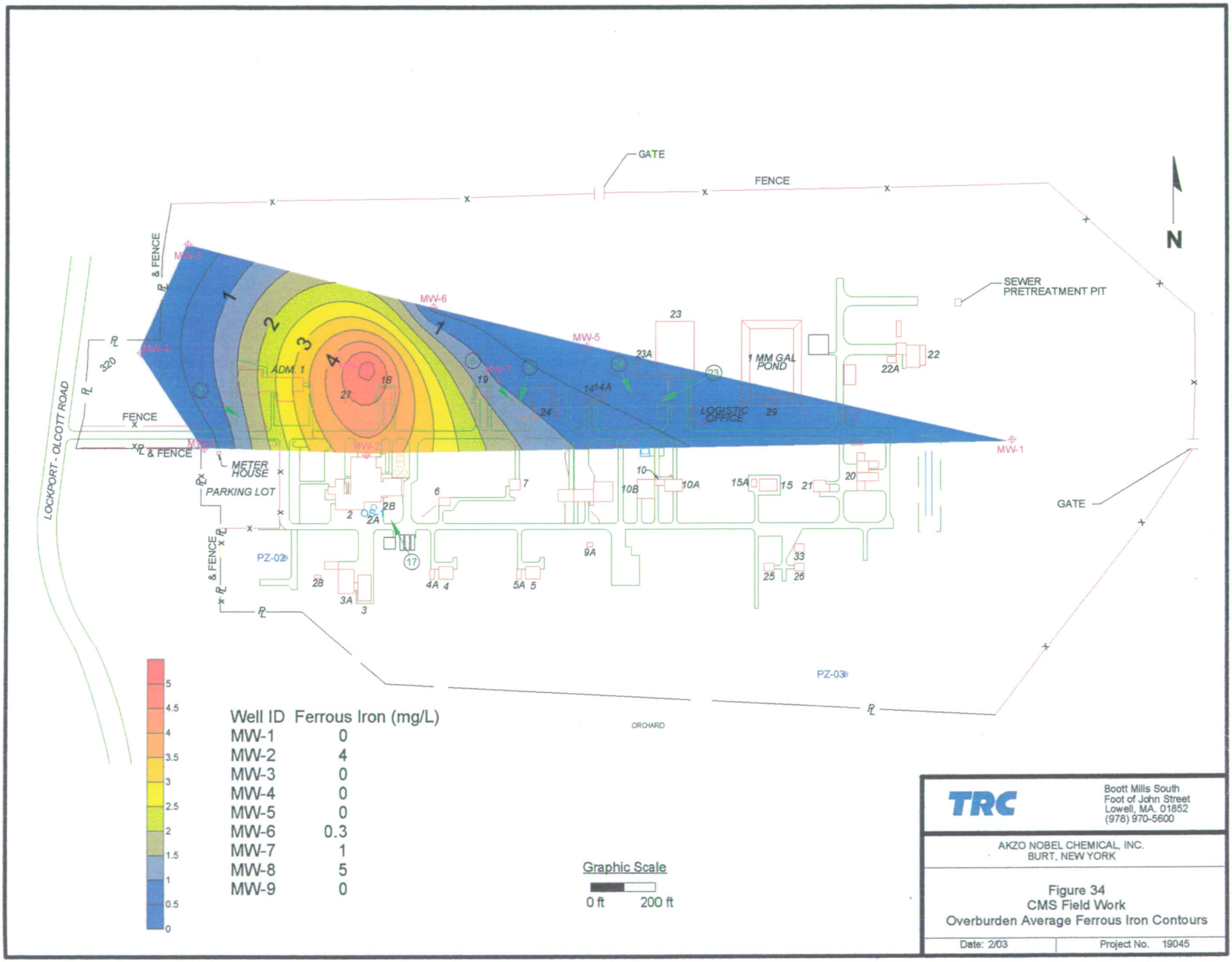
Figure 33
CMS Field Work
Overburden Average
Manganous Manganese Contours

Date: 2/03 | Project No. 19045



Well ID	Ferrous Iron (mg/L)
MW-1	0
MW-2	4
MW-3	0
MW-4	0
MW-5	0
MW-6	0.3
MW-7	1
MW-8	5
MW-9	0

Graphic Scale

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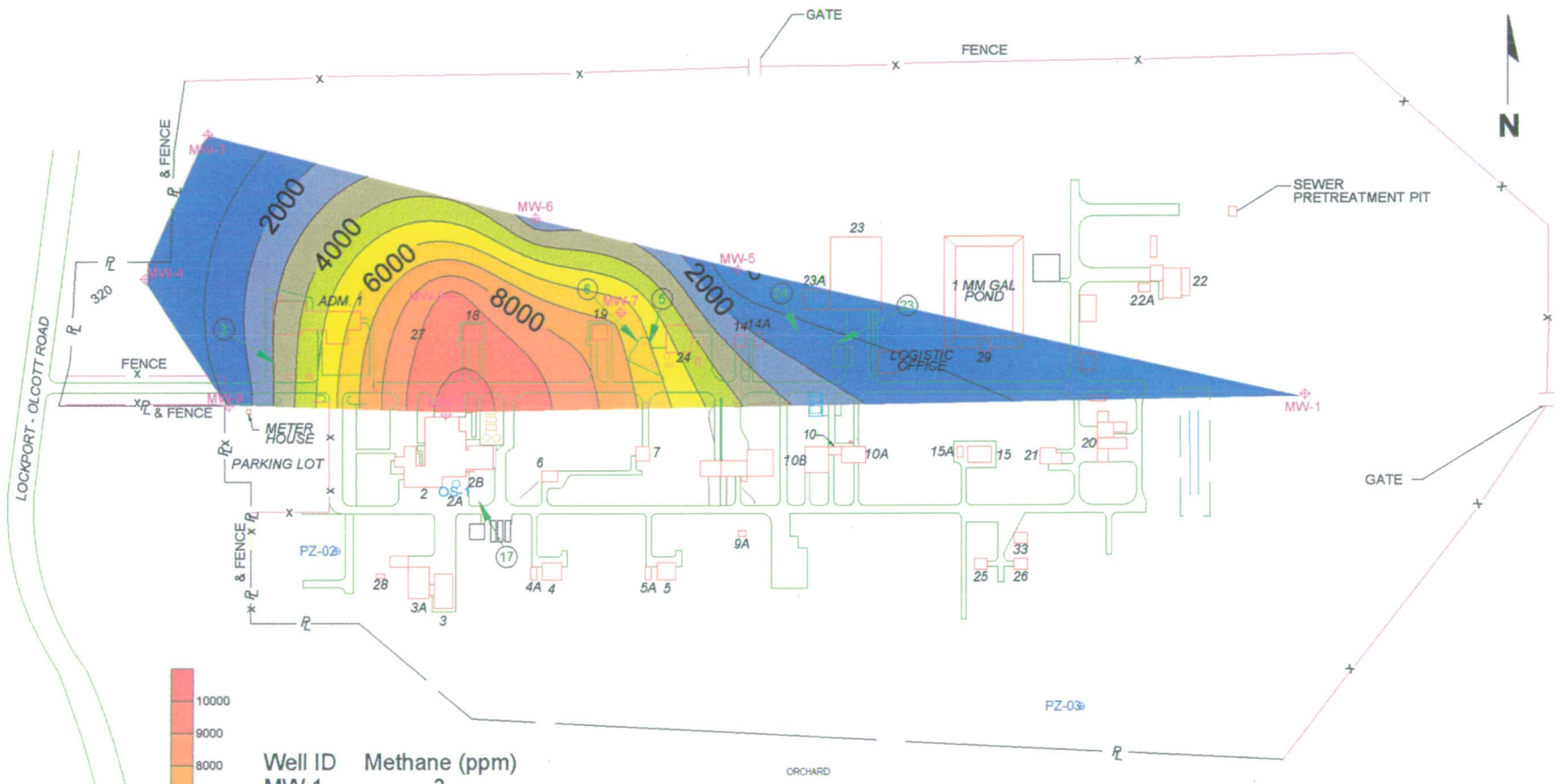
Figure 34
CMS Field Work
Overburden Average Ferrous Iron Contours

Date: 2/03 | Project No. 19045



Well ID	Methane (ppm)
MW-1	3
MW-2	10475
MW-3	<2.0
MW-4	<2.0
MW-5	2
MW-6	2288
MW-7	6775
MW-8	9475
MW-9	1020

Graphic Scale

0 ft 200 ft

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Figure 35
CMS Field Work
Overburden Average Methane Contours

Date: 2/13/03 Project No. 19045

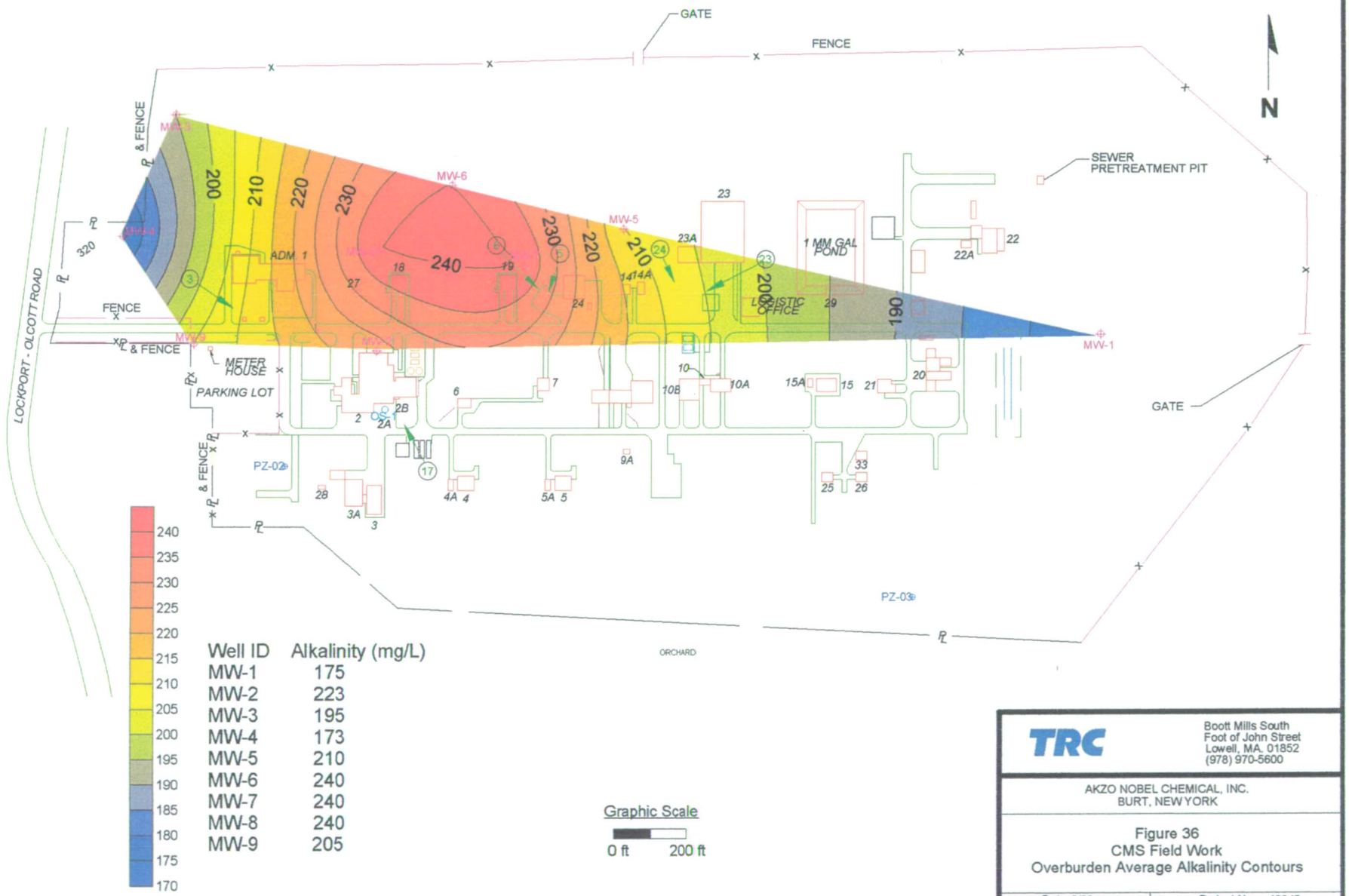

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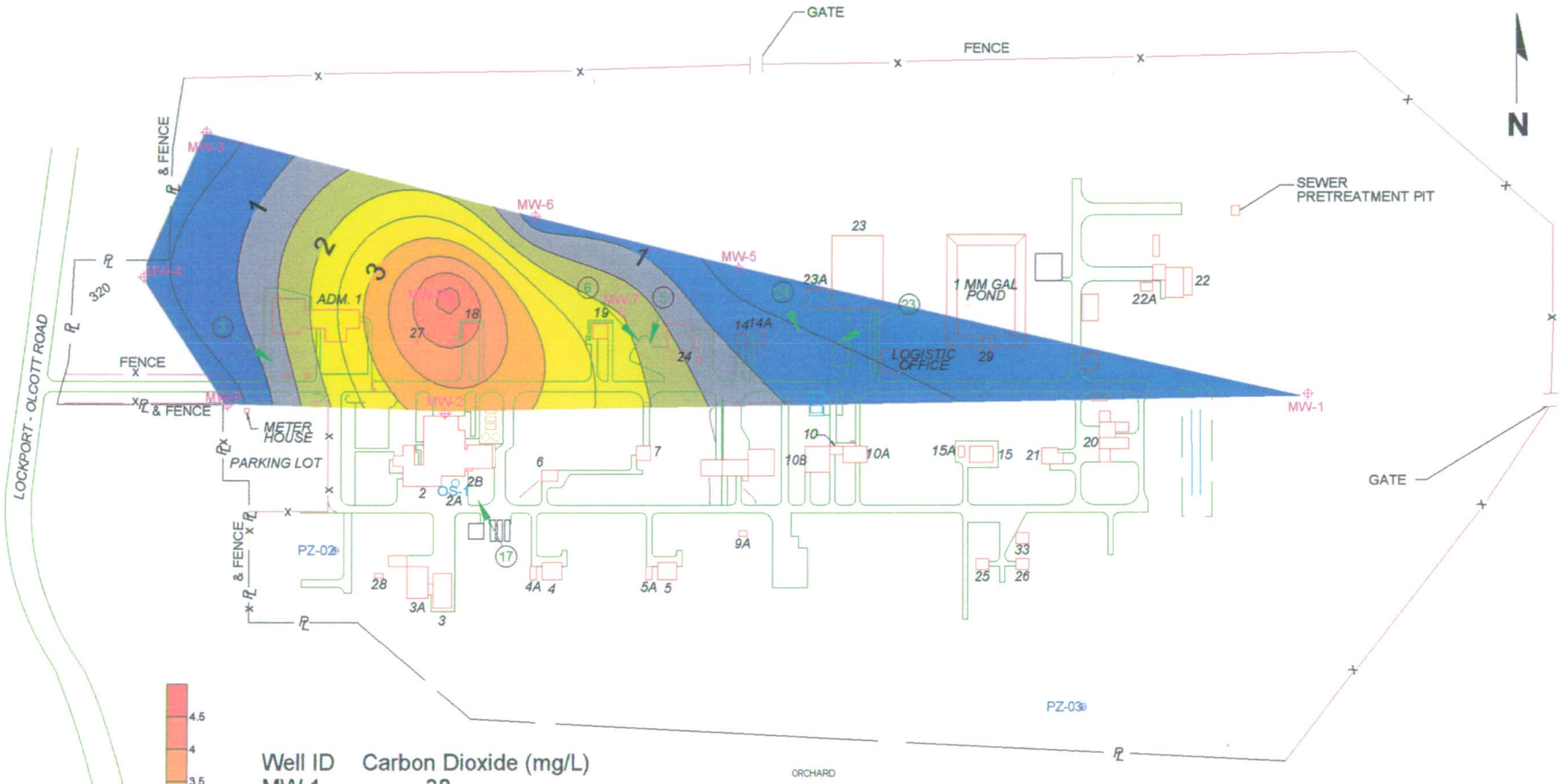
Figure 36
CMS Field Work
Overburden Average Alkalinity Contours

Date: 2/03 | Project No. 19045



Well ID	Carbon Dioxide (mg/L)
MW-1	38
MW-2	71
MW-3	38
MW-4	26
MW-5	37
MW-6	35
MW-7	41
MW-8	130
MW-9	41

Graphic Scale

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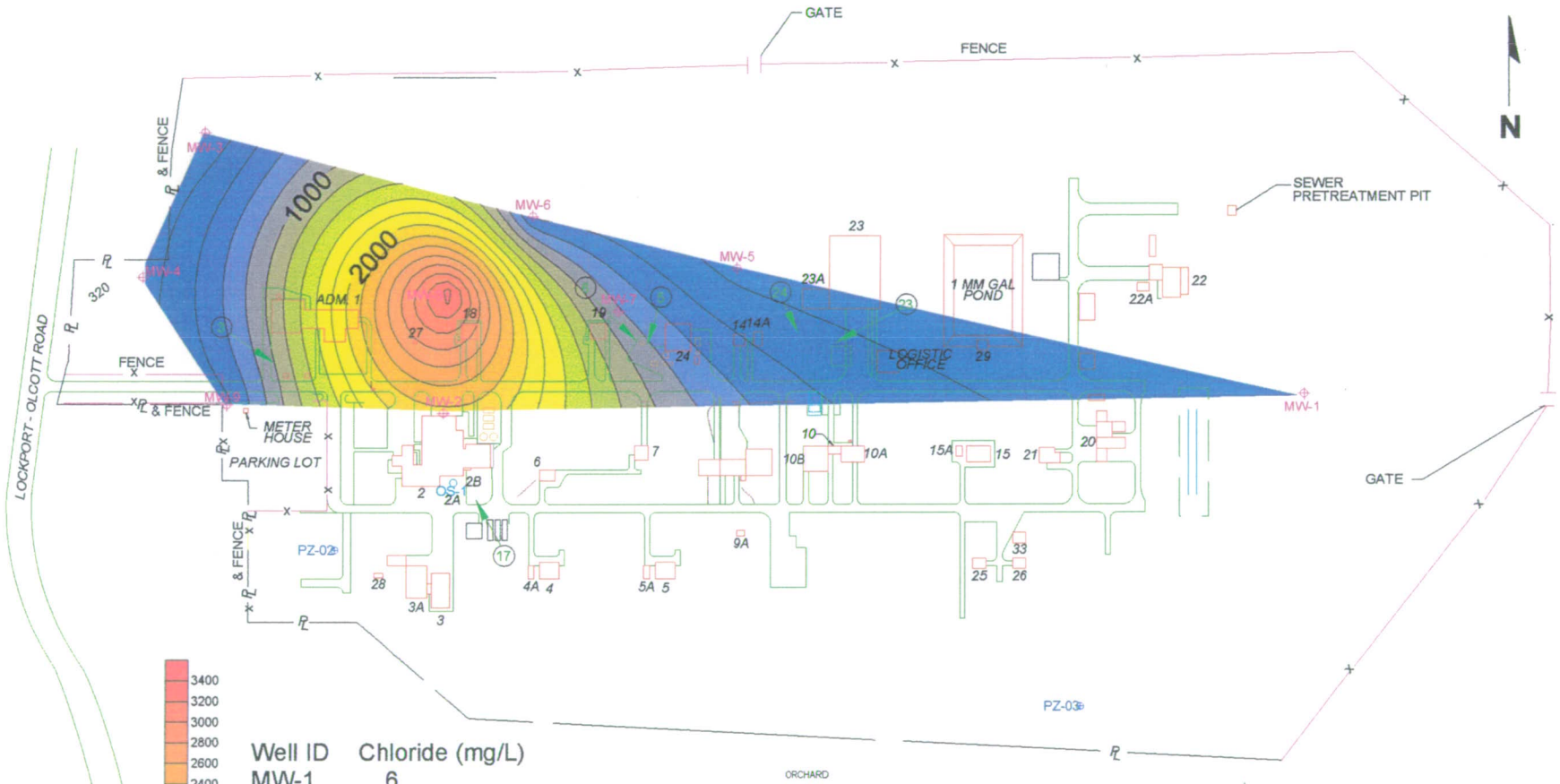
Figure 37
CMS Field Work
Overburden Average Carbon Dioxide Contours

Date: 2/03 | Project No. 19045



Well ID	Chloride (mg/L)
MW-1	6
MW-2	2148
MW-3	29
MW-4	114
MW-5	124
MW-6	337
MW-7	810
MW-8	3543
MW-9	357

Graphic Scale

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Figure 38
CMS Field Work
Overburden Average Chloride Contours

Date: 2/03 | Project No. 19045

3.2.4.3.1 Data Interpretation for overburden ground water

The extent and distribution of contaminant and electron donor indicators can be used to qualitatively confirm the findings of compound-specific analytical results regarding contaminated ground water zones.

The pH and temperature data presented in Table 10 demonstrate that environmental conditions in ground water at the facility are suitable for biological degradation to occur. Temperature in ground water from MW-2 was consistently elevated in comparison to other overburden wells, which may indicate an anthropogenic heat source in this area.

Figure 31 presents an isopleth of specific conductance; the data indicate elevated conductance in ground water at the MW-2, MW-6, MW-7, MW-8 section of the facility, and a much reduced specific conductance in the western and eastern down gradient ground water monitoring locations. Elevated specific conductance, as with the target analyte data discussed previously in this report, indicates the zone of ground water impairment is located within a subset of the industrialized area within the facility property.

Figure 32 presents an isopleth of organic carbon in ground water. Organic carbon is most prevalent in the area immediately down gradient of the known fuel oil contaminated area (SWMU 17) and within the MW-2, MW-6, MW-7, MW-8 industrialized area of the facility. Organic carbon content is both an indication of potential contamination as well as an indication that electron donor material is present in this area for support of biodegradation pathways such as reductive dechlorination, which require a "food source" for microbes who use chlorinated aliphatics for electron acceptors under anaerobic conditions.

The extent and distribution of contamination relative to electron acceptors and metabolic byproducts can be used to qualitatively document the occurrence of biodegradation.

Depleted dissolved oxygen concentration in areas with organic contamination indicates that an historic active zone of aerobic biodegradation was present. Figures 26-29 present the dissolved oxygen isopleth data for the four sampling events completed in the CMS field work. The data indicate some seasonality with regards to dissolved oxygen concentrations in ground water in the eastern component of ground water flow direction, but consistently demonstrate the reduced dissolved oxygen concentrations in the vicinity of MW-2. Significant dissolved oxygen depletion is noted across the production area of the facility, in comparison to down gradient wells. Dissolved oxygen concentrations are indicative of anaerobic conditions in the ground water regime in the vicinity of MW-2, MW-5 MW-6, MW-7 and MW-8. Aerobic conditions prevail down gradient to the west. This is evidence of aerobic biodegradation having occurred in this industrialized region.

Figure 30 presents redox potential Eh data. The data indicate a reducing ground water environment is located in the vicinity of MW-2, MW-5, MW-6, MW-7 and MW-8. This reducing environment is bounded by oxidizing conditions in ground water at the eastern and western down gradient monitoring well locations. Values in Table 10 indicate that ground water from MW-2, MW-6, MW-7 and MW-8 have redox conditions ranging from the possible to optimal range for reductive dechlorination.

Depleted nitrate and sulfate concentration in areas with organic contamination indicate that an active zone of anaerobic organic biodegradation is present and that denitrification and sulfate reduction are occurring. Nitrate data (see Table 10) indicates that, excepting the MW-9 location, little nitrate is present in ground water at the Akzo Nobel facility. Most of the measurements were either reported below, at, or slightly above the lab detection limit. Nitrate was found largely absent at wells with abundant dissolved oxygen. It can be concluded that nitrate is not a significant electron acceptor at the facility due to a lack of availability. Sulfate data indicate consistent depleted sulfate concentrations at MW-2 and MW-8. Sulfate concentrations are not depleted in down gradient well locations. This is evidence of anaerobic biodegradation having occurred in this MW-2 and MW-8 region.

Elevated ferrous iron, manganous manganese, and methane concentrations in areas with organic contamination indicate that an active zone of anaerobic biodegradation is present and that iron, manganese reduction and methanogenesis are occurring. Figures 33-34 illustrate the elevated ferrous and manganous species in the MW-2 and MW-8 ground water, and the absence of these species in the down gradient monitoring wells to the east and west. Figure 35 illustrates elevated methane in ground water recorded at the MW-2 and MW-8 locations; these locations are down gradient of known historic organic contaminant discharges that likely served as electron donors. Methanogenesis conditions are an excellent indicator of an environment conducive to reductive dechlorination.

The cumulative product of aerobic biodegradation of organics is carbon dioxide and water. Figure 37 presents the carbon dioxide in ground water isopleth. Carbon dioxide interacts with ground water alkalinity, and is also used as an electron acceptor during methanogenesis, so data interpretation must consider these factors as well. Consideration of the methane distribution at the facility, the carbon dioxide data indicate elevated carbon dioxide locations coincide with areas of depleted dissolved oxygen, moderated to some extent at locations of highest methane. Figure 36, ground water alkalinity isopleth, illustrates the elevated alkalinity that would be expected to result from both aerobic and anaerobic biodegradation is located in the MW-2, MW-5, MW-6, MW-7 and MW-8 industrialized area of the facility. As for other indicators, the carbon dioxide and alkalinity data support the hypothesis that the active zone of biodegradation lies within this area of the ground water at the Akzo Nobel facility.

The chloride in ground water isopleth is presented in Figure 38. The data indicate chloride concentrations are significantly elevated at the MW-2 and MW-8 locations. Chloride is an end-product of reductive dechlorination and direct oxidation of chlorinated organics, as well as a conservative tracer element in ground water flow regimes. The data provide evidence of both chlorinated organic biodegradation, as well as evidence of the significant dispersion, dilution, sorption of the ground water flow environment at the facility. Down gradient ground water chloride concentrations are markedly reduced from those in the MW-2, MW-8 area of the facility.

Geochemical data inference for biodegradation

The data generated during the CMS field work substantiate active biodegradation processes are at work within contaminated ground water in the MW-2, MW-5, MW-6, MW-7 and MW-8 industrialized area of the facility. Conditions documented are best described as sequential anaerobic-aerobic conditions. Such conditions are most frequently observed at sites where regional ground water is aerobic, but a high concentration of anthropogenic carbon (which serves as an electron donor) has been introduced in the source area. The behavior of specific contaminants of concern at the Akzo Nobel facility are discussed below.

Discussion of degradation sequence data for ground water contaminants of concern at the Akzo Nobel facility

BTEX, methylene chloride, DCE, dichlorobenzene and dichloroethane were identified as not being amenable to direct oxidation, but instead likely to be limited to biodegradation via reductive dechlorination. Evaluation of parent/daughter compound abundance and distribution data is warranted. This analysis must acknowledge the transition from anaerobic, reducing conditions in the MW-2, MW-5, MW-6, MW-7 and MW-8 industrialized area of the facility to aerobic, oxidizing conditions down gradient of this zone. For the certain chlorinated organic compounds identified above, direct biological oxidation can occur under aerobic conditions if these compounds occur under aerobic conditions or migrate down gradient from the anaerobic zone. While the abiotic process of hydrolysis has been demonstrated to occur for TCA, the half-life of such reactions is measured in years; however, for chloroethane, a monochlorinated alkane, the half-life is on the order of a few days to a month. Thus chloroethane persistence is not likely in ground water down gradient of a source zone. With the exception of trace concentrations of dichloroethane at MW-9, none of these compounds were detected in ground water from down gradient wells during the CMS field work.

The parent/daughter relationship of ethenes and ethanes under reductive dechlorination documented in the literature establishes the anticipated breakdown sequence of compounds. For the Akzo Nobel facility, the ethane degradation sequence has limited relevance, since PCE and TCE have been rarely detected in ground water. PCE was sporadically detected in ground water from MW-8 and MW-9 at concentrations below the ground water standard. TCE was noted once

in 1999 once in excess of the ground water standard at MW-7. With the exception of a diluted sample estimated value in March 2000, DCE has been sporadically detected at relatively low concentrations in MW-7. All detected DCE has been cis-1,2-DCE; it should be noted that virtually 100% of the biologically produced DCE in the reductive dechlorination sequence is cis 1,2-DCE. Vinyl chloride and ethene (and under some conditions ethane) are daughter products of this reaction sequence. No vinyl chloride was detected in ground water during the CMS field work period. Ethene was not detected in overburden ground water during the CMS field work period. One detection of trace concentrations of ethene and ethane was recorded in ground water from bedrock well MW-1B, during the April 2002 sampling event. The data suggest that negligible ethene compound contamination remains, and that reductive dechlorination has occurred for such compounds.

For the ethanes, both TCA and 1,2-DCA are commercial solvents in general use and starting point compounds for reductive dechlorination biodegradation. 1,1-TCA is not a common commercial solvent, but is a daughter product of TCA reductive dechlorination. An examination of Table 4 reveals that 1,2-DCA has not been detected at any significant concentration and has not been detected since the first sampling round in 1999. The TCA & 1,1-DCA data indicate that one anomalously high 1,1 DCA data point was reported in the March 2000 dataset. Prior and subsequent data from MW-2 indicate trace concentrations of 1,1-DCA exist in ground water at MW-2, with no TCA detected present. The data from MW-8 and MW-9 ground water sampling indicates that both TCA and 1,1-DCA are present, with higher concentrations found at MW-8 and lower concentrations found in down gradient well MW-9. At MW-8, 1,1-DCA concentrations are greater than, and trend closely with TCA concentrations in the anaerobic, highly reducing ground water environment (see Figure 30). Both compounds declined to non-detect in the most recent ground water sampling rounds. At down gradient well MW-9, TCA concentrations consistently exceed 1,1-DCA concentrations (see Figure 20). MW-9 ground water geochemical data indicate aerobic, oxidizing conditions predominate at the MW-9 well location. Since both TCA and 1,1-DCA do not biodegrade under aerobic conditions, attenuation of these compounds in the aerobic zone is largely governed by dilution, dispersion, and sorption in the subsurface environment. MW-9 ground water will require continued monitoring to confirm that recently recorded reductions of TCA and 1,1-DCA in ground water at up gradient

well MW-8 translate to reduction of TCA and 1,1-DCA concentrations detected in ground water at MW-9.

3.2.4.3.2 Data interpretation for Bedrock ground water

As previously discussed, the piezometric surface of bedrock ground water beneath the Akzo Nobel Burt, NY facility is considerably lower than that of nested well overburden ground water elevations at the western -most wells MW-3B, MW-4B, and MW-9B. There exists a consistent downward vertical gradient for ground water at these locations. The degree of head difference supports the conclusion that the extent and rate of communication is relatively low, with location-specific differences (most likely due to the till layer thickness variability) noted. Well MW-1B, located to the east of the developed portion of the facility, exhibits an upward vertical ground water elevation gradient. Thus the overburden and bedrock contours (see Figures 5-8) support the conclusion that the potential for discharge of overburden ground water to bedrock ground water exists over the developed portion of the Akzo Nobel facility; the degree of communication between overburden and bedrock is limited by local geology.

The degree of communication at specific well cluster locations can be evaluated by comparison of geochemical data from well pairs. The CMS field work geochemical data for well pairs is presented in tables 10 & 11. The data demonstrate considerable differences exist in ground water quality in overburden and bedrock at specific monitoring locations.

The previously presented extent of contamination data (See Table 4) support the conclusion that contaminants of concern are absent from bedrock ground water down gradient west of the industrialized area of the facility.

Geochemical data for bedrock ground water are presented in Table 11. The indicator data support the conclusion that communication between overburden and bedrock ground does occur, but is limited. Ethane and ethene were detected at trace concentrations in well MW-1B ground water. Chloride concentrations were elevated relative to other bedrock wells in MW-1B and MW-4B. Methane was found consistently elevated, and sulfate depleted, while specific

conductance was consistently less in MW-3B ground water relative to other bedrock wells. With the exception of MW-9B, dissolved organic carbon decreased in all bedrock monitoring wells over the CMS study period.

4. CONDITIONS REQUIRING CORRECTIVE ACTION

4.1 Conceptual Model Addendum

The May 2001 Corrective Measures Study Work Plan presented a discussion of the conceptual model of contamination within soil and ground water at the Akzo Nobel, Burt, NY facility. This conceptual model included the remaining source areas and soil contamination locations, and the resultant ground water contamination as defined in the RFI. The conceptual model was based on a quantitative analysis of the fate and transport of contaminants in the subsurface environment, via the application of an equilibrium fate model, a steady state ground water flow model, and a contaminant transport/reaction model (see the December 2000 RFI Report). The following is a finalized conceptual site model, incorporating the additional data collected during the CMS.

Releases of organic contaminants occurred over a number of years at the 80-acre fenced portion of the 350 acre Akzo Nobel facility located in Burt, NY. The facility was engaged in the manufacture of organic peroxides within a 30-acre sub-area of the property. Areas associated with Akzo Nobel operations that likely were/are release sources include: buildings, hazardous waste container storage pads, inactive landfills, an inactive burning cage, a closed clay pad storage area, drum storage areas, a closed waste sulfuric acid storage tank, closed underground storage tank (UST) locations, and numerous structures associated with the wastewater treatment facility and process sewer. The facility ceased manufacturing in April 2003; going forward, the facility will be used to warehouse product.

The depth to the ground water table at the Akzo Nobel facility is shallow, generally less than 10 feet BGS. The predominant unconsolidated deposits consist of a silty sand, but extensive finer grained sedimentary units were also observed. Ground water recharge occurs throughout the vegetated area of the facility. Ground water discharge for portions of the facility west of the on-site pond is W-NW, towards the course of Eighteenmile Creek, located approximately 300 feet to the west of the property at a considerably lower elevation. Eighteenmile Creek flows to Lake Ontario, approximately 2 miles downstream. A slight ground water divide exists at approximately the pond location in the middle of the industrialized portion of the Akzo Nobel

facility, and a limited portion of the site ground water flows to the N-NE. Ground water table gradients are flat over the industrialized portion of the facility, on the order of 0.005 ft/ft. Gradients steepen somewhat at the western property boundary. Depth to bedrock varies from approximately 15ft. BGS on the western to 25 ft. BGS on the eastern portion of the facility. A glacial till layer exists at the bedrock-overburden interface, thicker in western portions of the site. Vertical gradients to the west of the facility are strongly downward; vertical gradients are slightly upward in the east portion of the facility. Overburden hydraulic conductivities were on the order of one ft./day, with bedrock hydraulic conductivities on the order of 0.05 ft./day. The downward vertical gradients are significant (over 10 ft. in some cases), indicative of a very limited degree of hydraulic communication between the overburden and bedrock ground water.

The facility undertook corrective action pursuant to the RCRA (Part 373) permit. In 1994, Forty-two locations (SWMUs/AOCs) were identified at the RFA stage, and 25 of the 42 locations needed further investigation. Akzo Nobel replaced the main process sewer trunk lines and manholes in 1995/1996, removing and disposing off site 3,853.5 tons of stained and/or visually contaminated soil. This work was largely complete at the time of the 1996 initial RFI field work. Nine of the 25 locations required corrective measures at the RFI stage (2 SWMUs were deferred until access allowed for investigation). The 9 locations were found to contain residual soil and ground water organic contamination from historic process sewers and appurtenances, fuel oil in soil from a closed UST, and residual organic soil contamination and source materials at a burn area, a landfill area, and a drum storage area. All locations lie within the 30-acre industrialized portion of the facility.

The concentrations and distribution of contaminants, plus the qualitative screening data indicate the contamination present is limited in extent and within the main, developed portion of the Akzo Nobel Burt, NY property. Within the localized contaminated areas, the elevated concentrations of contaminants encountered were generally not surficial and were not indicative of significant secondary sources. The data are consistent with conditions encountered as a result of historic releases, and actions taken by Akzo Nobel have removed primary release mechanisms and secondary sources (i.e., contaminated soils).

Surface (0-2 ft. BGS) soil contamination consisted of a variety of volatile and semi-volatile organics, including aromatics, aliphatics, ketones, and phthalates. Only one surface soil sample exceeded standards, criteria, and guidance (SCGs), a generic threshold value for semi-volatile compounds. Subsurface (>2 ft. BGS) soil contamination consisted of aromatics, aliphatics (fuel-related and solvents), ketones, and phthalates in excess of SCGs at each of the 9 SWMUs/AOCs subject to corrective measures. Fuel oil contamination at a former UST location has not been completely delineated as the adjacent buildings have prevented the necessary sampling. The fuel oil release has had a localized impact on ground water quality. No recoverable free product layer remains. Petroleum product remains adsorbed on the soil matrix at and below the water. Sewer-related contaminated soil remains in the subsurface. Sewer line replacement and soil removal activities have reduced the potential for ongoing sources at these SWMUs. When still active, the facility replaced aged sewer lines, and pro-actively removed and disposed (off site) 3,853.5 tons of stained and/or visually contaminated soil. Phthalate contamination in soil is well defined to limited locations and has not been a source of ground water contamination. Contaminated landfilled materials are limited to a discrete area of 5 former unlined pits, and include ketones, which are the likely source of ketones in ground water.

Ground water contamination was initially delineated by placement of approximately 247 temporary ground water monitoring points over the entire developed portion of the subject property. The ground water headspace screening defined specific locations with elevated VOCs in ground water headspace within the study area. These headspace hotspots are likely the result of historic and/or ongoing releases at the Akzo Nobel facility. The old landfill, the burning cage, buildings, and the historic sewer line releases are potential sources for the VOCs found. The plumes were localized and well delineated per the ground water headspace determinations, within the industrialized portion of the Akzo Nobel facility. Up gradient and down gradient ground water did not exhibit significant headspace VOC presence. SVOCs are generally absent, except for a fuel oil-related compound at the UST location.

Ground water quality data were generated via installation, development, and sampling of overburden and bedrock monitoring wells at the Akzo Nobel facility in Burt, New York over a 4 year period. Data generated to date support the conclusion that overburden ground water quality

has been locally impacted by releases of certain volatile organic compounds at the Akzo Nobel Burt, NY facility. The extent of impact is generally limited to within the facility property. Fuel hydrocarbon contaminants of concern include BTEX compounds and naphthalene. Chlorinated aliphatic contaminants of concern include methylene chloride, dichloroethanes, and cis 1,2-dichloroethene. The chlorinated aromatic mono and dichlorobenzenes are contaminants of concern. Two ketone compounds formerly of concern no longer appear to be present at appreciable concentrations. Down gradient water table wells confirm the general absence of volatile organic contaminants down gradient of the main portion of the facility. Upper bedrock ground water quality data was obtained from 4 bedrock wells. Ground water data from the bedrock wells sampling confirm the general absence of volatile organic contaminants in bedrock ground water down gradient from the facility.

Contaminant fate was assessed via environmental equilibrium partitioning calculations that support the conclusion that low residual contaminant concentrations in soil can result in concentrations of contaminants in ground water (i.e. concentrations similar to those reported for the facility to date) in excess of contaminant-specific ground water standards. A steady state deterministic model of contaminant fate and transport in ground water at the Akzo Nobel facility was used to model ground water flow in a sub-area of the facility. This preliminary assessment effort supported the conclusion that if contaminants were to remain in soil at the facility in known source locations and continuously release to ground water, the ground water contaminant plume was illustrated to persist in the ground water in the immediate vicinity of known source areas, with negligible migration, over time frames typically applied to remediation decision-making. This would be the case both with no reactive degradation of contaminants considered, as well as with biological degradation.

The ground water data gathered during 1999-2002 indicate the combined effects of abiotic and biotic attenuation appear to limit the extent of contaminants in ground water to a finite area of the overburden within the property boundary and within the limited industrialized section of the Akzo Nobel facility. Evaluation of contaminant plume sequence maps illustrate a relatively stable contaminant plume condition in the overburden ground water, with some contaminant plumes disappearing over the course of study.

The data generated during the CMS field work substantiate active biodegradation processes are at work within contaminated ground water in the industrialized area of the facility. Conditions documented are best described as sequential anaerobic-aerobic conditions. The pH and temperature data demonstrate that environmental conditions in ground water at the facility are suitable for biological degradation to occur. Organic carbon is most prevalent in the area immediately down gradient of the known fuel oil contaminated area and within the industrialized area of the facility. Organic carbon content is both an indication of potential contamination as well as an indication that electron donor material is present in this area for support of biodegradation pathways such as reductive dechlorination, which require a "food source" for microbes who use chlorinated aliphatics for electron acceptors under anaerobic conditions. Depleted dissolved oxygen concentrations in areas with organic contamination indicates that an active zone of aerobic biodegradation is present. Significant dissolved oxygen depletion is noted across the production area of the facility, in comparison to down gradient wells. Eh data indicate a reducing ground water environment is located in the vicinity /down gradient of known contaminated locations is bounded by oxidizing conditions in ground water at the eastern and western down gradient monitoring well locations. Depleted nitrate and sulfate concentrations in areas with organic contamination indicate that an active zone of anaerobic organic biodegradation is present and that denitrification and sulfate reduction are occurring in these locations. Elevated ferrous iron, manganous manganese, and methane concentrations in areas with organic contamination indicate that an active zone of anaerobic biodegradation is present and that iron, manganese reduction and methanogenesis are occurring. The absence of these species in the down gradient monitoring wells to the east and west support the conclusion that this zone is limited within the industrialized portion of the facility. The carbon dioxide and alkalinity data support the hypothesis that the active zone of biodegradation lies within this area of the ground water at the Akzo Nobel facility.

Chloride is an end-product of reductive dechlorination and direct oxidation of chlorinated organics, as well as a conservative tracer element in ground water flow regimes. The data provide evidence of both chlorinated organic biodegradation, as well as evidence of the significant dispersion, dilution, sorption of the ground water flow environment at the facility.

Down gradient ground water chloride concentrations are markedly reduced from those in the central industrialized area of the facility.

The persistence of contaminants in ground water at the site (w/o consideration of biodegradation) are anticipated to be relatively long term. Mobility of contaminants will be largely controlled by advective transport, and the extent of a contaminant plume is likely to be limited to within the facility boundaries. However, gathered data provide compelling geochemical evidence of biological degradation processes in effect at the facility.

Numerous orchards, and one residential area surround and abut the facility property. There are no housing facilities on site. A security fence prevents trespassing on the facility. The nearest potential current residential receptor is located approximately 440 ft. north of the facility property line. Additional residences lie west of the facility. The Town of Newfane in the area of Burt and Olcott is serviced by the Newfane Water District Municipal System, whose potable water source is the Niagara River. There are no public drinking water supply wells in the area. There are no records of private wells available within the County Health, Cooperative Extensions, County Planning, and County Soil and Water Commission. The most probable contaminant receptors under current land use conditions are industrial workers. Receptors under restricted future land use conditions may include industrial workers, construction workers and visitors, residents for the non-industrialized portions of the facility, and adjacent residents who elect to install a private drinking water well. Exposure to surface soil is considered an exposure route for industrial workers, construction workers and visitors. Exposure to sub-surface soil is a likely exposure route for construction workers only. Exposure to on-site ground water is not a significant pathway since facility ground water is used only for filling the fire pond. Construction workers may be exposed to shallow on-site ground water. Exposure to volatilized site constituents in air is a complete pathway for industrial workers, construction workers, visitors and off-site residents; however, the effects of aerial dispersion would result in significant dilution of constituents in air beyond the immediate source area. Routinely occupied indoor spaces at the facility have the potential for exposure via volatilization of contaminants from soil or ground water with migration to indoor air. Routinely occupied buildings are largely limited to Building One, and buildings in which products are formulated or stored. After the transition of the facility from manufacturing to warehouse operations, occupied buildings will consist of the

main warehouse and a site trailer on blocks. Building One will be used for records storage and will not be routinely occupied.

4.2 Ground Water Conditions Requiring Corrective Action

A health assessment of potential exposures which may be associated with impacted ground water at the Akzo Nobel facility in Burt, New York was previously completed (see the Phase II RFI, December 2000). The assessment was made with the assumption that Akzo Nobel will implement activities and uses restrictions on the industrialized portion of the facility. Results of the quantitative risk assessment indicated that, under current site conditions no non-carcinogenic risks to public health were identified. One contaminant which was detected once in site ground water (vinyl chloride) may approach a significant risk (a carcinogenic risk greater than 10^{-4}) under modelled exposures to current administrative workers and future site residents outside of the industrialized portion of the facility, if determined to be present in ground water. However, the four additional rounds of ground water sampling completed in the CMS field work period have confirmed that vinyl choride is not present in ground water samples collected from the Akzo Nobel facility; thus vinyl chloride is not a contaminant of concern, based on the overall dataset. Additional ground water sampling completed in the CMS field work period have not resulted in significant new findings that would otherwise impact the December 2000 risk assessment.

Ground water contamination documented within the bounds of the production areas of the Akzo Nobel, Burt, NY parcel was not subject to quantitative analysis of drinking water use-related risk (since ground water is not currently used as a drinking water source, and is not anticipated to be used as a drinking water source in the future). As mentioned above, Akzo Nobel has indicated activity and use restrictions (i.e. institutional controls) are to be recorded for the production areas of the Akzo Nobel, Burt, NY parcel. Therefore, a conservative assumption that risk exists from impacted ground water contained within the facility boundary has been made in order to formulate specific activities and uses restrictions that will be developed during the CMS (as discussed further in Section 5 below).

4.3 Soil Contamination Requiring Corrective Action

No additional soil data were gathered during the CMS field work. Previously completed soil investigations revealed contaminants present in soil on site. The investigations conducted to date have fully characterized the nature and extent of soil contamination at the Akzo Nobel, Burt, NY facility. Table 13 presents contaminants for which an exceedance of soil cleanup objectives was noted during the RFI.

Table 13. Contaminants of Concern in Soil

Contaminant of Concern	SWMU/AOC Where Detected Above TAGM 4046 Recommended Soil Cleanup Objectives
Acetone	RFA/Phase 1,2-SWMUs 5/6,19
2-Butanone	RFA/Phase 1-SWMUs 3,24
Chloroform	RFA/Phase 1-SWMU 19
Benzo(a)pyrene	RFA/Phase 1-AOC E
Acetophenone	RFA/Phase 1-SWMU 31
Butylbenzylphthalate	RFA/Phase 1-SWMUs 16, 24
Dimethylphthalate	RFA/Phase 1-SWMUs 23,24
Di-n-butylphthalate	RFA/Phase 1-SWMUs 16, 24

The following known and potential source areas remain on site:

- SWMU 3,5,6 are former process sewer units. methyl ethyl ketone (MEK, also known as 2-Butanone), target phthalates, and acetone were detected above the NYSDEC Soil Cleanup Objectives.

- SWMU 16 had phthalate soil contamination limited to the immediate location of the unit in excess of soil cleanup objectives.

- SWMU 17 contamination encountered was limited to fuel oil-related contamination.

- SWMU 19 had acetone and chloroform soil contamination in excess of soil cleanup objectives.

- SWMU 23 had localized soil phthalates contamination in excess of soil cleanup objectives.

- SWMU 31 had acetophenone in soil concentrations in excess of soil cleanup objectives.

- SWMU 24 is a landfill that contains chemicals, primarily target phthalates, and acetone.

Volumes of contaminated soil have not been calculated. While sufficient data exist to support conservative estimation of soil volumes, Akzo Nobel has indicated activity and use restrictions (i.e. institutional controls) will be put in place for production areas of the Akzo Nobel, Burt, NY parcel (production areas are illustrated in Figure 3). The previously completed risk assessment took this commitment into consideration, in that unrestricted future use was not evaluated for production areas of the Akzo Nobel, Burt, NY parcel. Future risks will be managed by institutional controls within these production areas. Institutional controls are considered a corrective measure that Akzo Nobel has committed to regardless of risk characterization.

Thus the December 2000 soil contamination health and environmental assessment focused on assessing current/future human exposures to a restricted (i.e. site workers) population, and providing a basis for specific activities and use limitations formulations protective of future uses during the corrective measures study.

The quantitative analysis of risk from contaminated soil remaining on site was conducted for two most probable exposure pathways for surface (0-2 ft. below ground surface [BGS]) soil with 1) ingestion of surface soil by current/future industrial worker, and 2) dermal contact of surface soil by current/future industrial worker. The risk assessment concluded there is no appreciable risk under these two exposure pathways.

Subsurface soil contamination documented within the bounds of the production areas of the Akzo Nobel, Burt, NY parcel was not subject to quantitative analysis of risk. As mentioned above, Akzo Nobel has indicated activity and use restrictions (i.e. institutional controls) are to be recorded for the production areas of the Akzo Nobel, Burt, NY parcel.

Therefore, a conservative assumption that risk exists from subsurface soil contamination and buried materials has been made in order to formulate specific activities and uses restrictions that will be developed during the CMS (as discussed further in Section 5 below).

5. IDENTIFICATION, EVALUATION, AND SELECTION OF CORRECTIVE MEASURES

Data gathered to date are sufficient to select corrective measures required due to concentrations of hazardous constituents in environmental media, and due to site-specific exposure conditions which could reasonably come to exist under an unrestricted current and/or future use scenario. The identification, evaluation, and selection of corrective measures is presented in this section.

5.1 Site Corrective Measures Goals

The remedial action goals have been developed for each of the major areas of concern.

- Eliminate the future risk to human health posed by the contaminated soil and remaining source materials present within the industrialized portion of the facility.

- Eliminate the future risk to human health posed by the contaminated overburden ground water present beneath the industrialized portion of the facility.

- Control the migration of contaminated ground water.

5.2 General Response Action Alternatives

The following summarizes the general response action alternatives that may be appropriate for the media of concern at the Site:

- **No Action** - The no-action response would essentially leave the Site in its current condition. Under No Action, conditions would not be monitored or periodically reviewed.

- **Natural Attenuation** - Under natural attenuation, COC levels would be allowed to reduce via natural biologic and abiotic degradation, dilution via rainfall infiltration, groundwater flushing, and other degradation processes.

- **Use Restrictions** - Use restrictions include implementation and maintenance of institutional controls such as activity and use limitations (i.e., physical barriers, security fencing and pavement) to limit human exposure to Site COCs.

- **Containment** - Containment measures include various technologies which contain and/or isolate the COC. These measures prevent migration of the COC without disturbing or removing the materials in place. These measures generally consist of methods which cover, seal, stabilize, or provide an effective physical or hydraulic barrier around specific areas.

- **Withdrawal/Collection** - Collection of contaminated groundwater may be achieved via withdrawal techniques such as pumping, gravity drainage, and use of product-only recovery equipment. Treatment technologies include chemical, biological, or physical systems for separation, concentration, or destruction.

- **In-Situ Treatment** - In-situ treatment technologies include physical separation (i.e., soil vapor extraction), biological or chemical breakdown of contaminants, and immobilization/destruction by high temperature methods.

- **Removal** - Removal measures include excavation of contaminated media. The removed media may require ex-situ treatment or stabilization prior to disposal or re-use.

- **Disposal** - Disposal measures include reuse, recycle, or disposal at an approved landfill. The removed media may require ex-situ treatment or stabilization as part of disposal or re-use.

- **Ex-Situ Treatment** - Technologies similar to in-situ treatment methods may be employed. Media with multiple groups of COC may require more than one process to effectively treat all the contaminants, resulting in multiple treatment processes.

- **Discharge** - Discharge of treated effluent (air emissions or wastewater) is often required for ex-situ treatment options. Regardless of the discharge process, treatment system effluent must meet regulatory discharge criteria.

The general remedial action alternatives identified above are potentially applicable for the remediation of the impacted soil and groundwater of the Site as indicated below:

Table 14. General Response Actions per Media

Medium of Concern	General Response Action Measure
Soil	No Action Natural Attenuation Use Restriction Containment In-situ Treatment Removal Ex-situ Treatment Disposal
Groundwater	No Action Natural Attenuation Use Restriction Containment In-situ Treatment Withdrawal/Collection Ex-situ Treatment Discharge

Identification and screening of specific technologies associated with the general remedial action alternatives presented above is provided below.

5.3 Streamlined CMS Process

NYSDEC has indicated in Appendix-C, Scope of Work For A Corrective Measure Study, that a streamlined approach to CMS may be appropriate for development of a focused CMS. This CMS has adopted this abbreviated strategy, consistent with NYSDEC's guidance, in an effort to match the level of planning and remedy evaluation with the limited extent of contamination present.

5.4 Corrective Measures Evaluation

The results of the investigations completed to date, the updated conceptual model of contamination within soil and ground water, and the updated assessment of risks form the basis for evaluating the corrective measures for the Akzo Nobel, Burt, NY facility. This evaluation:

1. Identifies appropriate institutional controls on specific activities and uses which, if unrestricted, have the potential for human health impacts;
2. Evaluates alternative measures to assure that activities and uses within the limits of contamination can be effectively controlled;
3. Evaluates a ground water remedy appropriate for a stable ground water contaminant plume that resides within the boundaries of the facility.
4. Considers additional geochemical data that provides lines of evidence useful for indirectly demonstrating the types of natural attenuation processes active at the Akzo Nobel, Burt, NY facility; and
5. Assesses the rates of contaminant sorption, dilution, volatilization, and biological degradation that may be occurring within ground water at the Akzo Nobel, Burt, NY facility.

5.4.1 *Re-Evaluation of Previously Identified Candidate Remedial Technologies*

A limited set of corrective measure technologies were identified for final re-evaluation in the CMS Work Plan. The list of corrective measures technologies includes:

- Activities and Uses Restrictions-Institutional Controls for soil and ground water;
- Excavation and off-site disposal of soil and source materials at a secure landfill;
- Recycling of contaminated soil and source materials at an asphalt batching facility;
- Low temperature thermal treatment of soil and source materials;
- Ex-situ solvent extraction of contaminated soil and source materials;
- Monitored natural attenuation of ground water contamination.

5.4.2 *Technology Screening*

For a streamlined approach to CMS, the development of a focused CMS can forego the technology screening and evaluate a preferred remedy. As presented in Table 14 above, and as illustrated with specific technologies listed above, there are numerous classes of technologies, and specific technologies potentially applicable to the Akzo Nobel facility. The preferred remedy has been formulated to address all corrective measures goals while minimizing capital expenditures. The technologies assembled into the preferred corrective measure are:

- Activities and Uses Restrictions-Institutional Controls for soil and ground water;
- Monitored natural attenuation of ground water contamination.

The remaining identified response actions and technologies are not considered further in this analysis. In the event the NYSDEC determines a remedy other than the preferred remedy is appropriate, proposed technologies will be screened, based on inherent technology limitations, and site conditions that may preclude, limit or promote the use of certain technologies. Waste characteristics that limit the effectiveness or feasibility of technologies would need to be identified and applied to screen out non-applicable technologies from further consideration. This contingent analysis would be performed as necessary at a later date.

5.4.3 Candidate Corrective Measure

Technologies considered most suitable have been assembled into a corrective measure alternative for evaluation. One corrective measure alternative was identified for further consideration; the candidate corrective measure includes institutional controls and monitored natural attenuation of ground water contamination.

5.4.3.1 Institutional controls

Institutional controls are a mechanism used to limit human activities at or near a contaminated site, or to ensure effectiveness of the remediation action, over time, when contaminants remain at a contaminated site in levels or concentrations above the applicable remediation standard that would allow for unrestricted use of that property. Institutional controls may include, without limitation, structure, land, and natural resource-use restrictions, well restriction areas, and deed notices.

Institutional controls consisting of deed restrictions or covenants, to restrict activities on the site will be implemented. Akzo Nobel will draft and record the appropriate legal documents, and will submit the following information to the NYSDEC:

1. A map showing the area of control;
2. Description of the controls;
3. The property owner's agreement to establish and maintain the institutional controls, which are expressly made enforceable by the State, set out in such form as to be recordable pursuant to Real Property Law section 291.
4. Documentation establishing that Akzo Nobel has notified any adjacent property owner, state and local health departments and clerks of the governing bodies of each municipality in which the institutional control area is to be located of the intent to establish the institutional control. The notification provided will describe the type and areal extent of the contamination to be addressed by the institutional control; the

proposed remedial action and its projected duration; and the limitation on site use that will be necessary based on the contamination present and the proposed remedial action.

Specific activity restrictions shall be imposed to address potential risks via exposure to surface soil (at one location), considered an exposure route for industrial workers, construction workers and visitors. Specific activity restrictions shall also be imposed to address potential risks via exposure to sub-surface soil, considered a likely exposure route for construction workers. Specific activity restrictions shall also be imposed to address potential future risks from property ground water use for public or private potable supply. A deed restriction prohibiting potable use of on-site groundwater and completion of a soil management plan that will apply to excavations and other soil handling projects at the site will define the restrictions and activity limitations.

5.4.3.2 Monitored Natural Attenuation

Monitored Natural Attenuation (MNA) is a term that refers specifically to the use of natural attenuation processes as part of overall site remediation. The U.S. EPA defined monitored natural attenuation as the reliance on natural attenuation processes (within the context of a carefully controlled and monitored clean-up approach) to achieve site-specific remedial objectives within a time frame that is reasonable compared to other methods. The "natural attenuation processes" that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and ground water. These in-situ processes include, biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction of contaminants. (OSWER Directive 9200.4-17, 1997). Groundwater throughout the site will be monitored to determine the long term effectiveness of natural attenuation. Downgradient wells near the property line will also be monitored to evaluate off-site contaminant migration. A formalized monitoring program will be developed for the Akzo Nobel Facility, specifying the location, frequency, and type of samples and measurements necessary to evaluate remedy performance, as well as defining the anticipated performance objectives of the remedy.

The monitoring program will be designed to accomplish the following:

- Demonstrate that natural attenuation is occurring according to expectations;
- Identify any potentially toxic transformation products resulting from biodegradation;
- Determine if a plume is expanding (either downgradient, laterally or vertically);
- Ensure no impact to downgradient receptors;
- Detect new releases of contaminants to the environment that could impact the effectiveness of the natural attenuation remedy;
- Detect changes in environmental conditions (e.g., hydrogeologic, geochemical, microbiological, or other changes) that may reduce the efficacy of any of the natural attenuation processes; and
- Verify attainment of cleanup objectives.

Performance monitoring will continue as long as contamination remains above 6NYCRR 703.5 ground water standards. Monitoring will continue for a one year period after cleanup levels have been achieved, to ensure that concentration levels are stable and remain below target levels. For the purposes of cost estimation in this CMS, monitoring 6 wells on a quarterly basis for 2 years and semi-annual basis for 28 years has been assumed; actual monitoring scope will be defined in the remedial action work plan, and duration will be dependant upon rate of plume attenuation.

5.4.4 Candidate Corrective Measure Evaluation

The corrective measure alternative described above is evaluated against the technical, environmental, human health, and institutional criteria summarized in this section.

5.4.4.1 Technical

The candidate corrective measure evaluation for performance, reliability, implementability, and safety is presented below.

Performance

This criterion focuses on the effectiveness and useful life of the corrective measure.
The use of institutional mechanisms to memorialize land and resource-use constraints and provide for safety has been used extensively throughout the United States. Federal, State and local laws and codes have required various institutional control mechanisms for conservation area protection, aquifer protection, historic preservation, development limitations, hazardous and solid waste facility closure, notice of contaminated sites, notice of buried utilities, and the like. Whenever institutional controls are used, a control requirement (or notice) is recorded with the appropriate regulatory agency (or agencies) where reasonable diligent inquiry (required by law in many instances) would uncover the existence of such notice.

Institutional controls are effective and have an unlimited useful life when the definition of "what contamination can remain at a site and under what conditions" or "how clean is clean" is defined based upon current land-use and exposure scenarios; particularly when the continued existence of such "protective" conditions is beyond the control of the regulatory agency. As an alternative to cleaning a site to levels that would be considered "safe" for unrestricted use, an institutional control can provide notice of exposure elimination, system maintenance (e.g., engineering control, capping), or land-use constraints (e.g., nonresidential use only).

Monitored Natural Attenuation (MNA) has proven effective as a site remedy if adequate site characterization exists, and required MNA lines of evidence are established in support of MNA. Decisions to employ MNA as a remedy require a thorough and adequate site-specific Characterization. Site characterizations for natural attenuation must include a quantitative understanding of source mass; ground water flow; contaminant phase distribution and partitioning between soil, ground water, and soil gas; rates of biological and non-biological transformation; and an understanding of how all of these factors are likely to vary with time.

The Akzo Nobel Facility has been fully characterized, as discussed in the various NYSDEC-approved reports on the RFI and CMS studies completed.

Site characterization data support the establishment of a conceptual site model of conditions. A conceptual site model is a three-dimensional representation that conveys what is known or suspected about contamination sources, release mechanisms, and the transport and fate of those contaminants. The conceptual model provides the basis for assessing potential remedial technologies at the site. The conceptual site model for the Akzo Nobel Facility has been fully developed based on the RFI and CMS studies completed.

EPA's OWSER Directive 9200.4-17, 1997 sets forth the following criteria for evaluation of proposed monitored natural attenuation remedies:

(1) Historical ground water and/or soil chemistry data that demonstrate a clear and meaningful trend of decreasing contaminant mass and/or concentration over time at appropriate monitoring or sampling points.

(2) *Hydrogeologic and geochemical data that can be used to demonstrate indirectly the type(s) of natural attenuation processes active at the site, and the rate at which such processes will reduce contaminant concentrations to required levels.*

(3) *Data from field or microcosm studies (conducted in or with actual contaminated site media) which directly demonstrate the occurrence of a particular natural attenuation process at the site and its ability to degrade the contaminants of concern (typically used to demonstrate biological degradation processes only).*

Not all three criteria are required to be demonstrated; the first criterion alone is sufficient to select monitored natural attenuation as a remedy. However, in order to make decisions in a timely fashion, criteria 1 & 2 are typically evaluated.

The data collection efforts completed during the CMS field work conducted at the Akzo facility demonstrated that criteria 1 & 2 apply and have been documented in this CMS final report.

Reliability

This criteria focuses on the demonstrated and expected reliability of the corrective measure, including operation and maintenance requirements.

The reliability of institutional controls has been demonstrated effective at numerous federal and state contaminated site remediations over the past 20 years.

The reliability of natural attenuation is dependent upon detection of changes to projected contaminant trends, and will depend on the proper selection of monitoring wells/points. Specification of monitoring wells is of great significance with MNA because of the lack of engineering controls to control contaminant migration.

Performance monitoring to evaluate remedy effectiveness and to ensure protection of human health and the environment is a critical element for MNA due to the potentially longer remediation timeframes, potential for ongoing contaminant migration, and other uncertainties associated with using MNA.

Given the slow ground water transport times at the Akzo Nobel facility, and the fact that the facility will no longer be engaged in manufacturing, the semi-annual frequency of monitoring should be adequate to reliably detect, in a timely manner, the potential changes in site conditions listed above. At a minimum, the monitoring program should be sufficient to enable a determination of the rate(s) of attenuation and how that rate is changing with time.

If required, the monitoring frequency over the life of the remedy can be modified to enhance reliable surveillance as needed. For example, it may be appropriate to decrease the monitoring frequency at some point in time, once it has been determined that natural attenuation is progressing as expected and very little change is observed from one sampling round to the next. In contrast, the monitoring frequency may need to be increased if unexpected conditions (*e.g.*, plume migration) are observed.

Performance monitoring will continue one year beyond the time at which remediation objectives have been achieved, to verify that the site no longer poses a threat to human health or the environment.

MNA entails minimal operations and maintenance, beyond well maintenance and ground water sampling.

Implementability

This criterion focuses on the relative ease of implementation, and the time required to achieve remedial response.

Implementation of institutional controls and MNA will be relatively rapid. Institutional controls will take advantage of existing controls (security) and will be supplemented with deed notices and covenants that can be recorded in the 6 months to 1 years time frame.

Implementation of MNA will also be rapid, in that monitoring wells are currently installed/functional and available for additional sampling. The monitoring of a subset of the current monitoring well network of 15 monitoring wells is envisioned, and can be implemented without delay, within weeks of the remedy decision.

Safety

This criterion focuses on the threat to nearby communities and environments as well as those to workers during implementation.

Since the remedy does not involve intrusive activities, there will be no change to safety of current site users and the nearby communities and environments. Future site users will benefit from activity and use restrictions put in place to assure future risks from contaminated media are avoided until such time that such restrictions are no longer needed.

5.4.4.2 Environmental

This criterion addresses the short and long term beneficial and adverse effects of the response alternative, any adverse effects on environmentally sensitive areas, and an analysis of measures to mitigate adverse effects.

Criteria for selection of MNA as a remedy are relatively stringent, and a condition of no current risk to human health or environmental receptors is a prerequisite that has been demonstrated for the Akzo Nobel facility. Since the remedy does not involve intrusive activities, the site property does not include any environmentally sensitive areas, and the ground water contaminant plume currently residing within the property limits will decline in extent over the course of the remedy implementation period, no adverse effects have been identified, nor are measures to mitigate adverse effects necessary.

5.4.4.3 Human Health

This criterion assesses the corrective measure alternative in terms of the extent to which it mitigates short and long term potential exposure to any residual contamination and protects human health both during and after implementation.

As previously discussed, criteria for selection of MNA as a remedy are relatively stringent, and a condition of no current risk to human health is a prerequisite that has been demonstrated for the Akzo Nobel facility. Since the remedy does not involve intrusive activities, there will be no short term change to any residual contamination during implementation. Institutional controls will be designed specifically to restrict future activities and uses to those activities and uses which can be conducted without potential exposure to any residual contamination. The ground water contaminant plume currently residing within the property limits will decline in extent over the course of the remedy implementation period, further reducing the potential for risks to human health subsequent to remedy implementation. Biodegradation of the organic contaminants should contribute to significant mass reduction of contaminants over time, and at the end of the remedy implementation, conditions of no significant risk are anticipated to be achieved.

5.4.4.4 Institutional

This criterion addresses relevant environmental and public health standards, regulations, guidance, advisories, and ordinances.

No institutional barriers to implementation of the candidate remedy have been identified. NYS Criteria, Guidance and Standards have been used in the risk assessment completed during the course of the RFI/CMS. Since the remedy is not intrusive, will generate no byproducts or off gasses, will have no traffic impacts, over-the-road waste transport concerns, fugitive emissions, fenceline monitoring, or other attendant issues, and is consistent with historic land use patterns, institutional considerations normally applicable to remediation projects do not apply.

5.4.4.5 Cost Estimate

A cost estimate of the corrective measure has been developed, and presented in Appendix A to this CMS Final Report. This corrective measures cost estimate includes a quantitative estimate of direct and indirect capital costs, operations, maintenance and monitoring costs, and contingency costs, as applicable. The cost estimate for 30 years MNA is estimated at a total cost of $1.34 Million, or a net present worth cost of $453,000.

6. CORRECTIVE MEASURE ALTERNATIVE SUMMARY

The selected corrective measure includes institutional controls and monitored natural attenuation of ground water contamination.

Institutional controls consisting of deed restrictions or covenants, to restrict activities on the site will be implemented. Akzo Nobel will draft and record the appropriate legal documents, and will submit the specific information to the NYSDEC. Akzo Nobel will notify adjacent property owners, state and local health departments and clerks of the governing bodies of the municipality of the intent to establish the institutional control. The notification provided will describe the type and areal extent of the contamination to be addressed by the institutional control; the proposed remedial action and its projected duration; and the limitation on site use that will be necessary based on the contamination present and the proposed remedial action. Specific activity restrictions shall be imposed to address potential risks via exposure to surface soil (at one location), considered an exposure route for industrial workers, construction workers and visitors. Specific activity restrictions shall also be imposed to address potential risks via exposure to sub-surface soil, considered a likely exposure route for construction workers. Specific activity restrictions shall also be imposed to address potential future risks from property ground water use for public or private potable supply. A deed restriction prohibiting potable use of on-site groundwater and completion of a soil management plan that will apply to excavations and other soil handling projects at the site will define the restrictions and activity limitations.

Monitored natural attenuation, the reliance on natural attenuation processes to achieve site-specific remedial objectives, will be implemented. The "natural attenuation processes" that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under conditions in effect at the Akzo Nobel facility, will act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and ground water. These in-situ processes include, biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction of contaminants. Groundwater throughout the site will be monitored to determine the long term effectiveness of natural attenuation. Downgradient wells near the property line will also be

monitored to confirm there is no off-site contaminant migration. A formalized monitoring program will be developed for the Akzo Nobel Facility, specifying the location, frequency, and type of samples and measurements necessary to evaluate remedy performance, as well as defining the anticipated performance objectives of the remedy (i.e. achievement of ground water cleanup goals). Performance monitoring will continue as long as contamination remains above 6NYCRR 703.5 ground water standards. Monitoring will continue for a one year period after cleanup levels have been achieved, to ensure that concentration levels are stable and remain below target levels.

The candidate corrective measure alternative consisting of institutional controls and monitored natural attenuation meets all remedy selection criteria and has been recommended for implementation. This recommendation is based on technical, human health, and environmental considerations. The performance, reliability, implementability, and safety evaluations have been completed, and form the basis for the conclusion that the corrective measure alternative is technically feasible, protective of human health, and meets environmental criteria.

7. CORRECTIVE MEASURES IMPLEMENTATION

The Permit Module II.E.5(b)-(d) calls for a sequence of events that require a CMS Plan and a CMS Final Report. This CMS Final Report fulfills the final CMS deliverable requirement. Upon approval of the CMS Final Report, NYSDEC shall select the remedy, and initiate a Class III Permit Modification to specify the selected remedy. Once the remedy is included in the Akzo Nobel Part 373 Permit (or Post-Closure Permit, depending on the timing of full RCRA closure), Akzo Nobel will implement the remedy, which will conclude all corrective action provisions of the Part 373 Permit.

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Appendix A

Cost Estimate

LONG TERM WATER TABLE GROUND WATER MONITORING

Site: Akzo Nobel
Location: Burt, NY
Phase:
Base Year: 2003
Date: Jun-03

Description: Cost estimate for long term ground water monitoring at the Akzo Nobel facility for the period of 2003 -2032 (the next 30 years), with costs starting mid-year 2003. Assumes maintenance of institutional controls will be an ongoing expense required by warehouse operations, and therefore no separate costs are included herein.

ANNUAL COSTS (2003, 2004):

DESCRIPTION		QTY	UNIT	UNIT COST	TOTAL	NOTES
Site Monitoring & Maintenance						
Mob/Demob for GW sampling		4	QR	$429.00	$1,716	
Ground Water Sampling Equipment		1	YR	$1,148.51	$1,149	
GW Equipment	Quarter 1	1.0	WK	$2,362.66	$2,363	
	Quarter 2	1.0	WK	$2,362.66	$2,363	
	Quarter 3	1.0	WK	$2,362.66	$2,363	
	Quarter 4	1.0	WK	$2,362.66	$2,363	
Labor, Per Diem & Travel	Quarter 1	1.0	WK	$4,078.90	$4,079	
	Quarter 2	1.0	WK	$4,078.90	$4,079	
	Quarter 3	1.0	WK	$4,078.90	$4,079	
	Quarter 4	1.0	WK	$4,078.90	$4,079	
VOC Analysis (EPA 8260B)	Quarter 1	6	EA	$150.00	$900	
	Quarter 2	6	EA	$150.00	$900	
	Quarter 3	6	EA	$150.00	$900	
	Quarter 4	6	EA	$150.00	$900	
SVOCs Analysis (EPA 8270C)		0	EA	$300.00	$0	
QA/QC Samples- VOC	Quarter 1	3	EA	$150.00	$450	
	Quarter 2	3	EA	$150.00	$450	
	Quarter 3	3	EA	$150.00	$450	
	Quarter 4	3	EA	$150.00	$450	
	SVOC	0	EA	$300.00	$0	
Well Maintenance		0.25	LS	$7,800.19	$1,950	
TRC Labor		1	LS	$377.50	$378	Well Maintenance Oversight
SUBTOTAL					$36,358	
Professional/Technical Support						
Project Management		4	QR	$566.00	$2,264	5 HR/QR
Lab Coordination		4	QR	$486.00	$1,944	8 HR/QR
Sample Tracking		4	QR	$243.00	$972	8 HR/QR
Data Quality Evaluation		4	QR	$431.00	$1,724	4 HR/QR
Data Management		4	QR	$591.00	$2,364	8 HR/QR
Data Reporting		4	QR	$1,471.00	$5,884	
SUBTOTAL					$15,152	
SUBTOTAL					$51,510	
Contingency				15%	$7,727	
TOTAL YEARLY COSTS (2003, 2004)					$59,237	

LONG TERM WATER TABLE GROUND WATER MONITORING

Site: Akzo Nobel
Location: Burt, NY
Phase:
Base Year: 2003
Date: Jun-03

Description: Cost estimate for long term ground water monitoring at the Akzo Nobel facility for the period of 2003 -2032 (the next 30 years), with costs starting mid-year 2003. Assumes maintenance of institutional controls will be an ongoing expense required by warehouse operations, and therefore no separate costs are included herein.

ANNUAL COSTS (2005 THRU COMPLETION):

DESCRIPTION		QTY	UNIT	UNIT COST	TOTAL	NOTES
Site Monitoring & Maintenance						
Mob/Demob for GW sampling		2	QR	$429.00	$858	
Ground Water Sampling Equipment		1	YR	$1,148.51	$1,149	
GW Equipment	Quarter 1	1.0	WK	$2,362.66	$2,363	
	Quarter 2	0.0	WK	$2,362.66	$0	
	Quarter 3	1.0	WK	$2,362.66	$2,363	
	Quarter 4	0.0	WK	$2,362.66	$0	
Labor, Per Diem & Travel	Quarter 1	1.0	WK	$4,078.90	$4,079	
	Quarter 2	0.0	WK	$4,078.90	$0	
	Quarter 3	1.0	WK	$4,078.90	$4,079	
	Quarter 4	0.0	WK	$4,078.90	$0	
VOC Analysis (EPA 8260B)	Quarter 1	6	EA	$150.00	$900	
	Quarter 2	0	EA	$150.00	$0	
	Quarter 3	6	EA	$150.00	$900	
	Quarter 4	0	EA	$150.00	$0	
SVOCs Analysis (EPA 8270C)		0	EA	$300.00	$0	
QA/QC Samples- VOC	Quarter 1	3	EA	$150.00	$450	
	Quarter 2	0	EA	$150.00	$0	
	Quarter 3	3	EA	$150.00	$450	
	Quarter 4	0	EA	$150.00	$0	
	SVOC	0	EA	$300.00	$0	
Well Maintenance		0.25	LS	$7,800.19	$1,950	
TRC Labor		1	LS	$377.50	$378	Well Maintenance Oversight
SUBTOTAL					$19,917	
Professional/Technical Support						
Project Management		2	QR	$566.00	$1,132	5 HR/QR
Lab Coordination		2	QR	$486.00	$972	8 HR/QR
Sample Tracking		2	QR	$243.00	$486	8 HR/QR
Data Quality Evaluation		2	QR	$431.00	$862	4 HR/QR
Data Management		2	QR	$591.00	$1,182	8 HR/QR
Data Reporting		2	QR	$1,471.00	$2,942	
SUBTOTAL					$7,576	
SUBTOTAL					$27,493	
Contingency				15%	$4,124	
TOTAL YEARLY COSTS (2005 THROUGH COMPLETION)					$31,617	

PRESENT VALUE ANALYSIS:

COST TYPE	YEAR	TOTAL COST	TOTAL COST/YR	DISCOUNT FACTOR (4%)	PRESENT VALUE	NOTES
Base & 1st Year Cost	0,1	$118,474	$59,237	-	$59,237	See Worksheet for Present Value Calculation
Annual Cost	2-30	$916,897	$31,617	-	$573,282	
		$1,035,371			$632,519	
TOTAL NET PRESENT VALUE					$632,519	

LONG TERM WATER TABLE GROUND WATER MONITORING

Site: Akzo Nobel
Location: Burt, NY
Phase:
Base Year: 2003
Date: Jun-03

Description: Cost estimate for long term ground water monitoring at the Akzo Nobel facility for the period of 2003 -2032 (the next 30 years), with costs starting mid-year 2003. Assumes maintenance of institutional controls will be an ongoing expense required by warehouse operations, and therefore no separate costs are included herien.

ANNUAL COSTS (2005 THRU COMPLETION):

DESCRIPTION		QTY	UNIT	UNIT COST	TOTAL	NOTES
Site Monitoring & Maintenance						
Mob/Demob for GW sampling		2	QR	$429.00	$858	
Ground Water Sampling Equipment		1	YR	$1,148.51	$1,149	
GW Equipment	Quarter 1	1.0	WK	$2,362.66	$2,363	
	Quarter 2	0.0	WK	$2,362.66	$0	
	Quarter 3	1.0	WK	$2,362.66	$2,363	
	Quarter 4	0.0	WK	$2,362.66	$0	
Labor, Per Diem & Travel	Quarter 1	1.0	WK	$4,078.90	$4,079	
	Quarter 2	0.0	WK	$4,078.90	$0	
	Quarter 3	1.0	WK	$4,078.90	$4,079	
	Quarter 4	0.0	WK	$4,078.90	$0	
VOC Analysis (EPA 8260B)	Quarter 1	6	EA	$150.00	$900	
	Quarter 2	0	EA	$150.00	$0	
	Quarter 3	6	EA	$150.00	$900	
	Quarter 4	0	EA	$150.00	$0	
SVOCs Analysis (EPA 8270C)		0	EA	$300.00	$0	
QA/QC Samples- VOC	Quarter 1	3	EA	$150.00	$450	
	Quarter 2	0	EA	$150.00	$0	
	Quarter 3	3	EA	$150.00	$450	
	Quarter 4	0	EA	$150.00	$0	
	SVOC	0	EA	$300.00	$0	
Well Maintenance		0.25	LS	$7,800.19	$1,950	
TRC Labor		1	LS	$377.50	$378	Well Maintenance Oversight
SUBTOTAL					$19,917	
Professional/Technical Support						
Project Management		2	QR	$566.00	$1,132	5 HR/QR
Lab Coordination		2	QR	$486.00	$972	8 HR/QR
Sample Tracking		2	QR	$243.00	$486	8 HR/QR
Data Quality Evaluation		2	QR	$431.00	$862	4 HR/QR
Data Management		2	QR	$591.00	$1,182	8 HR/QR
Data Reporting		2	QR	$1,471.00	$2,942	
SUBTOTAL					$7,576	
SUBTOTAL					$27,493	
Contingency				15%	$4,124	
TOTAL YEARLY COSTS (2005 THROUGH COMPLETION)					$31,617	

PRESENT VALUE ANALYSIS:

COST TYPE	YEAR	TOTAL COST	TOTAL COST/YR	DISCOUNT FACTOR (4%)	PRESENT VALUE	NOTES
Base Year Cost	0	$59,237	$59,237	-	$59,237	See Worksheet for Present Value Calculation
Annual Cost	2-30	$916,897	$59,237	-	$573,282	
		$976,134			$632,519	
TOTAL NET PRESENT VALUE					$632,519	

PRESENT VALUE CALCULATION

Site: Description:
Location:
Phase:
Base Year:
Date:

Year		Annual Costs ($)	Periodic Costs ($)	Total Costs ($)	Discount Factor at 4%	Total Present Value Cost at 4% ($)
0	2003	$59,237			1.000	$59,237
1	2004	$59,237			0.962	$56,958
2	2005	$31,617			0.925	$29,232
3	2006	$31,617			0.889	$28,108
4	2007	$31,617			0.855	$27,026
5	2008	$31,617			0.822	$25,987
6	2009	$31,617			0.790	$24,987
7	2010	$31,617			0.760	$24,026
8	2011	$31,617			0.731	$23,102
9	2012	$31,617			0.703	$22,214
10	2013	$31,617			0.676	$21,359
11	2014	$31,617			0.650	$20,538
12	2015	$31,617			0.625	$19,748
13	2016	$31,617			0.601	$18,988
14	2017	$31,617			0.577	$18,258
15	2018	$31,617			0.555	$17,556
16	2019	$31,617			0.534	$16,881
17	2020	$31,617			0.513	$16,231
18	2021	$31,617			0.494	$15,607
19	2022	$31,617			0.475	$15,007
20	2023	$31,617			0.456	$14,430
21	2024	$31,617			0.439	$13,875
22	2025	$31,617			0.422	$13,341
23	2026	$31,617			0.406	$12,828
24	2027	$31,617			0.390	$12,335
25	2028	$31,617			0.375	$11,860
26	2029	$31,617			0.361	$11,404
27	2030	$31,617			0.347	$10,965
28	2031	$31,617			0.333	$10,544
29	2032	$31,617			0.321	$10,138
30	2033	$31,617			0.308	$9,748
TOTAL PRESENT VALUE						$632,519

TRC Labor Cost Subelement
Long Term Water Table and Groundwater Monitoring

	Field				Office								Office					
	Task		Task		Task		Task		Task		Task		Task		Task		Task	
	GW Monitoring		Well Maintenance		Mob/Demob for field work		Project Management		Lab Coordination		Sample Tracking		Data Quality Evaluation		Data Management		Data Reporting	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Total Direct Labor ($)	40	$2,760	4	$196	6	$374	5	$511	4	$376	2	$188	4	$376	8	$536	19	$1,251
Materials	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Travel & per diem	1149	$1,264	165	$182	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Equipment Rental	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
ODCs	50	$55	0	$0	50	$55	50	$55	100	$110	50	$55	50	$55	50	$55	200	$220
Subcontractor	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Price by task	Estimate/wk	$4,079	Estimate/YR	$378	Estimate/QR	$429	Estimate/QR	$566	Estimate/QR	$486	Estimate/QR	$243	Estimate/QR	$431	Estimate/QR	$591	Estimate/QR	$1,471

Long Term Water Table Ground Water Monitoring
Cost Sub-Element
GROUND WATER SAMPLING EQUIPMENT

COST WORKSHEET

Site: Akzo
Location: NY
Phase:
Base Year: 2003
Date: Jun-03

Prepared by: Date: Jun-03
Checked by: Date:

Work Statement:

Purge with a whale pump w/low flow controller and collect sample with disposable bailers; prepreserved bottles. TRC supplies all of their own equipment.

Cost Analysis:

DESCRIPTION	QTY	UNIT	LABOR	EQUIP	MTRL	TOTAL	TOTAL	
3M, 2", Clear Tape	1	PKG	$0.00	$0.00	$27.49	$27.49	$27.49	6/PKG
Ziplock bags	10	EA	$0.00	$0.00	$3.79	$3.79	$37.90	
Duct Tape	4	EA	$0.00	$0.00	$6.38	$6.38	$25.52	
Nitrile gloves	6	BOX	$0.00	$0.00	$12.00	$12.00	$72.00	100pairs/BOX
Safety Glasses	4	EA	$0.00	$0.00	$6.05	$6.05	$24.20	
5-gallon buckets	6	EA	$0.00	$0.00	$3.97	$3.97	$23.82	
pH paper	2	EA	$0.00	$0.00	$7.00	$7.00	$14.00	
Graduated Cylinder (250 mL)	2	EA	$0.00	$0.00	$7.05	$7.05	$14.10	
Kimwipes (4.5"x8.5")	2	BOX	$0.00	$0.00	$4.00	$4.00	$8.00	
YSI Batteries (C-Cell; 2 sets of 4)	1	EA	$0.00	$0.00	$11.35	$11.35	$11.35	8/Pack
ORP Solution	2	EA	$0.00	$0.00	$17.00	$17.00	$34.00	
1413 US/CM Conductivity Solution	2	EA	$0.00	$0.00	$11.00	$11.00	$22.00	
pH Calibration Solutions, 1L (pH 4, 7 and 10)	2	EA	$0.00	$0.00	$44.70	$44.70	$89.40	
Turbidity meter batteries (9V)	1	EA	$0.00	$0.00	$11.35	$11.35	$11.35	4/Pack
Poly Sheeting	2	EA	$0.00	$0.00	$36.80	$36.80	$73.60	
Brush	2	EA	$0.00	$0.00	$11.50	$11.50	$23.00	
Alconox Detergent (4lb box)	1	EA	$0.00	$0.00	$20.00	$20.00	$20.00	
20 gal Container	2	EA	$0.00	$0.00	$22.50	$22.50	$45.00	
Field Book	2	EA	$0.00	$0.00	$15.00	$15.00	$30.00	
Whale Pump	2	EA	$0.00	$0.00	$20.00	$55.00	$110.00	
Whale Pump low flow controller	1	EA	$0.00	$0.00	$325.00	$325.00	$325.00	

TOTAL COST/SAMPLING YEAR		$1,041.73
Subcontractor Overhead	0%	$0.00
SUBTOTAL		$1,042
Subcontractor Profit	0%	$0.00
SUBTOTAL		$1,041.73
Contractor Overhead	5%	$52
SUBTOTAL		$1,094
Contractor Profit	5%	$54.69
TOTAL UNIT COST		$1,148.51

Source of Cost Data:

Vendors

Cost Adjustment Factor:

FACTOR:		NOTES:
H&S Productivity (labor & equip)		
Escalation to Base Year		
Area Cost Factor		
Subcontractor Markup		
Prime Contractor Markup	X	

Long Term Water Table Ground Water Monitoring
Cost Sub-Element
GROUND WATER SAMPLING EQUIPMENT

COST WORKSHEET

Site:	Akzo	Prepared by:		Checked by:	
Location:	NY	Date:	Jun-03	Date:	
Phase:					
Base Year:	2003				
Date:	Jun-03				

Work Statement:

TRC supplies all of their own equipment with a one person sampling team. This team will use a Whale pump to purge with a low flow control. Tubing estimate based on dedicated tubing with routine replacement. Assumes that sampling 16 wells/week at a depth to bottom of 25 ft/well. DI water estimate for pump decontamination based on experience. Discharge volume estimated assuming 5 well volumes need to be removed from each well. Well volume based on average dimensions calculated from the active onsite wells: 4" dia well with ave DTW of 10ft and ave DTB of 25ft. Grundfos pump costs and associated generator and tubing provided for reference. Vehicles will be rented locally and returned locally.

Cost Analysis:

DESCRIPTION	QTY	UNIT	LABOR	EQUIP	MTRL	UNIT TOTAL	TOTAL	
Teflon Lined Polyethylene Tubing (1/2" ID x 5/8" OD)	0	LF	$0.00	$0.00	$2.00	$2.00	$0.00	Grundfos
Teflon Lined Polyethylene Tubing (3/8" ID x 1/2" OD)	50	LF	$0.00	$0.00	$1.65	$1.65	$82.00	Whale Pump
Whale pump electrical cord	100	LF	$0.00	$0.00	$0.50	$0.50	$50.00	
Peristaltic Pump Tubing (1/4" ID x 1/2" OD)	0	EA	$0.00	$0.00	$60.00	$60.00	$0.00	25 LF
Teflon Disposable Bailers (1.5"x36" weighted)	2	EA	$0.00	$0.00	$150.00	$150.00	$300.00	24/case
Bailer Cord (1/8"x 600' nylon)	2	EA	$0.00	$0.00	$25.00	$25.00	$50.00	
DI Water	20	GAL	$0.00	$0.00	$18.00	$18.00	$360.00	
Discharge of Purge and Decon Water	0	GAL	$0.00	$0.00	$0.00	$0.00	$0.00	
YSI 600 XL DO; pH; ORP; Cond (2 @ $300/wk)	0.5	WK	$0.00	$0.00	$600.00	$600.00	$300.00	
Solinst Interface Probe (2 @ $140/wk)	0.5	WK	$0.00	$0.00	$280.00	$280.00	$140.00	
Lamotte 2020 turbidity meter (2 @ $80/wk)	0	WK	$0.00	$0.00	$160.00	$160.00	$0.00	
Peristaltic Pump	0	WK	$0.00	$0.00	$75.00	$75.00	$0.00	
Grundfos Redi-Flo2 100' w/controller (3 @ $290/wk)	0.3	WK	$0.00	$0.00	$870.00	$870.00	$261.00	
Extension cords	0	EA	$0.00	$0.00	$4.00	$4.00	$0.00	
Generator	0	WK	$0.00	$0.00	$125.00	$125.00	$0.00	
Motorola SP-10 Radios (2 mile radius)	0	WK	$0.00	$0.00	$60.00	$60.00	$0.00	4 radios
FID rental includes cal gas (2 @ $250/wk)	0.5	WK	$0.00	$0.00	$500.00	$500.00	$250.00	
Vehicles (SUV or Minivan - 2 @ $350/wk)	0.5	WK	$0.00	$0.00	$700.00	$700.00	$350.00	

TOTAL COST/WEEK		$2,143.00
Subcontractor Overhead	0%	$0.00
SUBTOTAL		$2,143
Subcontractor Profit	0%	$0.00
SUBTOTAL		$2,143.00
Contractor Overhead	5%	$107
SUBTOTAL		$2,250
Contractor Profit	5%	$112.51
TOTAL UNIT COST		$2,362.66

Source of Cost Data:

Vendors

Cost Adjustment Factor:

FACTOR:		NOTES:
H&S Productivity (labor & equip)		
Escalation to Base Year		
Area Cost Factor		
Subcontractor Markup		
Prime Contractor Markup	X	

Long Term Water Table Ground Water Monitoring
Cost Sub-Element
WELL MAINTENANCE

COST WORKSHEET

Site: Akzo
Location: NY
Phase:
Base Year: 2003
Date: Jun-03

Prepared by:
Date: Jun-03

Checked by:
Date:

Work Statement:
Costs to complete 2 surface well completions.

Cost Analysis:

DESCRIPTION	QTY	UNIT	LABOR	EQUIP	MTRL	UNIT TOTAL	TOTAL	
Form Crew Mobilization	1	EA	-	-	-	$2,400.00	$2,400.00	Apr-01
Personnel & Equipment	2.5	DAY	-	-	-	$1,500.00	$3,750.00	Apr-01
Surface Completions	2	EA	-	-	-	$275.00	$550.00	Apr-01
Per Diem (Form Crew)	2.5	DAY	-	-	-	$150.00	$375.00	Apr-01
Certified Driller Oversight							$0.00	
TOTAL COST/WEEK							$7,075.00	

SUBTOTAL		
Subcontractor Overhead	0%	$0.00
SUBTOTAL		$7,075
Subcontractor Profit	0%	$0.00
SUBTOTAL		$7,075.00
Contractor Overhead	5%	$354
SUBTOTAL		$7,429
Contractor Profit	5%	$371.44
TOTAL UNIT COST		$7,800.19

Source of Cost Data:
Subcontractor Invoice dated April 23, 2001

Cost Adjustment Factor:

FACTOR:		NOTES:
H&S Productivity (labor & equip)		
Escalation to Base Year		
Area Cost Factor		
Subcontractor Markup		
Prime Contractor Markup	X	

Appendix B

Additional Field-Acquired Data Documentation

- Supplemental Soil Boring Logs
- Supplemental Rock Core Logs
- Supplemental Well Construction Diagrams
- Summary of Ground Water Elevations
- Ground Water Sampling Field Data Sheets
- Laboratory Data Deliverables (supplied upon request)

TRC

Soil Boring Log

Project/Client Phase II RFI/CMS Akzo Nobel	**Project No.** 19045-0070-00000	**Boring No.** MW-10	Sheet 1 of 1
		Well No. MW-10	
Location Description 15 South of MW-10B		**TRC Geologist** Charles Foster	

Drilling Contractor/Foreman SJB Services / Dale Matthies	**Drill Rig Make/Model** CME-550X	**Auger/Drive Casing Size/Type** 4 1/4 " ID HSA
Sampler Description 2 -foot split spoon	**Drilling Method** HSA	**Coordinates** X= Y=
Filter Seal Amount/Type: See Well Const. Log	**Drill Bit/Auger Diameter:** 4 ¼ HSA	**Ref. El.:**
Sand Pack Amount/Type:	**Hammer Weight/Fall:** 140/30"	**Riser Stick Up:**
Screen Length/Type:	**Water Table Depth:** ~7.8' bgs.	**Surface Elevation:** NA
Riser Length/Type:	**Total Depth:** 15' bgs.	**Date Start:** 12/03/02 **Date Finish:** 12/04/02

Depth	Sample Number	Blows/ RQD	Pen/Rec Core Rec	Sample Description	Strati-graphic Description	Field Testing	Lab Sample Number	Well Construction
	S-1	2	24/8	3 inches dark brown Silt and organic topsoil and roots.				
1		2						
		3						
2		2						
	S-2	5	24/14	Dark brown SILT and fine Sand, trace clay.				
3		7						
		7						
4		7						
	S-3	3	24/18	Dark Red-brown SILT, some Clay, some fine Sand				
5		4						
		4						
6		4						
	S-4	5	24/16	Dark Red-brown fine SAND and Silt, trace clay last 2" moist at nose.				
7		4						
		4						
8		4						
	S-5	25	24/8	Saturates Red-brown SILT and broken angular gravel , trace concrete (fill? former cellar?)				
9		21						
		10						
10		7						
	S-6	5	24/10	3 Inches Broken gravel fragments				
11		15		7 inches dark red-Brown SILT, Some fine Sand, Some Sub rounded gravel (till)				
		25						
12		28						
	S-7	15	24/16	Dark brown fine SAND some Silt. Some angular Broken native gravel (dry interior)				
13		32						
		22						
14		19						

Granular Soils

Blows/ft	Density
0-4	v. loose
4-10	loose
10-30	m. dense
30-50	dense
>50	v. dense

Proportions

trace 0-10% some 20-35%
little 10-20% and 35-50%

Cohesive Soils

Blows/ft	Density
>2	v. soft
2-4	soft
4-8	m. stiff
8-15	stiff
15-30	v. stiff
>30	hard

Grain Size (USCS)

silt/clay	<0.08 mm
f. sand	0.43-0.08 mm
m. sand	2.0-0.43 mm
c. sand	4.8-2.0 mm
f. gravel	19-4.8 mm
c. gravel	75-19 mm
cobble	300-75 mm
boulder	>300 mm

Notes

1) Possible fill 8-10 ft. associated with former barn, tough augering.
2) Water perched on till unit.
3) Augered to 15 ft. for well installation.

TRC

Soil Boring Log

Project/Client Phase II RFI/CMS Akzo Nobel	**Project No.** 19045-0070	**Boring No.** MW-10B	Sheet 1 of 2
Location Description 60 Ft. Southwest of PZ-02		**Well No.** MW-10B	**TRC Geologist** Charles Foster

Drilling Contractor/Foreman SJB Services / Dale Matthies	**Drill Rig Make/Model** CME-550X	**Auger/Drive Casing Size/Type** 6 1/4 " ID HSA/ 4 inch casing/HQ Core
Sampler Description Continuous 2 ft split spoon/HQ rock coring	**Drilling Method** HSA continuous sampling	**Coordinates** X= Y=
Filter Seal Amount/Type: See Well Const. Log	**Drill Bit/Auger Diameter:** 5 7/8 RB	**Ref. El.:**
Sand Pack Amount/Type:	**Hammer Weight/Fall:** 140/30	**Riser Stick Up:**
Screen Length/Type:	**Water Table Depth:** ~ 20 ft. (in rock)	**Surface Elevation:** NA
Riser Length/Type:	**Total Depth:** 44' bgs.	**Date Start:** 12/02/02 **Date Finish:** 12/04/02

Depth	Sample Number	Blows/ RQD	Pen/Rec Core Rec	Sample Description	Strati-graphic Description	Field Testing	Lab Sample Number	Well Construction
	S-1	2	24/4	4 inches organic topsoil and roots (pushed stone				
1		2	.	or frozen earth to depth)				
		5						
2		7						
	S-2	9	24/8	Brown fine SAND and Silt, trace clay.				
3		7						
		7						
4		7						
	S-3	3	24/18	Brown to red-brown SILT, some fine Sand				
5		4						
		4						
6		5						
	S-4	6	24/18	Brown fine SAND and Silt, one small gravel clast				
7		7		moist at nose.				
		7						
8		10						
	S-5	4	24/14	4" Brown fine SAND and Silt wet				
9		9		4" Brown fine to coarse SAND, trace fine gravel				
		7		some Silt, 2" Gray shale pulverized (fill?)				
10		7		4" Brown fine to coarse SAND, some Silt trace				
	S-6	8	24/12	fine gravel				
		12		Red-brown fine SAND and Silt, some fine sub-				
11		22		rounded Gravel, wet.				
		33						
12		10						
	S-7		24/16	Dark brown fine SAND some Silt. Saturated.				
13		21		Some fine angular gravel (dry at bottom)				
		27						
		29						

Granular Soils

Blows/ft	Density
0-4	v. loose
4-10	loose
10-30	m. dense
30-50	dense
>50	v. dense

Proportions

trace 0-10% some 20-35%
little 10-20% and 35-50%

Cohesive Soils

Blows/ft	Density
>2	v. soft
2-4	soft
4-8	m. stiff
8-15	stiff
15-30	v. stiff
>30	hard

Grain Size (USCS)

silt/clay	<0.08 mm
f. sand	0.43-0.08 mm
m. sand	2.0-0.43 mm
c. sand	4.8-2.0 mm
f. gravel	19-4.8 mm
c. gravel	75-19 mm
cobble	300-75 mm
boulder	>300 mm

Notes

TRC

Soil Boring Log

Project/Client	Project No.	Boring No. MW-10B	Sheet
Phase II RFI/CMS-Akzo	19045-0070-00000	Well No. MW-10B	2 of 2
Location Description: 60 Ft. Southwest of PZ-02		TRC Geologist: Charles Foster	

Depth	Sample Number	Blows/ RQD	Pen/Rec Core Rec	Sample Description	Strati-graphic Description	Field Testing	Lab Sample Number	Well Construction
	S-8	7	24/8	4 inches red-brown/dark brown Silt, some fine Sand, some clay				
15		31		4 inches broken angular gravel fragments, some fine Sand and Silt.				
		21						
		33						
16	S-9	10	24/16					
		12		Red-Brown fine to medium SAND Some Silt,				
17		18		Some angular gravel Wet (till). Broken native				
		11		shale fragments in nose.				
18	S-10	20	24/1	Broken native shale fragment in nose				
		16						
19		30						
		44						
20	S-11	100/4	4/0	No Recovery				
21								
22	S-12	59	9/6	Fragmented , pulverized shale fragments some				
		100/3		Glacial till sluff from above.				
23								
24				Auger Refusal 24 ft.				
				4" Brown fine SAND and Silt wet				
				4" Brown fine to coarse SAND, trace fine gravel				
				some Silt, 2" Gray shale pulverized (fill?)				
				4" Brown fine to coarse SAND, some Silt trace				
				fine gravel				
				Red-brown fine SAND and Silt, some fine sub-				
				rounded Gravel, wet.				
				Dark brown fine SAND some Silt. Saturated.				
				Some fine angular gravel (dry at bottom)				

Granular Soils

Blows/ft	Density
0-4	v. loose
4-10	loose
10-30	m. dense
30-50	dense
>50	v. dense

Proportions

trace	0-10%	some	20-35%
little	10-20%	and	35-50%

Cohesive Soils

Blows/ft	Density
>2	v. soft
2-4	soft
4-8	m. stiff
8-15	stiff
15-30	v. stiff
>30	hard

Grain Size (USCS)

silt/clay	<0.08 mm
f. sand	0.43-0.08 mm
m. sand	2.0-0.43 mm
c. sand	4.8-2.0 mm
f. gravel	19-4.8 mm
c. gravel	75-19 mm
cobble	300-75 mm
boulder	>300 mm

Notes

1) Weathered bedrock at 22 ft.
2) Auger refusal 24ft. Competent rock. Roller-bitted to 29 ft. to install 4 inch casing.
3) 4-inch casing grouted in rock socket 24-29 ft.
4) See Rock Core log for MW-10B

TRC

Rock Core Log

	Project: Akzo Nobel Phase II RFI/CMS **Project No.** 19045-0070-00000	**Date/Time** 12/04/02, 1235	**Sheet** 1 of 1
	Contractor Personnel:	**TRC Personnel:** Charles Foster	
Boring/Well Number: MW-10B	**Driller/Equipment:** Dale Matthies/CME-550X, Wire-line (10') HQ-Core Barrel, Series 2 Bit (new)	**Elevation:** **Orientation:** **Time Start:** 1235 **Time Finish:** 1340	

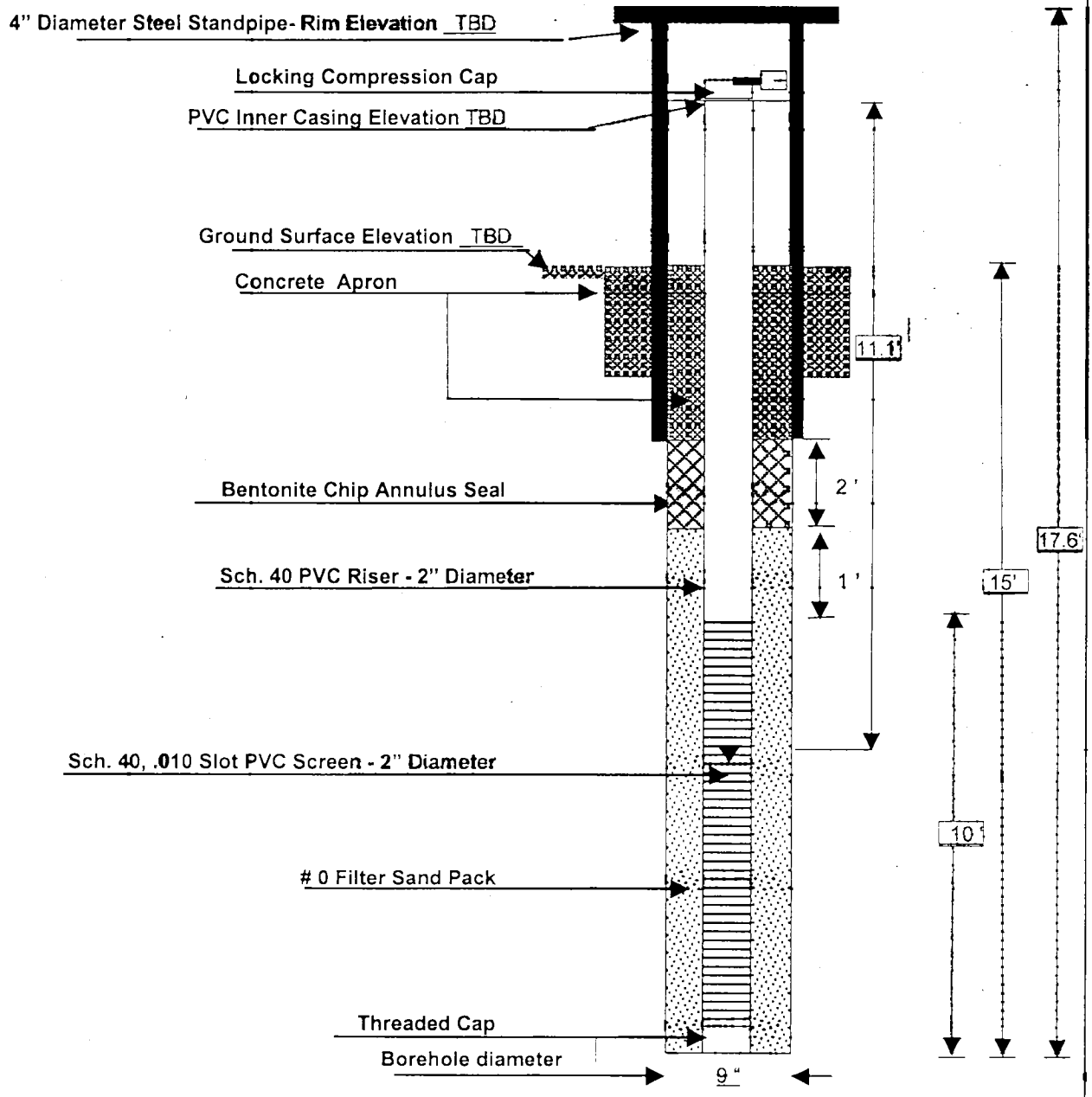
Depth	Comments: Tests, Instrumentation, Coring Rate and Smoothness, Coring Fluid Loss	Core Run Length and Recovery (%)	Core Loss Zone	Box Number	Discontinuities: RQD	Fractures Per Foot	Description: Tightness, Planarity, Smoothness, Filling, Staining, Orientation	Lithology: Mineralogy, Classification, Color, Grain Size, Alteration, Cementation, Hardness, Weathered State	Graphic Log
29	2 min/ft, no H_2O loss.	72/72 100%		1	52/ 72	0		Red brown to gray very fine grain shale/ siltstone (Queenstone shale).	
30	2 min/ft, Some H_2O loss.				72 %	2	Vertical Fracture at 30.5'	Vertical fracture with weathering / H20 Bearing at 30.5	
31	2 min/ft, Some minor H_2O loss.					1		Shale with some mechanical breaks to 32.8 where clay filled fracture noted.	
32	2 min/ft, intermittent minor H_2O loss.					1	Clay filling at 32.8'		
33	1minute 40 sec /ft, No H20 Loss.					3		Competent siltstone with few horizontal fractures.	
34	1 min 50 sec/ft, no H_2O loss.					1		↓	
35	2 min/ft, some H_2O loss.	108/108 100 %			95/108 88 %	0		Very fine grained competent shale/siltstone.	
36	2 min 10 sec/ft, no H_2O loss.					0		↓	
37	2 min 10 sec/ft, no H_2O loss.					2		Red-brown siltstone with 3" fracture spacing. Tight	
38	1min, 50 sec/ft, no H_2O loss.					0			
39	1 min, 45 sec/ft, no H_2O loss.		X	2		1		Siltstone and shale with slight blue/gray hue.	
40	2 min, 20 sec/ft, little H_2O loss.					2		2 H20 bearing, eroded fractures at 40.4 and 40.7	
41	2 min/ft, no H_2O loss.					1		in shale/siltstone. Fracture with trace weathering at 41.3	
42	2 min/ft, no H_2O loss.					1		Fracture with trace weathering at 42.5.	
43	2 min/ft, no H_2O loss.					1		Fracture with trace weathering at 43.5	
44									

TRC

Overburden Monitoring Well Construction Log with Protective Casing

Well No. MW-10

Project: Akzo-Nobel Phase II RFI/CMS **No.:** 19045-0070-00000	**Reference Elevation:** TBD
Client: Pam Cook **Date Completed:** 12/03/02	**Reference Description:** Top of PVC riser
Location: 15 ft. South MW-10B	**Depth to Water:** 11.15
Drilling Contractor: SJB Services **Method:** HSA	**Development Date:** 12/03 to 12/04/02
TRC Geologist: Charles Foster	**Development Method:** Whale pump



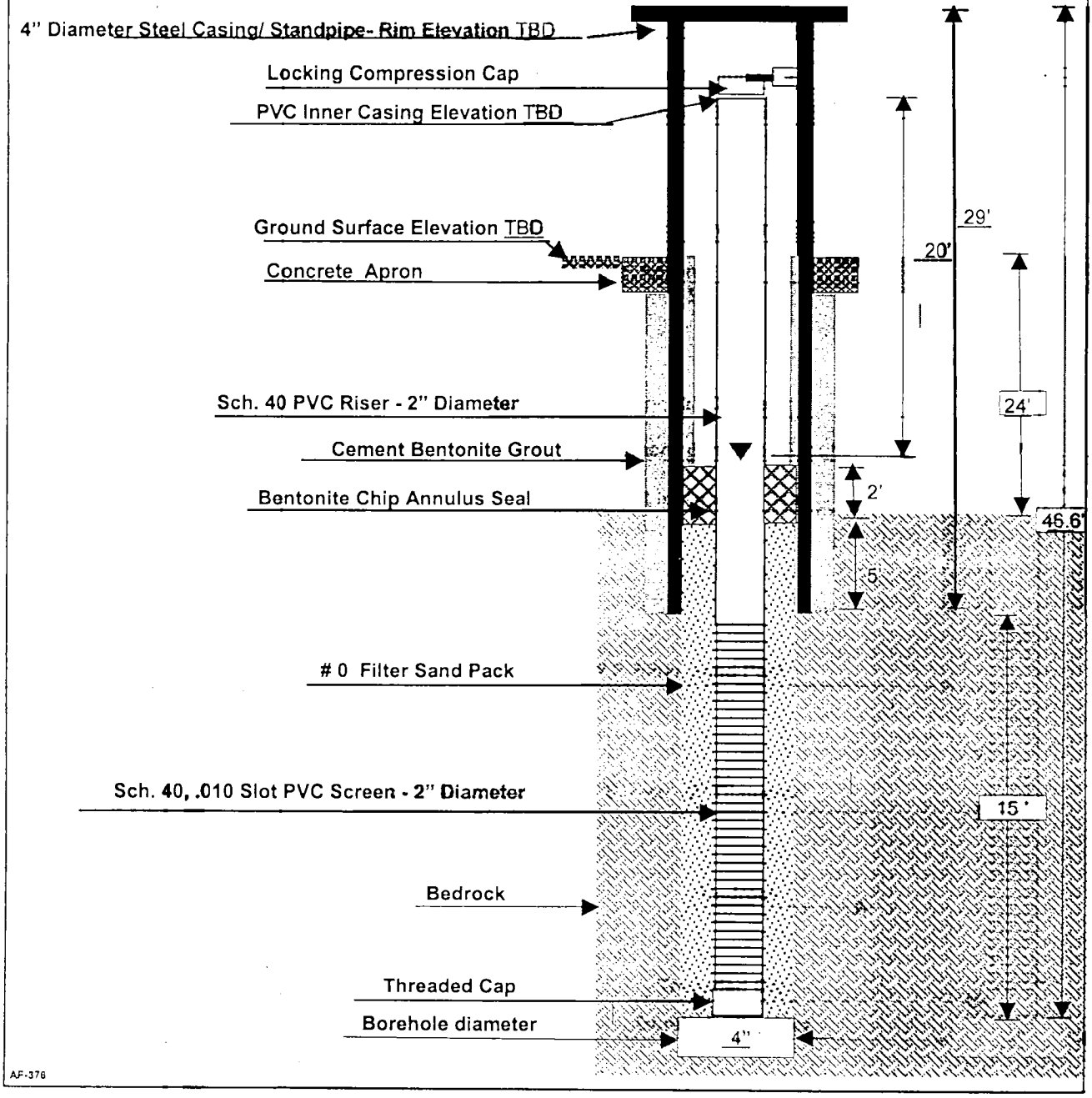
AF-376

TRC

Bedrock Monitoring Well Construction Log with Protective Casing

Well No. MW-10B

Project: Akzo-Nobel Phase II RFI/CMS **No.:** 19045-0070-00000	**Reference Elevation:**
Client: Pam Cook **Date Completed:** 12/04/02	**Reference Description:** Top of PVC Riser
Location: Southwestern corner of site ~ 60 SW Of PZ-02	**Depth to Water:** 20 ft.
Drilling Contractor: SJB Services **Method:** Casing/coring	**Development Date:** 12/04 to 12/05/02
TRC Geologist: Charles Foster.	Development Method: Bailer



AF-376

AKZO-NOBEL Groundwater Elevation Data - Overburden Wells, August 26, 2002

Monitoring Well	Measurement Reference Location	Ref PVC Reference Elevation	DTW PVC From PVC	GW Elev Water Elevation	Easting	Northing
MW-1	PVC North	327.90	11.36	316.54	36786.6	24032.24
MW-2	PVC North	321.39	4.27	317.12	17165	23607.23
MW-3	PVC North	322.10	8.23	313.87	11701.9	29935.1
MW-4	PVC North	322.59	10.23	312.36	10287.4	26678.2
MW-5	PVC North	324.19	7.32	316.87	23872.39	26872.89
MW-6	PVC North	324.80	8.10	316.70	19202.83	28048.89
MW-7	PVC North	323.61	6.83	316.78	21170.83	25912.89
MW-8	PVC North	325.76	9.00	316.76	17240.8	26278.9
MW-9	PVC North	324.55	8.21	316.34	12207.4	23798.2
OS-1	PVC North	327.15	10.00	317.15	17389.6	22040.36
PZ-02	PVC North	330.50	13.37	317.13	14667.5	20509.9
PZ-03	PVC North	333.42	15.11	318.31	31749.5	16981.9

J:\Omiscproj\AkzoPh2RFI\surfer\GWElevationPlots\October02GWElevData\August02OBWells

AKZO-NOBEL Ground water Elevation Data - All Wells, October 8, 2002

Monitoring Well	Measurement Reference Location	Ref PVC Reference Elevation	DTW PVC	GW Elev	Easting	Northing
MW-1	PVC North	327.90	12.94	314.96	36786.6	24032.24
MW-1B	PVC North	327.79	12.14	315.65	36821.4	24421.74
MW-2	PVC North	321.39	5.17	316.22	17165	23607.23
MW-3	PVC North	322.10	10.56	311.54	11701.9	29935.1
MW-3B	PVC North	321.39	13.57	307.82	11730.8	30077.9
MW-4	PVC North	322.59	13.13	309.46	10287.4	26678.2
MW-5	PVC North	324.19	8.23	315.96	23872.39	26872.89
MW-6	PVC North	324.80	8.91	315.89	19202.83	28048.89
MW-7	PVC North	323.61	7.70	315.91	21170.83	25912.89
MW-8	PVC North	325.76	9.84	315.92	17240.8	26278.9
MW-4B	PVC North	323.19	17.55	305.64	10287.4	26558.2
MW-9	PVC North	324.55	8.80	315.75	12207.4	23798.2
MW-9B	PVC North	324.78	18.94	305.84	12147.4	23438.2
OS-1	PVC North	327.15	10.90	316.25	17389.6	22040.36
PZ-02	PVC North	330.50	14.25	316.25	14667.5	20509.9
PZ-03	PVC North	333.42	Dry to 15.34 (TD)	#VALUE!	31749.5	16981.9

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TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/29/02, 1215 | Sheet 1 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-01 **Well Location:** MW-01

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.35 ft. (from ground)

Riser Stick-up (from ground) 2.25 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 11.11 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 4.27 ft.

Height of Water Column 6.84 ft. x ☒ .16 gal/ft (2 In.) ☐ .65 gal/ft (4 In.) ☐ 1.5 gal/ft (6 In.) ☐ ___ gal/ft (___ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.056 gallon(s)

3 volumes = 3.34

5 volumes = 5.57

6 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Flow stopped briefly at 2 gal. Note INC in DO. Restart after 5 mins

Purge Volume (gal)	0.5	1	1.5	2.0	2.5	3.0	4.0
pH (Std. Units)	7.15	7.10	7.06	7.03	7.06	7.02	7.00
Eh (millivolts)	179.8	182.7	185.3	187.8	184.8	181.5	186.3
Conduct. (µs/cm)	520	514	516	512	521	514	512
Temp. (C)	12.98	12.23	12.44	12.15	12.52	11.94	11.76
Turb. (NTU)							
DO (mg/l)	2.62	1.49	1.48	1.17	4.92	4.91	3.84
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Rusty at start

Odor: None noted

Other: Clear at 1 gal

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/28/02, 1230	———	———
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/28/02, 1230	———	———
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/28/02, 1230	———	———
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 1230	———	———
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 1230	———	———
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/28/02, 1230	———	———

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/28/02, 1200 | Sheet 2 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-01 **Well Location:** MW-01

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.35 ft. (from ground)

Riser Stick-up (from ground) 2.25 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.96 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 11.36 ft.

Height of Water Column 6.6 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.056 gallon(s)

3 volumes = 3.168

5 volumes = 5.28

6.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	4.5	5.0	5.5	6	6.5		
pH (Std. Units)	7.01	7.01	7.01	7.01	7.00		
Eh (millivolts)	197.5	195.5	195.6	195.3	195.9		
Conduct. (µs/cm)	516	520	515	515	516		
Temp. (C)	11.86	12.06	11.66	11.64	11.85		
Turb. (NTU)							
DO (mg/l)	3.90	2.78	2.20	1.94	2.07		
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color very light brown

Odor None

Other ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/28/02, 1230	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/28/02, 1230	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/28/02, 1230	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 1230	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 1230	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/28/02, 1230	------	------

AF-206/C

Signed: [signature]

Rev. 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/28/02, 1450 | Sheet 1 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-01B **Well Location:** MW-01B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 1.90 ft. (from ground)

Riser Stick-up (from ground) 1.65 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 47.08 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 10.99 ft.

Height of Water Column 36.09 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 5.88 gallon(s)

3 volumes = 17.6

5 volumes = 29.4

24.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Exceeded pumps lift capability at 15.5gal & 20.5 gal cont. purge on page 2 on 8/29

Purge Volume (gal)	5	10	15	17.5	20		
pH (Std. Units)	8.51	8.38	8.41	8.11	8.10		
Eh (millivolts)	-417.1	-579.1	-644.2	-605.2	-616.9		
Conduct. (µs/cm)	2742	2759	2722	2787	2776		
Temp. (C)	10.33	10.77	12.04	11.24	11.13		
Turb. (NTU)							
DO (mg/l)	0.50	0.22	0.18	0.42	0.25		
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other: Clear at 1 gal

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, Poland spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL		------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml		------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly		------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly		------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly		------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly		------	------

Signed: Chad Sit

AF-206/C

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7	Project No: 19045-007	Date/Time: 8/29/02, 0800	Sheet 2 of 2
Contractor Personnel:		TRC Personnel: C. Foster	

Sample No.: MW-01B Well Location: MW-01B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 1.90 ft. (from ground)

Riser Stick-up (from ground) 1.65 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.96 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 11.36 ft.

Height of Water Column 6.6 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 5.88 gallon(s)

3 volumes = 17.6
5 volumes = 29.4

24.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	20.5	21.5	22.5	23.5	24.5		
pH (Std. Units)	8.01	7.94	7.91	7.91	7.90		
Eh (millivolts)	127.2	60.3	-16.1	-34.1	-41.5		
Conduct. (µs/cm)	2896	2765	2758	2735	2734		
Temp. (C)	11.05	11.59	10.87	10.94	11.03		
Turb. (NTU)							
DO (mg/l)	3.83	1.99	2.05	2.06	2.13		
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color very light brown

Odor None

Other ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/29/02, 0940	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/29/02, 0940	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/29/02, 0940	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/29/02, 0940	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/29/02, 0940	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/29/02, 0915	------	------

AF-206/C

Signed: [signature]

Rev. 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/29/02, 1215 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-02 **Well Location:** MW-02

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up (from ground) Flushmount _____ ft.

Riser Stick-up (from ground) Flushmount _____ ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ____

WELL MATERIAL ☒ PVC ☐ SS ☐ ____

Well Depth 11.11 ft. ☒ top of riser ☐ top of casing ☐ _____ ☒ measured ☐ historical

Water Depth 4.27 ft.

Height of Water Column 6.84 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.11 gallon(s)

3 volumes = 3.34

5 volumes = 5.57

6 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	1	2	3	4	5	6	
pH (Std. Units)	6.74	6.83	6.85	6.84	6.81	6.81	
Eh (millivolts)	-178.3	-196.7	-203.1	-205.9	-207.4	-211.3	
Conduct. (µs/cm)	3721	1992	1671	1627	1750	1715	
Temp. (C)	18.66	18.89	18.97	19.0	18.99	19.0	
Turb. (NTU)							
DO (mg/l)	0.82	0.48	0.33	0.29	0.26	0.25	
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Black particles

Odor: Septic Odor

Other: Petroleum odor

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
_____	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/29/02, 1240	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/29/02, 1240	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/29/02, 1240	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/29/02, 1240	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/29/02, 1240	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/29/02, 1240	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7	**Project No:** 19045-007	**Date/Time:** 8/27/02, 1740	Sheet 1 of 2
Contractor Personnel:		**TRC Personnel:** C. Foster	

Sample No.: MW-03 **Well Location:** MW-03

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.61 ft. (from ground)

Riser Stick-up (from ground) 2.5 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 16.78 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.23 ft.

Height of Water Column 8.55 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 1.39 gallon(s)

3 volumes = 4.18

5 volumes = 6.97

10 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Well to near dryness at 6 gallons, continued purge on 8/28

Purge Volume (gal)	1	2	3	4	5	6	
pH (Std. Units)	7.09	7.02	7.04	7.03	7.01	7.01	
Eh (millivolts)	190.1	189.1	176.6	158.3	139.9	121.1	
Conduct. (µs/cm)	743	753	744	746	744	740	
Temp. (C)	14.22	15.16	14.65	14.26	13.72	13.29	
Turb. (NTU)							
DO (mg/l)	1.18	0.73	0.60	0.68	1.19	1.10	
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color Light brown

Odor None noted

Other ---

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL		---	---
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml		---	---
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly		---	---
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly		---	---
☒ Chloride	YES (NO)	4° C	1x250 ml poly		---	---
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly		---	---

Signed: [signature]

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7	**Project No:** 19045-007	**Date/Time:** 8/28/02, 0810	Sheet 2 of 2
Contractor Personnel:		**TRC Personnel:** C. Foster	

Sample No.: MW-03 **Well Location:** MW-03

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.61 ft. (from ground)

Riser Stick-up (from ground) 2.5 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 16.78 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.23 ft.

Height of Water Column 8.55 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.39 gallon(s)

3 volumes = 4.18

5 volumes = 6.97

10 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	7	8	9	10			
pH (Std. Units)	7.07	7.00	7.00	7.00			
Eh (millivolts)	171	175.8	177.7	180.4			
Conduct. (µs/cm)	797	811	788	771			
Temp. (C)	14.26	15.03	14.76	14.22			
Turb. (NTU)							
DO (mg/l)	6.11	6.42	6.48	6.78			
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color Light yellow

Odor None noted

Other ___

SAMPLE EQUIP./DECON.	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/28/02, 0845	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/28/02, 0845	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/28/02, 0845	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 0845	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 0845	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/28/02, 0845	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/28/02, 0905 | Sheet 1 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-03B **Well Location:** MW-03B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.5 ft. (from ground)

Riser Stick-up (from ground) 2.4 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 37.18 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 13.17 ft.

Height of Water Column 24.01 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 3.91 gallon(s)

3 volumes = 11.74
5 volumes = 19.57

20 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	2	4	6	8	10	12	14
pH (Std. Units)	7.83	7.83	7.88	7.89	7.87	7.85	7.83
Eh (millivolts)	-16.8	-76.9	-112	-117.4	-121.4	-125.2	-124.8
Conduct. (µs/cm)	409	401	400	405	409	411	415
Temp. (C)	10.89	10.97	11.09	11.15	11.17	11.17	11.15
Turb. (NTU)							
DO (mg/l)	1.27	0.74	0.45	0.37	0.31	0.26	0.22
Carbon Dioxide (mg/L)	1.18						

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other: ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL		------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml		------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly		------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly		------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly		------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly		------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7	**Project No:** 19045-007	**Date/Time:** 8/28/02, 0905	Sheet 2 of 2
Contractor Personnel:		**TRC Personnel:** C. Foster	

Sample No.: MW-03B **Well Location:** MW-03B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.5 ft. (from ground)

Riser Stick-up (from ground) 2.4 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 37.18 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 13.17 ft.

Height of Water Column 24.01 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 3.91 gallon(s)

3 volumes = 11.74
5 volumes = 19.57

20 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	16	18	20				
pH (Std. Units)	7.80	7.76	7.73				
Eh (millivolts)	-121.9	-119.8	-102.4				
Conduct. (µs/cm)	421	426	429				
Temp. (C)	11.11	11.05	10.99				
Turb. (NTU)							
DO (mg/l)	0.19	0.19	0.22				
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐
Color: Light brown
Odor: None noted
Other: ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/28/02, 0950	-------	-------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/28/02, 0950	-------	-------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/28/02, 0950	-------	-------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 0950	-------	-------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 0950	-------	-------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/28/02, 0950	-------	-------

AF-206/C

Signed: _____

Rev. 6 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/27/02, 1205 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-04 **Well Location:** MW-04

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 3.0 ft. (from ground)

Riser Stick-up (from ground) 2.8 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 16.04 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 10.23 ft.

Height of Water Column 5.81 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 0.947 gallon(s)

3 volumes = 2.84
5 volumes = 4.74

3.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Well to near dryness at 2 & 2.5 gallons, poor recharge, completed sampling on 8/28

Purge Volume (gal)	0.5	1	1.5	2.0	2.5	3.0	
pH (Std. Units)	7.08	7.0	6.96	7.04	6.99	7.18	
Eh (millivolts)	107	111.7	112.8	114.6	113.7	137.3	
Conduct. (µs/cm)	892	940	919	925	934	876	
Temp. (C)	15.03	14.77	14.68	14.82	15.32	15.09	
Turb. (NTU)							
DO (mg/l)	3.45	2.79	3.16	3.35	4.09	4.71	
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Cloudy, whitish

Odor: None noted

Other: Light brown at end

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/27/02, 1700	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/27/02, 1700	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/27/02, 1815	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 0750	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 0750	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/27/02, 1400	------	------

AF-206/C

Signed: _____

Rev. 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/27/02, 1240 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-04B **Well Location:** MW-04B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.7 ft. (from ground)

Riser Stick-up (from ground) 2.6 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 40.93 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 19.28 ft.

Height of Water Column 21.65 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 3.53 gallon(s)

3 volumes = 10.58

5 volumes = 17.64

13.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Well to near dryness at 6, 8, & 10 gallons, completed sampling after ample recharge.

Purge Volume (gal)	2.5	5	7.5	10	11.5	12.5	13.0
pH (Std. Units)	8.82	8.59	8.22	8.09	7.89	7.93	8.02
Eh (millivolts)	40.2	8.7	94.4	116.6	104.7	99.6	98.6
Conduct. (µs/cm)	341	447	1172	1593	3112	1702	1628
Temp. (C)	11.02	11.33	11.27	11.33	11.61	11.22	11.17
Turb. (NTU)							
DO (mg/l)	4.83	5.17	4.32	5.23	3.0	4.21	4.89
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other: ---

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing.

Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/27/02, 1630	---	---
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/27/02, 1630	---	---
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/27/02, 1630	---	---
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 1630	---	---
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 1630	---	---
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/27/02, 1630	---	---

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7	**Project No:** 19045-007	**Date/Time:** 8/28/02, 1635	Sheet 1 of 1
Contractor Personnel:		**TRC Personnel:** C. Foster	

Sample No.: MW-05 **Well Location:** MW-05

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.12 ft. (from ground)

Riser Stick-up (from ground) 1.95 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 15.03 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 7.32 ft.

Height of Water Column 7.71 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = r^2 h(0.163)]

Volume of Water In Well = 1.25 gallon(s)

3 volumes = 3.75
5 volumes = 6.25

7 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	1	2	3	4	5	6	7
pH (Std. Units)	6.79	6.76	6.76	6.75	6.74	6.74	6.73
Eh (millivolts)	59.3	59.2	58.3	59.5	60.6	60.9	61.3
Conduct. (µs/cm)	1044	1045	1045	1045	1043	1045	1045
Temp. (C)	14.49	14.45	14.42	14.40	14.40	14.39	14.39
Turb. (NTU)							
DO (mg/l)	0.78	0.43	0.30	0.24	0.24	0.23	0.22
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other: ---

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/28/02, 1640	---	---
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/28/02, 1640	---	---
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/28/02, 1640	---	---
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 1640	---	---
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 1640	---	---
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/28/02, 1640	---	---

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/29/02, 1315 | Sheet 1 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-06 **Well Location:** MW-06

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.50 ft. (from ground)

Riser Stick-up (from ground) 2.40 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch

WELL MATERIAL ☒ PVC ☐ SS ☐

Well Depth 17.32 ft. ☒ top of riser ☐ top of casing ☒ measured ☐ historical

Water Depth 8.10 ft.

Height of Water Column 9.22 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 1.50 gallon(s)

3 volumes = 4.5

5 volumes = 7.5

14 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	1	2	3	4	5	6	7
pH (Std. Units)	7.54	7.51	7.50	7.50	7.48	7.47	7.47
Eh (millivolts)	-142.0	-140.5	-150.6	-164.2	-171.4	-175.8	-176.9
Conduct. (µs/cm)	1751	1756	1757	1757	1757	1757	1758
Temp. (C)	13.95	15.01	15.04	15.02	15.04	15.04	15.03
Turb. (NTU)							
DO (mg/l)	3.70	1.94	1.43	1.18	0.72	0.63	0.56
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other:

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
_____	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL		------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml		------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly		------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly		------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly		------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly		------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/29/02, 1315 | Sheet 2 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-06 **Well Location:** MW-06

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.50 ft. (from ground)

Riser Stick-up (from ground) 2.40 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.32 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.10 ft.

Height of Water Column 9.22 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 1.50 gallon(s)

3 volumes = 4.5

5 volumes = 7.5

14 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	8	9	10	11	12	13	14
pH (Std. Units)	7.48	7.47	7.46	7.46	7.47	7.47	7.46
Eh (millivolts)	-147.5	-160.2	-167.7	-172.6	-174.6	-176.1	-178.9
Conduct. (µs/cm)	1753	1753	1755	1755	1755	1756	1756
Temp. (C)	14.95	14.99	15.03	15.04	15.03	15.03	15.03
Turb. (NTU)							
DO (mg/l)	2.94	2.76	2.18	1.55	1.17	0.98	0.80
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other: Foamy white

SAMPLE EQUIP./DECON.	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/29/02, 1545	-------	-------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/29/02, 1545	-------	-------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/29/02, 1545	-------	-------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/29/02, 1545	-------	-------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/29/02, 1545	-------	-------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/29/02, 1545	-------	-------

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/29/02, 1810 | Sheet 1 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-07/ 7D (duplicate) **Well Location:** MW-07/ 7D (duplicate)

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.55 ft. (from ground)

Riser Stick-up (from ground) 2.40 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.32 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.10 ft.

Height of Water Column 9.22 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 1.37 gallon(s)

3 volumes = 4.10

5 volumes = 6.84

10 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	1	2	3	4	5	6	7
pH (Std. Units)	7.5	7.64	7.73	7.73	7.74	7.74	7.75
Eh (millivolts)	-170.7	-203.4	-217.7	-220.8	-227.4	-231.7	-234.4
Conduct. (µs/cm)	2351	2300	2288	2270	2252	2242	2237
Temp. (C)	15.33	15.34	15.32	15.32	15.33	15.30	15.29
Turb. (NTU)							
DO (mg/l)	2.70	2.23	1.63	1.41	1.15	1.07	1.00
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light yellow

Odor: Sewer odor

Other: ---

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL		---	---
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml		---	---
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly		---	---
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly		---	---
☒ Chloride	YES (NO)	4° C	1x250 ml poly		---	---
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly		---	---

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/29/02, 1810 | Sheet 2 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-07/ 7D (duplicate) **Well Location:** MW-07/ 7D (duplicate)

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.55 ft. (from ground)

Riser Stick-up (from ground) 2.40 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.32 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.10 ft.

Height of Water Column 9.22 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.37 gallon(s)

3 volumes = 4.10

5 volumes = 6.84

10 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	8	9	10				
pH (Std. Units)	7.75	7.75	7.76				
Eh (millivolts)	-237.7	-238.8	-240.2				
Conduct. (µs/cm)	2232	2225	2223				
Temp. (C)	15.28	15.27	15.27				
Turb. (NTU)							
DO (mg/l)	0.97	0.93	0.91				
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light yellow

Odor: Sewer odor

Other: ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/29/02, 1830/1900	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/29/02, 1830/1900	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/29/02, 1830/1900	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/29/02, 1830/1900	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/29/02, 1830/1900	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/29/02, 1830/1900	------	------

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/29/02, 1645 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-08 **Well Location:** MW-08

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.10 ft. (from ground)

Riser Stick-up (from ground) 1.95 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 18.21 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 9.0 ft.

Height of Water Column 9.21 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 1.50 gallon(s)

3 volumes = 4.5
5 volumes = 7.5

12.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	1.5	3	4.5	6	7.5	9	10.5	12
pH (Std. Units)	6.91	6.88	6.88	6.85	6.84	6.83	6.82	6.84
Eh (millivolts)	-173.6	-179.3	-181.3	-182.7	-183.8	-185.8	-184.9	-187.3
Conduct. (µs/cm)	8095	7804	7775	7887	7886	8002	8243	7799
Temp. (C)	15.18	15.08	15.08	15.02	15.0	14.99	14.92	15.0
Turb. (NTU)								
DO (mg/l)	1.71	4.79	4.71	3.68	3.44	2.94	2.70	2.24
Carbon Dioxide (mg/L)								

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other:

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/29/02, 1710	———	———
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/29/02, 1710	———	———
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/29/02, 1710	———	———
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/29/02, 1710	———	———
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/29/02, 1710	———	———
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/29/02, 1710	———	———

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/28/02, 1840 | Sheet 1 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-09 **Well Location:** MW-09

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.30 ft. (from ground)

Riser Stick-up 2.20 ft. (from ground)

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.35 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.21 ft.

Height of Water Column 9.14 ft. x

[Vol. = $r^2 h(0.163)$]

☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

Volume of Water in Well = 1.49 gallon(s)

3 volumes = 4.47

5 volumes = 7.44

10 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Flow slowed at 6 gal. inc rate, Noted inc in DO. Restart after 15 mins

Purge Volume (gal)	1	2	3	4	5	6	7
pH (Std. Units)	6.79	6.76	6.78	6.91	6.94	6.88	6.82
Eh (millivolts)	-3.8	-5.1	-0.6	8.7	14.9	22.7	102.2
Conduct. (µs/cm)	1613	1763	1850	1392	1291	1363	1829
Temp. (C)	16.25	17.39	16.85	16.11	15.46	14.64	17.03
Turb. (NTU)							
DO (mg/l)	1.45	0.91	0.62	0.90	1.09	0.84	4.03
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown turbid

Odor: None noted

Other: Clear with time

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL		----	----
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml		----	----
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly		----	----
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly		----	----
☒ Chloride	YES (NO)	4° C	1x250 ml poly		----	----
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly		----	----

Signed: [signature]

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7 | **Project No:** 19045-007 | **Date/Time:** 8/28/02, 1840 | Sheet 2 of 2

Contractor Personnel:

TRC Personnel: C. Foster

Sample No.: MW-09 **Well Location:** MW-09

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up 2.30 ft. (from ground)

Riser Stick-up (from ground) 2.20 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.35 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.21 ft.

Height of Water Column 9.14 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.49 gallon(s)

3 volumes = 4.47

5 volumes = 7.44

10 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	8	9	10				
pH (Std. Units)	6.98	6.99	6.97				
Eh (millivolts)	107.2	110.3	107.3				
Conduct. (µs/cm)	1723	1617	1114				
Temp. (C)	16.05	15.61	14.64				
Turb. (NTU)							
DO (mg/l)	4.81	4.63	3.86				
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown turbid

Odor: None noted

Other: Clear with time

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/28/02, 1940	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/28/02, 1940	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/28/02, 1940	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/28/02, 1940	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/28/02, 1940	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/28/02, 1940	------	------

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7	**Project No:** 19045-007	**Date/Time:** 8/28/02, 1810	Sheet 1 of 2
Contractor Personnel:		**TRC Personnel:** C. Foster	

Sample No.: MW-9B **Well Location:** MW-9B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up ~2.30 ft. (from ground)

Riser Stick-up (from ground) ~2.20 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 42.20 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 20.68 ft.

Height of Water Column 21.52 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 3.507 gallon(s)

3 volumes = 10.52
5 volumes = 17.53

17.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Exceeded pumps lift capability at 6 & 10 gals, continued on page 2 on 8/29/02

Purge Volume (gal)	2	4	6	8	10		
pH (Std. Units)	9.25	9.17	8.53	8.10	8.21		
Eh (millivolts)	-118.8	-160.3	-217.3	-136.0	-138.8		
Conduct. (µs/cm)	596	616	1143	1573	1558		
Temp. (C)	11.95	12.25	12.07	11.69	11.84		
Turb. (NTU)							
DO (mg/l)	0.25	0.27	0.17	0.74	1.90		
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Light brown

Odor: None noted

Other: ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL		___	___
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml		___	___
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly		___	___
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly		___	___
☒ Chloride	YES (NO)	4° C	1x250 ml poly		___	___
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly		___	___

AF-206/C

Signed: [signature]

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 7	**Project No:** 19045-007	**Date/Time:** 8/29/02, 1030	Sheet 2 of 2
Contractor Personnel:		**TRC Personnel:** C. Foster	

Sample No.: MW-09B **Well Location:** MW-09B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	bkg	

Protective Casing Stick-up ~2.3 ft. (from ground)

Riser Stick-up (from ground) ~2.2 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 42.20 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 20.68 ft.

Height of Water Column 21.52 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 3.507 gallon(s)

3 volumes = 10.52

5 volumes = 17.53

17.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS

Purge Volume (gal)	11	12	13	14	15	16	17	17.5
pH (Std. Units)	8.17	8.12	8.0	7.97	7.97	8.13	8.25	8.27
Eh (millivolts)	125.7	122.3	76.2	-1.3	-72.5	-80.5	-84.5	-80.7
Conduct. (µs/cm)	1887	1808	1801	1797	1860	1747	1657	1623
Temp. (C)	11.98	11.69	11.85	12.31	12.21	12.24	12.04	12.04
Turb. (NTU)								
DO (mg/l)	3.54	2.24	2.03	1.52	1.53	2.05	2.27	2.97
Carbon Dioxide (mg/L)								

Sample Description

Clear ☒ Turbid ☐

Color Light brown

Odor None noted

Other ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS recorder & flow-through cell. Ground Water Samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	8/29/02, 1100	———	———
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	8/29/02, 1100	———	———
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	8/29/02, 1100	———	———
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	8/29/02, 1100	———	———
☒ Chloride	YES (NO)	4° C	1x250 ml poly	8/29/02, 1100	———	———
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	8/29/02, 1100	———	———

AF-208/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling – Round 8	**Project No:** 19045-007	**Date/Time:** 10/08/02; 1420	Sheet 1 of 1
Contractor Personnel:		**TRC Personnel:** C. Rudzinski	

Sample No.: MW-01 **Well Location:** MW-01

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.35 ft. (from ground)

Riser Stick-up (from ground) 2.25 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 18.10 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 12.94 ft.

Height of Water Column 5.16 ft. x

☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 0.8 gallon(s)

3 volumes = 2.4

5 volumes = 4.0

4.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 13.8 feet during purge.

Purge Volume (gal)	1.0	1.5	2.0	2.5	3.0	3.5	4.0
pH (Std. Units)	7.50	7.42	7.41	7.38	7.37	7.37	7.36
Eh (millivolts)	11.0	1.0	-3.0	-5.2	-6.2	-5.7	-5.0
Conduct. (µs/cm)	560	557	556	558	558	560	560
Temp. (C)	12.62	12.55	12.49	12.49	12.49	12.45	12.44
Turb. (NTU)							
DO (mg/l)	0.62	0.42	0.38	0.36	0.35	0.32	0.31
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Mod. turbid at start

Odor: None noted

Other: Clear at 1 gal

SAMPLE EQUIP./DECON.	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/08/02, 1515	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/08/02, 1515	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/08/02, 1515	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/08/02, 1515	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/08/02, 1515	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/08/02, 1515	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC

Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 8	**Project No:** 19045-007	**Date/Time:** 10/08/02, 1255	Sheet 1 of 1
Contractor Personnel:		**TRC Personnel:** C. Rudzinski	

Sample No.: MW-1B **Well Location:** MW-1B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 1.90 ft. (from ground)

Riser Stick-up (from ground) 1.65 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 47.08 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 12.14 ft.

Height of Water Column 34.94 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = r^2 h(0.163)]

Volume of Water In Well = 5.6 gallon(s)

3 volumes = 16.8
5 volumes = 28.0

17.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Exceeded pumps lift capability at 15.5 gal. Let recharge 2Xs to purge 3 volumes.

Purge Volume (gal)	5.0	7.5	10.0	12.5	15.0	17.5	
pH (Std. Units)	8.02	8.19	8.55	8.91	9.03	9.16	
Eh (millivolts)	-211	-243	-300	-343	-331	-276	
Conduct. (µs/cm)	3276	3250	3210	3166	3135	3130	
Temp. (C)	10.50	10.70	10.60	10.70	11.20	11.10	
Turb. (NTU)							
DO (mg/l)	0.26	0.27	0.19	0.18	0.40	0.55	
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color Clear

Odor None noted

Other ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Groundwater samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, Poland spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/09/02;0820	Very slow	-------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/09/02;0820	recharge.	-------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/09/02;0820	Only recovered	-------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/09/02;0820	0.4 feet over-	-------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/09/02;0820	night.	-------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/09/02;0820		-------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/11/02, 0930 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Rudzinski

Sample No.: MW-02 **Well Location:** MW-02

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up (from ground) Flushmount _____ ft.

Riser Stick-up (from ground) Flushmount _____ ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ _____

WELL MATERIAL ☒ PVC ☐ SS ☐ _____

Well Depth 11.10 ft. ☒ top of riser ☐ top of casing ☐ _____ ☒ measured ☐ historical

Water Depth 5.17 ft.

Height of Water Column 5.93 ft. x

[Vol. = r^2 h(0.163)]

☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

Volume of Water in Well = 0.95 gallon(s)

3 volumes = 2.9

5 volumes = 4.75

5.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 5.4 feet during purge

Purge Volume (gal)	1.0	2.0	3.0	3.5	4.0	4.5	5.0
pH (Std. Units)	6.85	6.90	6.91	6.91	6.91	6.90	6.90
Eh (millivolts)	-108	-115	-120	-123	-123	-124	-124
Conduct. (µs/cm)	4700	3324	2708	2631	2632	2602	2609
Temp. (C)	17.96	18.23	18.33	18.35	18.35	18.36	18.36
Turb. (NTU)							
DO (mg/l)	1.73	0.96	0.76	0.70	0.68	0.63	0.62
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Clear

Odor: Septic Odor

Other: _____

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
_____	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/11/02, 1005	-------	-------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/11/02, 1005	-------	-------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/11/02, 1005	-------	-------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/11/02, 1005	-------	-------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/11/02, 1005	-------	-------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/11/02, 1005	-------	-------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/10/02, 1050 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Rudzinski

Sample No.: MW-03 **Well Location:** MW-03

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.61 ft. (from ground)

Riser Stick-up (from ground) 2.5 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 16.80 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 10.56 ft.

Height of Water Column 6.24 ft. x

[Vol. = $r^2 h(0.163)$]

☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

Volume of Water in Well = 1.0 gallon(s)

3 volumes = 3.0

5 volumes = 5.0

3.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Well to dryness at 2.5 gallons. Had to let recover 2Xs to purge 3 volumes.

Purge Volume (gal)	0.5	1.0	1.5	2.0	2.5	3.0	3.5
pH (Std. Units)	7.32	7.23	7.20	7.19	7.25	7.46	7.37
Eh (millivolts)	54.0	60.1	65.6	67.2	46.0	70.0	75.4
Conduct. (µs/cm)	800	806	813	827	848	821	817
Temp. (C)	15.33	15.01	14.94	14.51	15.49	15.00	14.42
Turb. (NTU)							
DO (mg/l)	1.31	0.71	0.56	0.47	1.44	3.60	4.60
Carbon Dioxide (mg/L)							

Sample Description

Clear ☐ Turbid ☐

Color: Mod turbid lt brown

Odor: None noted

Other: ---

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/10/02;1600	---	---
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/10/02;1600	---	---
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/10/02;1600	---	---
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/10/02;1600	---	---
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/10/02;1600	---	---
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/10/02;1600	---	---

AF-206/C

Signed:

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/10/02, 1425 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Rudzinski

Sample No.: MW-3B **Well Location:** MW-3B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.5 ft. (from ground)

Riser Stick-up (from ground) 2.4 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 37.50 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 13.57 ft.

Height of Water Column 23.93 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 4.0 gallon(s)

3 volumes = 12.0

5 volumes = 20.0

12 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 18.2 feet during purge.

Purge Volume (gal)	3.0	5.0	7.0	9.0	10.0	11.0	12.0
pH (Std. Units)	8.04	8.02	8.02	8.03	8.03	8.03	8.03
Eh (millivolts)	-199	-208	-219	-217	-215	-213	-211
Conduct. (µs/cm)	451	449	455	459	461	463	463
Temp. (C)	11.49	11.57	11.66	11.60	11.63	11.61	11.63
Turb. (NTU)							
DO (mg/l)	0.21	0.19	0.18	0.17	0.17	0.17	0.16
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Clear

Odor: None noted

Other:

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/10/02;1555	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/10/02;1555	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/10/02;1555	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/10/02;1555	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/10/02;1555	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/10/02;1555	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/10/02, 0850 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Rudzinski

Sample No.: MW-04 **Well Location:** MW-04

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 3.0 ft. (from ground)

Riser Stick-up (from ground) 2.8 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 16.30 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 13.13 ft.

Height of Water Column 3.17 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 0.5 gallon(s)

3 volumes = 1.5
5 volumes = 2.5

1.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Well to dryness at 1 gallon; v. slow recharge; had to let recover 2Xs to purge 3 volumes

Purge Volume (gal)	0.5	1.0	1.5				
pH (Std. Units)	7.30	7.0	No				
Eh (millivolts)	13.6	111.7	Reading				
Conduct. (µs/cm)	1069	940	Had to				
Temp. (C)	14.38	14.77	purge				
Turb. (NTU)			last 0.5				
DO (mg/l)	6.10	2.79	gals with				
Carbon Dioxide (mg/L)			bailer				

Sample Description

Clear ☐ Turbid ☒

Color: Turbid red-brown

Odor: None noted

Other: ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing & low flow controller. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260,	YES (NO)	4° C/HCl	2x40 mL	10/10/02, 1730	------	------
☐ TOC	YES (NO)	4C/H2SO4	3x40 ml	Very slow	------	------
☐ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	recovery. Not	------	------
☐ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	enough volume to	------	------
☐ Chloride	YES (NO)	4° C	1x250 ml poly	collect remaining	------	------
☐ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	parameters.	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 8	**Project No:** 19045-007	**Date/Time:** 10/10/02, 0810	Sheet 1 of 1
Contractor Personnel:		**TRC Personnel:** C. Rudzinski	

Sample No.: MW-4B **Well Location:** MW-4B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.7 ft. (from ground)

Riser Stick-up (from ground) 2.6 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 40.95 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 17.55 ft.

Height of Water Column 23.40 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 3.75 gallon(s)

3 volumes = 11.2
5 volumes = 19.0

11.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Well to dryness at 6 gallons; poor recharge; had to let recharge 3Xs to purge 3 volumes.

Purge Volume (gal)	2.0	4.0	6.0	8.0	9.0	10.0	11.5
pH (Std. Units)	8.47	8.56	8.26	8.13	7.88	7.89	8.01
Eh (millivolts)	-106	-173	-21.9	-96.0	-70.0	-90.0	-99.0
Conduct. (µs/cm)	850	795	2833	1670	3552	3416	2580
Temp. (C)	10.99	11.75	13.51	11.23	11.82	11.36	11.23
Turb. (NTU)							
DO (mg/l)	1.04	0.49	3.00	2.47	2.28	1.25	2.26
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Clear

Odor: Sulphur

Other: ___

SAMPLE EQUIP./DECON.	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing.

Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/10/02, 1215	-------	-------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/10/02, 1215	-------	-------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/10/02, 1215	-------	-------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/10/02, 1215	-------	-------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/10/02, 1215	-------	-------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/10/02, 1215	-------	-------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling – Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/11/02, 0745 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Rudzinski

Sample No.: MW-05 **Well Location:** MW-05

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.12 ft. (from ground)

Riser Stick-up (from ground) 1.95 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ____

WELL MATERIAL ☒ PVC ☐ SS ☐ ____

Well Depth 15.05 ft. ☒ top of riser ☐ top of casing ☐ ____ ☒ measured ☐ historical

Water Depth 8.23 ft.

Height of Water Column 6.82 ft. x

[Vol. = r^2 h(0.163)]

☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

Volume of Water in Well = 1.1 gallon(s)

3 volumes = 3.3

5 volumes = 5.5

5.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 8.3 feet during purge.

Purge Volume (gal)	1.0	2.0	3.0	3.5	4.0	4.5	5.0
pH (Std. Units)	7.01	6.98	6.99	6.99	6.99	6.99	6.99
Eh (millivolts)	211	210	208	207	207	206	206
Conduct. (µs/cm)	1045	1042	1050	1049	1049	1050	1050
Temp. (C)	14.93	14.79	14.73	14.75	14.74	14.74	14.75
Turb. (NTU)							
DO (mg/l)	2.09	0.59	0.45	0.44	0.40	0.39	0.38
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Slightly turbid at start

Odor: None noted

Other: Clear at 1 gallon

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
____	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/11/02, 0810	----	----
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/11/02, 0810	----	----
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/11/02, 0810	----	----
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/11/02, 0810	----	----
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/11/02, 0810	----	----
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/11/02, 0810	----	----

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/09/02, 1545 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C.Rudzinski

Sample No.: MW-06 **Well Location:** MW-06

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.50 ft. (from ground)

Riser Stick-up (from ground) 2.40 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.32 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.91 ft.

Height of Water Column 8.41 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ ___ gal/ft (___ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.4 gallon(s)

3 volumes = 4.2

5 volumes = 7.0

7.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 9.0 feet during purge.

Purge Volume (gal)	1.0	2.0	3.0	4.0	5.0	6.0	7.0
pH (Std. Units)	7.40	7.50	7.57	7.60	7.61	7.60	7.61
Eh (millivolts)	-114	-111	-114	-121	-124	-126	-127
Conduct. (µs/cm)	2100	1961	1930	1923	1921	1920	1917
Temp. (C)	14.63	14.95	15.09	15.13	15.14	15.14	15.14
Turb. (NTU)							
DO (mg/l)	0.68	0.51	0.44	0.42	0.38	0.36	0.35
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color Turbid red-brown at start

Odor Septic

Other Clear at 1 gallon

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/09/02;1600	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/09/02;1600	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/09/02;1600	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/09/02;1600	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/09/02;1600	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/09/02;1600	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 8	**Project No:** 19045-007	**Date/Time:** 10/11/02, 1100	Sheet 1 of 1
Contractor Personnel:		**TRC Personnel:** C. Rudzinski	

Sample No.: MW-07/ 7D (duplicate) **Well Location:** MW-07/ 7D (duplicate)

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.55 ft. (from ground)

Riser Stick-up (from ground) 2.40 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ____

WELL MATERIAL ☒ PVC ☐ SS ☐ ____

Well Depth 15.50 ft. ☒ top of riser ☐ top of casing ☐ ____ ☒ measured ☐ historical

Water Depth 7.70 ft.

Height of Water Column 7.80 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = r^2 h(0.163)]

Volume of Water in Well = 1.25 gallon(s)

3 volumes = 3.75
5 volumes = 6.25

7.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 8.1 feet during purge.

Purge Volume (gal)	1.0	2.0	3.0	4.0	5.0	6.0	7.0
pH (Std. Units)	7.68	7.74	7.83	7.83	7.85	7.86	7.86
Eh (millivolts)	-129	-133	-139	-142	-146	-147	-149
Conduct. (µs/cm)	2830	2773	2705	2682	2658	2648	2637
Temp. (C)	15.47	15.51	15.49	15.48	15.50	15.50	15.50
Turb. (NTU)							
DO (mg/l)	2.08	1.59	1.26	1.12	0.94	0.88	0.80
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐
Color Light yellow
Odor Sewer odor
Other ____

SAMPLE EQUIP./DECON.	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
____	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	12x40 mL	10/11/02;1130	------	------
☒ TOC	YES (NO)	4C/H2SO4	6x40 ml	10/11/02;1130	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	2x500 ml poly	10/11/02;1130	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	2x250 ml poly	10/11/02;1130	------	------
☒ Chloride	YES (NO)	4° C	2x250 ml poly	10/11/02;1130	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	2x500 ml poly	10/11/02;1130	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL
GW Sampling - Round 8
Project No: 19045-007
Date/Time: 11/08/02, 1630
Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Rudzinski

Sample No.: MW-08 **Well Location:** MW-08

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up 2.10 ft. (from ground)

Riser Stick-up (from ground) 1.95 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ____

WELL MATERIAL ☒ PVC ☐ SS ☐ ____

Well Depth 18.20 ft. ☒ top of riser ☐ top of casing ☐ ____ ☒ measured ☐ historical

Water Depth 9.84 ft.

Height of Water Column 8.36 ft. x

[Vol. = r^2 h(0.163)]

☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

Volume of Water in Well = 1.4 gallon(s)

3 volumes = 4.2
5 volumes = 7.0

7.0 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 10.1 feet during purge.

Purge Volume (gal)	1.5	3.0	4.5	6.0	7.0			
pH (Std. Units)	6.55	6.55	6.56	6.56	6.56			
Eh (millivolts)	-91.1	-95.4	-97.8	-98.9	-99.0			
Conduct. (µs/cm)	23190	23333	23259	23252	23260			
Temp. (C)	15.61	15.65	15.66	15.66	15.66			
Turb. (NTU)								
DO (mg/l)	0.88	0.88	0.87	0.85	0.85			
Carbon Dioxide (mg/L)								

Sample Description

Clear ☒ Turbid ☐
Color Clear
Odor None noted
Other ____

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
____	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/08/02, 1715	------	------
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/08/02, 1715	------	------
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/08/02, 1715	------	------
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/08/02, 1715	------	------
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/08/02, 1715	------	------
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/08/02, 1715	------	------

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record Ground Water

Project: AKZO NOBEL GW Sampling - Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/09/02, 1005 | Sheet 1 of 1

Contractor Personnel: | **TRC Personnel:** C. Rudzinski

Sample No.: MW-09 | Well Location: MW-09

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

Protective Casing Stick-up 2.30 ft. (from ground)

Riser Stick-up (from ground) 2.20 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ___

WELL MATERIAL ☒ PVC ☐ SS ☐ ___

Well Depth 17.68 ft. ☒ top of riser ☐ top of casing ☐ ___ ☒ measured ☐ historical

Water Depth 8.80 ft.

Height of Water Column 8.88 ft. x ☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

[Vol. = $r^2 h(0.163)$]

Volume of Water in Well = 1.4 gallon(s)

3 volumes = 4.2
5 volumes = 7.0

5.0 Total gallons Purged

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

FIELD WATER QUALITY MEASUREMENTS Groundwater stabilized at 15.8 feet during purge.

Purge Volume (gal)	1.0	2.0	3.0	4.0	4.5	5.0	
pH (Std. Units)	7.12	7.07	7.03	7.17	7.17	7.17	
Eh (millivolts)	224	223	222	201	205	207	
Conduct. (µs/cm)	1678	1625	1767	1444	1439	1431	
Temp. (C)	15.32	16.38	16.78	16.22	16.25	16.22	
Turb. (NTU)							
DO (mg/l)	2.90	0.87	0.63	1.53	1.49	1.49	
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Clear

Odor: None noted

Other: ___

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
___	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/09/02;1035	----	----
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/09/02;1035	----	----
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/09/02;1035	----	----
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/09/02;1035	----	----
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/09/02;1035	----	----
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/09/02;1035	----	----

AF-206/C

Signed: _____

Rev: 8 July 1991

TRC
Field Data Record
Ground Water

Project: AKZO NOBEL GW Sampling - Round 8 | **Project No:** 19045-007 | **Date/Time:** 10/09/02, 1300 | Sheet 1 of 1

Contractor Personnel:

TRC Personnel: C. Rudzinski

Sample No.: MW-9B **Well Location:** MW-9B

WELL INTEGRITY

	YES	NO
Protect. Casing Secure	☒	☐
Concrete Collar Intact	☒	☐
PVC Stick-up Intact	☒	☐
Well Cap Present	☒	☐
Security Lock Present	☒	☐

OVA/PID SCREENING MEAS.

	Total VOC's	Methane
Background	0.0 ppm	
Well Mouth	0.0 ppm	

Protective Casing Stick-up (from ground) ~2.30 ft.

Riser Stick-up (from ground) ~2.20 ft.

WELL DIAMETER ☒ 2 inch ☐ 4 inch ☐ 6 inch ☐ ____

WELL MATERIAL ☒ PVC ☐ SS ☐ ____

Well Depth 42.20 ft. ☒ top of riser ☐ top of casing ☐ ____ ☒ measured ☐ historical

Water Depth 18.98 ft.

Height of Water Column 23.26 ft. x [Vol. = $r^2 h(0.163)$]

☒ .16 gal/ft (2 in.) ☐ .65 gal/ft (4 in.) ☐ 1.5 gal/ft (6 in.) ☐ __ gal/ft (__ in.)

Volume of Water in Well = 3.75 gallon(s)

3 volumes = 11.25
5 volumes = 18.75

11.5 Total gallons Purged

FIELD WATER QUALITY MEASUREMENTS Exceeded pumps lift capability at 7 gallons. Let recharge 2Xs to purge 3 volumes.

Purge Volume (gal)	4.0	6.0	7.0	8.0	9.0	10.0	11.5
pH (Std. Units)	8.84	8.89	8.84	8.65	8.26	8.27	8.27
Eh (millivolts)	-252	-249	-241	-220	-159	-161	-163
Conduct. (µs/cm)	935	918	973	1076	1714	1679	1667
Temp. (C)	12.36	12.46	12.41	12.14	12.06	12.02	12.02
Turb. (NTU)							
DO (mg/l)	0.28	0.34	0.30	0.28	0.53	0.37	0.34
Carbon Dioxide (mg/L)							

Sample Description

Clear ☒ Turbid ☐

Color: Clear

Odor: None noted

Other: ____

SAMPLE EQUIP./DECON.

	PURGE	SAMPLE
Peristaltic Pump	☐	☐
Submersible Pump	☒	☐
Bailer	☐	☒
Waterra	☐	☐
PVC/Silicon Tubing	☐	☐
Teflon/Silicon Tubing	☐	☐
Air Lift	☐	☐
In-line Filter	☐	☐
Pressure Vacuum Filter	☐	☐
Measuring Tape	☐	☐
____	☐	☐

EQUIPMENT ID

Whale pump with dedicated tubing. Field measurements were recorded with a YSI Model 600 XL Sonde and Model 650 MDS datalogger & flow-through cell. Ground water samples were collected with a dedicated teflon bailer.

DESCRIPTION OF DECON. PROC.

Decontaminated whale pump by pumping 2 to 3-gallons of alconox/spring water mixture, spring water rinse, 1% nitric, methanol rinse, air dry and final Poland Spring water rinse.

DECON. FLUID USED

Water	☒
Alconox	☒
PS Water	☒
HNO_3 (1 or 10%)	☒
PS Water	☒
Methanol	☒
Air Dry	☒
PS Water	☒

ANALYTICAL PARAMETERS	Filtered (circle)	Preservation Method	Volume Required	Time of Collection	CLP Sample #	CLP Case #
☒ VOAs 8260, RSK-175	YES (NO)	4° C/HCl	6x40 mL	10/09/02; 1400	----	----
☒ TOC	YES (NO)	4C/H2SO4	3x40 ml	10/09/02; 1400	----	----
☒ Total Fe and Mn	YES (NO)	4° C/HNO3	1x500 ml poly	10/09/02; 1400	----	----
☒ NH3, NO2, NO3	YES (NO)	4° C/H2SO4	1x250 ml poly	10/09/02; 1400	----	----
☒ Chloride	YES (NO)	4° C	1x250 ml poly	10/09/02; 1400	----	----
☒ Dissolved Fe & Mn	(YES) NO	4° C/HNO3	1x500 ml poly	10/09/02; 1400	----	----

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Rev: 8 July 1991

Signed: _____

TRC

Customer-Focused Solutions