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report.HW.932063.2001-02-06.Annual_Report_Eighth.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

Olin

P. O. BOX 248, 1186 LOWER RIVER ROAD, NW, CHARLESTON, TN 37310-0248

(423) 336-4000 FAX: (423) 336-4183

February 6, 2001

Mr. Michael J. Hinton, P.E.
Environmental Engineer II
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203-2999

Subject: **Charles Gibson Site**
NYSDEC Registry No. 9-32-063
Eighth Annual Report - 2000

Dear Mr. Hinton:

Enclosed are three copies of the Eighth Annual Report - 2000 for the referenced site. This report summarizes the activities performed during 2000 for the operations and maintenance of the containment remedy for the site and the ground water monitoring program outside of the containment area.

The following is a summary of major activities that occurred during 2000.

The Operation and Maintenance Manual for the Gibson Site was updated and issued in June 2000. The manual reflects current activities being performed for the operation and maintenance of the containment remedy for the Site and the ground water monitoring program outside the containment area.

Semi-annual groundwater sampling events were performed during May and October 2000. Annual sediment sampling was performed in October 2000. The first annual sampling and analysis of leachate was completed in October 2000.

Discharges to the City of Niagara Falls Wastewater Treatment Facility totaled 67,236 gallons.

If you have any questions, please call me at 423/336-4381.

Sincerely,
OLIN CORPORATION

Lorraine M. Miller

Lorraine M. Miller
Sr. Associate Environmental Specialist

cc: C. M. Richards via e-mail
M. L. Fries via e-mail
R. K. Hall via e-mail
B. H. Brayley

dm:sites/P&T(Gibson)/ENV4060/O&M/Eighth Annual Report 2000

EIGHTH ANNUAL REPORT

2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063

PREPARED BY OLIN CORPORATION

FEBRUARY 2001

Introduction

This is the Eighth Annual Report from Olin Corporation (Olin) for the Charles Gibson Site (Pine and Tuscarora Site), located in Niagara Falls, New York. This report summarizes the activities performed during 2000 for the operations and maintenance of the containment remedy for the Site and the ground water monitoring program outside of the containment area.

Background

The Charles Gibson Site (Site) is located approximately four miles east of downtown Niagara Falls, New York. The Site comprises an area of approximately two acres of land in Niagara County bordered on the south by private property, on the west by Tuscarora Road and on the north and east by Cayuga Creek. The Site is a fully remediated waste site currently surrounded by a fence.

Construction of the remedy on the Site concluded in 1990. The remedy consisted of rerouting Cayuga Creek around and away from the waste, installation of a fully circumscribed soil-bentonite slurry wall barrier and installation of a double flexible membrane liner cap with a perimeter collection drain system. The first year of operations and maintenance (O&M) of the containment remedy for the Site and the ground water monitoring program began in 1993.

Discussion

The Stipulation and Consent Judgment, CIV 83-1400, and its modification, CIV 83-1400C, (the Agreement) listed the following elements to be included in the required remediation plan for the Site (Plan C):

1. Quarterly ground water monitoring for 30 years (revised in 1997 to semiannual);
2. Sample collection and analysis of creek water during high and low water periods annually and of creek sediments annually for 30 years;
3. Establishment of an upward hydraulic gradient within the containment area, unless Olin can demonstrate by clear and convincing evidence the establishment of the same is unnecessary or inappropriate to the accomplishment of the goals set forth in paragraph 4(a) of the stipulation;
4. Acquisition by Olin of easements which would permit the required monitoring;
5. Provisions for protection of the Site from disturbance which might increase the threat of contamination migration, including regular inspection of the site;
6. Provisions for the design and implementation of a contingency plan in the event that migration of the contaminants occurs despite the implementation of the containment remediation plan;
7. Containment or removal of the contaminants deposited or caused to be deposited by Olin which have migrated off-Site consistent with the goals of paragraph 4(a);
8. Fiscal arrangements, guarantees, or the provision of financial assurances sufficient to ensure that Olin possess the financial ability to perform the containment remedial plan and monitoring.

The Agreement includes a provision in the event that after seven years following the delivery of a Release of Liability (issued December 15, 1992), Olin demonstrates that conditions at the Site are such that the stated frequency or duration of the requirements of elements 1, 2, or 5 are no longer necessary to determine whether the remediation is effective, Olin may reduce the frequency and /duration of such monitoring or inspections. Additionally, if after seven years following the Release of Liability, Olin is able to demonstrate that element 8 is no longer necessary to ensure performance, Olin may alter the fiscal arrangements appropriately.

The approved Plan C, Operations and Maintenance Manual for Olin Corporation, Pine and Tuscarora Site, Niagara Falls, New York, June 10,1992, (as modified) (O&M Manual), provides details on the O&M of the containment remedy on the northern portion of the site and includes provisions for site control and environmental monitoring. The O&M Manual was updated in June 2000 to reflect current activities being performed for the operation and maintenance of the containment remedy for the Site and the ground water monitoring program outside the containment area. The yearly inspection and sampling schedule for the Site included in the O&M Manual (June 2000), Appendix C is included in this report for reference (Attachment 1).
The O&M Manual addresses the required elements as set forth in the Agreement. Element 4, acquisition of easements, is a completed task. Element 6, a contingency plan, is addressed in the O&M Manual. Element 7, containment of the contaminants, has been achieved and is being monitored for effectiveness. Element 8, a provision of financial assurance, is being met. This report discusses elements 1, 2, 3, and 5 of the Agreement.

Element 1) **Semi-annual ground water monitoring.** This monitoring requirement for hexachlorobenzene (HCB) was modified in 2000 since HCB has never been detected in ground water throughout the monitoring program. Beginning in 2000, hexachlorobenzene (HCB) will be analyzed every other year. The sampling events will alternate between the spring and fall events. The next HCB sampling is scheduled for October 2002.

During May 2000, monitor wells MW-A3, MW-1R, MW-2, MW-4, and MW-5 were sampled for the site compounds alpha-BHC, beta-BHC, gamma-BHC, delta-BHC and hexachlorobenzene. The October 2000 sampling of the same wells included analysis for the BHC compounds. Analyses were performed using SW-846 Method 8080 (for BHC's) and SW-846 Method 8270 (for hexachlorobenzene). Sampling results indicate that concentrations of site compounds being monitored are similar to previous results.

Reports were submitted as appropriate to the New York State Department of Environmental Conservation (NYSDEC). The semi-annual ground water monitoring data summary from 1997 through 2000 is provided in Table 1. This time period represents the start of the semi-annual events. Records of ground water monitoring data related to this site are maintained at the Olin Niagara Falls Plant. These records are available for review and inspection by the State upon reasonable notice.

Element 2) **Annual creek sediment monitoring.** The monitoring requirements for sediment were modified in 2000 to delete the HCB compound since HCB has never been detected in sediment at either the upstream or downstream locations since the monitoring program began.

The annual sediment sampling occurred on October 4, 2000. Analytical results for the sediment samples collected were included in the Semi-Annual Ground Water Sampling and Annual Sediment Sampling Report, October 2000. This report was submitted to NYSDEC on January 5, 2001. The annual upstream and downstream sediment sampling results for the project-to-date are summarized in Tables 2 and 3.

The 2000 sediment sample data for site compounds were elevated when compared to 1999 data. The data are being reviewed due to changes in the concentrations from earlier sampling events. Results of the evaluation will be discussed with the NYSDEC project manager.

Element 3) **Establishment of an upward (inward) hydraulic gradient.** Quarterly ground water elevations were monitored at piezometer pairs P1/P2, P3/P4, and P5/P6 to maintain an inward hydraulic gradient in the containment area of the site. The data collected during each event is recorded on the Ground Water Elevation/Pumping Forms (Form 3.1). An evaluation of data from the piezometer pairs at the Site indicates that an inward hydraulic gradient is generally being maintained in the containment area of the site (Table 4). Water level elevations in Manhole A and Manhole B are monitored quarterly (Table 5).

Waters collected in the Site perimeter collection drain system are managed by direct discharge to the City of Niagara Falls Wastewater Treatment Facility. The Site is classified as a commercial/small industrial/residential user (CSIRU and does not require a permit. 67,276 gallons of ground water from the Site were discharged to the WWTF during 2000 (Table 6). A summary of yearly discharge volumes for the Site is provided in Table 7. The operation of the direct discharge system provides for more precise control of an inward gradient for the Site.

Annual leachate sampling and analysis for BHC's began in 2000 to replace the POTW sampling that was previously performed. HCB will be monitored every five years starting in 2000. The sampling location is Manhole B.

Element 5) **Site protection.** Quarterly site inspections were conducted to identify any potential problems with the physical structures and to ensure that the remedial measure components are operating effectively. Routine site maintenance included fertilizing, mowing and weeding the cap area. Fieldwork in 2000 also included replacing locks on the monitor wells and piezometers. General site conditions and security status were noted on the Inspection Form (Form 2.1) and addressed as appropriate. Records of all environmental monitoring data are maintained at the Niagara Falls Plant. These records are available for review and inspection by the State upon reasonable notice.

Conclusions:

The work performed for the Site during 2000 was reviewed and found to be in accordance with the approved O&M Manual for the Site (as modified). Ground water monitoring indicates there are no increased concentrations of the Site compounds being monitored. Evaluation of the ground water data generated during the 2000 monitoring year indicates that the containment remedy is effective. Sediment data is being evaluated against past sampling results. Results of the evaluation will be discussed with the NYSDEC project manager.

Table 1

Semi-annual Ground Water Summary

Monitor Well: MW –A3

	1997	1998		1999		2000	
Parameter	**September (*)**	**April**	**October**	**April**	**October**	**May**	**October**
Alpha-BHC	.059	.016J	.12	.0043J	-	.050U	.050U
Beta-BHC	.028J	.012J	.0092J	.053U	-	.012J	.050U
Gamma-BHC	.050U	.050U	.024J	.053U	-	.050U	.050U
Delta-BHC	.050U	.050U	.053U	.053U	-	.050U	.050U
Hexachlorobenzene	10U	10U	-	11U	-	11U	NR

Monitor Well: MW –1R

	1997	1998		1999		2000	
Parameter	**September (*)**	**April**	**October**	**April**	**October**	**May**	**October**
Alpha-BHC	.058	.085	.18	.072	.057	.028J	.099/.060
Beta-BHC	.053	.14	.20	.13	.080	.12	.19/.15
Gamma-BHC	.050U	.050U	.028J	.053U	.050UJ	.051U	.063J/.058U
Delta-BHC	.050U	.0042J	.053U	.0054J	.050U	.051U	.061U/.058U
Hexachlorobenzene	10U	10U	11U	11U	10U	10U	NR

Monitor Well: MW –2

	1997	1998		1999		2000	
Parameter	**September (*)**	**April**	**October**	**April**	**October**	**May**	**October**
Alpha-BHC	.050U	.050U	.053U	.053U	.050U	.029J	.054U
Beta-BHC	.050U	.050U	.053U	.053U	.050U	.098	,054U
Gamma-BHC	.050U	.050U	.053U	.053U	.050UJ	.052U	.054U
Delta-BHC	.050U	.050U	.053U	.053U	.050U	.052U	.054U
Hexachlorobenzene	10UJ	10U	11U	10U	10U	10U	NR

Notes: Concentrations in ug/l
- (*) Start of semi annual monitoring program
- U Not detected
- J Estimated value
- / Field Duplicates
- - Not enough water for analysis
- NR No longer required

Data has been validated

Table 1 (cont.)

Semi-annual Ground Water Summary

Monitor Well: MW –4

	1997	1998		1999		2000	
Parameter	September (*)	April	October	April	October	May	October
Alpha-BHC	.050/.060	.0030J	.053U	.0031J	.050U/.050U	.051U/.052U	.0069J
Beta-BHC	.055/.069	.016J	.045J	.017J	.066/.068	.045J/.062	.047J
Gamma-BHC	.050U/.050U	.050U	.053U	.053U	.050UJ/.050UJ	.051U/.052U	.050U
Delta-BHC	.050U/.050U	.050U	.053U	.053U	.050U/.050U	.051U/.052U	.050U
Hexachlorobenzene	10U/10U	10U	10U	10U	10U10U	10U/10U	NR

Monitor Well: MW –5

	1997 (*)	1998		1999		2000	
Parameter	September	April	October	April	October	May	October
Alpha-BHC	.059	.050U/.0066J	.053U/.053U	.0071J/.0071J	.045J	.010J	.013J
Beta-BHC	.050U	.0080J/.0084J	.053U/.053U	.053U/.053U	.050	.031J	.022J
Gamma-BHC	.050U	.050U/.050U	.053U/.053U	.053U/.053U	.0065J	.052U	.055U
Delta-BHC	.050U	.050U/.050U	.053U/.053U	.053U/.053U	.050U	.052U	.055U
Hexachlorobenzene	10U	10U/10U	11U/10U	11U/11U	10U	10U	NR

Notes: Concentrations in ug/l
- (*) Start of semi annual monitoring program
- U Not detected
- J Estimated value
- / Field Duplicates
- - Not enough water for analysis
- NR No longer required

Data has been validated

Table 2
Analytical Summary
Cayuga Creek
Annual Upstream Sediment Sampling

Parameter	1993 September	1994 June	1994 September	1995 August	1996 September	1997 September	1998 October	1999 October	2000 October
alpha-BHC	1.5 J	NS	6.1 U	8.1J	2.7J	5.3J	2.1J	8.9/7.4	3.5
beta-BHC	2.3 J	NS	2.2 J	12	6.1U	11	5.2	28/19	4.5J
gamma-BHC	6.0 U	NS	6.1 U	12 U	6.1U	2.5J	.31UJ	2.9J/.42J	2.3U
delta-BHC	6.0 U	NS	6.1 U	21	6.1U	4.0J	5.5	37/31	2.3U
HCB	500 U	NS	510 U	480 U	500U	330U	470U	480U/480U	NR

Notes:
Concentration in microgram/kilogram (ug/kg)
BHC = Hexachlorocyclohexane
HCB = Hexachlorobenzene
J = Estimated value.
U = Undetected at the concentration level specified
NS = Not sampled
NR – No longer required for this event
Data has been validated

Table 3
Analytical Summary
Cayuga Creek
Annual Downstream Sediment Sampling

Parameter	1993 September	1994 June	1994 September	1995 August	1996 September	1997 September	1998 October	1999 October	2000 October
alpha-BHC	2,200	5,300	720	790	5000	330	4800J/80000J	4800J	9600/13000
beta-BHC	390	1,800	82	83 J	600	580	1300J/12000J	1800	3000J/2700J
gamma-BHC	40 U	690	67 U	250 U	35J	44J	300UJ/690J	52J	1200U/1400U
delta-BHC	27 J	80 J	67 U	250 U	41J	60J	53J/5500UJ	190J	1200U/1400U
HCB	800 U	570 UR	550 U	420 U	330U	330U	520U/550U	510U	NR

Notes:
Concentration in microgram/kilogram (ug/kg)
BHC = Hexachlorocyclohexane
HCB = Hexachlorobenzene
J = Estimated value.
U = Undetected at the concentration level specified
R = Sample result rejected due to low surrogate recoveries caused by matrix interference
NR = No longer required for this event
Data has been validated

Table 4

2000 Quarterly Groundwater Elevations Summary

MH-A 562.54

Piezometer Pair	2/2/00	5/2/00	7/28/00	10/4/00
P1	564.48	565.61	566.59	566.05
P2	565.16	565.51	565.54	565.38
P3	566.44	567.84	567.41	567.34
P4	565.01	565.36	565.61	565.28
P5	568.90	568.28	569.10	563.46
P6	567.48	562.91	567.74	563.52

Note: Measurement units are in feet.
Piezometers P1, P3, P5 are outside the slurry wall.
Piezometers P2, P4, P6 are located within the containment area.
Discharge system pumped on 1/4/00, 4/10/00, 4/11/00, 6/23/00, 10/18/00

Table 5

Manhole Monitoring
2000 Water Elevations (ft.)

Date	Manhole A	Manhole B	Comments
2/2/00	562.54	562.75	Site visit by NYSDEC
5/2/00	562.85	562.91	Semiannual ground water sampling
7/28/00	562.96	563.03	Site visit
10/4/00	563.46	563.52	Semiannual GW sampling

Notes:
Manhole monitoring:

- Maintain water level below 565 feet to prevent hydrostatic pressure buildup under concrete slab.
- Pump Manhole B as required to maintain an inward gradient. (This pumping requirement is addressed by the operation of the direct discharge system which became operational in March 1997.)

Table 6

Direct Discharges from the Site - 2000

Monitoring Period	Date of Flow	Discharge Volume (Gallons)
1 QTR 00 (JAN - MAR)	1/4/2000	22930
2 QTR 00 (APR - JUN)	4/10/2000 4/11/2000 6/23/2000	17630 4600 22050
3 QTR 00 (JUL – SEP)		No discharges
4 QTR 00 (OCT – DEC)	10/18/2000	26
TOTALS		**67,236**

Notes:
City of Niagara Falls reclassified site wastewater discharge permit from significant industrial user (SIU) to commercial /small industrial/residential user (CSIRU). SIU permit was rescinded by City of Niagara Falls on September 14, 1999. POTW Monitoring and reporting requirements are terminated
October flow was test of reinstallation of flow meter.

Table 7

Summary of Yearly Discharge Volumes

Date	Volume (gallons)
1991	104,120
1992	76,562
1993	77,797
1994	69,724
1995	56,940
1996	77,512
1997(*)	64,687
1998	51,070
1999	140,860
2000	**67,236**
TOTALS	**786,508**

(*) Represents start of operation of direct discharge system

ATTACHMENT 1

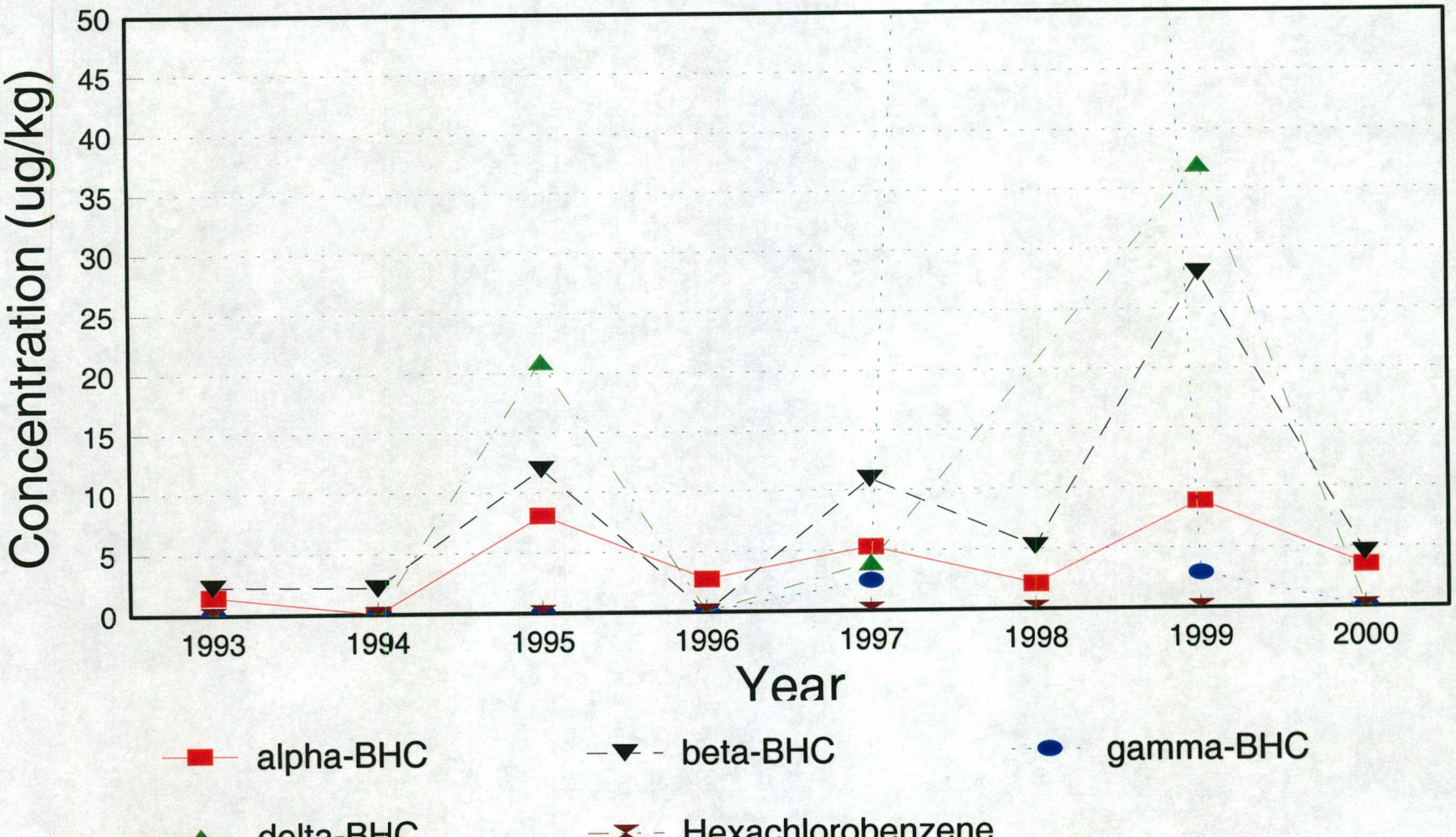
Revised: September 25, 2000

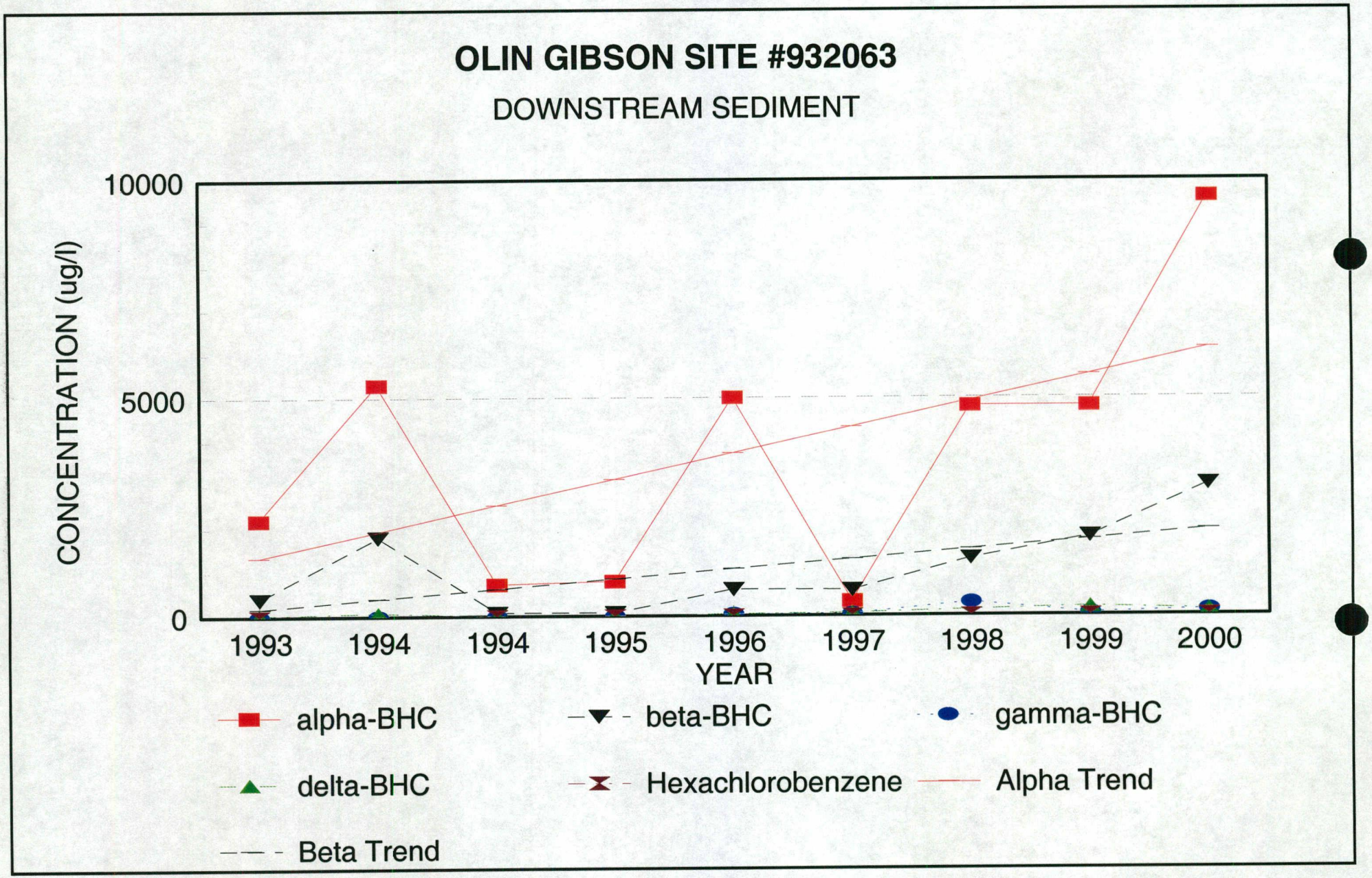
INSPECTION AND SAMPLING SCHEDULE
GIBSON SITE
NIAGARA FALLS, NEW YORK

Quarterly	Site Inspection (including Site Cover/Cap, Site Fence, Creek Riprap, Site Structures, CPVC Drain/Sump System).
Quarterly	Piezometer and sump groundwater level elevation measurements.
Semi-Annually	Groundwater monitoring well sampling (April and October) for BHC isomers.
Annually	Cayuga Creek sediment sampling (October) for BHC isomers.
Annually	Leachate sample collection and analysis (Manhole B) for BHC isomers (starting in 2000).
Annually	Annual report to NYSDEC (January).
Biennially	Groundwater monitoring well sampling (starting in April 2000) for HCB. The biennial sampling events following 2000 will alternate seasonally between April and October sampling. Next HCB sampling is October 2002.
Every Five Years in 2000).	Leachate sample collection and analysis (Manhole B) (for HCB) (starting

OLIN GIBSON SITE #932063

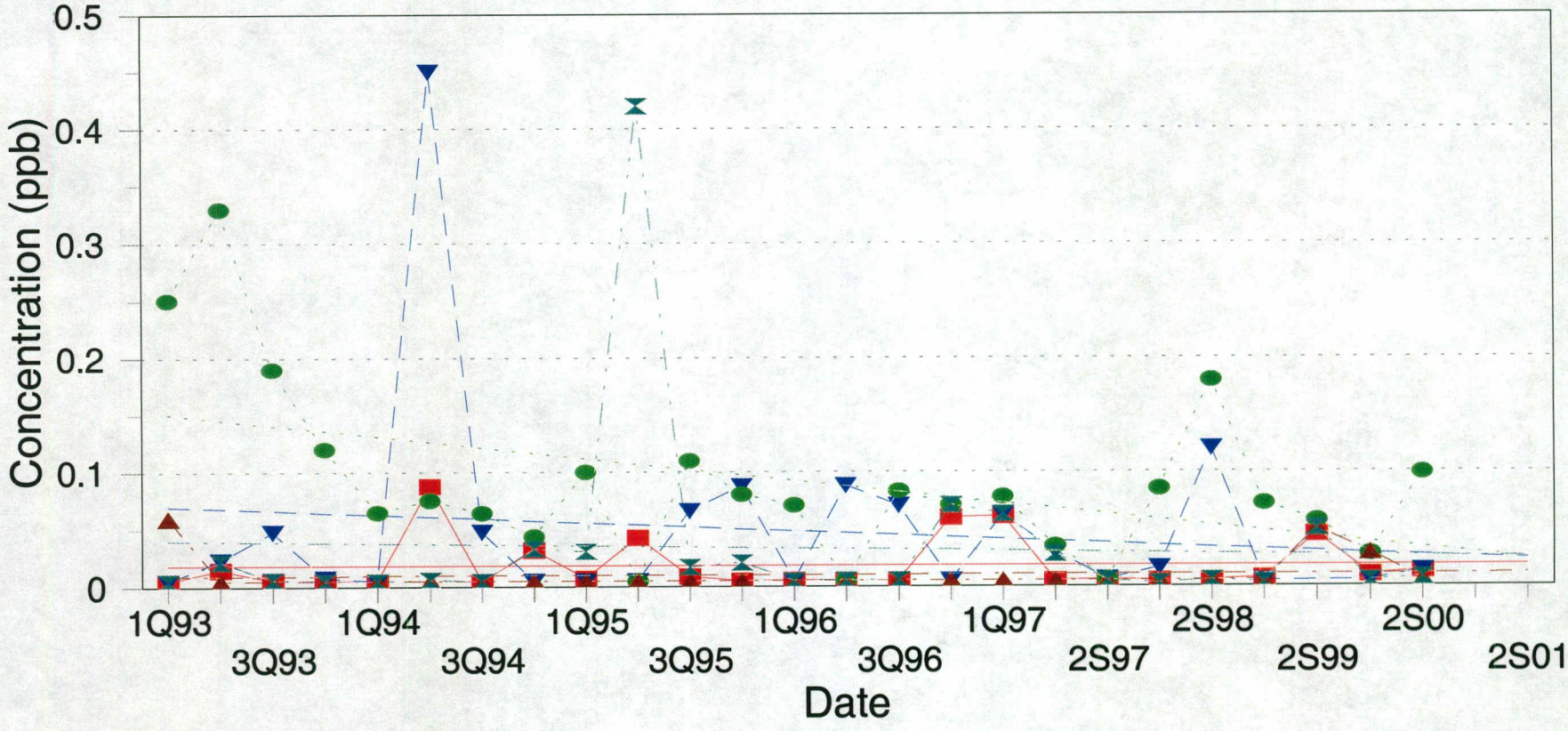
UPSTREAM SEDIMENT




OLIN GIBSON SITE #932063
DOWNSTREAM SEDIMENT
CONCENTRATION (ug/l)
10000
5000
0
1993
1994
1994
1995
1996
1997
1998
1999
2000
YEAR
alpha-BHC
beta-BHC
gamma-BHC
delta-BHC
Hexachlorobenzene
Alpha Trend
Beta Trend

Gibson Site #932063

alpha - BHC

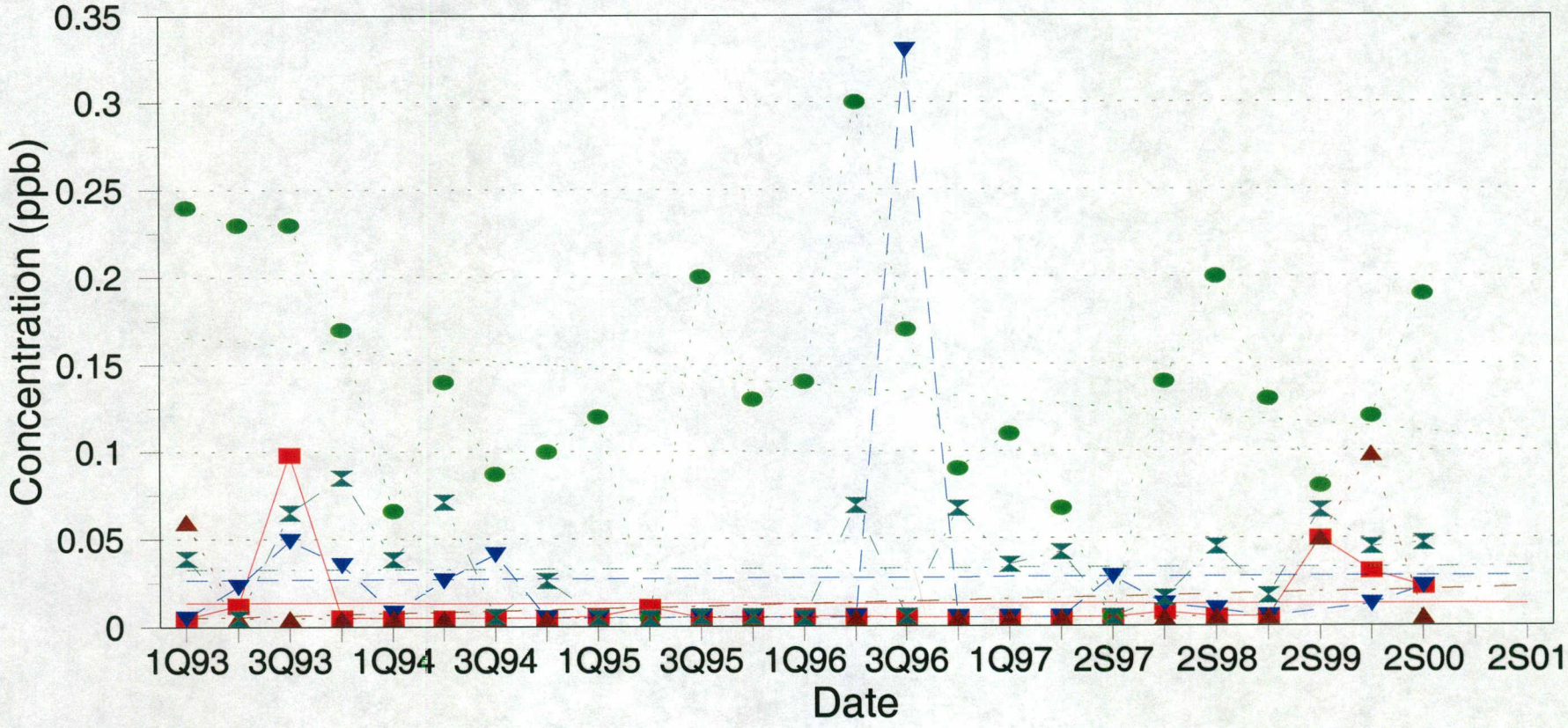


MW-5 MW-A3 MW-1R MW-2 MW-4

Non-detects plotted as 1/10th of detection limit

Gibson Site #932063

beta - BHC

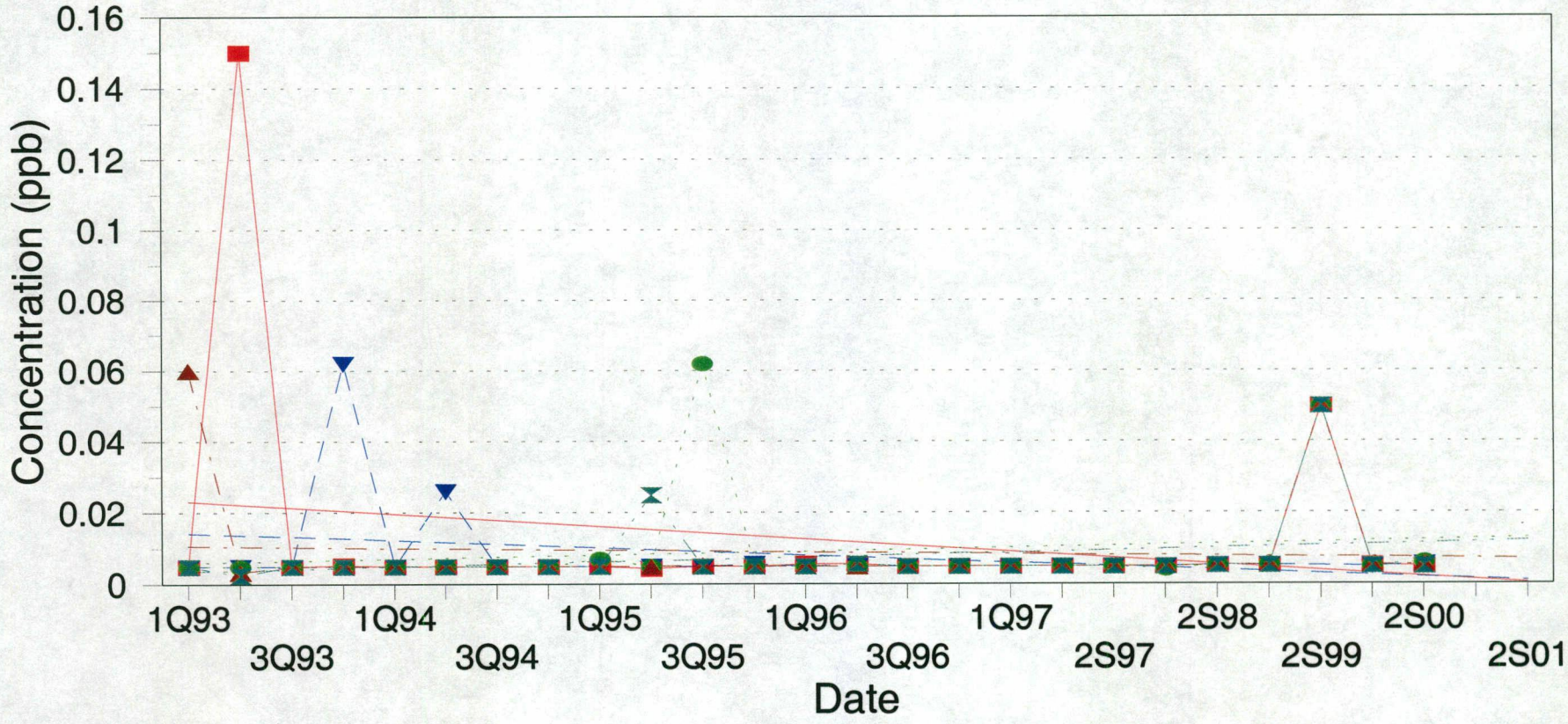


MW-5 MW_A3 MW-1R MW-2 MW-4

Non-detects plotted as 1/10th of detection limit

Gibson Site #932063

delta -BHC

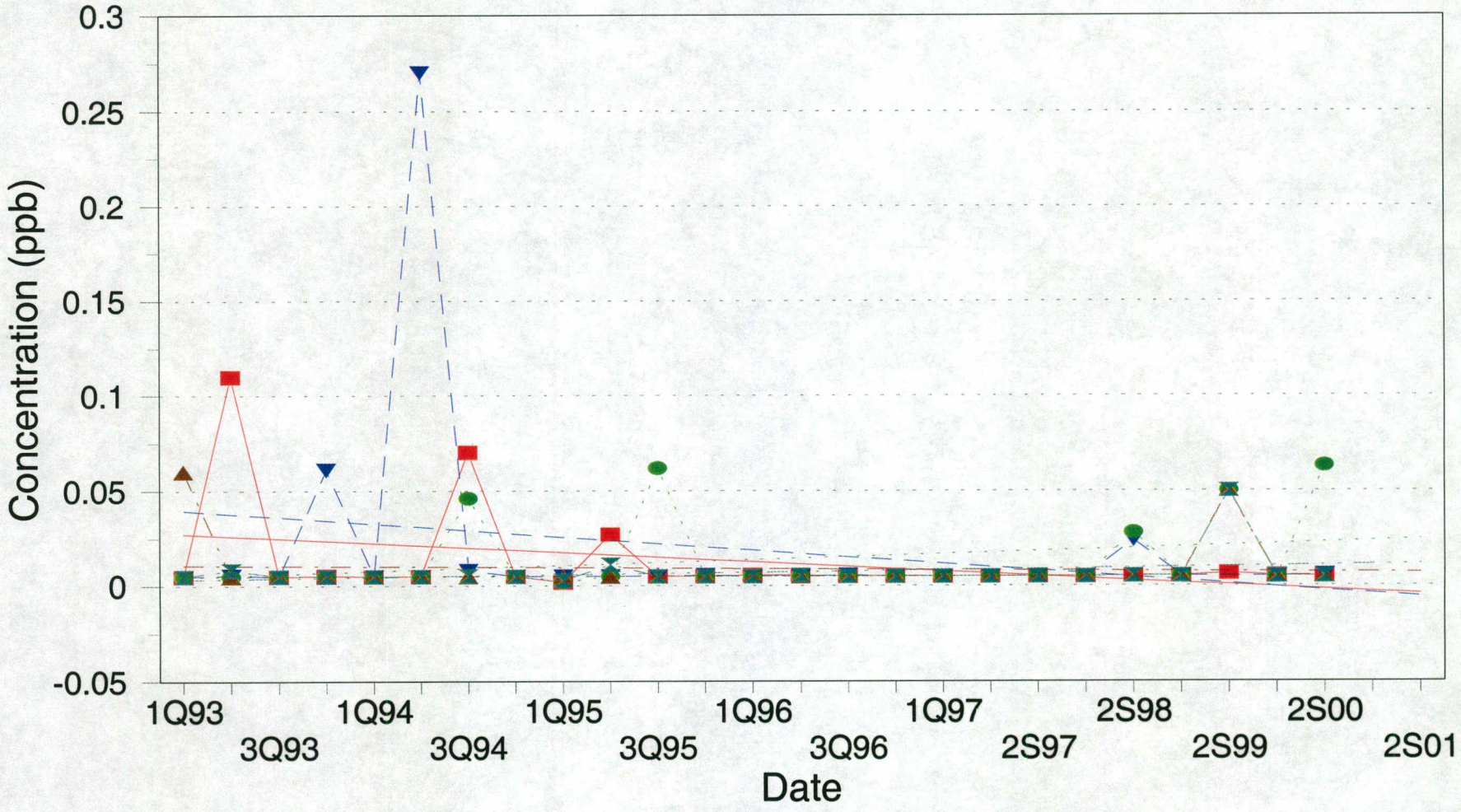


MW-5 MW-A3 MW-1R MW-2 MW-4

Non-detects plotted as 1/10th of detection limit

Gibson Site #932063

gamma - BHC



Non-detects plotted as 1/10th of detection limit

Olin

P. O. BOX 248, 1186 LOWER RIVER ROAD, NW, CHARLESTON, TN 37310-0248

(423) 336-4000 FAX: (423) 336-4183

January 05, 2001

MJH

Mr. Michael J. Hinton, P.E.
Environmental Engineer
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203-2999

Subject: Charles Gibson Site
(Pine and Tuscarora Site)
Niagara Falls, New York
NYSDEC Registry No. 9-32-063
Semi-Annual Ground Water Sampling and
Annual Sediment Sampling Report
October 2000

Dear Mr. Hinton:

In accordance with the approved sampling plan for the above referenced Site, enclosed are three copies of the second Semi-Annual Ground Water Report, October 2000. The analytical data summary for ground water is listed in Table 1. The analytical data summary for sediment is listed in Table 2. The laboratory data summary package (Appendix A), and the field logs (Appendix B) for this sampling event are also attached. The Quarterly Site Inspection Forms (Form 2.1) and the Quarterly Ground Water Elevation/Pumping Forms (Form 3.1) are included in Appendices C and D respectively. The analytical data has been validated and found to be acceptable as qualified.

This sampling event reflects modifications to the monitoring plan, which were approved by NYSDEC this year (i.e. biennial groundwater sampling for hexachlorobenzene and elimination of hexachlorobenzene analysis of sediments). The first annual sampling of leachate was completed during this event (Table 3).

If you have any questions, please call me at 423/ 336-4381.

Sincerely,
OLIN CORPORATION

Lorraine M. Miller

Lorraine M. Miller
Senior Associate Environmental Specialist

cc: R. K. Hall (letter only, via e-mail)
B. H. Brayley (1 copy)
C.M. Richards (letter only, via e-mail)

dm:sites/P&T Gibson//ENV 4060/O&M/SemiAnnual Sampling October 2000

TABLE 1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL RESULTS SUMMARY
SEMI-ANNUAL GROUND WATER SAMPLING

October 4, 2000

PARAMETER	MW-1R	MW-1R (dup)	MW-2	MW-4	MW-5	MW-A3
alpha-BHC	.099	.060	.054U	.0069J	.013J	.050U
beta-BHC	.19	.15	.054U	.047J	.022J	.050U
delta-BHC	.061U	.058U	.054U	.050U	.055U	.050U
gamma-BHC	.063J	.058U	.054U	.050U	.055U	.050U
Hexachlorobenzene	NR	NR	NR	NR	NR	NR

Notes:

Concentration in ug/l

U Undetected at associated value

J Estimated value
Field blank was non-detect for all parameters of interest.
Data has been validated and judged acceptable as qualified.

NR Not required for this event.
Next sampling for hexachlorobenzene is scheduled for October 2002.

TABLE 2

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL RESULTS SUMMARY
ANNUAL SEDIMENT SAMPLING

October 4, 2000

	DS-1	DS-1 (dup)	US-1
PARAMETER			
alpha-BHC	9600	13000	3.5
beta-BHC	3000J	2700J	4.5J
delta-BHC	1200U	1400U	2.3U
gamma-BHC	1200U	1400U	2.3U

Notes:

Concentration in ug/kg
DS Downstream sample
US Upstream sample
U Undetected at associated value
J Estimated value
Field Blank was non-detect for all parameters of interest.
Data has been validated and judged acceptable as qualified.
Hexachlorobenzene analysis no longer required for this event.

APPENDIX A

LABORATORY DATA SUMMARY PACKAGE

SEMI-ANNUAL GROUND WATER SAMPLING

ANNUAL SEDIMENT SAMPLING

AND LEACHATE SAMPLING

OCTOBER 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

TABLE 3

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL RESULTS SUMMARY
ANNUAL SAMPLING OF LEACHATE

October 4, 2000

	Manhole B
PARAMETER	
alpha-BHC	.16J
beta-BHC	.82
delta-BHC	.93
gamma-BHC	.50U
Hexachlorobenzene	10U

Notes:

Concentration in ug/l
U Undetected at associated value
J Estimated value
Field Blank was non-detect for all parameters of interest.
Data has been validated and judged acceptable as qualified.
Sampled from Manhole B.
The hexachlorobenzene sampling is scheduled every 5 years. Next sampling in 2005.

FILE COPY

SEVERN TRENT SERVICES

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October 26, 2000

Ms. Lorraine M. Miller
OLIN CORPORATION
P.O Box 248
1186 Lower River Road Nw
Charleston, TN 37310-0248

Dear Ms. M. Miller :

Please find enclosed the analytical results of 14 sample(s) received at our laboratory on October 6, 2000. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7000-2226A	Purchase Order #8143-20
Project ID: Semiannaul GW Sampling	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 929-8140 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: P. MCMAHON

Aqueous

TABLE SV-1.0
7000-2226A
OLIN CORPORATION
MISCELLANEOUS BASE-NEUTRALS

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	Method Blank SBLKLQ SBLKLQ 1.00	MHB-1004 002226A-01 SBLKLQ 1.00	MH8-1004 002226A-08 SBLKLQ 1.00	Quant. Limits with no Dilution
Hexachlorobenzene	U	U	U	10
Date Received Date Extracted Date Analyzed	 10/10/00 10/12/00	10/06/00 10/10/00 10/12/00	10/06/00 10/10/00 10/12/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.0
7000-2226A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	Method Blank 101000-B02 PBLK55 1.00	MHB-1004 002226A-01 PBLK55 10.0	MW7-1004 002226A-02 PBLK55 1.16	Quant. Limits with no Dilution
alpha-BHC	U	0.16J	0.060	0.050
beta-BHC	U	0.82	0.15	0.050
delta-BHC	U	0.93	U	0.050
gamma-BHC (Lindane)	U	U	U	0.050
Date Received		10/06/00	10/06/00	
Date Extracted	10/10/00	10/10/00	10/10/00	
Date Analyzed	10/13/00	10/18/00	10/13/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.1
7000-2226A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D.	MW1R-1004	MW2-1004	MW2-1004 MS	Quant. Limits with no Dilution
Lab Sample I.D.	002226A-03	002226A-04	002226A-04MS	
Method Blank I.D.	PBLK55	PBLK55	PBLK55	
Quant. Factor	1.22	1.08	1.09	
alpha-BHC	0.099	U	0.19X	0.050
beta-BHC	0.19	U	0.22X	0.050
delta-BHC	U	U	0.13X	0.050
gamma-BHC (Lindane)	0.0063J	U	0.19X	0.050
Date Received	10/06/00	10/06/00	10/06/00	
Date Extracted	10/10/00	10/10/00	10/10/00	
Date Analyzed	10/13/00	10/13/00	10/14/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.2
7000-2226A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	MN2-1004 MSD 002226A-04 MSD PBLK55 1.10	MN5-1004 002226A-05 PBLK55 1.10	MNA3-1004 002226A-07 PBLK55 1.00	Quant. Limits with no Dilution
alpha-BHC	0.20X	0.013J	U	0.050
beta-BHC	0.22X	0.022J	U	0.050
delta-BHC	0.14X	U	U	0.050
gamma-BHC (Lindane)	0.21X	U	U	0.050
Date Received	10/06/00	10/06/00	10/06/00	
Date Extracted	10/10/00	10/10/00	10/10/00	
Date Analyzed	10/14/00	10/13/00	10/14/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.3
7000-2226A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	MW8-1004 002226A-08 PBLK55 1.00	PBLK55 QC1 101000-B02 QC1 PBLK55 1.00		Quant. Limits with no Dilution
alpha-BHC	U	0.17X		0.050
beta-BHC	U	0.19X		0.050
delta-BHC	U	0.12X		0.050
gamma-BHC (Lindane)	U	0.18X		0.050
Date Received Date Extracted Date Analyzed	10/06/00 10/10/00 10/14/00	 10/10/00 10/13/00		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.4
7000-2226A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	Method Blank 101000-S02 PCBLK55 1.00	MW4-1004 002226A-06 PCBLK55 1.00		Quant. Limits with no Dilution
alpha-BHC	U	0.0069J		0.050
beta-BHC	U	0.047J		0.050
delta-BHC	U	U		0.050
gamma-BHC (Lindane)	U	U		0.050
Date Received Date Extracted Date Analyzed	 10/10/00 10/21/00	10/06/00 10/10/00 10/18/00		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Soil

TABLE GC-1.5
7000-2226A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/Kg dry weight basis.

Client Sample I.D. Lab Sample I.D. Method Blank I.D. Quant. Factor	Method Blank 100700-B02 PBLK50 1.00	DS1-1005 002226A-09 PBLK50 740.	OS1-1005 002226A-10 PBLK50 828.	Quant. Limits with no Dilution
alpha-BHC	U	9600	13000	1.7
beta-BHC	U	3000J	2700J	7.5
delta-BHC	U	U	U	1.7
gamma-BHC (Lindane)	U	U	U	1.7
Date Received		10/06/00	10/06/00	
Date Extracted	10/07/00	10/07/00	10/07/00	
Date Analyzed	10/13/00	10/13/00	10/13/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Soil

TABLE GC-1.6
7000-2226A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/Kg dry weight basis.

Client Sample I.D.	US1-1005	PBLK50 QC1 100700-B02		Quant. Limits with no Dilution
Lab Sample I.D.	002226A-11	QC1		
Method Blank I.D.	PBLK50	PBLK50		
Quant. Factor	1.36	1.00		
alpha-BHC	3.5	5.0X		1.7
beta-BHC	4.5J	5.4JX		7.5
delta-BHC	U	4.5X		1.7
gamma-BHC (Lindane)	U	5.2X		1.7
Date Received	10/06/00			
Date Extracted	10/07/00	10/07/00		
Date Analyzed	10/13/00	10/13/00		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

STL
Committed To Your Success

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the STL-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

STL-Connecticut
Certification Summary (as of April 2000)

State	Regulatory Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Maine	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	2528
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater	998355710

7000-2226A
OLIN CORPORATION
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
MHB-1004	002226A-01	WATER	10/04/00	10/06/00
MH7-1004	002226A-02	WATER	10/04/00	10/06/00
MW1R-1004	002226A-03	WATER	10/04/00	10/06/00
MH2-1004	002226A-04	WATER	10/04/00	10/06/00
MH2-1004	002226A-04MS	WATER	10/04/00	10/06/00
MH2-1004	002226A-04MSB	WATER	10/04/00	10/06/00
MH2-1004	002226A-04MSD	WATER	10/04/00	10/06/00
MH5-1004	002226A-05	WATER	10/04/00	10/06/00
MH4-1004	002226A-06	WATER	10/04/00	10/06/00
MHA3-1004	002226A-07	WATER	10/04/00	10/06/00
MH8-1004	002226A-08	WATER	10/04/00	10/06/00
DS1-1005	002226A-09	SOIL	10/05/00	10/06/00
OS1-1005	002226A-10	SOIL	10/05/00	10/06/00
US1-1005	002226A-11	SOIL	10/05/00	10/06/00

STL CT ANALYTICAL SUMMARY

Client ID: DS1-1005, MH2-1004, MH4-1004, MH5-1004, MH7-1004, MH8-1004, MHA3-1004, MHB-1004, MW1R-1004, OS1-1005, US1-1005
Job Number: 7000-2226A

Date: 10/27/100

Qty	Matrix	Analysis	Description
1	None	DISK	Diskette Prep.
1	None	DISK-2	Diskette Prep.
3	SOIL	PST-N8081A-MISC	Pesticides
2	WATER	BN-N8270C-MISC	Miscellaneous Base-N
3	WATER	PST-N8081A-MISC	Miscellaneous Pestic
8	WATER	PST-N8081A-MISC	Miscellaneous Pestic

APPENDIX B

FIELD LOGS

SEMI-ANNUAL GROUND WATER SAMPLING

ANNUAL SEDIMENT SAMPLING

AND LEACHATE SAMPLING

OCTOBER 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

CONESTOGA-ROVERS & ASSOCIATES

2055 Niagara Falls Blvd., Suite #3
Niagara Falls, New York 14304
Telephone: (716) 297-6150 Fax: (716) 297-2265
www.CRAworld.com

TRANSMITTAL

DATE: October 23, 2000

REFERENCE NO.: 008143-20

PROJECT NAME: Olin Gibson Site Semi-Annual Sampling / Q&M Manual revisions

TO: Ms. Lorraine Miller
Olin Chemicals
P.O. Box 248
1186 Lower River Road
Charleston, TN 37310

RECEIVED
OCT 27 2000
ENVIRONMENTAL REMEDIATION

Please find enclosed:
- ☐ Draft
- ☐ Originals
- ☐ Prints
- ☑ Final
- ☐ Other

Sent via:
- ☑ Mail
- ☐ Overnight Courier
- ☐ Same Day Courier
- ☐ Other

QUANTITY	DESCRIPTION
1	Copy of field forms for Fall, 2000 Gibson Site groundwater and sediment sampling
1	Copy of chain of custody for Severn Trent Laboratories for Fall, 2000 samples
1	CD disk of Gibson Site Operation and Maintenance Manual with September 25, 2000
	Revisions (to L. Miller only)

- ☐ As Requested
- ☑ For Your Use
- ☐ For Review and Comment
- ☐
- ☐

COMMENTS:

Copy to: B. Brayley (Olin-Niagara Falls)

Completed by: Frank Garbe [Please Print]

Signed: Frank Garbe

Filing: Correspondence File

REGISTERED COMPANY FOR ISO 9001 ENGINEERING DESIGN

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER SAMPLING FIELD PARAMETERS
FIELD INSTRUMENTATION CALIBRATION FORM

DATE: Oct 4, 2000 SEMI-ANNUAL SAMPLING EVENT: Fall 2000

PERSON CALIBRATING METERS: F. Garbe (CRA)

pH METER USED: MANUFACTURER: Hydac (Hazco #910)
MODEL: pH & Specific Conductivity Meter
IDENTIFICATION/CONTROL NUMBER: #910

CALIBRATION STANDARDS USED:
STANDARD 7.00 METER READ: 7.01
STANDARD 4.00 METER READ: ~~7.00~~ 3.98
STANDARD 10.00 METER READ: 10.09
METER CALIBRATION COMMENTS: (see below)

SPECIFIC CONDUCTIVITY METER USED:
MANUFACTURER: Hydac (Hazco #910)
MODEL: pH and Specific Conductivity Meter
IDENTIFICATION/CONTROL NUMBER: #910

CALIBRATION STANDARDS USED:
STANDARD 0 (DI) READ: 15
(STANDARD 0 USED: ___ AIR, ✓ WATER) (DI)
STANDARD 1000 READ: 1068
STANDARD 10 000 READ: > than scale
METER CALIBRATION COMMENTS:

THERMOMETER USED: TYPE: Hydac (Hazco #910) → built into
MANUFACTURER: Hydac pH & Sp. Conductivity meter
IDENTIFICATION/CONTROL NUMBER: #910
COMMENTS: (DOES THERMOMETER TEMPERATURE AGREE WITH SPECIFIC CONDUCTIVITY METER TEMPERATURE ?) NA
OTHER:

OTHER INSTRUMENTS USED: TYPE: NONE
MANUFACTURER:
IDENTIFICATION/CONTROL NUMBER:

CALIBRATIONS PERFORMED:

OTHER CALIBRATION COMMENTS: pH meter went off calibration twice during the day with very high pH readings. Required re calibration. It was very obvious when this happened as pH readings would go >12.

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers & Assocs.
SAMPLE ID: MHB-1004
SAMPLING EVENT/DATE: Fall 2000 10/4/00
MONITORING WELL: Manhole B
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: (FT.)
DEPTH TO WATER FROM TOP OF RISER: (FT.)
WATER COLUMN: (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD:
BOTTOM OF WELL/SILT BUILDUP:
PURGE START TIME: STOP TIME:
PURGE OBSERVATIONS:

FIELD PARAMETER MEASUREMENTS: N A

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
1				
2				
3				
4				
5				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/4/00

MEDIA: GROUNDWATER Manhole B Leachate ✓
CREEK SEDIMENT

SAMPLE TIME: 945

LOCATION: Manhole B Leachate
SAMPLE METHOD: Disposable teflon bailer & poly cord (No Purge)
SAMPLING OBSERVATIONS: water clear, sampled for BHC HCB, Next sampling spring 2002
QC SAMPLES TAKEN: None
OTHER OBSERVATIONS/COMMENTS: Depth to water = 13.82' w/L @ 563.52'
pH 6.76 Sp. Cond. 4960 temp 58.9° F. First time sampled by FG/CRA.

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= SC measured / {(T-25)(0.2)}+1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers (CRA)

SAMPLE ID: MW-1R-1004
SAMPLING EVENT/DATE: 10/4/00 (Fall 2000)
MONITORING WELL: MW1R
CONDITION: Good

GROUNDWATER PURGE DATA

PURGE DATE: 10/4/00

DEPTH TO BOTTOM FROM TOP OF RISER: 12-13 measured (FT.)
DEPTH TO WATER FROM TOP OF RISER: 4.60 (FT.)
WATER COLUMN: 7.53 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.20 = (1¼) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Dedicated tubing & peristaltic pump
BOTTOM OF WELL/SILT BUILDUP: None
PURGE START TIME: 11:35 STOP TIME: 11:48
PURGE OBSERVATIONS: water consistently clear

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	@ 25°C	TEMP. (C OR (F))		NOTES:
1	7.51	1135	1344.8	17.2°	63.1°	clear
2	7.47	1115	1314.9	17.4°	63.3°	clear
3	7.46	1093	1292.0	17.3°	63.2°	clear
4						
5						

TOTAL VOLUME PURGED: 3+ vols (= 3¾ Gals) purged. Well was drying up at 3 Gals

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/4/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT

SAMPLE TIME: 12:00

LOCATION: MW-1R

SAMPLE METHOD: Dedicated tubing & peristaltic pump

SAMPLING OBSERVATIONS: water clear, well dryed up during sampling, came back 3 times sampling finished at 12:50

QC SAMPLES TAKEN: DUPLICATE "MW-7" @ 11:45 (MW7-1004)

OTHER OBSERVATIONS/COMMENTS: Large bee's nest inside cover & annulus - removed. Sampled for BHC isomers only. (for 1st time)

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= SC measured / {(T-25)(0.02)}+1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers (CRA)

SAMPLE ID: MW2-1004
SAMPLING EVENT/DATE: Fall 2000 10/4/00
MONITORING WELL: MW-2
CONDITION: Good

GROUNDWATER PURGE DATA

PURGE DATE: 10/4/00

DEPTH TO BOTTOM FROM TOP OF RISER: 12.15 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 4.42 (FT.)
WATER COLUMN: 7.73 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.24 (=1¼) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Dedicated tubing & peristaltic pump
BOTTOM OF WELL/SILT BUILDUP: None
PURGE START TIME: 13:15 STOP TIME: 13:30
PURGE OBSERVATIONS: water clear throughout

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)		TEMP. (C OR F)		NOTES:
			(at 25°C)			
1	6.99	1271	1535	16.4°	61.6°F	clear water
2	7.20	1299	1461.7	16.8°	62.2°	clear water
3	7.15	1222	1465.2	16.7°	62.1°	clear water
4						
5						

TOTAL VOLUME PURGED: Purged 3+ vols (= 3¾ Gals)

GROUNDWATER OR SEDIMENT SAMPLING DATA:

SAMPLE DATE: 10/4/00
SAMPLE TIME: 13:30

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT

LOCATION: MW-2
SAMPLE METHOD: dedicated tubing & peristaltic pump
SAMPLING OBSERVATIONS: water clear throughout
QC SAMPLES TAKEN: MS/MSD collected (6+1 Liter glass)
OTHER OBSERVATIONS/COMMENTS: MW-2 had 2 sets of tubing - discarded the older looking one. Sampled for BHC isomers only (for 1st time)

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC\ measured}{\{(T-25)(0.02)\}+1}$

CRA 8143 (1) AppD-GwsdForm

0.02

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers

SAMPLE ID: MW5-1004
SAMPLING EVENT/DATE: 10/4/00 Fall 2000
MONITORING WELL: MW-5
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE: 10/4/00

DEPTH TO BOTTOM FROM TOP OF RISER: 15.32 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 7.23 (FT.)
WATER COLUMN: 8.09 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 2.09 (±2¼) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Dedicated tubing and peristaltic pump
BOTTOM OF WELL/SILT BUILDUP: None
PURGE START TIME: 14:15 STOP TIME: 14:45
PURGE OBSERVATIONS: water dark brown turbid, then clearing to light yellow tint

FIELD PARAMETER MEASUREMENTS: @ 25°C

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)		TEMP. (C OR F)		NOTES:
1	6.48	2500	2853.9	18.8°	65.8°	→ dk brown, turbid
2	6.38	2550	2985.9	17.7°	63.9°	→ yellow tint turbid
3	6.53	2520	2978.7	17.3°	63.2°	→ Lt yellow tint, v. slightly turbid.
4						
5						

TOTAL VOLUME PURGED: ~3 vols (6¾ gals)

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/4/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT

SAMPLE TIME: 14:50

LOCATION: MW-5
SAMPLE METHOD: Dedicated tubing & peristaltic Pump
SAMPLING OBSERVATIONS: water clear with very light yellow tint
QC SAMPLES TAKEN: None
OTHER OBSERVATIONS/COMMENTS: Sampled for BHC isomers only. ~~(Last time)~~ (F6)
First event for BHC analysis only.

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= SC measured / {(T-25)(0.02)}+1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: MW4-1004
SAMPLING EVENT/DATE: 10/4/00 Fall 2000
MONITORING WELL: MW-4
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE: 10/4/00

DEPTH TO BOTTOM FROM TOP OF RISER: 13.75 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 6.28 (FT.)
WATER COLUMN: 7.47 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.19 (≈1¼) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Dedicated tubing & peristaltic pump
BOTTOM OF WELL/SILT BUILDUP: None
PURGE START TIME: 15:20 STOP TIME: 15:45
PURGE OBSERVATIONS: Purge water from bottom of well very black, turbid at first then gradually clearing to lightly turbid, light black tint. Initially strong H_2S like odor.
FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm) [at 25oC]	TEMP. (C OR F)	NOTES:
1	7.42	1780/ 2094.1	17.5°/63.5°	very black, turbid
2	7.03	1736/ 2052	17.3°/63.1°	mod turbid, black
3	7.22	1937/ 2268	17.7°/63.9°	lightly turbid w/ black tint
4	7.33	2160/ 2535	17.6°/63.7°	as above
5				

TOTAL VOLUME PURGED: 4 volumes = 5 Gals

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/4/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT

SAMPLE TIME: 15:50

LOCATION: MW-4
SAMPLE METHOD: Peristaltic pump & dedicated tubing
SAMPLING OBSERVATIONS: water clear w/ black tint (lightly turbid)
QC SAMPLES TAKEN: None
OTHER OBSERVATIONS/COMMENTS: Sampled for BHC isomers only (for 1st time for BHC isomers analysis only)

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= $\frac{SC\ measured}{\{(T-25)(0.2)\}+1}$

0.02

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: MWA3-1004
SAMPLING EVENT/DATE: 10/4/00 Fall 2000
MONITORING WELL: MW-A3
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE: 10/4/00

DEPTH TO BOTTOM FROM TOP OF RISER: 11.97 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 6.01 (FT.)
WATER COLUMN: 5.96 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 0.95 (≈1.0) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Dedicated tubing & peristaltic pump
BOTTOM OF WELL/SILT BUILDUP: None
PURGE START TIME: 16:15 STOP TIME: 16:30
PURGE OBSERVATIONS: Purge water light yellow tint initially, then clear

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm) @ 25°C	TEMP. (C OR F)	NOTES:
1	6.89	847 / 958	19.2° / 66.5°	Light yellow tint
2	6.72	860 / 1026	16.9° / 62.5°	clear
3	6.66	857 / 1027	16.7° / 62.1°	clear
4				
5				

TOTAL VOLUME PURGED: 3 volumes = 3 Gals

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/4/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT
SAMPLE TIME: 16:35

LOCATION: MW-A3
SAMPLE METHOD: Dedicated tubing & peristaltic pump
SAMPLING OBSERVATIONS: Sample water clear
QC SAMPLES TAKEN: None
OTHER OBSERVATIONS/COMMENTS: Sampled for BHC isomers only (1st time for BHC only analysis)

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= SC measured / {{T-25)(0.02)}+1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: MW 8-1004
SAMPLING EVENT/DATE: 10/4/00 Fall 2000
MONITORING WELL: NA (Field Blank)
CONDITION: NA

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: (FT.)
DEPTH TO WATER FROM TOP OF RISER: (FT.)
WATER COLUMN: (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= (GALS)

PURGE METHOD:
BOTTOM OF WELL/SILT BUILDUP:
PURGE START TIME: STOP TIME: NA
PURGE OBSERVATIONS:

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
1				
2				
3				
4				
5				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/4/00

MEDIA: GROUNDWATER (Field blank)
CREEK SEDIMENT

SAMPLE TIME: 17:00

LOCATION: Poured lab supplied DI water into lab supplied bottles @ MW-2 location
SAMPLE METHOD: (weather: mostly cloudy, 64°F, light wind from west).
SAMPLING OBSERVATIONS:
QC SAMPLES TAKEN: MW-8 is Field blank
OTHER OBSERVATIONS/COMMENTS: Will be analyzed for BHC isomers and HCB (as Manhole B leachate will be analyzed for Both)

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= $\frac{\text{SC measured}}{\{(T-25)(0.02)\}+1}$

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F. Garbe
SAMPLED BY: F. Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: DS1-1005 (& DUP DS1-1005)
SAMPLING EVENT/DATE: 10/5/00 Fall 2000
~~MONITORING~~ WELL: Creek Sediments
CONDITION: N/A

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: (FT.)
DEPTH TO WATER FROM TOP OF RISER: (FT.)
WATER COLUMN: (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= (GALS)

PURGE METHOD:
BOTTOM OF WELL/SILT BUILDUP:
PURGE START TIME: STOP TIME:
PURGE OBSERVATIONS: N A

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
1				
2				
3				
4				
5				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/5/00

MEDIA: GROUNDWATER ____ CREEK SEDIMENT ✓

SAMPLE TIME: 11:15

LOCATION: Cayuga Creek sediment - down stream from site - approx 50 ft S. of SE corner of site Fence - loc. is immed. below 'gap' between 2 sets of overhead power lines.

SAMPLE METHOD: ~~Decontaminated carbon steel shovel~~ & decontaminated stainless steel bowl & trowel

SAMPLING OBSERVATIONS: Sediments collected from 3 closely spaced locations (approx 5'-8' from shore in 3-4' of water

QC SAMPLES TAKEN: DS1-1005 ("11:30") is Duplicate of DS1-1005. Samples was vigorously homogenized in stainless steel bowl prior to filling jars

OTHER OBSERVATIONS/COMMENTS: Sediment collected mostly black fine silt & organic debris w abundant small gravel, wood/wood fragments / brick, glass, organic debris, min. tan brown clayey si ONE crayfish observ → one small sheen 'slick' observ

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= SC measured / {(T-25)(0.02)}+1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: F-Garbe
SAMPLED BY: F-Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: US1-1004
SAMPLING EVENT/DATE: 10/5/00 Fall 2000
~~MONITORING WELL~~: Creek Sediment
CONDITION: N/A

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: (FT.)
DEPTH TO WATER FROM TOP OF RISER: (FT.)
WATER COLUMN: (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= (GALS)

PURGE METHOD:
BOTTOM OF WELL/SILT BUILDUP:
PURGE START TIME: STOP TIME: N/A
PURGE OBSERVATIONS:

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
1				
2				
3				
4				
5				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 10/5/00

MEDIA: GROUNDWATER
CREEK SEDIMENT ✓

SAMPLE TIME: 12:15

LOCATION: Cayuga Creek sediment upstream from Site - ~~e~~ streambed directly downslope from 1st ~~set~~ of Gibson Site Gates. In ~1½'-2½' of water, 3'-6' from shore

SAMPLE METHOD: decontaminated stainless steel hand auger & stainless steel bowl & trowel.

SAMPLING OBSERVATIONS: Sediment tan brown clay, some minor black organic silt/sediment, some gravel, minor glass.

QC SAMPLES TAKEN: None

OTHER OBSERVATIONS/COMMENTS: None

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= $\frac{SC\ measured}{\{(T-25)(0.02)\}+1}$

Results To: Paul Mc Intosh
Conestoga-Rovers

CHAIN OF CUSTODY RECORD

CRA
CONESTOGA-ROVERS & ASSOCIATES
2055 Niagara Falls Blvd. Suite Three
Niagara Falls, NY 14304 (716)297-6150

SHIPPED TO (Laboratory Name):
Severn Trent Services
128 Long Hill Cross Rd.
Shelton, CT 064848

REFERENCE NUMBER:
8143-20 Olin Gibson Site
Semi-Annual

SAMPLER'S SIGNATURE: Frank Garbe PRINTED NAME: Frank Garbe

SEQ. No.	DATE	TIME	SAMPLE No.	SAMPLE TYPE	No. OF CONTAINERS	PARAMETERS: BHC (SOIL) (BZ-MISC)	PARAMETERS: HCB (BNA-MISC)	REMARKS
	10/4/00	945	MHB-1004	Leachate	4	2	2	
		1145	MW7-1004	GW	2	2		
		1200	MW1R-1004		2	2		
		1330	MW2-1004		6	6		MS/MSD
		1450	MW5-1004		2	2		
		1550	MW4-1004		2	2		
		1635	MWA3-1004		2	2		
	↓	1700	MW8-1004	↓	4	2	2	
	10/5/00	1115	DS1-1005	Sediment	1	1		
		1130	OS1-1005		1	1		
	↓	1215	US1-1005	↓	1	1		

MW-7 Duplicate of MW-1R
MW-8 is Field Blank
OS-1 is duplicate of DS-1

TOTAL NUMBER OF CONTAINERS

HEALTH/CHEMICAL HAZARDS

RELINQUISHED BY: ① Frank Garbe (via Fedex)	DATE: 10/5/00 TIME: 14:00	RECEIVED BY: ②	DATE: TIME:
RELINQUISHED BY: ②	DATE: TIME:	RECEIVED BY: ③	DATE: TIME:
RELINQUISHED BY: ③	DATE: TIME:	RECEIVED BY: ④	DATE: TIME:

METHOD OF SHIPMENT: WAY BILL No.

White –Fully Executed Copy
Yellow –Receiving Laboratory Copy
Pink –Shipper Copy
Goldenrod –Sampler Copy

SAMPLE TEAM: F. Garbe

RECEIVED FOR LABORATORY BY:
DATE: TIME:

№ NF-2457

1001 (D) OCT 31/94(NF) REV.1 (F-05)

APPENDIX C

QUARTERLY SITE INSPECTION FORMS
(Form 2.1)

July - December 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 8/29/00 TIME: 2:30 PM

INSPECTOR'S NAME: BH Brayley WEATHER: Clear, Sunny

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS: Flowmeter sent out to factory for repair. Auto Dialer upgraded - will be activated once flowmeter is reinstalled.

U - Unacceptable A - Acceptable

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 9/8/00 TIME: 4⁰⁰ PM

INSPECTOR'S NAME: BH Brayley WEATHER: Sunny; Clear

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS:

U - Unacceptable A - Acceptable

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 10/4/00 TIME: 10⁰⁰ AM

INSPECTOR'S NAME: BH Brayley WEATHER: Clear

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS: CRA sampling

U - Unacceptable A - Acceptable

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 10/18/00 TIME: 1:30 PM

INSPECTOR'S NAME: BH Brayley WEATHER: Sunny - Clear

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS:

Inspection made.

Installed repaired Flowmeter w/ Carrier Controls.

U - Unacceptable A - Acceptable

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 10/30/00 TIME: 1030 AM

INSPECTOR'S NAME: B/H Brayley WEATHER: Sunny/clear

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS: Removed autodialer w/ Carrier Controls

U - Unacceptable A - Acceptable

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 11/22/00 TIME: 1100 PM

INSPECTOR'S NAME: BH Brayley WEATHER: cold overcast

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS:

Autodialer reinstalled w/ Carrier Controls.

U - Unacceptable

A - Acceptable

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 12/8/00 TIME: 1:00 PM

INSPECTOR'S NAME: BH Brayley WEATHER: Cold, Overcast

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS:

U - Unacceptable A - Acceptable

APPENDIX D

QUARTERLY GROUNDWATER ELEVATION /PUMPING FORMS
(Form 3.1)

July - December 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

FORM 3.1
GROUND WATER ELEVATION/PUMPING FORM
PINE AND TUSCARORA SITE

DATE: 7/28/00 TIME: 1⁰⁰ PM

INSPECTOR'S NAME: BH Brayley WEATHER: Clear, Sunny

Piezometer	Inside Casing or Rim Elev.	Depth to Water Ft.	Water Elev.	Elev. Limit
P1	572.86	6.27	566.59	
P2	575.00	9.46	565.54	
P3	574.18	6.77	567.41	
P4	576.40	10.79	565.61	
P5	575.09	5.99	569.10	
P6	578.34	10.6	567.74	
MANHOLE A	575.27	12.31	562.96	565.00
MANHOLE B	577.41	14.38	563.03	565.00
Before Pumping	MH A	____	____	
After Pumping	MH A	____	____	565.00
Before Pumping	MH B	____	____	
After Pumping	MH B	____	____	565.00

Pumping Date: _____ Est Gals: _____

_____ _____

COMMENTS: _____

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NYSDEC REGISTRY NO. 9-32-063
GROUNDWATER ELEVATION FORM

THIS FORM TO BE USED FOR ALL QUARTERLY PIEZOMETER AND MANHOLE GROUNDWATER ELEVATION MEASURING EVENTS

DATE: Oct 4, 2000 TIME: 905 A.M

INSPECTOR: F. Garbe COMPANY: Conestoga-Rovers & Associates

WEATHER: Overcast, approx. 56°-58° F, rain - steady, sometimes heavy, NO wind.

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	6.67	566.05	-
P-2	574.89	9.51	565.38	-
P-3	574.16	6.82	567.34	small bee's nest
P-4	576.14	10.86	565.28	-
P-5	575.05	6.12	568.93	-
P-6	578.28	10.37	567.91	-
MANHOLE A	575.22	11.76	563.46	-
MANHOLE B	577.34	13.82	563.52	-

(Note: Manhole A empties into Manhole B by gravity feed and Manhole B is pumped automatically to the Town of Niagara Tuscarora Road sanitary sewer line by a float controlled sump pump which maintains groundwater elevations in Manhole B (and by extension Manhole A) below an elevation of 565 ft. above mean sea level. Therefore, Depth to water distance from the manhole rim should not be less than 12.41 ft. at Manhole B and 10.22 ft. at Manhole A.
(Note: riser elevations (re)surveyed September, 1999 by Wendel Surveyors)

ADDITIONAL COMMENTS/OBSERVATIONS: P-3, P-5, ~~P-6~~ have new 'T' or gripper plugs (red-Ace Hardware labels). Plug on P-3 causes well riser cap to sit up a bit over annular space (but still lockable).

Olin

P.O. BOX 248, 1186 LOWER RIVER ROAD, NW, CHARLESTON, TN 37310-0248
(423) 336-4000 FAX: (423) 336-4166

June 29, 2000

Mr. Michael J. Hinton, P.E.
Environmental Engineer
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203-2999

Subject: Charles Gibson Site
(Pine and Tuscarora Site)
Niagara Falls, New York
NYSDEC Registry No. 9-32-063
Semi-Annual Ground Water Sampling Report
May 2000

Dear Mr. Hinton:

In accordance with the approved sampling plan for the above referenced Site, enclosed are three copies of the first Semi-Annual Ground Water Report, May 2000. The analytical data summary for ground water is listed in Table 1. The laboratory data summary package (Appendix A), and the field logs (Appendix B) for this sampling event are also attached. The Quarterly Site Inspection Forms (Form 2.1) and the Quarterly Ground Water Elevation/Pumping Forms (Form 3.1) are included in Appendices C and D respectively. The analytical data has been validated and found to be acceptable as qualified.

If you have any questions, please call me at 423/ 336-4381.

Sincerely,
OLIN CORPORATION

Lorraine M. Miller

Lorraine M. Miller
Senior Associate Environmental Specialist

cc: R. K. Hall (letter only, via e-mail)
B. H. Brayley (1 copy)
G. E. Hilliard (letter only, via e-mail)

TABLE 1

ANALYTICAL RESULTS SUMMARY
SEMI-ANNUAL GROUND WATER SAMPLING

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

May 2, 2000

	MW-1R	MW-2	MW-4	MW-7	MW-5	MW-A3
PARAMETER				(MW-4 DUP)		
alpha-BHC	.028J	.029J	.051U	.052U	.010J	.050U
beta-BHC	.12	.098	.045J	.062	.031J	.012J
delta-BHC	.051U	.052U	.051U	.052U	.052U	.050U
gamma-BHC	.051U	.052U	.051U	.052U	.052U	.050U
Hexachlorobenzene	10U	10U	10U	10U	10U	11U

Notes:

Concentration in ug/l
U Undetected at associated value
J Estimated value
Field Blank (MW-8) was non-detect for all parameters of interest.
Data has been validated and judged acceptable as qualified.

APPENDIX A

LABORATORY DATA SUMMARY PACKAGE

SEMI-ANNUAL GROUND WATER SAMPLING

MAY 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

FILE COPY

Committed To *Your* Success

Severn Trent Laboratories
128 Long Hill Cross Road
Shelton CT 06484

Tel: (203) 929-8140
Fax: (203) 929-8142
www.stl-inc.com

May 19, 2000

Ms. Lorraine M. Miller
OLIN CORPORATION
P.O Box 248
1186 Lower River Road Nw
Charleston, TN 37310-0248

RECEIVED
MAY 2 4 2000
ENVIRONMENTAL REMEDIATION

Dear Ms. M. Miller :

Please find enclosed the analytical results of 10 sample(s) received at our laboratory on May 4, 2000. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definition of data qualifiers and terminology
- analytical results
- chain-of-custody

STL Report #7000-0810A	Purchase Order #8143-20
Project ID: Semiannaul GW Sampling	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 929-8140 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC

cc: P. MCMAHON

7000-0810A
OLIN CORPORATION

Case Narrative

Sample Receipt – All samples were received in good condition and at proper temperature.

Semi-Volatile Organics - Semi-volatile organic samples were extracted and analyzed by capillary GC/MS according to NYSDEC '95 Protocols using guidance provided in Methods 3510C/8270C. The instrumentation used was a Hewlett-Packard Gas Chromatograph interfaced with a Mass Selective Detector.

All samples were extracted, concentrated and analyzed without any apparent problems.

Sample Calculation:

Sample ID – SBLKDRFMS
Compound - hexachlorobenzene

$$\frac{1675900(40)1000}{4704207(0.198)2(1000)} = 35.99 = 36 \text{ ug/L}$$

Pesticides - Pesticide samples were extracted and analyzed by GC/ECD using guidance provided in Methods 3510C/8081A. The instrumentation used was a Hewlett-Packard Gas Chromatograph equipped with an Electron Capture Detector (Ni63).

All samples were extracted and concentrated without any apparent problems.

Samples 0502-MW4 and 0502-MW7 required sulfur cleanup.

The recovery of the surrogate, Decachlorobiphenyl , was below QC limits in sample 05052-MW5.

Manual integrations were performed if required, and any affected peaks were designated with an "MM" on the area report in the column titled "Code". Manual integrations were initialed by the analyst that performed the integration.

Sample Calculation:

Sample ID –0502-MW2
Compound – beta-BHC

$$\frac{(69496\text{area})(10000\text{ul})}{(7374286\text{area/ng})(960\text{ml})(1\text{ul})} = .098\text{ug/L}$$

Aqueous

TABLE SV-1.0
7000-0810A
OLIN CORPORATION
MISCELLANEOUS BASE-NEUTRALS

All values are ug/L.

Client Sample I.D.	Method Blank	0502-MW2	0502-MW2 MS	Quant. Limits with no Dilution
Lab Sample I.D.	SBLKDR	000810A-01	000810A-01MS	
Method Blank I.D.	SBLKDR	SBLKDR	SBLKDR	
Quant. Factor	1.00	1.00	1.00	
Hexachlorobenzene	U	U	U	10
Date Received		05/04/00	05/04/00	
Date Extracted	05/08/00	05/08/00	05/08/00	
Date Analyzed	05/15/00	05/15/00	05/17/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE SV-1.1
7000-0810A
OLIN CORPORATION
MISCELLANEOUS BASE-NEUTRALS

All values are ug/L.

Client Sample I.D.	0502-MW2 MSD	0502-MW1R	0502-MW5	Quant. Limits with no Dilution
Lab Sample I.D.	000810A-01 MSD	000810A-02	000810A-03	
Method Blank I.D.	SBLKDR	SBLKDR	SBLKDR	
Quant. Factor	1.00	1.00	1.03	
Hexachlorobenzene	U	U	U	10
Date Received	05/04/00	05/04/00	05/04/00	
Date Extracted	05/08/00	05/08/00	05/08/00	
Date Analyzed	05/17/00	05/15/00	05/15/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE SV-1.2
7000-0810A
OLIN CORPORATION
MISCELLANEOUS BASE-NEUTRALS

All values are ug/L.

Client Sample I.D.	0502-MW4	0502-MW7	0502-MWA3	Quant. Limits with no Dilution
Lab Sample I.D.	000810A-04	000810A-05	000810A-06	
Method Blank I.D.	SBLKDR	SBLKDR	SBLKDR	
Quant. Factor	1.04	1.00	1.06	
Hexachlorobenzene	U	U	U	10
Date Received	05/04/00	05/04/00	05/04/00	
Date Extracted	05/08/00	05/08/00	05/08/00	
Date Analyzed	05/15/00	05/15/00	05/15/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE SV-1.3
7000-0810A
OLIN CORPORATION
MISCELLANEOUS BASE-NEUTRALS

Aqueous

All values are ug/L.

Client Sample I.D.	0502-MW8			Quant. Limits with no Dilution
Lab Sample I.D.	000810A-07			
Method Blank I.D.	SBLKDR			
Quant. Factor	1.06			
Hexachlorobenzene	U			10
Date Received	05/04/00			
Date Extracted	05/08/00			
Date Analyzed	05/15/00			

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.0
7000-0810A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D.	Method Blank	0502-MW2	0502-MW2 MS	Quant. Limits with no Dilution
Lab Sample I.D.	050800-B02	000810A-01	000810A-01MS	
Method Blank I.D.	PBLK39	PBLK39	PBLK39	
Quant. Factor	1.00	1.04	1.04	
alpha-BHC	U	0.029J	0.19X	0.050
beta-BHC	U	0.098	0.24X	0.050
delta-BHC	U	U	0.15X	0.050
gamma-BHC (Lindane)	U	U	0.20X	0.050
Date Received		05/04/00	05/04/00	
Date Extracted	05/08/00	05/08/00	05/08/00	
Date Analyzed	05/10/00	05/11/00	05/10/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

TABLE GC-1.1
7000-0810A
OLIN CORPORATION
8081A PESTICIDES

Aqueous

All values are ug/L.

Client Sample I.D.	0502-MW2 MSD	0502-MW1R	0502-MW5	Quant. Limits with no Dilution
Lab Sample I.D.	000810A-01 MSD	000810A-02	000810A-03	
Method Blank I.D.	PBLK39	PBLK39	PBLK39	
Quant. Factor	1.02	1.02	1.03	
alpha-BHC	0.21X	0.028J	0.010J	0.050
beta-BHC	0.26X	0.12	0.031J	0.050
delta-BHC	0.16X	U	U	0.050
gamma-BHC (Lindane)	0.22X	U	U	0.050
Date Received	05/04/00	05/04/00	05/04/00	
Date Extracted	05/08/00	05/08/00	05/08/00	
Date Analyzed	05/10/00	05/11/00	05/11/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.2
7000-0810A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D.	0502-MWA3	0502-MW8		Quant. Limits with no Dilution
Lab Sample I.D.	000810A-06	000810A-07		
Method Blank I.D.	PBLK39	PBLK39		
Quant. Factor	1.01	1.02		
alpha-BHC	U	U		0.050
beta-BHC	0.012J	U		0.050
delta-BHC	U	U		0.050
gamma-BHC (Lindane)	U	U		0.050
Date Received	05/04/00	05/04/00		
Date Extracted	05/08/00	05/08/00		
Date Analyzed	05/11/00	05/11/00		

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

Aqueous

TABLE GC-1.3
7000-0810A
OLIN CORPORATION
8081A PESTICIDES

All values are ug/L.

Client Sample I.D.	Method Blank	0502-MW4	0502-MW7	Quant. Limits with no Dilution
Lab Sample I.D.	050800-S02	000810A-04	000810A-05	
Method Blank I.D.	PBLK39	PBLK39	PBLK39	
Quant. Factor	1.00	1.02	1.03	
alpha-BHC	U	U	U	0.050
beta-BHC	U	0.045J	0.062	0.050
delta-BHC	U	U	U	0.050
gamma-BHC (Lindane)	U	U	U	0.050
Date Received		05/04/00	05/04/00	
Date Extracted	05/08/00	05/08/00	05/08/00	
Date Analyzed	05/12/00	05/12/00	05/12/00	

See Appendix for qualifier definitions
Note: Compound detection limit = quantitation limit x quantitation factor
Quant. Factor = a numerical value which takes into account any variation in sample weight/volume, % moisture and sample dilution.

STL
Committed To Your Success

ORGANICS APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

S - Estimated due to surrogate outliers.

X - Matrix spike compound.

(1) - Cannot be separated.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C - Confirmed by GC/MS.

T - Compound present in TCLP blank.

P - This flag is used for a pesticide/aroclor target analyte when there is a greater than 25 percent difference for detected concentrations between the two GC columns (see Form X).

STATE CERTIFICATIONS

In some instances it may be necessary for environmental data to be reported to a regulatory authority with reference to a certified laboratory. For your convenience, the laboratory identification numbers for the STL-Connecticut laboratory are provided in the following table. Many states certify laboratories for specific parameters or tests within a category (i.e. method 325.2 for wastewater). The information in the following table indicates the lab is certified in a general category of testing such as drinking water or wastewater analysis. The laboratory should be contacted directly if parameter-specific certification information is required.

STL-Connecticut
Certification Summary (as of April 2000)

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Maine	Department of Health and Environmental Services	Drinking Water, Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater	2528
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater	46410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste	10602
North Carolina	Division of Environmental Management	Wastewater	388
Rhode Island	Department of Health	Chemistry...Non-Potable Water and Wastewater	A43
Washington	Department of Ecology	Wastewater/Hazardous Waste	C231
Wisconsin	Department of Natural Resources	Wastewater	998355710

7000-0810A
OLIN CORPORATION
SAMPLE SUMMARY

CLIENT ID	LAB ID	MATRIX	DATE COLLECTED	DATE RECEIVED
0502-MW2	000810A-01	WATER	05/02/00	05/04/00
0502-MW2	000810A-01FMS	WATER	05/02/00	05/04/00
0502-MW2	000810A-01FMSB	WATER	05/02/00	05/04/00
0502-MW2	000810A-01FMSD	WATER	05/02/00	05/04/00
0502-MW1R	000810A-02	WATER	05/02/00	05/04/00
0502-MW5	000810A-03	WATER	05/02/00	05/04/00
0502-MW4	000810A-04	WATER	05/02/00	05/04/00
0502-MW7	000810A-05	WATER	05/02/00	05/04/00
0502-MWA3	000810A-06	WATER	05/02/00	05/04/00
0502-MW8	000810A-07	WATER	05/02/00	05/04/00

IEA-CT ANALYTICAL SUMMARY

Client ID: 0502-MW1R, 0502-MW2, 0502-MW4, 0502-MW5, 0502-MW7, 0502-MW8, 0502-MWA3
Job Number: 7000-0810A

Date: 5/20/100

Qty	Matrix	Analysis	Description
1	None	DISK	Diskette Prep.
3	WATER	BN-N8270C-MISC	Miscellaneous Base-N
7	WATER	BN-N8270C-MISC	Miscellaneous Base-N
3	WATER	PST-N8081A-MISC	Miscellaneous Pestic
7	WATER	PST-N8081A-MISC	Miscellaneous Pestic

APPENDIX B

FIELD LOGS

SEMI-ANNUAL GROUND WATER SAMPLING

MAY 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

CONESTOGA-ROVERS
& ASSOCIATES

2055 Niagara Falls Blvd., Suite #3
Niagara Falls, New York 14304
Telephone: (716) 297-6150 Fax: (716) 297-2265
www.CRAworld.com

FILE COPY

TRANSMITTAL

DATE: May 5, 2000

REFERENCE NO.: 8143-20

PROJECT NAME: Olin-Gibson Site, Spring, 2000 Semi-Annual Sampling

TO: Ms. Lorraine Miller
Olin Corporation
1186 Lower River Road
P.O. Box 248
Charleston, TN 37310

RECEIVED
MAY 11 2000
OLIN-ENVIRONMENTAL
REMEDIATION GROUP

Please find enclosed:
- ☐ Draft
- ☐ Originals
- ☐ Prints
- ☐ Final
- ☒ Other Copies

Sent via:
- ☒ Mail
- ☐ Overnight Courier
- ☐ Same Day Courier
- ☐ Other

QUANTITY	DESCRIPTION
1	Copy of CRA field book notes for May 2, 2000 Gibson Site sampling
1	Copy of chain of custody (Severn Trent Laboratories) for 5/2/00 Gibson Site sampling
1	Copies of groundwater elevation form, field instrumentation calibration form, and
	sampling field forms (6)

- ☐ As Requested
- ☒ For Your Use
- ☐ For Review and Comment
- ☐
- ☐

COMMENTS:

Copy to: Ben Brayley, Olin Niagara Falls

Completed by: Frank Garbe [Please Print]

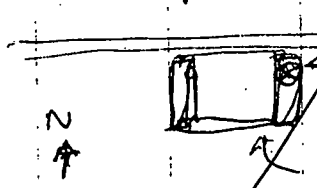
Signed: Frank Garbe /rmdt

Filing: Correspondence File

(122)

Benchmark:
on railing post # 4
counting from west side.
(this is approx above
east center part of creek)
(Note - Railing is also
connected to shorter
railings on each side of
bridge)

on post, looking down



9[30] FG drops off Gibson Site
photos (disposable camera)
@ TOPS

10[00] @ CRA

10/3/97

FG = Frank Gerbec, CRA

(123)

May 2, 2000
TUS

May 2000
Gibson Site Sampling

Weather: partly sunny, ~54°F, no wind

→ Now ok on L. Miller to dump purge water in manhole B.

8[00] @ CRA office → Get 6 coolers set (3 coolers & equip together - need 12+ ft New teflon tubing for MW-1R (+ extra for other well(s)?)

(X) B. Brayley requested I scan out padlock well riser cover holes this time → will get file from PRC & do another time

8[05] call Ben Brayley - (there was some confusion as to the date of sampling - Ben checking w/ L. Miller to make sure that NYSDEC was notified that sampling was today and not May 10 (!). Tell Ben I will gather together equip - make labels etc till I hear from him.

8[20] B. Brayley calls - BM was told today was sampling day and NYSDEC was told (M. Hinton - DEC was out last spring for yearly inspec)

(124)

9:00 To Olin - Sign out keys → Gate (FA9) & well keys (GA-1) (GA-one)
- Grand says Ben B. just left w/ 2 other guys - ask him to let Ben know I've gone over to Site.

9:25 @ Site - Gates open Piezo w/ Ls

Piezo	time	Depth to H2O	comments
P-1	9:51	7.11	*(1) ~~not flush~~ Fc
P-2	9:48	9.38	NO PVC cap
P-3	9:46	6.32	—
P-4	9:44	10.78	—
P-5	9:38	5.52	← PVC riser cap Broken in pieces ← ant nest
P-6	9:35	10.00	
Manhole A	9:53	12.37	—
Manhole B	9:42	14.43	—

Same kind of very fine white ash like powder in annular space

Note - New all weather covered Locks on Gates & Piezos (except P-2 and P-1)

*(1) P-1 Lock riser cover hole could be reamed bigger - all others ok - (maybe also P-2)

(125)

9:57 Lock Front Gates - Move truck to MW-1R, set up on MW-1R & well Locks also GA-1

MW-1R → 'survivor' wasps (11.85+.28 = 12.13)

Bottom: 12.13
W/L 4.76
7.37
.16
1 Vol = 1.18 = 1¼ Gals

Bottom: Firm
Start purge: 10:40
Stop purge: 11:00

→ Pulled tubing out last time - replace w/ New ¼" OD teflon tubing.

pH/SC calibration

pH/SC meter → CRA # 03214
Omega Pocket PAL
Temp: → ~~digital~~ Fc analog metal

pH ON 7.00 reads 8.97
ON 10.00 reads 9.89
ON 4.00 reads 4.14 → adjust slope a tad
ON 7.00 reads 7.02 OK ✓ SG.

STD temps = 61°F "Fresh"

The Following Image(s) are the Best Copy Available

BIEL'S

Spec. Conductivity (same meter)
on 10000 umhos/cm reads
970 umhos/cm
on DI water reads
30 umhos/cm
ok 7/6 ✓

MW-1R Purge record
(CRA (Geoguard) #3274 Peristaltic)

vol	pH	SC	temp	water
1	7.25	1010	59°F	Light tan/mod turbid at 1st, then clear
2	7.28	980	52.5°F	clear
3	7.32	990	51.5°F	clear
4	7.25	980	52.5°F	Mod. turbid, V. Light tan (water drying up)

Dry @ 4+ vols
(5¼ gals)
purge ends @ 11:00

10³⁵ M. Hinton (NYSDEC) on site
→ photo of FG purging set up @ MW-1R
(Note → 2 out of 3 batteries from CRA dead).

10⁵⁵ M. Hinton unlocks side gate fence to inspect inside of site → did walk thru of outside.

→ Mike says FA 9 key doesn't open side locked gate → says it's a FA 10 Lock (2 locks - Both FA 10 keys)
- Mike Goes in Front gate)

11:05 FG dumps MW-1R water in Manhole & using front Gate.

11²⁵ Sample MW-1R
→ 0302-MW-1R
→ water drys up after ~2 Liters
→ wait
→ Dry after 30 secs
→ setup on MW-2 while waiting
- 3 port samples on ice
→ 12:00 pumps ~1/min - will have to come back & pump later in day - close well
→ 11²⁵ Back on well → finish sample
<2 BNC isomers
<2 HCB

MW-2

Bottom 12.13 (11.85 + .28 = 12.13)
WL 4.73 Bottom: Firm
7.40
-.16
1 vol = 1.18 gals = 1¼ gals

→ Put new ¼" ϕ od teflon tubing in MW-2

(128)

11^{45} M. Hinton + offsite
→ Mike took back panel off of pump control unit on telephone pole W. of fenced site - Asks FG to have Ben B call him - he has a question about pump flow meter → it now reads ~28K gals, Mike says last yr they pumped ~58K gals → is flow meter reset? or is he reading it wrong (ie need a multiplier?).
Everything else ok - no concerns

12^{00} Ben B. on site - Relay M. Hintons request/comments. Ben will call him.

12^{15} Purge MW-2

Vol	pH	SC	temp	water
1	7.12	1270	58°F	clear

(tubing not @ bottom cut to short

(12^{30} to office - get new batteries, New peristaltic pump? and more ¼" ID od teflon tubing
- lock front gate of site

(129)

13^{30} Return to site → New tubing in MW-2 + new pump

13^{30} Re Start MW-2 Purge

Vol	pH	SC	Temp	water
2	7.44	1290	57.5°F	clear w/ sand & bottom debris
3	7.35	1270	56°F	clear

end purge → purged 3+ vols (4 gals)
13^{55}

14^{00} Sample MW-2
(0502 - MW2)
water = clear
MS/MSD 12 Liters amber glass
-2+2+2 BHC isomers
-2+2+2 HCB

14^{25} end sample
14^{30} setup to finish Sampling MW-R
14^{45} Finish MW-1R
(Going dry on last liter)

(130)

14[50] Set up on MW-5 & MW-4

(15.03 + .28 = 15.30)

MW-5

Bottom: Firm

Bottom 15.30
WL 6.38
8.72
.16

1 vol = 1.40 gal = 1½ gal.

start purge: 15[05]
stop purge: 15[26]

Purge:

vol	pH	SC	temp	water
1	6.44	2470	52.5°F	mod. turbid, Lt red Brn tint
2	6.45	2500	52.0°F	clear
3	6.43	2500	52.5°F	clear

→ end purge 15:26
purged 3 + vols (4¾ gals)

(→ Geo pump → dying)

15[30] Sample MW-5
(0502-MW5)
2 + 2 liters ← 2 Blue 2 TCB
water: clear

15[40] Dump MW-5 & MW-2 water

Purge

→ MW-4

Bottom 13.76
WL 6.44
7.32
.16

1 vol = 1.17 gal = 1¼ gals

Note → 2 bottles (liters) broken → have enough for everything but Field blank → (would have been chart 2 anyway) → will get spares from CRH Field room.

Purge MW-4 — New teflon tubing in well.

vol	pH	SC	temp	water
1	7.66	1780	56.5°	very black to black, Turbid
2	7.02	1950	52°F	mod turbid, Lt. black tint
3	6.91	1950	51°F	Lt ly turbid, v. Lt. black tint
4	6.97	2080	52°F	clear

16[25] end purge; purged 4 vols (5 gals)

(131)

(13.48 + .28 = 13.76)
Bottom: Firm

start purge 16[08]
stop purge: 16[35]

(132)

→ pump: CRA 'SIGMA' A 3057

16[30] Sample MW-4

2 BMC + 2 MCB

& Duplicate: "MW-7" "1645"

(2 BMC + 2 MCB)

water: clear

→ 16[35] Dry after 2 Liters

→ stuff to truck

→ dump MW-4 water

→ set up for MW-A3 (rep)

→ 16[55] sample again get 1½ liters after 20 mins → Need 4½ L more (=1 hr) → will close well

Purge MW-A3 & sample rest of MW-4, MW-A3 & Field blank on new 5/3/00

17[10] Stop stuff to MW-A3 & set up.

Purge MW-A3

Bottom 11.97 (11.69 + .28 = 11.97')

W/L 5.54 Bottom: Firm

6.43 start purge: 17:22

2" .16 Stop purge: 17[37]

1 vol = 1.03 Gals = 1.0 Gal

(133)

vol	pH	SC	temp	water
1	6.77	740	50.0°F	clear
2	6.79	730	48.0°	clear
3	6.77	740	48.0°	clear

(battery dying on 3rd vol.)

17[37] End purge

Purged 3 vols (3¼ Gals)

17[40] To truck w/ some equip. & to get New battery for Sampling

also Dump MW-A3 water, lock up Manhole & Front Service gate.

17[50] Back to well → owner(?) of Niag. Falls Motel tells me 'No trespassing' — & didn't ask permission as when I asked in October(99) for well rehab he said 'No problem, anytime' for walking thru his property. He just wants me to ask so he knows who it is.

I apologize & tell him I'll ask from now on

(134)

1755 Sample MW-A3

Get all 4 Liters (2 BHC + 2 HCB)

water: clear

- will try to finish off MW-4

1800 Back to office for 2 Lab bottles (2 1000ml amber glass) (From Severn Trent Labs also)

1815 Field Blank "MW-8"

→ Sampled by pouring 4 Liters of lab supplied DI into 4 1000 ml Liter bottles

Loc. @ MW-2

weather: sunny/partly cloudy ~58°F, Lt to mod wind from WSW.

1825 Back on MW-4 → Get all but 1½ Liters → will wait it out

→ Tony Manns from the office stops by (- he saw the truck)

(135)

1845 Done Sampling MW-4 & Dup MW-7

To CRA

→ will ice samples more in cooler (missed Fedex)

→ will label, tape & pack & c-o-c in wen AM → & out wen PM for Thurs AM delivery. → return keys on way home

1900 Equip Away

FG 5/2/00

5/3/00

830–1000 reike, tape/labels & pack coolers & chain.

FG 5/3/00

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 | NO. P7000-0610A

Severn Trent Laboratories
128 Long Hill Cross Road
Shelton CT 06484
Tel: (203) 929-8140
Fax: (203) 929-8142

STL Committed To *Your* Success

STL JOB #:

CLIENT: OLIN CORPORATION

PROJECT ID: 037070-CHARLES GIB.

STL PROJECT MGR: PAUL HOBART

RUSH ☐ YES ☒ NO | DUE DATE

							PST-MISC BN-MISC								
							GL1000								
							Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	REMARKS
01	0502 - MW 2	5/2/00	14:00	WA		Y	12								MS/MSD
02	0502 - MW 1R	5/2/00	11:25	WA		N	4								
03	0502 - MW 5	5/2/00	15:30	WA		N	4								
04	0502 - MW-4	5/2/00	16:30	WA		N	4								
05	0502 - MW 7	5/2/00	16:45	WA		N	4								
06	0502 - MW A3	5/2/00	17:55	WA		N	4								
07	0502 - MW 8	5/2/00	18:15	WA		N	4								
08				WA		N	4								
09				WA		N	4								~~Field Blank~~ FG

MW-7 is Duplicate of MW-4

MW-8 is Field Blank

A - AIR
AQ - AQUEOUS
C - COMPLEX
D - DRUM WASTE
OI - OIL
S - SOIL
SL - SLUDGE
W - WIPE
O - OTHER
FB - FIELD BLANK
TB - TRIP BLANK

BOTTLES PREPARED BY: Rita Chase | DATE / TIME: 4/26/00 15:00
SIGNATURE: Rita Chase

SAMPLES COLLECTED BY: Frank Garbe - CRA | DATE / TIME: 5/2/00
SIGNATURE: Frank Garbe shipped 5/3/00 P100

BOTTLES REC'D BY: CRA Frank Garbe | DATE / TIME:
SIGNATURE: Frank Garbe 4/28/00

RECEIVED IN LAB BY: | DATE / TIME:
SIGNATURE:

☐ BOTTLES INTACT ☐ CUSTODY SEALS
☐ PRESERVED ☐ SEALS INTACT
☐ CHILLED ☐ SEE REMARKS

CLIENT COPY

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER ELEVATION FORM

THIS FORM TO BE USED FOR ALL QUARTERLY PIEZOMETER AND MANHOLE GROUND-WATER ELEVATION MEASURING EVENTS

DATE: May 2, 2000 (TUS) TIME: 9'30 AM

INSPECTOR: Frank Garbe COMPANY: Conestoga-Rovers & Associates (CRA)

WEATHER: partly sunny, 54°F, No wind

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	7.11	565.61	-
P-2	574.89	9.38	565.51	No PVC cap
P-3	574.16	6.32	567.84	-
P-4	576.14	10.78	565.36	-
P-5	575.05	5.52	569.53	PVC cap broken
P-6	578.28	10.00	568.28	can't reset
MANHOLE A	575.22	12.37	562.85	-
MANHOLE B	577.34	14.43	562.91	-

(Note: Manhole A empties into Manhole B by gravity feed and Manhole B is pumped automatically to the Town of Niagara Tuscarora Road sanitary sewer line by a float controlled sump pump which maintains groundwater elevations in Manhole B (and by extension Manhole A) below an elevation of 565 ft. above mean sea level. Therefore, Depth to water distance from the manhole rim should not be less than 12.41 ft. at Manhole B and 10.22 ft. at Manhole A.
(Note: riser elevations (re)surveyed September, 1999 by Wendel Surveyors)

ADDITIONAL COMMENTS/OBSERVATIONS: New 'all weather' locks (GA-1) on piezometers P-1, P-2, P-3, P-4 & Manholes A & B. Piezometers P-5 & P-6 still have older GA-1 locks w/out all weather casing (possibly because newer GA-1 lock shanks are thicker - won't fit thru riser cover holes). Front Gates have new 'all weather' (FA-9) locks. Side fence gate (near Manhole B) has older (FA-10) locks (2) - but there NO longer is a key for those on Gibson Site key ring(s).

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER SAMPLING FIELD PARAMETERS
FIELD INSTRUMENTATION CALIBRATION FORM

DATE: May 2, 2000 SEMI-ANNUAL SAMPLING EVENT: Spring, 2000

PERSON CALIBRATING METERS: Frank Garbe - Conestoga - Rovers & Associates

pH METER USED: MANUFACTURER: Omega
MODEL: Pocket Pal (pH & specific conductivity meter)
IDENTIFICATION/CONTROL NUMBER: CRA # 03214

CALIBRATION STANDARDS USED:

STANDARD 7.00 METER READ: 6.97
STANDARD 4.00 METER READ: 4.14
STANDARD 10.00 METER READ: 9.89
METER CALIBRATION COMMENTS: adjusted slope a very small amount; 2nd measurement of 7.00 gave 7.02

SPECIFIC CONDUCTIVITY METER USED:
MANUFACTURER: Omega (pH & specific conductivity meter)
MODEL: Pocket Pal
IDENTIFICATION/CONTROL NUMBER: CRA #03214

CALIBRATION STANDARDS USED:

STANDARD 0 READ: 30 umhos/cm
(STANDARD 0 USED: ____ AIR, ✓ WATER)(DI)
STANDARD 1000 umhos/cm READ: 970 umhos/cm
STANDARD ____ READ: ____
METER CALIBRATION COMMENTS: ____

THERMOMETER USED: TYPE: Dial type, metal
MANUFACTURER: UNKN.
IDENTIFICATION/CONTROL NUMBER: None
COMMENTS: (DOES THERMOMETER TEMPERATURE AGREE WITH SPECIFIC CONDUCTIVITY METER TEMPERATURE ?) NO temp. on Omega PocketPal
OTHER: ____

OTHER INSTRUMENTS USED: TYPE: (None)
MANUFACTURER: ____
IDENTIFICATION/CONTROL NUMBER: ____

CALIBRATIONS PERFORMED: ____

OTHER CALIBRATION COMMENTS: Standards solutions temperature 61°F

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: Frank Garbe
SAMPLED BY: Frank Garbe
COMPANY: Conestoga-Rovers & Associates

SAMPLE ID: 0502-MW1R
SAMPLING EVENT/DATE: 5|2|00 Spring, 2000
MONITORING WELL: MW-1R
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE: 5|2|00

DEPTH TO BOTTOM FROM TOP OF RISER: 12-13 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 4.76 (FT.)
WATER COLUMN: 7.37 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.18 (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Peristaltic pump / dedicated tubing (≈1¼ Gals)
BOTTOM OF WELL/SILT BUILDUP: None (Bottom Firm) / No silt
PURGE START TIME: 10:40 STOP TIME: 11:00
PURGE OBSERVATIONS: @ first, light tan tint & mod. turbid, rapidly clearing by end of 1st volume; becoming turbid again immed. before drying up
FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY (measured umhos/cm) at 25°C	TEMP. (C OR F)	NOTES:
1	7.25	1010 / 1263	59°/15°C	Lt. tan tint, mod. turbid
2	7.28	980 / 1347	52.5°/11.4°	clear
3	7.32	970 / 1354	51.5°/10.8°	clear
4	7.25	980 / 1347	52.5°/11.4°	becoming mod. turbid, very light tan tint, then dry
5				

TOTAL VOLUME PURGED: Dry at 4+ vols (5¼ Gals)

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 5|2|00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT
SAMPLE TIME: 11:25 begun
14:45 end

LOCATION: MW-1R
SAMPLE METHOD: Peristaltic pump & dedicated teflon tubing
SAMPLING OBSERVATIONS: well dry after 1st 2 Liters, returned 12:00 & finished at 14:45
QC SAMPLES TAKEN: None - regular bottle set (2 Liters for BHC isomers) (& 2 Liters HCB)
OTHER OBSERVATIONS/COMMENTS: water - clear
Put new ¼"ϕ od teflon tubing into well

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= SC measured / {(T-25)(0.2)}+1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: Frank Garbe
SAMPLED BY: Frank Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)
SAMPLE ID: 0502-MW2
SAMPLING EVENT/DATE: 5/2/00 Spring, 2000
MONITORING WELL: MW-2
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE: 5/2/00

DEPTH TO BOTTOM FROM TOP OF RISER: 12.13 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 4.73 (FT.)
WATER COLUMN: 7.40 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.18 (GALS) (≈ 1¼ Gals)
PURGE METHOD: Peristaltic pump/dedicated tubing
BOTTOM OF WELL/SILT BUILDUP: Bottom Firm/No silt
PURGE START TIME: 12:15 STOP TIME: 13:55
PURGE OBSERVATIONS: water clear from start to stop

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm) (measured / @ 25°C)	TEMP. (C OR F)	NOTES:
1	7.12	1270 / 1610	14.4° / 58°	clear
2	7.44	1290 / 1647	14.2° / 57.5°	clear
3	7.35	1270 / 1657	13.3° / 56°	clear
4				
5				

TOTAL VOLUME PURGED: 3 vols+(4 Gals)

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 5/2/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT
SAMPLE TIME: 14:00 began
14:25 end

LOCATION: MW-2
SAMPLE METHOD: Peristaltic pump & dedicated teflon tubing
SAMPLING OBSERVATIONS: water clear
QC SAMPLES TAKEN: MS/MSD collected (12 Liter amber glass total), 6 BHC isomers, 6 HCB Liters each.
OTHER OBSERVATIONS/COMMENTS: water - clear; put new teflon tubing (¼" ø od) into well - 1st time tubing cut to short - replaced. (twice)

Note: specific conductivity formula to 25 degrees Celcius: SC(25)= SC measured / {(T-25)(0.2)}+1

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: Frank Garbe
SAMPLED BY: Frank Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: 0502-MW5
SAMPLING EVENT/DATE: 5/2/00 Spring, 2000
MONITORING WELL: MW-5
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE: 5/2/00

DEPTH TO BOTTOM FROM TOP OF RISER: 15.30 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 6.38 (FT.)
WATER COLUMN: 8.72 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.40 (≃ 1½) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Peristaltic Pump & dedicated tubing
BOTTOM OF WELL/SILT BUILDUP: Firm / None
PURGE START TIME: 15:05 STOP TIME: 15:26
PURGE OBSERVATIONS: purge water moderately turbid w/ a light red brown tint at first, then clears by end of first volume.
FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm) (measured / at 25°C)	TEMP. (C OR F)	NOTES:
1	6.44	2470 / 3393	11.4° / 52.5°	mod. turbid, Red-Brn tint
2	6.45	2500 / 3463	11.1° / 52°	clear
3	6.43	2500 / 3434	11.4° / 52.5°	clear
4				
5				

TOTAL VOLUME PURGED: 3 well volumes + (5 3/4 Gals)

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 5/2/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT
SAMPLE TIME: 15:30

LOCATION: MW-5
SAMPLE METHOD: Peristaltic pump & dedicated teflon tubing
SAMPLING OBSERVATIONS: water clear
QC SAMPLES TAKEN: None — Normal bottle set (2 Liters for BHC, 2 Liters for HCB)
OTHER OBSERVATIONS/COMMENTS: None

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC\ measured}{\{(T-25)(0.2)\}+1}$

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: Frank Garbe
SAMPLED BY: Frank Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: 0502-MW4 / 0502-MW7
SAMPLING EVENT/DATE: 5/2/00 Spring, 2000
MONITORING WELL: MW-4
CONDITION: GOOD

GROUNDWATER PURGE DATA PURGE DATE: 5/2/00

DEPTH TO BOTTOM FROM TOP OF RISER: 13.76 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 6.44 (FT.)
WATER COLUMN: 7.32 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.17 (≈ 1¼) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Peristaltic pump & dedicated tubing
BOTTOM OF WELL/SILT BUILDUP: Firm/No silt
PURGE START TIME: 16:08 STOP TIME: 16:30
PURGE OBSERVATIONS: Purge water very black / turbid going to lightly black tinted. Lightly turbid. when pump shut off for more than a few minutes water becomes darker at first when pump started up.

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY (umhos/cm) measured / at 25°C	TEMP. (C OR F)	NOTES:
1	7.66	1780 / 2305	13.6 / 56.5°	very black, very turbid
2	7.02	1950 / 2700	11.1 / 52°	mod. turbid, light black tint
3	6.91	1950 / 2742	10.6 / 51°	lightly turbid, very light black tint
4	6.97	2080 / 2881	11.1 / 52°	clear
5				

TOTAL VOLUME PURGED: 4 ~~Vols~~ (5 Gals)

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 5/2/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT

SAMPLE TIME: 16:30
For Duplicate "16:45"

LOCATION: MW-4

SAMPLE METHOD: Peristaltic pump & dedicated teflon tubing

SAMPLING OBSERVATIONS: Sampled immed. after purge - sample water clear

QC SAMPLES TAKEN: Duplicate "MW-7" (0502-MW7) < 2 BHC / 2 HCB > liters

OTHER OBSERVATIONS/COMMENTS: New ¼" ϕ od teflon tubing in well.

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC\ measured}{\{(T-25)(0.2)\}+1}$

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: Frank Garbe
SAMPLED BY: Frank Garbe
COMPANY: Conestoga-Rovers & Associates (CRA)

SAMPLE ID: 0502-MWA3
SAMPLING EVENT/DATE: 5/2/00 Spring, 2000
MONITORING WELL: MW-A3
CONDITION: Good

GROUNDWATER PURGE DATA PURGE DATE: 5/2/00

DEPTH TO BOTTOM FROM TOP OF RISER: 11.97 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 5.54 (FT.)
WATER COLUMN: 6.43 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 1.03 (≈1 Gal) (GALS)

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAIN-LESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

PURGE METHOD: Peristaltic pump & dedicated tubing
BOTTOM OF WELL/SILT BUILDUP: Firm/ no silt
PURGE START TIME: 17:22 STOP TIME: 17:37
PURGE OBSERVATIONS: Purge water clear

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm) (measured / at 25°C)	TEMP. (C OR F)	NOTES:
1	6.77	740 / 1057	10.0° / 50°	clear
2	6.79	730 / 1077	8.9° / 48°	clear
3	6.77	740 / 1091	8.9° / 48°	clear
4				
5				

TOTAL VOLUME PURGED: Purged 3 vols + (3¼ gals)

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 5/2/00

MEDIA: GROUNDWATER ✓
CREEK SEDIMENT
SAMPLE TIME: 17:55

LOCATION: MW-A3
SAMPLE METHOD: Peristaltic pump & dedicated teflon tubing
SAMPLING OBSERVATIONS: Purge water clear
QC SAMPLES TAKEN: None
OTHER OBSERVATIONS/COMMENTS: None

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC\ measured}{\{(T-25)(0.2)\}+1}$

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER AND SEDIMENT
SAMPLING FIELD FORM

RECORDED BY: Frank Garbe
SAMPLED BY: Frank Garbe
COMPANY: Conestoga - Rovers & Associates (CRA)

SAMPLE ID: 0502 - MW 8
SAMPLING EVENT/DATE: 5/2/00 Spring, 2000
MONITORING WELL: Field Blank
CONDITION: N/A

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: (FT.)
DEPTH TO WATER FROM TOP OF RISER: (FT.)
WATER COLUMN: (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= (GALS)

PURGE METHOD:
BOTTOM OF WELL/SILT BUILDUP:
PURGE START TIME: STOP TIME:
PURGE OBSERVATIONS:

NOTE: ALL GIBSON SITE MONITORING WELLS ARE 2-INCH DIAMETER STAINLESS STEEL. WELL DEPTHS:

MW-1R	12.10'
MW-2	12.13'
MW-A3	11.95'
MW-4	13.75'
MW-5	15.28'

FIELD PARAMETER MEASUREMENTS: N/A

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
1				
2				
3				
4				
5				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 5/2/00

MEDIA: ~~GROUNDWATER~~ CREEK SEDIMENT ⇒ Field Blank
SAMPLE TIME: 18:15

LOCATION: at MW-2 well
SAMPLE METHOD: Poured Lab supplied DI into 4 1000 ml amber glass supplied bottles.
SAMPLING OBSERVATIONS: (weather at time of sampling: sunny/partly cloudy 58°F, lt-to mod. wind from WSW.)
QC SAMPLES TAKEN: Field Blank Sample
OTHER OBSERVATIONS/COMMENTS: —

Note: specific conductivity formula to 25 degrees Celcius: $SC(25) = \frac{SC\ measured}{\{(T-25)(0.2)\}+1}$

APPENDIX C

QUARTERLY SITE INSPECTION FORMS
(Form 2.1)

January - June 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

FILE COPY

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 2/02/00 TIME: 1^00 PM / 3^00 PM

INSPECTOR'S NAME: BHBrayley WEATHER: Cold

GENERAL SITE CONDITIONS	STATUS U/A	SECURITY	STATUS U/A
Access Road	A	Fence/Locks	A
Cover Vegetation	A	Piezometer/Locks	U*
Trees/Litter	A	Monitoring Wells/Locks	U*
Erosion/Cap	A	Manholes/Lids	A
Erosion/Banks	A		

COMMENTS: * locks frozen - could not open - will replace w/ weatherproof locks

Inspected site with NYDEC - Bidjan Rostami, P.E. - Covered with heavy snow

U - Unacceptable A - Acceptable

FILE COPY

CHARLES GIBSON SITE
(Pine & Tuscarora, P&T)
ENV4060 IND

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: 4/24/00 TIME: 2:28 PM

INSPECTOR'S NAME: BHBrayley WEATHER: Clear/Sunny

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS: Checked wiring on front panel on Manhole "B" Flowmeter to verify auto dialer inputs.

Manhole "B" Flowmeter 26160
Panel totalizer 26207

U - Inacceptable A - Acceptable

FILE COPY

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: May 22, 2000 TIME: 3 30 PM

INSPECTOR'S NAME: Bill Brayley WEATHER: Clear - Sunny

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS: Inspected Site + cut down small trees on South East End near creek

I Inacceptable A - Acceptable

FILE COPY

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: June 8, 200 TIME: 1100 AM

INSPECTOR'S NAME: BH Brayley WEATHER: Cloudy

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS: Well Caps #2 + #5 have been added. Rear Access Gate lock has been changed to current key for all access (Front + Rear).

U - Unacceptable A - Acceptable

FILE COPY

FORM 2.1
INSPECTION FORM
PINE AND TUSCARORA SITE

DATE: June 22, 2000 TIME: 11⁰⁰ AM

INSPECTOR'S NAME: BH Brayley WEATHER: Clear

GENERAL SITE CONDITIONS	STATUS U/A
Access Road	A
Cover Vegetation	A
Trees/Litter	A
Erosion/Cap	A
Erosion/Banks	A

SECURITY	STATUS U/A
Fence/Locks	A
Piezometer/Locks	A
Monitoring Wells/Locks	A
Manholes/Lids	A

COMMENTS:

U - Unacceptable A - Acceptable

APPENDIX D

QUARTERLY GROUNDWATER ELEVATION /PUMPING FORMS
(Form 3.1)

January - June 2000

CHARLES GIBSON SITE

(PINE AND TUSCARORA SITE)

NIAGARA FALLS, NEW YORK

NYSDEC Registry No. 9-32-063

FILE COPY

FORM 3.1
GROUND WATER ELEVATION/PUMPING FORM
PINE AND TUSCARORA SITE

DATE: 2/02/00 TIME: 1^00 PM / 3^00 PM

INSPECTOR'S NAME: BH Brayley WEATHER: Cold-clear

Piezometer	Inside Casing or Rim Elev.	Depth to Water Ft.	Water Elev.	Elev. Limit
P1	572.86	8.38	564.48	
P2	575.00	9.84	565.16	
P3	574.18	7.74	566.44	
P4	576.40	11.39	565.01	
P5	575.09	6.19	568.9	
P6	578.34	10.86	567.48	
MANHOLE A	575.27	12.73	562.54	565.00
MANHOLE B	577.41	14.66	562.75	565.00
Before Pumping	MH A			
After Pumping	MH A			565.00
Before Pumping	MH B			
After Pumping	MH B			565.00

Pumping Date: Est Gals:

COMMENTS: Inspection by NYDEC – BIJAN ROSTAMI, P.E. @ 3^00 PM – Will send report

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGISTRY NO. 9-32-063
GROUNDWATER ELEVATION FORM

THIS FORM TO BE USED FOR ALL QUARTERLY PIEZOMETER AND MANHOLE GROUNDWATER ELEVATION MEASURING EVENTS

DATE: May 2, 2000 (TUS) TIME: 9'30 AM

INSPECTOR: Frank Garbe COMPANY: Conestoga-Rovers & Associates (CRA)

WEATHER: partly sunny, 54°F, No wind

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	7.11	565.61	-
P-2	574.89	9.38	565.51	No PVC cap
P-3	574.16	6.32	567.84	-
P-4	576.14	10.78	565.36	-
P-5	575.05	5.52	569.53	PVC cap broken
P-6	578.28	10.00	568.28	can't reset
MANHOLE A	575.22	12.37	562.85	-
MANHOLE B	577.34	14.43	562.91	-

(Note: Manhole A empties into Manhole B by gravity feed and Manhole B is pumped automatically to the Town of Niagara Tuscarora Road sanitary sewer line by a float controlled sump pump which maintains groundwater elevations in Manhole B (and by extension Manhole A) below an elevation of 565 ft. above mean sea level. Therefore, Depth to water distance from the manhole rim should not be less than 12.41 ft. at Manhole B and 10.22 ft. at Manhole A.
(Note: riser elevations (re)surveyed September, 1999 by Wendel Surveyors)

ADDITIONAL COMMENTS/OBSERVATIONS: New 'all weather' locks (GA-1) on piezometers P-1, P-2, P-3, P-4 & Manholes A & B. Piezometers P-5 & P-6 still have older GA-1 locks w/out all weather casing (possibly because newer GA-1 lock shanks are thicker - won't fit thru riser cover holes). Front Gates have new 'all weather' (FA-9) locks. Side fence gate (near Manhole B) has older (FA-10) locks (2) - but there NO longer is a key for those on Gibson Site key ring(s).