



3855 NORTH OCOEE STREET, SUITE 200, CLEVELAND, TN. 37312
(423) 336-4000 FAX (423) 336-4166

February 28, 2014

Mr. Brian Sadowski
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
Periodic Review Report - 2013**

Dear Mr. Sadowski:

As requested by NYSDEC I have attached one electronic version (in Adobe PDF format) of the subject report. This report summarizes the site conditions and activities performed during 2013 for the operation and maintenance of the containment remedy for the Charles Gibson site in Niagara Falls, N.Y.

The report is in the format requested by NYSDEC, and is submitted prior to March 02, 2014.

Please direct any comments to me at 423/336-4540. Thank you.

Sincerely,
OLIN CORPORATION

David M. Share
Director, Environmental Remediation

cc: Adam Carringer - Olin

Mike Walker – Severson Environmental Services
Matthew Forcucci – NYSDOH Buffalo
Michael Hinton – NYSDEC Buffalo

Olin Corporation

**Charles Gibson Site
Site No. 932063
Periodic Review Report**

February 28, 2014

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I. INTRODUCTION

Brief Summary, Nature and Extent, Remedial History:

The Stipulation and Consent Judgment Approving Settlement Agreement was signed in 1985. Construction of the remedy on the Charles Gibson 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 groundwater monitoring program began in 1993. Waters collected in the site perimeter collection drain system are managed by direct discharge to the City of Niagara Falls Wastewater Treatment Facility. The Charles Gibson site is classified as a commercial/small industrial/residential user (CSIRU) and does not require a permit.

Effectiveness of Remedial Program:

Groundwater monitoring indicates there are no increased concentrations of the Site compounds being monitored. Evaluation of the groundwater indicates that the containment remedy is effective. An evaluation of data from the piezometer pairs at the Site indicates that an inward hydraulic gradient has been established in the containment area of the site. Since 2003, concentrations of site compounds being monitored have been undetected or estimated at concentrations below the detection levels in all monitor wells. The remedial program is achieving the objectives of containing groundwater flow and maintaining groundwater quality standards.

Compliance:

There are no areas of non-compliance.

Recommendations:

The Operation and Maintenance program has shown that the conditions at the site are stable and consistent.

II. SITE OVERVIEW

Site Description and Nature/Extent Prior to Remediation:

The Site as now defined incorporates approximately two acres bounded to the east and north by Cayuga Creek, to the west by Tuscarora Road and to the south by Niagara Mohawk Power Corporation right-of-way and the Auto Zone Incorporated auto parts store and parking lot. The Site cap is slightly mounded with the center of the capped area essentially flat. The capped area is enclosed by a chain link fence. A wooden privacy fence is immediately next to and outside of the chain link fence on portions of the perimeter.

Remediation Chronology:

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 are no longer necessary to determine whether the remediation is effective, Olin may reduce the

frequency and duration of such monitoring or inspections. Olin has submitted annual reports and has conducted the required monitoring for the duration of the remediation.

III. **REMEDY PERFORMANCE, EFFECTIVENESS, AND PROTECTIVENESS**

The work performed for the Site during 2013 was reviewed and found to be in accordance with the approved O&M Manual (Revised 2009) as well as the NYSDEC approved reduction in annual sampling dated April 25, 2013. Groundwater monitoring indicates there are no increased concentrations of the Site compounds being monitored. Evaluation of the groundwater data generated during the 2013 monitoring year indicates that the containment remedy is effective. Drawdown in both manholes was effectively maintained at specified levels throughout the year.

IV. **IC/EC PLAN**

IC/EC Requirements:

Fence is in place around the landfill, effectively restricting access

Clean soil cover is in place on the landfill, restricting infiltration and promoting runoff

A hydraulic control system is in place, effectively controlling groundwater flow direction

Certification:

Attachment A

V. **MONITORING PLAN COMPLIANCE REPORT**

Components of Site Monitoring Plan:

The operation, maintenance, and monitoring (OM&M) activities to be performed include:

- Performance of a groundwater monitoring program to monitor ground water quality at the Site and to verify the inward hydraulic gradient within the capped area.
- The current groundwater level monitoring system for the Site consists of six piezometers (P-1 through P-6) and two manholes (A and B). Piezometers P-1, P-2 and Manhole A are located in the northeast section of the Site; P-3, P-4, and Manhole B are located in the southeast section; and P-5 and P-6 are located toward the southwest (see ***Attachment B***). All piezometers are constructed of Schedule 80 PVC and are 2 inches in diameter. Each piezometer has been constructed with 5 feet of screen and was screened at the water table.
- The construction of the piezometer screens at the water table allows for continued monitoring of the water table elevation inside and outside of the containment area during periods of water level fluctuations. Piezometers P-1, P-3, and P-5 are located outside of the slurry wall that runs along the perimeter of the Site. Piezometers P-2, P-4, and P-6 are inside the slurry wall and paired opposite the three piezometers inside the slurry wall.
- Water level elevations will be measured quarterly at the Site. Manholes A and B and piezometers P-1 through P-6 will be measured. Water level elevations are measured by

means of an acoustical sounder or electronic water level probe. The sounder or probe is lowered into the manhole or piezometer until it makes contact with the free water surface. The depth from the top of the piezometer riser pipe or manhole rim to the water surface is measured to an accuracy of 0.01 ft. Depth to water measurements are converted into mean sea level elevations by referring to the surveyed elevation of the top of the piezometer riser pipe or manhole rim provided on the Groundwater Elevation Form. The depth to water measurements for Manholes A and B are checked to see that they are not greater than 10.27 feet and 12.41 feet, respectively to ensure that the automatic sump pump is functioning.

Summary and Comparison to Remedial Objectives:

The isolation of groundwater within the capped area has been established and is being maintained by current operation and maintenance activities. Since 2003, concentrations of Site compounds being monitored have been undetected or estimated at concentrations below the detection levels, in all monitor wells and Manhole B (**Table 1 & Table 2**). The groundwater monitoring and sampling is performed on an annual basis in rotating quarters to help assess seasonal variability with Groundwater Sampling Field Parameters presented in **Attachment C**.

Currently two locations, immediately upstream and downstream of the Site and the adjacent remediated portion of the Cayuga Creek bed, are sampled once per year, in the Fall or 'low water' period. Beginning with the October 2000 sample event, annual creek sediment samples have been analyzed for BHC isomers only. HCB results are undetected (U) for all sampling events since 1993. Sample collection and analysis of creek sediments are performed annually during the second half of the calendar year. The 2012 data show a decrease in all sediment parameters, both upstream and downstream (**Table 3**).

The water elevation data collected from the piezometers and ground water wells was used to determine whether an inward hydraulic gradient exists was made by comparing water level measurements within the capped area to those measured outside the capped area. The groundwater elevation data indicate that ground water within the capped area is consistent with historical data. An evaluation of data from the piezometer pairs at the Site indicates that an inward hydraulic gradient is being maintained in two of the three piezometer pairs with the exception of a slight outward gradient in the third piezometer pair (P1/P2) with a maximum outward gradient being 0.22 ft. The third pair (P1/P2) had an inward gradient during the second and third quarters. Drawdown in both manholes was effectively maintained at specified levels throughout the year. **Table 4** shows the most recent tables for piezometric data demonstrating that inward gradient.

Deficiencies:

None

Recommendations for Changes:

The Operation and Maintenance program has shown that the conditions at the site are stable and consistent.

VI. O&M PLAN COMPLIANCE REPORT

Components of the O&M Plan:

Site remediation requirements have been met by Olin through rerouting of Cayuga Creek around and away from the waste, by constructing a fully circumscribing soil-bentonite slurry wall barrier, and through installing a double flexible membrane liner cap as part of the final cover with a perimeter collection drain system. The O&M Plan safeguards that remedy and provide for monitoring of the Gibson Site in compliance with the Settlement Agreement.

Inspections, on at least a quarterly basis, of the Site are conducted to identify any potential problems with physical deterioration of structures, possible malfunctions of the slurry wall or of the perforated CPVC drain system, and to ensure that all site remedial measures components are operating effectively, in accordance with the Settlement Agreement.

The Environmental Inspector conducts the inspections to ensure that the remedial measures at the Site will remain operative in a manner that will minimize the need for extra maintenance. Additionally, the inspections address the safeguards to control, minimize or eliminate threats to human health and the environment. The potential post-remediation threats include the release of HCB, BHC, or contaminated leachate to the groundwater, and/or the creek.

Operation, maintenance, and monitoring activities are conducted to identify proposed changes to the O&M Manual or site procedures which would provide a safer and/or more efficient and cost-effective operation.

Recordkeeping is conducted for each site visit and inspection.

Operation & Monitoring (O&M) Summary:

The groundwater collection system is inspected semi-annually for the buildup of hard or soft scale-like deposits. The inspection is performed concurrently with inspection of the capped area. If a component of the groundwater collection system is found to be damaged or malfunctioning, it is repaired or replaced.

The capped area is mowed on a regular basis to prevent establishment of woody vegetation during this reporting period. The capped area functions as designed and complies with the O&M Plan.

Inspections are conducted using the items listed on the Site Inspection Form presented in **Attachment D**. Information to be entered on these forms includes the inspector's name, date, and time of inspection, item inspected and any comments. The inspector indicates on the forms whether the condition of each item was acceptable or unacceptable to ensure that the requirements of this O&M Plan are fulfilled. The scheduled Site monitoring inspections are performed by a qualified individual assigned to inspect the items and systems noted on the Site Inspection Form. The completed Site Inspection Forms are maintained at Olin Environmental Remediation offices in Cleveland, TN. Inspections are performed, at a minimum, on a quarterly basis.

Evaluation of Remedial Systems:

All components are performing as designed.

O&M deficiencies:

None

Conclusions:

The O&M system is being run and maintained properly and does not require additions or modifications at this time.

VII. OVERALL PRR CONCLUSIONS AND RECOMMENDATIONS

Compliance with SMP:

Based on the operations and maintenance documentation listed above, the system requirements are being met. There are no new exposure pathways. Additional plans and modifications are not necessary.

Remedy Effectiveness:

Based on the data developed to date, the remedy has been effective in attaining the remedial objectives.

The isolation of ground water within the capped area has been established and is being maintained by current operation and maintenance activities.

Review of the groundwater elevation data indicate that inward hydraulic gradients were observed between piezometers within the capped area and piezometers outside of the capped area with one previously noted exception. Fluctuations of groundwater elevations indicate that minor outward hydraulic gradients occur, but typically revert back to inward gradients by the next quarter.

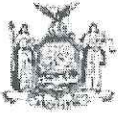
Currently two locations, immediately upstream and downstream of the Site and the adjacent remediated portion of the Cayuga Creek bed, are sampled once per year, in the Fall or 'low water' period. A sample is collected downstream of the Site to monitor changes in levels of contaminants in creek sediments, if any. The other sample, immediately upstream of the Site is used to monitor potential upstream contaminant sources or potential 'backwash' effects caused by the changing level of the Niagara River. Beginning with the October 2000 sample event, annual creek sediment samples have been analyzed for BHC isomers only. HCB results are undetected (U) for all sampling events since 1993.

Future Submittals:

Future submittals of this report will be done on an annual basis.

Attachment A

Institutional & Engineering Certification Form



Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form



Site Details

Box 1

Site No. 932063

Site Name Charles Gibson Site

Site Address: N.E. Cnr. of Niagara Falls Blvd. & Tuscarora Rd. Zip Code: 14304
City/Town: Niagara Falls
County: Niagara
Site Acreage: 2.0

Reporting Period: January 31, 2013 to January 31, 2014

- | | YES | NO |
|--|-------------------------------------|-------------------------------------|
| 1. Is the information above correct? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| If NO, include handwritten above or on a separate sheet. | | |
| 2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form. | | |
| 5. Is the site currently undergoing development? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Box 2

- | | YES | NO |
|--|-------------------------------------|--------------------------|
| 6. Is the current site use consistent with the use(s) listed below?
Closed Landfill | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Are all ICs/ECs in place and functioning as designed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

Description of Institutional Controls

<u>Parcel</u>	<u>Owner</u>	<u>Institutional Control</u>
161.05-3-7	OLIN CORPORATION	Monitoring Plan O&M Plan

Consent Judgement 3/12/85 including IC stipulations p. 23 Permits and Easements, sections 11-24.

- Groundwater Quality Monitoring
- Leachate Monitoring
- Creek Sediment Monitoring

161.05-5-12	OLIN CORPORATION	Monitoring Plan O&M Plan
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Consent Judgment 3/12/85 including IC stipulations p. 23 Permits and Easements, sections 11-24.

- Groundwater Quality Monitoring
- Leachate Monitoring
- Creek Sediment Monitoring

Description of Engineering Controls

<u>Parcel</u>	<u>Engineering Control</u>
161.05-3-7	Cover System Groundwater Containment Leachate Collection Fencing/Access Control
- Realignment of Cayuga Creek	
- Slurry Wall	
- Double Membrane Liner	
- Cap	
- Perimeter Leachate Collection System with discharge to NFWWTP.	
- Perimeter Fence	
161.05-5-12	Cover System Groundwater Containment Leachate Collection Fencing/Access Control
- Realignment of Cayuga Creek	
- Slurry Wall	
- Double Membrane Liner	
- Cap	
- Perimeter Leachate Collection System with discharge to NFWWTP.	
- Perimeter Fence	

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

- a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;
- b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and complete.

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

- (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;
- (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;
- (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;
- (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and
- (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

**IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and
DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 932063

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1, 2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I David M. Share at 3855 N. OCEAN ST., Cleveland TN 37421
print name print business address

am certifying as OLIN CORPORATION (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

David M. Share
Signature of Owner, Remedial Party, or Designated Representative
Rendering Certification

2/28/2014
Date

IC/EC CERTIFICATIONS

Box 7

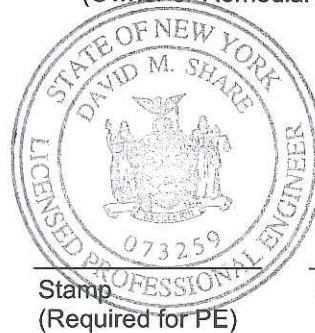
Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I David M. Share at 3855 N. Olcott St., Suite 200, Cleveland TN
print name print business address

am certifying as a Professional Engineer for the OLIN CORPORATION
(Owner or Remedial Party)

David M. Share
Signature of Professional Engineer, for the Owner or
Remedial Party, Rendering Certification



Stamp
(Required for PE)

2/28/2014
Date

Attachment B

**Site Features Map
Figure 1**

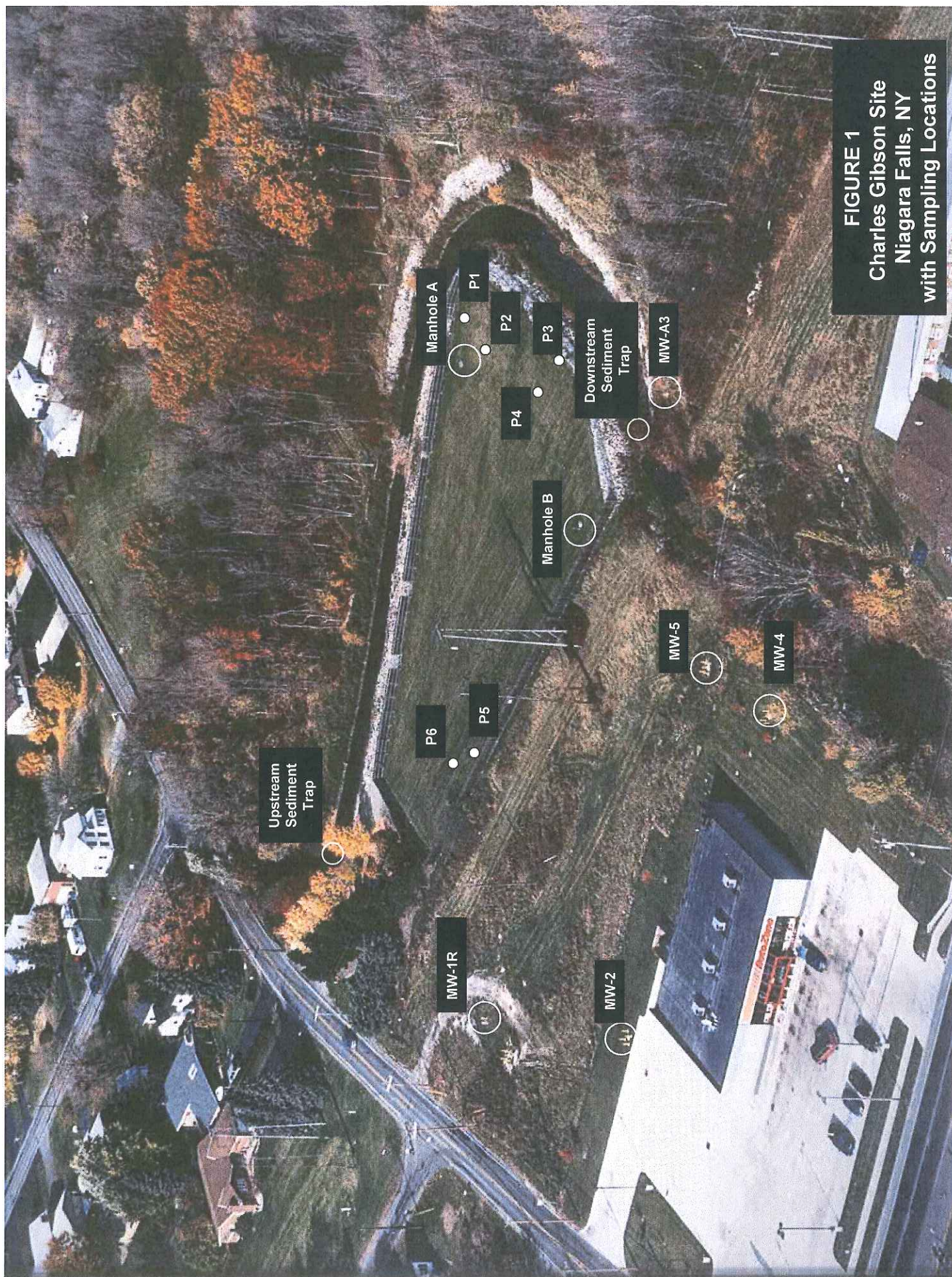


FIGURE 1
Charles Gibson Site
Niagara Falls, NY
with Sampling Locations

Attachment C

Field Sampling Forms

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

DATE: 5-13-13 SEMI-ANNUAL SAMPLING EVENT:

PERSON CALIBRATING METERS: C Jones

pH METER USED: MANUFACTURER: oakton

MODEL: pH tester 3

IDENTIFICATION/CONTROL NUMBER: 1220148

CALIBRATION STANDARDS USED:

STANDARD 7.00 METER READ: 7.02

STANDARD 4.00 METER READ: 4.00

STANDARD 10.00 METER READ: 10.03

METER CALIBRATION COMMENTS:

SPECIFIC CONDUCTIVITY METER USED:

MANUFACTURER: Oakton

MODEL: 35607-10

IDENTIFICATION/CONTROL NUMBER: WD 35607-10 (E-700)

CALIBRATION STANDARDS USED:

STANDARD 0 READ: (STANDARD 0 USED: AIR, X WATER)

STANDARD 8974 8979

STANDARD 1413 1415

METER CALIBRATION COMMENTS:

THERMOMETER USED: TYPE: Digital

MANUFACTURER: Fischer

IDENTIFICATION/CONTROL NUMBER: 3T 08 1B

COMMENTS: (DOES THERMOMETER TEMPERATURE AGREE WITH
SPECIFIC CONDUCTIVITY METER TEMPERATURE ?) yes

OTHER:

OTHER INSTRUMENTS USED: TYPE:

MANUFACTURER:

IDENTIFICATION/CONTROL NUMBER:

CALIBRATIONS PERFORMED:

OTHER CALIBRATION COMMENTS:

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

RECORDED BY: JONES

SAMPLE ID: MAH-B-051313

SAMPLED BY: JONES

SAMPLING EVENT/DATE: 5/13/13 ANNUAL

COMPANY: SEVENSON

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 STAIN-

LESS STEEL. WELL DEPTHS:

MW-1R 12.10' 5/13/13

MW-2 12.13' 5/13/13

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:

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: 05/13/13

MEDIA: GROUNDWATER
CREEK SEDIMENT

SAMPLE TIME: 935

LOCATION: MANHOLE B

SAMPLE METHOD: PERISTALTIC PUMP - DEDICATED TUBING

SAMPLING OBSERVATIONS:

QC SAMPLES TAKEN: NONE

OTHER OBSERVATIONS/COMMENTS: SAMPLED AT 935 ON 5/13/13

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

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

RECORDED BY: C JONES SAMPLE ID: MW-A3-051313
SAMPLED BY: C JONES SAMPLING EVENT/DATE: 5/13/13 ANNUAL
COMPANY: SEVENSON MONITORING WELL: MW-A3
CONDITION: Good

GROUNDWATER PURGE DATA

PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: 11.95 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 10.57 (FT.)
WATER COLUMN: 1.38 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= 0.22 (GALS)

NOTE: ALL GIBSON SITE
MONITORING WELLS ARE
2-INCH DIAMETER STAIN-
LESS STEEL. WELL DEPTHS:
~~MW-1R 12.10'~~ 4/15/13
~~MW-2 12.13'~~ DATED
MW-A3 11.95'
MW-4 13.75'
MW-5 15.28'

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

STOP TIME:

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME		pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
0	1	7.56	652	8.4	CLEAR
2	2	7.41	709	8.6	CLEAR
	3	STARTED TO GO DRY			
	4				
	5				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA:

SAMPLE DATE: 5/13/13

MEDIA: GROUNDWATER X
CREEK SEDIMENT

SAMPLE TIME: 1300

LOCATION: BEHIND NIAGARA FALLS HOTEL

SAMPLE METHOD: PERISTALTIC PUMP, DEDICATED TUBING

SAMPLING OBSERVATIONS: CLEAR, NO ODOUR

QC SAMPLES TAKEN: NONE

OTHER OBSERVATIONS/COMMENTS:

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

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

RECORDED BY: C. JONES SAMPLE ID: MW-4 - 051313
SAMPLED BY: C. JONES SAMPLING EVENT/DATE: 5/13/13
COMPANY: SEVENSON MONITORING WELL: MW-4
CONDITION: Good

GROUNDWATER PURGE DATA

PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: 13.75 (FT.)

DEPTH TO WATER FROM TOP OF RISER: 7.85 (FT.)

WATER COLUMN: 5.90 (FT.)

2" DIA. WELL CONSTANT: 0.16

ONE WELL VOLUME = 0.75 (GALS)

NOTE: ALL GIBSON SITE
MONITORING WELLS ARE
2-INCH DIAMETER STAIN-
LESS STEEL. WELL DEPTHS:
~~MW-1R 12.10'~~ 4/15/13
~~MW-2 12.13'~~ 4/15/13
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:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
<u>0.1</u>	<u>7.16</u>	<u>651</u>	<u>8.70</u>	<u>V. TURBID</u>
<u>.75</u>	<u>7.29</u>	<u>707</u>	<u>9.1</u>	<u>TURBID</u>
<u>1.50</u>	<u>7.31</u>	<u>755</u>	<u>9.3</u>	<u>CLEAR</u>
<u>2.25</u>	<u>7.34</u>	<u>764</u>	<u>9.4</u>	<u>CLEAR</u>
<u>5</u>				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA:

SAMPLE DATE: 5/13/13

MEDIA: GROUNDWATER α
CREEK SEDIMENT

SAMPLE TIME: 1145

LOCATION: E OF AUTO ZONE

SAMPLE METHOD: PERASTATIC PUMP AND DEDICATED TUBING

SAMPLING OBSERVATIONS: CLEAR, NO ODOR, SAMPLE HAD ORANGE TINT MIDWAY THROUGH SAMPLING

QC SAMPLES TAKEN: DUP

OTHER OBSERVATIONS/COMMENTS: A DUPLICATE SAMPLE WAS TAKE HERE

LABELED "MW-7" "1215"

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

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

RECORDED BY: JONES SAMPLE ID: MW 5-051313
 SAMPLED BY: JONES SAMPLING EVENT/DATE: 5/13/13
 COMPANY: SEVENSON MONITORING WELL: MW 5
 CONDITION: GOOD

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: 15.28 (FT.) NOTE: ALL GIBSON SITE MONITORING WELLS ARE
 DEPTH TO WATER FROM TOP OF RISER: 6.90 (FT.) 2-INCH DIAMETER STAIN-
 WATER COLUMN: 8.38 (FT.) LESS STEEL WELL DEPTHS:
 2" DIA. WELL CONSTANT: 0.16 MW-1R 12.10' 4/25/13
 ONE WELL VOLUME= 1.34 (GALS) MW-2 12.13' DELETED
 MW-A3 11.95'
 MW-4 13.75'
 MW-5 15.28'

PURGE METHOD: PERISTALTIC PUMP
 BOTTOM OF WELL/SILT BUILDUP: NO
 PURGE START TIME: 1035 STOP TIME: 1050
 PURGE OBSERVATIONS: TURBID ⇒ CLEAR, VERY LIGHT GREEN W PURGE BUCKET

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm	TEMP. (C OR F)	NOTES:
0 1	6.17	897	8.3	TURBID (226 umhos)
1.5 2	6.31	1112	8.5	↓
3.0 3	6.35	1159	8.5	↓ SLIGHTLY TURBID
4.5 4	6.42	1206	8.6	CLEAR
5				

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 5/13/13
 MEDIA: GROUNDWATER X SAMPLE TIME: 1055
 CREEK SEDIMENT _____
 LOCATION: MW 5 BEHIND AUTO ZONE
 SAMPLE METHOD: PERISTALTIC PUMP & DEDICATED TUBING
 SAMPLING OBSERVATIONS: CLEAR, NO ODOR
 QC SAMPLES TAKEN: MS/MSD VOLUME
 OTHER OBSERVATIONS/COMMENTS: MS/MSD VOLUME TAKEN 4 (1 LITERS)

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



CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM 07977

1565 Jefferson Road, Building 300, Suite 360 • Rochester, NY 14623 | +1 585 288 5380 +1 585 288 8475 (fax) PAGE 1 OF 1

Project Name OLIN - CHARLES GIBSON		Project Number 02107511		Date 30 1075		ANALYSIS REQUESTED (Include Method Number and Container Preservative)									
Project Manager DAVID SAGE		Report CC dmshare@olin.com		Company/Address OLIN CORP		PRESERVATIVE		NUMBER OF CONTAINERS		METALS, TOTAL (List in comments below)		METALS, DISSOLVED (List in comments below)		PRESERVATIVE KEY	
Phone # (423) 336-4587		Email dmshare@olin.com		Sample's Printed Name CHARLES JONES		Sample's Signature <i>[Signature]</i>		FOR OFFICE USE ONLY LAB ID		TIME SAMPLING DATE		TIME		MATRIX	
CLIENT SAMPLE ID		FOR OFFICE USE ONLY LAB ID		TIME SAMPLING DATE		TIME		MATRIX		TIME		TIME		MATRIX	
MHG-051313				935		5/13/13		6W		2					
MW5-051313				1055						4					
MW4-051313				1145						2					
MW7-051313				1215						2					
MW-A3-051313				1300						2					
SPECIAL INSTRUCTIONS/COMMENTS Metals															
TURNAROUND REQUIREMENTS RUSH (SURCHARGES APPLY) 1 day 2 day 3 day 4 day 5 day															
REPORT REQUIREMENTS I. Results Only II. Results + QC Summaries (LCS, DUP, MS/MSD as required) III. Results + QC and Calibration Summaries IV. Data Validation Report with Raw Data															
INVOICE INFORMATION PO # 02107511 BILL TO: OLIN															
RECEIVED BY Signature Printed Name Firm Date/Time															
RECEIVED BY Signature Printed Name Firm Date/Time															
RECEIVED BY Signature Printed Name Firm Date/Time															

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

RECORDED BY: Jones, Walker SAMPLE ID: US-1-091813, MS-1-091813
SAMPLED BY: Jones, Walker SAMPLING EVENT/DATE: Annual Sediment Sample
COMPANY: SANDERSON MONITORING WELL: Creek Sediment
CONDITION:

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:

PURGE OBSERVATIONS:

STOP TIME:

FIELD PARAMETER MEASUREMENTS:

WELL
VOLUME

pH

SPECIFIC
CONDUCTIVITY
umhos/cm)

TEMP.
(C OR F)

NOTES:

TOTAL VOLUME PURGED:

GROUNDWATER OR SEDIMENT SAMPLING DATA:

SAMPLE DATE: 09/18/13

MEDIA: GROUNDWATER
CREEK SEDIMENT X

SAMPLE TIME: 1030

LOCATION: US-1, sample taken from sediment trap located upstream of landfill cap.

SAMPLE METHOD: Sediment samples were removed from the trap, placed on a bowl and mixed for equalization of the sediment. then transferred to sample jars

SAMPLING OBSERVATIONS: Brownish sediment with a few black streaks.

QC SAMPLES TAKEN: yes, Duplicates sample was taken at this point and labeled MS-1. For Lab QC purposes.

OTHER OBSERVATIONS/COMMENTS: X

Samples collected: US-1 + MS-1 (4 oz glass jars), Packed in ice + Picked up by Lab
SC measured Covered

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

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

RECORDED BY: JAMES WALKER SAMPLE ID: DS-1-091813
 SAMPLED BY: JAMES WALKER SAMPLING EVENT/DATE: 9/18/13
 COMPANY: SEVENSON MONITORING WELL: Creek Sediment
 CONDITION: _____

GROUNDWATER PURGE DATA PURGE DATE: _____

DEPTH TO BOTTOM FROM TOP OF RISER: _____ (FT.) NOTE: ALL GIBSON SITE
 DEPTH TO WATER FROM TOP OF RISER: _____ (FT.) MONITORING WELLS ARE
 WATER COLUMN: _____ (FT.) 2-INCH DIAMETER STAIN-
 2" DIA. WELL CONSTANT: 0.16 LESS STEEL WELL DEPTHS:
 ONE WELL VOLUME= _____ (GALS) 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:

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: 09/18/13

MEDIA: GROUNDWATER _____
 CREEK SEDIMENT X SAMPLE TIME: 1230

LOCATION: DS-1, sample was collected from the Sediment trap downstream of the Cap.

SAMPLE METHOD: Sediment was removed from the Sediment trap, Placed in a bowl and mixed.
Then transferred to the sample jar.

SAMPLING OBSERVATIONS: Muddy Brown Sediment.

QC SAMPLES TAKEN: NO

OTHER OBSERVATIONS/COMMENTS: p

Sample collected: DS-1-091813 in a 4oz glass jar. Packed on Ice + Picked
SC measured up by Lab Carion

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



7091

PAGE OF

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Attachment D

Site Inspection Forms

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

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 3/6/2013 TIME: 1000

INSPECTOR: Walker COMPANY: Sevenson

WEATHER:

REASON FOR INSPECTION (QUARTERLY OR OTHER): 1st Quarter Inspection 2013

GENERAL SITE CONDITIONS: U=UNACCEPTABLE A=ACCEPTABLE

(Note: For general site conditions note existence of bare areas (number,size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	<u></u>
COVER VEGETATION	<u>A</u>	<u></u>
TREES	<u>A</u>	<u></u>
LITTER	<u>A</u>	<u></u>
EROSION (CAP)	<u>A</u>	<u></u>
EROSION (BANK)	<u>A</u>	<u></u>
SECURITY:		
FENCE/LOCKS	<u>A</u>	<u></u>
PIEZOMETERS/LOCKS	<u>A</u>	<u></u>
MONITORING WELLS/LOCKS	<u>A</u>	<u></u>
MANHOLES/LIDS/LOCKS	<u>A</u>	<u></u>
ELECTRICAL PANEL	<u>A</u>	<u></u>

ADDITIONAL COMMENTS: Someone cut a bunch of branches off of a Maple tree near the
the power lines (NYSEG?). This has happened before with the pine trees.



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

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 5/13/13 TIME: 0800

INSPECTOR: C. JONES COMPANY: SEVENSON

WEATHER: Cloudy 37° F

REASON FOR INSPECTION (QUARTERLY OR OTHER): QUARTERLY / ANNUAL SAMPLING EVENT

GENERAL SITE CONDITIONS:

U=UNACCEPTABLE A=ACCEPTABLE

(Note: For general site conditions note existence of bare areas (number,size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	
COVER VEGETATION	<u>A</u>	
TREES	<u>A</u>	
LITTER	<u>A</u>	<u>FILLED UP A GARBAGE BAG FULL OF DEBRIS</u>
EROSION (CAP)	<u>A</u>	
EROSION (BANK)	<u>A</u>	
SECURITY:		
FENCE/LOCKS	<u>A</u>	
PIEZOMETERS/LOCKS	<u>A</u>	
MONITORING WELLS/LOCKS	<u>A</u>	<u>SPRAYED SOME OF THE LOCKS WITH WD40</u>
MANHOLES/LIDS/LOCKS	<u>A</u>	
ELECTRICAL PANEL	<u>A</u>	

ADDITIONAL COMMENTS:

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

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 9/18/13 TIME: 0830

INSPECTOR: C. JONES COMPANY: SEVENSON

WEATHER: 65° Sunny

REASON FOR INSPECTION (QUARTERLY OR OTHER): Quarterly inspection, Annual sediment sample

GENERAL SITE CONDITIONS: U=UNACCEPTABLE A=ACCEPTABLE

(Note: For general site conditions note existence of bare areas (number,size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

COMMENTS

ACCESS ROAD	<u>A</u>	
COVER VEGETATION	<u>A</u>	
TREES	<u>A</u>	
LITTER	<u>A</u>	<u>PICKED UP TRASH ALONG CREEK</u>
EROSION (CAP)	<u>A</u>	
EROSION (BANK)	<u>A</u>	

SECURITY:

FENCE/LOCKS	<u>A</u>	<u>SECTION OF WOODEN FENCE DOWN. WAS PUT BACK UP</u>
PIEZOMETERS/LOCKS	<u>A</u>	
MONITORING WELLS/LOCKS	<u>A</u>	
MANHOLES/LIDS/LOCKS	<u>A</u>	
ELECTRICAL PANEL	<u>A</u>	

ADDITIONAL COMMENTS: _____

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

THIS FORM TO BE USED FOR QUARTERLY AND ALL OTHER SITE INSPECTIONS

DATE: 11/6/13 TIME: 1000

INSPECTOR: C JONES COMPANY: SEVENSON

WEATHER: 55° SUNNY

REASON FOR INSPECTION (QUARTERLY OR OTHER): QUARTERLY

GENERAL SITE CONDITIONS:

U=UNACCEPTABLE A=ACCEPTABLE

(Note: For general site conditions note existence of bare areas (number,size), cracks, subsidence (sinking), ponded water, stressed vegetation, soil discoloration or seeps, and rodent burrows. For site security, note absence of locks, gates open or damaged, missing signs or evidence of vandalism. Note any other unusual occurrences.)

		COMMENTS
ACCESS ROAD	<u>A</u>	
COVER VEGETATION	<u>A</u>	
TREES	<u>A</u>	
LITTER	<u>A</u>	
EROSION (CAP)	<u>A</u>	
EROSION (BANK)	<u>A</u>	

SECURITY:

FENCE/LOCKS	<u>A</u>	
PIEZOMETERS/LOCKS	<u>A</u>	
MONITORING WELLS/LOCKS	<u>A</u>	
MANHOLES/LIDS/LOCKS	<u>A</u>	
ELECTRICAL PANEL	<u>A</u>	

ADDITIONAL COMMENTS:

MINOR GRAFFITI ON WESTERN SIDE OF WOOD FENCE

LIGHT LITTER - PICKED UP A BAG FULL.

TABLE 1
CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL SUMMARY
SEMI-ANNUAL GROUND WATER SAMPLING 2003-2013

MONITOR WELL: MW-A3

	2003		2004		2005		2007		2008		2009		2010		2011		2012		2013	
Parameter	April	September	April	September	April	September	April	September	April	September	April	September	April	September	April	September	April	September	May	September
Alpha-BHC	.048U	.035J	.048U	.047U	.047U	.048U	.048U	-	.048U	.048U	.049U	NR	NR	.034J	.053U	NR	NR	0.050U	0.047U	NR
Beta-BHC	.048U	.059U	.048U	.047U	.047U	.048U	.048U	-	.048U	.048U	.049U	NR	NR	.050U	.053U	NR	NR	0.050U	0.047U	NR
Gamma-BHC	.048U	.059U	.048U	.047U	.047U	.048U	.048U	-	.048U	.048U	.049U	NR	NR	.029J	.053U	NR	NR	0.050U	0.047U	NR
Delta-BHC	.048U	.059U	.048U	.047U	.047U	.048U	.048U	-	.048U	.048U	.049U	NR	NR	.050U	.053U	NR	NR	0.050U	0.047U	NR
Hexachlorobenzene	NR	NR	10U	NR	NR	NR	NR	NR	5U	NR	NR	NR	NR	NR	NR	NR	NR	20U	NR	NR

MONITOR WELL: MW-4

	2003		2004		2005		2007		2008		2009		2010		2011		2012		2013	
Parameter	April	September	April	September	April	September	April	September	April	September	April	September	April	September	April	September	April	September	May	September
Alpha-BHC	.049U	0.056	.048U	.048U	.047U	.047U	.042J	.025J	.03J	.048U	.047U	NR	NR	.49U	0.076	NR	NR	0.047U	0.047U	NR
Beta-BHC	.049U	.026J	.048U	.037J	.047U	.036J	.033J	.047U	.037J	.048U	.047U	NR	NR	.49U	.048U	NR	NR	0.047U	0.047U	NR
Gamma-BHC	.049U	.033J	.048U	.048U	.047U	.047U	.048U	.047U	.05U	.048U	.047U	NR	NR	.49U	.0247J	NR	NR	0.047U	0.047U	NR
Delta-BHC	.049U	.050U	.048U	.048U	.047U	.047U	.048U	.047U	.024J	.048U	.047U	NR	NR	.49U	.048U	NR	NR	0.047U	0.047U	NR
Hexachlorobenzene	NR	NR	NR	9U	NR	NR	NR	NR	5U	NR	NR	NR	NR	4.9U	NR	NR	NR	9.4U	NR	NR

MONITOR WELL: MW-5

	2003		2004		2005		2007		2008		2009		2010		2011		2012		2013	
Parameter	April	September	April	September	April	September	April	September	April	September	April	September	April	September	April	September	April	September	May	September
Alpha-BHC	.048U	.049U	.048U	.048U	.047U	.047UJ	.041J	.026J	.035J	.017J	.048U	NR	NR	.030J	.047U	NR	NR	0.047U	0.047U	NR
Beta-BHC	.048U	.049U	.048U	.048U	.047U	.047UJ	.025J	.048U	.052U	.047U	.048U	NR	NR	.049U	.047U	NR	NR	0.047U	0.047U	NR
Gamma-BHC	.048U	.049U	.048U	.048U	.047U	.047UJ	.047U	.048U	.027J	.018J	.048U	NR	NR	.025J	.017J	NR	NR	0.047U	0.047U	NR
Delta-BHC	.048U	.049U	.048U	.048U	.047U	.047UJ	.047U	.048U	.031J	.0094J	.048U	NR	NR	.049U	.047U	NR	NR	0.047U	0.047U	NR
Hexachlorobenzene	NR	NR	10U	NR	NR	NR	NR	NR	5U	NR	NR	NR	NR	4.7U	NR	NR	NR	9.4U	NR	NR

Notes: Concentration in ug/l
- Insufficient sample
U Undetected
J Estimated value
NR Not required

Table 2
Annual Manhole B Sampling

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL RESULTS SUMMARY
ANNUAL LEACHATE SAMPLING

April 13, 2013

	MANHOLE B (MHB)
PARAMETER	
alpha-BHC	0.047U
beta-BHC	0.047U
delta-BHC	0.047U
gamma-BHC	0.047U
Hexachlorobenzene	NR

Notes:

U Undetected

J Estimated value

NR Not Required

Concentration in ug/l

Field blank was non-detect for all parameters of interest.

Data has been validated and judged acceptable as qualified.

Next hexachlorobenzene (HCB) sampling scheduled for Fall 2014

TABLE 3
Charles Gibson Site
Niagara Falls, New York

ANALYTICAL SUMMARY

Annual Cayuga Creek Sediment Sampling 2003 - 2013

UPSTREAM

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Parameter	September	September	September	September	September	September	September	September	September	September	September
Alpha- BHC	28/22J	80U/86J	23J	13	40	77	240	94	200J	17	170J
Beta- BHC	48/30	20J/190	36	34	4.8	69	260	97	120J	48	190J
Gamma- BHC	12J/28	23J/56J	15J	13	4.6	17J	18J	33J	190U	5.5U	28U
Delta- BHC	1.9J/26U	80U/38J	26U	3.9J	3.7	26U	39J	52J	140J	23	28U

DOWNSTREAM

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Parameter	September	September	September	September	September	September	September	September	September	September	September
Alpha- BHC	28/22J	80U/86J	23J	8.3	NS	5200	210	53J	230J	9.8	29U
Beta- BHC	48/30	20J/190	36	22	NS	1000	73	62J	130J	37	89
Gamma- BHC	12J/28	23J/56J	15J	11	NS	66J	60U	63U	220U	5.9U	29U
Delta- BHC	1.9J/26U	80U/38J	26U	3.7J	NS	82J	32	56J	170J	18	29U

Notes:

Concentration in microgram per kilogram (ug/kg)

U Not Detected

J Estimated value

NS No sample in trap

Table 4
2013 Quarterly Groundwater Elevations Summary

Piezometer Pair	3/06/2013	Inward gradient	5/13/2013	Inward gradient	9/18/2013	Inward gradient	11/06/2013	Inward gradient
P1 outside P2 inside	565.32 565.54	Outward	565.63 565.43	Inward	565.62 565.33	Inward	565.35 565.51	Outward
P3 outside P4 inside	569.56 565.34	Inward	567.74 565.24	Inward	566.04 565.26	Inward	569.11 566.09	Inward
P5 outside P6 inside	569.35 567.83	Inward	568.75 567.63	Inward	567.79 567.24	Inward	569.17 567.70	Inward
Manhole A Manhole B	563.92 564.09	Below 565 ft msl Yes Yes	563.67 563.73	Below 565 ft msl Yes Yes	563.29 563.33	Below 565 ft msl Yes Yes	563.36 563.42	Below 565 ft msl Yes Yes

Notes: Measurement units are in feet above MSL.

Piezometers P1, P3, P5 are outside the slurry wall.

Piezometers P2, P4, P6 are located within the containment area.

NA – Not Available

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.

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 GROUND-
WATER ELEVATION MEASURING EVENTS

DATE: 3/6/2013 TIME: 1000

INSPECTOR: Walker COMPANY: Sevenson

WEATHER: Cloudy 30 F

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	<u>7.4</u>	<u>565.32</u>	
P-2	574.89	<u>9.35</u>	<u>565.54</u>	
P-3	574.16	<u>4.6</u>	<u>569.56</u>	
P-4	576.14	<u>10.8</u>	<u>565.34</u>	
P-5	575.05	<u>5.7</u>	<u>569.35</u>	
P-6	578.28	<u>10.45</u>	<u>567.83</u>	
MANHOLE A	575.22	<u>11.3</u>	<u>563.92</u>	
MANHOLE B	577.34	<u>13.25</u>	<u>564.09</u>	

(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:



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 GROUND-
 WATER ELEVATION MEASURING EVENTS

DATE: 5/13/13 TIME: 0800
 INSPECTOR: C Jones COMPANY: SEVENSON
 WEATHER: 40° cloudy

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	<u>7.09</u>	<u>565.63</u>	
P-2	574.89	<u>9.46</u>	<u>565.43</u>	
P-3	574.16	<u>6.42</u>	<u>567.74</u>	
P-4	576.14	<u>10.90</u>	<u>565.24</u>	
P-5	575.05	<u>6.30</u>	<u>568.75</u>	
P-6	578.28	<u>10.65</u>	<u>567.63</u>	
MANHOLE A	575.22	<u>11.55</u>	<u>563.67</u>	
MANHOLE B	577.34	<u>13.61</u>	<u>563.73</u>	

(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: _____

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 GROUND-WATER ELEVATION MEASURING EVENTS

DATE: 9/18/13 TIME: 0830
 INSPECTOR: C. Jones COMPANY: SEVENSON
 WEATHER: 60° Sunny

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	<u>7.10</u>	<u>565.62</u>	
P-2	574.89	<u>9.56</u>	<u>565.33</u>	
P-3	574.16	<u>8.12</u>	<u>566.04</u>	
P-4	576.14	<u>10.88</u>	<u>565.26</u>	
P-5	575.05	<u>7.26</u>	<u>567.79</u>	
P-6	578.28	<u>11.04</u>	<u>567.24</u>	
MANHOLE A	575.22	<u>11.93</u>	<u>563.29</u>	
MANHOLE B	577.34	<u>14.01</u>	<u>563.33</u>	

(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: this site looked good, no vandalism
damaging, all looks same.

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 GROUND-
 WATER ELEVATION MEASURING EVENTS

DATE: 11/6/13 TIME: 1000

INSPECTOR: C JONES COMPANY: SEYENSON

WEATHER: 55° SUNNY

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	<u>7.37</u>	<u>565.35</u>	
P-2	574.89	<u>9.38</u>	<u>565.51</u>	
P-3	574.16	<u>5.05</u>	<u>569.11</u>	
P-4	576.14	<u>10.85</u>	<u>575.29</u>	
P-5	575.05	<u>5.88</u>	<u>569.17</u>	
P-6	578.28	<u>10.58</u>	<u>567.70</u>	
MANHOLE A	575.22	<u>11.86</u>	<u>563.36</u>	
MANHOLE B	577.34	<u>13.92</u>	<u>563.42</u>	

(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: _____

Table 5
Olin Corp. Gibson Site
Discharge Volumes

Summary of Yearly Discharge Volumes

Date	Volume (gallons)
2003 (1)	5,230
2004	65,082
2005	51,115
2006	52,891
2007	22,958
2008	40,223
2009	40,187
2010	28,118
2011	40,625
2012	29,623
2013	46,766
TOTALS	422,818

Monthly Discharge Volumes
2013

Month	Volume (gallons)
Jan	4,299
Feb	4,835
Mar	6,074
Apr	4,620
May	4,544
Jun	4,148
Jul	6,515
Aug	3,164
Sep	2,324
Oct	0
Nov	1,021
Dec	5,222
Total	46,766

Notes:

(1) Pumped during test of system on 4/13/2003