Charles Gibson Site
Site No. 932063
Periodic Review Report Revision

May 10, 2022

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I. INTRODUCTION

Brief Summary, Nature and Extent, Remedial History:

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 compounds being monitored. Evaluation of the monitor well and sediment analytical results indicate the containment remedy is effective. An evaluation of data from the piezometer pairs at the Site indicates that a materially inward hydraulic gradient has been established in the containment area of the site. 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:

No recommendations. Conditions at the Site are stable.

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 2021 was reviewed and found to be in accordance with the approved O&M Manual (Revised 2019), the Site Management Plan approved by NYSDEC on July 17, 2020, 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 2021 monitoring year indicates that the containment remedy is effective. Drawdown in both manholes was effectively maintained.

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 Monitoring Plan:

Operation, maintenance, and monitoring 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 outside the slurry wall.

- Water level elevations are measured quarterly at the Site in Manholes A and B and piezometers P-1 through P-6. 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 14.07 feet and 17.07 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. 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. Sample collection and analysis of creek sediments are performed annually during the second half of the calendar year. The fall 2021 data appeared to be consistent with historical results. The downstream sediment trap had been disturbed and there was no sample taken from the trap. The fall 2021 data showed no detections in the upstream location **(Table 3)**.

The water elevation data collected from the piezometers and groundwater wells was used to determine whether an inward hydraulic gradient exists. Gradient direction was made by comparing water level measurements within the capped area to those measured outside the capped area. The groundwater elevation data indicates that groundwater within the capped area is consistent with historical data. An evaluation of data from the piezometer pairs at the Site indicates that historically an inward gradient exists during the spring and summer seasons while the fall/winter seasons exhibit conditions that reflect outward gradients. An evaluation of the seasonal trends from 2008 through 2021 shows that the spring elevations have remained consistent with all piezometers **(Table 6).** The fall data has shown roughly a 3 foot drop among the wells outside the slurry wall while elevations within the slurry wall has remained consistent. This is further evidence that the remedy has remained effective.

Table 4 and Table 4B shows the most recent piezometric data and graphs.

Deficiencies:

None

Recommendations for Changes:

No recommendations. Conditions at the Site are stable.

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. This O&M Plan safeguards that remedy and provides for monitoring of the Gibson Site in compliance with the Settlement Agreement.

Quarterly inspections of the Gibson 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. Additionally, the inspections address the safeguards to control, minimize or eliminate threats to human health and the environment. 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 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:

The groundwater elevation data indicates that groundwater within the capped area is consistent with historical data 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 previously noted exceptions. Fluctuations of groundwater elevations indicate that minor outward hydraulic gradients historically 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. Historically, upstream samples show higher concentrations than downstream. Beginning with the October 2000 sample event, annual creek sediment samples have been analyzed for BHC isomers only. Downstream sample collection amounts were insufficient for analysis and the upstream analysis revealed undetected concentrations of BHC.

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

Future Submittals:

Future submittals of this report will continue to be submitted annually.

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: 2.000

Reporting Period: January 31, 2021 to January 31, 2022

	YES	NO
1. Is the information above correct?	☑	☐
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?	☐	☑
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☑
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☑
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?	☐	☑

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Closed Landfill	☑	☐
7. Are all ICs in place and functioning as designed?	☑	☐

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

SITE NO. 932063

Box 3

Description of Institutional Controls

Parcel	Owner	Institutional Control
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.
Operation and Maintenance Manual; September 30, 2009.
- Groundwater Quality Monitoring.
- Leachate Monitoring.
- Creek Sediment Monitoring.

161.05-5-12	OLIN CORPORATION	Monitoring Plan O&M Plan

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

- Groundwater Quality Monitoring.
- Leachate Monitoring.
- Creek Sediment Monitoring.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
161.05-3-7	Cover System Groundwater Containment Leachate Collection Fencing/Access Control

- Realignment of Cayuga Creek from the waste.
- Fully circumscribed soil-bentonite slurry wall barrier.
- Double flexible membrane liner cap.
- Perimeter Leachate Collection System with discharge to NFWWTP.
- Final cover soil cap.
- Perimeter chain link and portions of wooden privacy fencing with locked gates.

161.05-5-12	Cover System Groundwater Containment Leachate Collection Fencing/Access Control

- Realignment of Cayuga Creek away from the waste.
- Fully circumscribed soil-bentonite slurry barrier wall.
- Double flexible membrane liner cap.
- Perimeter leachate collection system with discharge to the NFWWTP.
- Final soil cover cap.
- Perimeter chain link with portions of wooden privacy fencing with locked gates.

Box 5

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 Engineering Control 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 compete.

YES	NO
☑	☐

2. For each Engineering control listed in Box 4, I certify by checking "YES" below that all of the following statements are true:

   (a) The 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
☑	☐

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 Adam B Carringer at 490 Stuart Rd NE Cleveland TN 37312
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.

Adam B Carringer 2/24/2022
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification Date

EC CERTIFICATIONS

Box 7

Qualified Environmental Professional 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 Carrie Hunt (print name) at 490 Stuart Road NE, Cleveland TN 37312 (print business address),

am certifying as a Qualified Environmental Professional for the Olin Corporation (Owner or Remedial Party)

Carrie Hunt CHMM, 11148 — Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification

_____ — Stamp (Required for PE)

2/28/2022 — Date

ATTACHMENTS

Attachment A – Institutional & Engineering Certification Form

Attachment B – Site Map

Attachment C – Field Sampling Forms

Attachment D – Site Inspection Forms

Table 1 – Analytical Summary - Groundwater

Table 2 – Analytical Summary - Manhole B

Table 3 – Analytical Summary - Sediments

Table 4 – Groundwater Evaluations Summary

Table 4B – Groundwater Elevations Data

Table 5 – Discharge Volumes

Table 6 – Seasonal Piezometer Data

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: 03/17/21 SAMPLING EVENT: SPRING 2021

PERSON CALIBRATING METER: Maxwell Littlson

INSTRUMENT USED:

MANUFACTURER: Horiba

MODEL NUMBER: U-52

HGS NUMBER: P346AXKB

DATE OF MANUFACTURE: September 2019

CALIBRATION STANDARDS USED:

STANDARD 7.00 METER READ: _____

STANDARD 4.00 METER READ: ✓

STANDARD 10.00 METER READ: _____

	PRE CALIBRATION READINGS	POST CALIBRATION READINGS
TEMPERATURE (°F or °C):	2.67	2.81
pH:	7.65	3.94
pHmv:	42	-40
OX-RED POT (ORPmv):	105	4.70
CONDUCTIVITY (ms/cm):	1.51	1.57
TURBIDITY (NTU):	0.0	1.1
mg/L DO:	20.95	15.02
% DO:	137.0	113.8

OTHER CALIBRATION COMMENTS: —

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

RECORDED BY: KYLE EYDT
SAMPLED BY: KYLE EYDT
COMPANY: SES

SAMPLE ID: MH-B-031721
SAMPLING EVENT/DATE: SPRING - 3-17-21
MONITORING WELL: MH-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)

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

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'

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: 031721

MEDIA: GROUNDWATER X
CREEK SEDIMENT

SAMPLE TIME: 0910

LOCATION: MH-B
SAMPLE METHOD: PERISTALTIC PUMP
SAMPLING OBSERVATIONS: NONE
QC SAMPLES TAKEN: NONE
OTHER OBSERVATIONS/COMMENTS:

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: KYLE EYDT
SAMPLED BY: KYLE EYDT
COMPANY: SES

SAMPLE ID: MW-4
SAMPLING EVENT/DATE: ~~3/19/21~~ 3/18/21
MONITORING WELL: MW 4
CONDITION:

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: 13.75 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 7.57 (FT.)
WATER COLUMN: 6.18 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= .99 (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: PUMP
BOTTOM OF WELL/SILT BUILDUP:
PURGE START TIME: ~~0900~~ 845 STOP TIME: 0900
PURGE OBSERVATIONS: ORANGE WATER

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
INITIAL ~~1~~	7.04	1.24	7.3	
2	7.20	1.26	7.34	
3	7.25	1.06	7.07	
4	6.98	1.17	7.15	
5				

TOTAL VOLUME PURGED: 3 gallons

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 03/18/21

MEDIA: GROUNDWATER X
CREEK SEDIMENT

SAMPLE TIME: 0900

LOCATION: MW-4
SAMPLE METHOD: PUMP
SAMPLING OBSERVATIONS: ORANGE WATER
QC SAMPLES TAKEN: MS-MSD
OTHER OBSERVATIONS/COMMENTS: WELL RAN DRY FROM PURGE WE CAME BACK THE NEXT DAY TO SAMPLE RECHARGE.

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: KYLE Eydt
SAMPLED BY: KYLE EYDT
COMPANY: SES

SAMPLE ID: MW-5 + MW7 Blind Dup
SAMPLING EVENT/DATE:
MONITORING WELL: 5
CONDITION:

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: 15.28 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 7.7 (FT.)
WATER COLUMN: (FT.)
2" DIA. WELL CONSTANT: 7.58 0.16
ONE WELL VOLUME= 1.21 (GALS)

PURGE METHOD: PUMP
BOTTOM OF WELL/SILT BUILDUP:
PURGE START TIME: 0945 STOP TIME: 1000
PURGE OBSERVATIONS:

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'

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
0 INITIAL	5.74	1.4	6.3C	
1	6.39	1.36	7.01 C	
2	7.52	1.35	7.36C	
3	~~7.53~~ 6.55	1.36	7.65C	
5				

TOTAL VOLUME PURGED: 3.75 GAL.

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 031721

MEDIA: GROUNDWATER X
CREEK SEDIMENT
SAMPLE TIME: 1000

LOCATION: MW-5
SAMPLE METHOD: PUMP
SAMPLING OBSERVATIONS: NONE
QC SAMPLES TAKEN: blind duplicate taken at MW5 as MW7 at 1030
OTHER OBSERVATIONS/COMMENTS: MW5 sampled at 1000

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: KYLE EVDT
SAMPLED BY: KYLE EVDT
COMPANY: SES

SAMPLE ID: MW-A3
SAMPLING EVENT/DATE: 3/17/21
MONITORING WELL: MW-A3
CONDITION:

GROUNDWATER PURGE DATA PURGE DATE:

DEPTH TO BOTTOM FROM TOP OF RISER: 11.95 (FT.)
DEPTH TO WATER FROM TOP OF RISER: 6.2 (FT.)
WATER COLUMN: 5.75 (FT.)
2" DIA. WELL CONSTANT: 0.16
ONE WELL VOLUME= .92 (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: PUMP
BOTTOM OF WELL/SILT BUILDUP: NO
PURGE START TIME: 1100 STOP TIME: 1120
PURGE OBSERVATIONS:

FIELD PARAMETER MEASUREMENTS:

WELL VOLUME	pH	SPECIFIC CONDUCTIVITY umhos/cm)	TEMP. (C OR F)	NOTES:
1	6.8	.44	6.55C	
2	7.4	.39	7.8C	
3	7.67	.40	7.28C	
4				
5				

TOTAL VOLUME PURGED: 3 gallons

GROUNDWATER OR SEDIMENT SAMPLING DATA: SAMPLE DATE: 3/17/21

MEDIA: GROUNDWATER X
CREEK SEDIMENT
SAMPLE TIME: 1120

LOCATION: MW-A3
SAMPLE METHOD: PUMP
SAMPLING OBSERVATIONS: NONE
QC SAMPLES TAKEN: NONE
OTHER OBSERVATIONS/COMMENTS:

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

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

002999

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: Charles Gibson	Project Number: 1259
Project Manager: Adam Carringer	Report CC: Adam Carringer
Company/Address: Olin Corp Or 3855 North Ocoee St CLEVELAND TN 37312	
Phone #: 423 336 4989	Email: ABCarringer@Olin.com
Sampler's Signature: [signature]	Sampler's Printed Name: Max Litton

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

PRESERVATIVE: 0

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ◦ 8260 ◦ 624 ◦ CLP	GC/MS SVOAs ◦ 8270 ◦ 625	GC VOAs ◦ 8021 ◦ 601/602	PESTICIDES ◦ 8081 ◦ 608	PCBs ◦ 8082 ◦ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
FIELD BLANK 031721		03/17/21	0917		2				2				
MW5 031721		03/17/21	1000		6				6				MS/MSD
MW11 031821		03/18/21	0900		2				2				
MW7 031721		03/17/21	1030		2				2				
MW8 031721		03/17/21	0910		2				2				
MW13 031721		03/17/21	1120		2				2				
TEMP BLANK		—	—	—	1				1				Provided by lab

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS
Metals
Shipped in one cooler

See QAPP ☐

TURNAROUND REQUIREMENTS
_____ RUSH (SURCHARGES APPLY)
_____ 1 day _____ 2 day _____ 3 day
_____ 4 day _____ 5 day
_X_ Standard (10 business days-No Surcharge)
REQUESTED REPORT DATE: Standard

REPORT REQUIREMENTS
_____ I. Results Only
_X_ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
_____ III. Results + QC and Calibration Summaries
_____ IV. Data Validation Report with Raw Data
Edata _____ Yes _____ No

INVOICE INFORMATION
PO #
BILL TO: OLIN

STATE WHERE SAMPLES WERE COLLECTED

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature [signature]	UPS	Signature	Signature	Signature	Signature
Printed Name Max Litton	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm SEVENSON	Firm	Firm	Firm	Firm	Firm
Date/Time 03/18/21 1100	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

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

RECORDED BY: WALKER
SAMPLED BY: WALKER
COMPANY: SOUTHSON

SAMPLE ID: US-1-092021
SAMPLING EVENT/DATE: 9-20-21
MONITORING WELL: SEDIMENT (CREEK) upstream trap
CONDITION: ok

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 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'

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: 9-20-21

MEDIA: GROUNDWATER
CREEK SEDIMENT X

SAMPLE TIME: 1430

LOCATION: CREEK Sediment upstream of Landfill Cap near Driveway Gates
SAMPLE METHOD: Sediment Trap
SAMPLING OBSERVATIONS: Brown + Black mud
QC SAMPLES TAKEN: Duplicate Sample Taken and Labeled MS-1-092021 - Time 1445
OTHER OBSERVATIONS/COMMENTS:

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: WALKER
SAMPLED BY: M. WALKER
COMPANY: SEVERN

SAMPLE ID: DS-1-092021
SAMPLING EVENT/DATE: 9-20-21
MONITORING WELL: CREEK SEDIMENT Down Stream of Culv
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)

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

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'

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: 9-20-21

MEDIA: GROUNDWATER
CREEK SEDIMENT X

SAMPLE TIME: Ø No Sample

LOCATION: center of Creek - 3 fence post from Corner, Down stream of Culv

SAMPLE METHOD: SEDIMENT TRAP - Submerged

SAMPLING OBSERVATIONS: SEDIMENT TRAP WAS FOUND upside down in CREEK BED

QC SAMPLES TAKEN: Ø No SEDIMENT WAS IN TRAP. NO SAMPLE TAKEN.

OTHER OBSERVATIONS/COMMENTS: ↓ SEE ABOVE

I CLEANED THE TRAP AND RESET FOR NEXT YEAR.

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

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

061202

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 SITE	Project Number: 125G
Project Manager: ADAM CARRINGER	Report CC: ADAM CARRINGER
Company/Address: OLIN CORP. - Corporate Env. Remediation Group ~~3855 Industry~~ 490 Stuart Rd CLEVELAND, TN 37312	
Phone #: 423-508-2768	Email: ABCARRINGER@OLIN.COM
Sampler's Signature:	Sampler's Printed Name: MICHAEL WALKER

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: O

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
US-1-092021		9-20-21	1430	SED	1				1				
MS-1-092021		9-20-21	1445	SED	1				1				
~~DS-1-092021~~		~~9/20/21~~		~~SED~~	~~1~~				~~1~~				

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS

~~Metals~~

No DS-1-09 2021 Was taken Due to Lack of Material in Sediment trap.

See QAPP ☐

TURNAROUND REQUIREMENTS

_____ RUSH (SURCHARGES APPLY)

_____ 1 day _____ 2 day _____ 3 day

_____ 4 day _____ 5 day

X Standard (10 business days-No Surcharge)

REQUESTED REPORT DATE

_____

REPORT REQUIREMENTS

_____ I. Results Only

X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

_____ III. Results + QC and Calibration Summaries

_____ IV. Data Validation Report with Raw Data

Edata _____ Yes _____ No

INVOICE INFORMATION

PO #

BILL TO: OLIN CORP

STATE WHERE SAMPLES WERE COLLECTED New York

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
~~MICHAEL WALKER~~					
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: MICHAEL WALKER	Printed Name: UPS DRIVER	Printed Name	Printed Name	Printed Name	Printed Name
Firm: SEVENSON	Firm: UPS	Firm	Firm	Firm	Firm
Date/Time: 9/20/21 1505	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Lab Copy; Yellow - Return to Originator

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: 2/24/2021 TIME: 1300

INSPECTOR: Jones COMPANY: Sevenson

WEATHER: 40 sunny

REASON FOR INSPECTION (QUARTERLY OR OTHER): power check on system

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 occurences.)

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

ADDITIONAL COMMENTS:

The alarm agent failed to send out watch dog check-ins. Sevenson arrived to a secure site and made sure the power was on. Ran the pump on manual for a few minutes. The water level was around 15 feet.

M Walker has ordered new alarm parts that are compatible with 5G service.

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: 3/17/21 TIME: 1200

INSPECTOR: KYLE EYOT COMPANY: SES

WEATHER:

REASON FOR INSPECTION (QUARTERLY OR OTHER): Quarterly Inspection 1st Q 2021

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 occurences.)

		COMMENTS
ACCESS ROAD	A	
COVER VEGETATION	A	
TREES	A	
LITTER	A	
EROSION (CAP)	A	
EROSION (BANK)	A	

SECURITY:

FENCE/LOCKS	A	
PIEZOMETERS/LOCKS	A	
MONITORING WELLS/LOCKS	A	
MANHOLES/LIDS/LOCKS	A	
ELECTRICAL PANEL	A	

ADDITIONAL COMMENTS: Homeless guy that was living on site has not returned since the local police talked to him.

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: 5/12/21 TIME: 0930

INSPECTOR: Maxwell Liffiton COMPANY: Sevenson

WEATHER: Sunny, 50°F

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 occurences.)

		COMMENTS
ACCESS ROAD	A	—
COVER VEGETATION	A	—
TREES	A	—
LITTER	A	—
EROSION (CAP)	A	—
EROSION (BANK)	A	—
SECURITY:		
FENCE/LOCKS	A	—
PIEZOMETERS/LOCKS	U	P-2 cover eyehole has snapped off. Cover can be removed without removing lock.
MONITORING WELLS/LOCKS	A	—
MANHOLES/LIDS/LOCKS	A	—
ELECTRICAL PANEL	A	—

ADDITIONAL COMMENTS: Site grass is fairly long.

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: 9-20-21 TIME: 1 00 PM

INSPECTOR: WALKER COMPANY: STEVENSON

WEATHER: cloudy 78°F

REASON FOR INSPECTION (QUARTERLY OR OTHER): Fall sampling event + 3rd (3) inspection

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 occurences.)

		COMMENTS
ACCESS ROAD	A	Good
COVER VEGETATION	A	Good
TREES	A	Good
LITTER	A	Some, but picked up.
EROSION (CAP)	A	None
EROSION (BANK)	A	None
SECURITY:		
FENCE/LOCKS	A	ok
PIEZOMETERS/LOCKS	A	ok
MONITORING WELLS/LOCKS	A	ok
MANHOLES/LIDS/LOCKS	A	ok
ELECTRICAL PANEL	A	ok

ADDITIONAL COMMENTS: Site looks Good. Repairing some wood planks on fence, growth on creek bank amongst Rip Rap is getting thicker + tall. Do we need to maintain that?

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: 11-8-21 TIME: 0900

INSPECTOR: MIKE WALKER COMPANY: SEVENSON

WEATHER: SUNNY 55°F

REASON FOR INSPECTION (QUARTERLY OR OTHER): 4TH QUARTER SITE INSPECTION 2021

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 occurences.)

		COMMENTS
ACCESS ROAD	A	
COVER VEGETATION	A	
TREES	A	
LITTER	A	
EROSION (CAP)	A	
EROSION (BANK)	A	
SECURITY:		
FENCE/LOCKS	A	
PIEZOMETERS/LOCKS	A	
MONITORING WELLS/LOCKS	A	
MANHOLES/LIDS/LOCKS	A	P-2 Lock was cracked, Landlord A new one
ELECTRICAL PANEL	A	

ADDITIONAL COMMENTS: SITE LOOKED GOOD, ALL WENT WELL.

Tables

TABLE 1
CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL SUMMARY
GROUND WATER SAMPLING 2015-2021

MONITOR WELL: MW-A3

	2015		2016		2017		2018		2019		2020		2021	
Parameter	May	September	May	September	May	September	May	September	May	September	May	September	March	September
Alpha-BHC	0.047U	NR	NR	-	0.047U	NR	NR	-	-	NR	NR	-	0.049U	NR
Beta-BHC	0.047U	NR	NR	-	0.047U	NR	NR	-	-	NR	NR	-	0.049U	NR
Gamma-BHC	0.047U	NR	NR	-	0.047U	NR	NR	-	-	NR	NR	-	0.049U	NR
Delta-BHC	0.047U	NR	NR	-	0.047U	NR	NR	-	-	NR	NR	-	0.049U	NR
Hexachlorobenzene	NR	NR	NR	-	NR	NR	NR	-	-	NR	NR	-	NR	NR

MONITOR WELL: MW-4

	2015		2016		2017		2018		2019		2020		2021	
Parameter	May	September	May	September	May	September	May	September	May	September	May	September	March	September
Alpha-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.13	NR	NR	0.047U	0.045U	NR
Beta-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.047U	NR	NR	0.047U	0.045U	NR
Gamma-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.48	NR	NR	0.047U	0.045U	NR
Delta-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.18	NR	NR	0.047U	0.045U	NR
Hexachlorobenzene	NR	NR	NR	10U	NR	NR	NR	9.4U	NR	NR	NR	9.4U	NR	NR

MONITOR WELL: MW-5

	2015		2016		2017		2018		2019		2020		2021	
Parameter	May	September	May	September	May	September	May	September	May	September	May	September	March	September
Alpha-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.1	NR	NR	0.047U	0.050U	NR
Beta-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.047U	NR	NR	0.047U	0.050U	NR
Gamma-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.41	NR	NR	0.047U	0.050U	NR
Delta-BHC	0.047U	NR	NR	0.056U	0.047U	NR	NR	0.047U	0.25	NR	NR	0.047U	0.050U	NR
Hexachlorobenzene	NR	NR	NR	10U	NR	NR	NR	9.4U	NR	NR	NR	9.4U	NR	NR

Notes: Concentration in ug/l
- \- insufficient sample
- U Not detected at reported quantitation limit
- J Estimated value
- NR Not required

Next hexachlorobenzene (HCB) sampling scheduled for fall 2022.

Table 2
Annual Manhole B Sampling

CHARLES GIBSON SITE
NIAGARA FALLS, NEW YORK

ANALYTICAL RESULTS SUMMARY
ANNUAL LEACHATE SAMPLING

May 17, 2021

	MANHOLE B (MHB)
PARAMETER	
alpha-BHC	0.054U
beta-BHC	0.13J
delta-BHC	0.054U
gamma-BHC	0.054U
Hexachlorobenzene	NR

Notes:
U - Not detected at reported quantitation limit
J - Estimated value (see data narrative)
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 2022.

TABLE 3
Charles Gibson Site
Niagara Falls, New York

ANALYTICAL SUMMARY

Annual Cayuga Creek Sediment Sampling 2010 - 2021

UPSTREAM

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		2021
Parameter	September	September	September	September	September	September	September	September	September	September	May	September	September
Alpha- BHC	94	200J	17	170J	120	NS	9.7	200	57U	3200	270	32U	150U
Beta- BHC	97	120J	48	190J	280	NS	25	190	57U	1100	350	32U	150U
Gamma- BHC	33J	190U	5.5U	28U	49U	NS	5.6U	51U	57U	510U	59U	32U	150U
Delta- BHC	52J	140J	23	28U	49U	NS	19	51U	57U	510U	59U	32U	150U

DOWNSTREAM

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		2021
Parameter	September	September	September	September	September	September	September	September	September	September	May	September	September
Alpha- BHC	53J	230J	9.8	29U	55	52U	7	69U	63U	NS	73U	40U	NS
Beta- BHC	62J	130J	37	89	100	76	18	87	63U	NS	110	40U	NS
Gamma- BHC	63U	220U	5.9U	29U	52U	52U	4.9U	69U	63U	NS	73U	40U	NS
Delta- BHC	56J	170J	18	29U	52U	52U	15	69U	63U	NS	73U	40U	NS

Notes:
Concentration in microgram per kilogram (ug/kg)
U Not detected at reported quantitation limit
J Estimated value
NS No sample in trap

Table 4

2021 Quarterly Groundwater Elevations Summary

Piezometer Pair	3/17/2021	Inward gradient	5/12/2021	Inward gradient	9/20/2021	Inward gradient	11/08/2021	Inward gradient
P1 outside **P2 inside**	563.99 570.51	Outward	565.47 565.44	Inward	564.73 565.48	Outward	565.18 565.54	Outward
P3 outside **P4 inside**	567.72 565.28	Inward	568.11 565.18	Inward	564.28 565.78	Outward	567.70 565.49	Inward
P5 outside **P6 inside**	568.79 567.12	Inward	568.62 567.15	Inward	567.75 567.13	Inward	569.17 567.68	Inward
		Below 565 ft msl		Below 565 ft msl		Below 565 ft msl		Below 565 ft msl
Manhole A **Manhole B**	562.61 562.66	Yes Yes	562.87 562.94	Yes Yes	562.81 562.90	Yes Yes	562.81 562.90	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.

Table 4B - Groundwater Elevations Data

	PIEZOMETER							
DATE	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**MHA**	**MHB**
2/13/2008	NA	NA	NA	NA	NA	NA	NA	NA
4/3/2008	565.44	565.50	567.55	565.44	569.84	567.99	564.13	564.17
9/11/2008	566.13	565.28	566.31	565.20	568.37	567.39	564.11	564.23
11/5/2008	565.46	565.24	566.52	565.17	568.76	567.43	563.81	563.89
2/13/2009	NA	NA	NA	NA	NA	NA	NA	NA
4/2/2009	565.46	565.43	566.81	565.34	569.11	567.77	563.97	564.03
9/17/2009	566.37	565.42	566.51	565.29	568.60	567.58	563.67	563.74
11/23/2009	565.31	565.29	566.41	565.24	568.70	567.37	563.52	563.61
3/3/2010	565.27	565.42	566.18	565.22	568.83	567.57	563.77	563.84
4/14/2010	565.72	565.46	567.05	565.19	569.45	567.77	564.02	564.09
9/17/2010	566.40	565.20	564.91	565.07	567.23	566.93	564.20	563.68
11/11/2010	564.53	565.16	565.57	565.02	567.40	566.78	563.82	563.88
3/9/2011	565.05	565.49	568.11	565.42	569.75	567.88	563.94	564.03
4/19/2011	565.50	565.48	567.74	565.26	569.46	567.77	564.01	564.15
9/22/2011	565.54	565.28	565.11	565.18	567.27	567.09	563.42	563.46
11/8/2011	565.33	565.41	567.41	565.28	568.77	567.53	563.32	563.40
3/15/2012	565.36	565.54	568.25	565.34	569.23	567.75	564.21	567.27
5/22/2012	566.01	565.50	567.40	565.46	569.01	567.75	563.40	563.49
9/17/2012	564.50	565.26	564.37	565.16	566.77	566.80	563.47	563.53
11/9/2012	564.51	565.38	568.28	565.22	568.40	567.25	563.62	563.99
3/6/2013	565.32	565.54	569.56	565.34	569.35	567.83	563.92	564.09
5/13/2013	565.63	565.43	567.74	565.24	568.75	567.63	563.67	563.73
9/18/2013	565.62	565.33	566.04	565.26	567.79	567.24	563.29	563.33
11/6/2013	565.35	565.51	569.11	566.09	569.17	567.70	563.36	563.42
3/18/2014	565.34	565.49	569.24	565.19	569.35	567.76	563.86	563.89
5/9/2014	565.50	565.50	568.44	565.35	569.36	567.82	563.83	563.91
9/18/2014	565.54	566.88	565.37	568.55	567.76	567.17	563.27	563.32
12/8/2014	566.65	565.08	568.15	565.15	568.14	566.86	563.50	563.56
3/11/2015	565.15	564.68	567.45	565.15	568.39	567.07	568.80	563.89
5/27/2015	565.84	565.53	566.71	565.44	568.46	567.49	563.84	563.83
9/1/2015	565.16	565.41	565.17	565.49	567.46	577.07	563.51	563.54
11/10/2015	564.97	565.40	566.11	565.34	568.92	567.07	563.67	563.76
3/8/2016	565.08	565.67	570.39	565.46	569.34	567.67	563.51	563.59
5/27/2016	565.87	565.56	567.24	565.50	568.60	567.88	563.94	563.48
9/8/2016	564.27	565.37	563.95	565.33	566.18	566.53	563.32	563.49
11/11/2016	563.28	565.11	565.17	565.17	565.44	566.13	563.36	563.39
3/7/2017	565.22	565.58	570.75	565.37	568.68	567.07	563.64	563.74
5/30/2017	566.00	566.31	568.71	565.43	569.09	567.63	563.57	563.63
9/6/2017	565.12	565.48	565.88	565.49	566.60	567.33	563.40	563.49
11/21/2017	565.01	565.51	569.92	565.43	569.24	567.60	563.52	563.60
3/13/2018	565.64	565.54	568.64	565.49	568.26	567.77	563.77	563.79
5/24/2018	565.90	565.53	567.21	565.35	568.70	567.57	563.24	563.31
9/25/2018	564.33	565.34	563.86	569.13	566.20	567.12	563.10	563.14
11/18/2018	563.33	565.19	568.91	568.16	568.85	566.57	563.21	563.25
3/7/2019	565.52	565.58	567.96	567.75	569.08	567.67	563.90	563.99
5/21/2019	566.11	565.58	568.87	565.46	569.43	567.88	563.63	563.69
9/24/2019	564.91	565.35	564.71	565.22	567.90	567.17	562.94	563.03
11/6/2019	564.74	565.40	567.51	565.19	568.85	567.36	563.08	563.14
3/19/2020	565.57	566.69	568.44	566.59	569.24	567.78	566.53	566.62
5/18/2020	566.49	565.55	567.55	565.51	568.85	567.58	560.67	560.72
9/22/2020	563.89	565.36	563.63	565.19	566.49	566.62	561.88	561.98
11/12/2020	563.02	565.17	562.54	564.89	565.75	566.16	562.03	562.09
3/17/2021	563.99	570.51	567.72	565.28	568.79	567.12	562.61	562.66
5/12/2021	565.47	565.44	568.11	565.18	568.62	567.15	562.87	562.94
9/20/2021	564.73	565.48	564.28	565.78	567.75	567.13	562.81	562.90
11/8/2021	565.18	565.54	567.70	565.49	569.17	567.68	562.81	562.90

NA-Not Available

Table 5
Olin Corp. Gibson Site
Discharge Volumes

Summary of Yearly Discharge Volumes

Date	Volume (gallons)
2010	28,118
2011	40,625
2012	29,623
2013	46,766
2014	33,564
2015	18,537
2016	28,172
2017	35,492
2018	33,837
2019	47,182
2020	297,712
2021	**43,740**
TOTALS	**683,368**

Monthly Discharge Volumes 2021

Month	Volume (gallons)
Jan	0
Feb	126
Mar	0
Apr	0
May	0
Jun	0
Jul	25,470
Aug	7,033
Sep	0
Oct	0
Nov	4,000
Dec	7,111
TOTALS	**43,740**

Table 6 - Seasonal Piezometer Data

PIEZOMETER - Spring								
DATE	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**MHA**	**MHB**
2/13/2008	NA	NA	NA	NA	NA	NA	NA	NA
4/3/2008	565.44	565.50	567.55	565.44	569.84	567.99	564.13	564.17
2/13/2009	NA	NA	NA	NA	NA	NA	NA	NA
4/2/2009	565.46	565.43	566.81	565.34	569.11	567.77	563.97	564.03
3/3/2010	565.27	565.42	566.18	565.22	568.83	567.57	563.77	563.84
4/14/2010	565.72	565.46	567.05	565.19	569.45	567.77	564.02	564.09
3/9/2011	565.05	565.49	568.11	565.42	569.75	567.88	563.94	564.03
4/19/2011	565.50	565.48	567.74	565.26	569.46	567.77	564.01	564.15
3/15/2012	565.36	565.54	568.25	565.34	569.23	567.75	564.21	567.27
5/22/2012	566.01	565.50	567.40	565.46	569.01	567.75	563.40	563.49
3/6/2013	565.32	565.54	569.56	565.34	569.35	567.83	563.92	564.09
5/13/2013	565.63	565.43	567.74	565.24	568.75	567.63	563.67	563.73
3/18/2014	565.34	565.49	569.24	565.19	569.35	567.76	563.86	563.89
5/9/2014	565.50	565.50	568.44	565.35	569.36	567.82	563.83	563.91
3/11/2015	565.15	564.68	567.45	565.15	568.39	567.07	568.80	563.89
5/27/2015	565.84	565.53	566.71	565.44	568.46	567.49	563.84	563.83
3/8/2016	565.08	565.67	570.39	565.46	569.34	567.67	563.51	563.59
5/27/2016	565.87	565.56	567.24	565.50	568.60	567.88	563.94	563.48
3/7/2017	565.22	565.58	570.75	565.37	568.68	567.07	563.64	563.74
5/30/2017	566.00	566.31	568.71	565.43	569.09	567.63	563.57	563.63
3/13/2018	565.64	565.54	568.64	565.49	568.26	567.77	563.77	563.79
5/24/2018	565.90	565.53	567.21	565.35	568.70	567.57	563.24	563.31
3/7/2019	565.52	565.58	567.96	567.75	569.08	567.67	563.90	563.99
5/21/2019	566.11	565.58	568.87	565.46	569.43	567.88	563.63	563.69
3/19/2020	565.57	566.69	568.44	566.59	569.24	567.78	566.53	566.62
5/18/2020	566.49	565.55	567.55	565.51	568.85	567.58	560.67	560.72
3/17/2021	563.99	570.51	567.72	565.28	568.79	567.12	562.61	562.66
5/12/2021	565.47	565.44	568.11	565.18	568.62	567.15	562.87	562.94

NA-Not Available

PIEZOMETER - Fall								
DATE	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**MHA**	**MHB**
9/11/2008	566.13	565.28	566.31	565.20	568.37	567.39	564.11	564.23
11/5/2008	565.46	565.24	566.52	565.17	568.76	567.43	563.81	563.89
9/17/2009	566.37	565.42	566.51	565.29	568.60	567.58	563.67	563.74
11/23/2009	565.31	565.29	566.41	565.24	568.70	567.37	563.52	563.61
9/17/2010	566.40	565.20	564.91	565.07	567.23	566.93	564.20	563.68
11/11/2010	564.53	565.16	565.57	565.02	567.40	566.78	563.82	563.88
9/22/2011	565.54	565.28	565.11	565.18	567.27	567.09	563.42	563.46
11/8/2011	565.33	565.41	567.41	565.28	568.77	567.53	563.32	563.40
9/17/2012	564.50	565.26	564.37	565.16	566.77	566.80	563.47	563.53
11/9/2012	564.51	565.38	568.28	565.22	568.40	567.25	563.62	563.99
9/18/2013	565.62	565.33	566.04	565.26	567.79	567.24	563.29	563.33
11/6/2013	565.35	565.51	569.11	566.09	569.17	567.70	563.36	563.42
9/18/2014	565.54	566.88	565.37	568.55	567.76	567.17	563.27	563.32
12/8/2014	566.65	565.08	568.15	565.15	568.14	566.86	563.50	563.56
9/1/2015	565.16	565.41	565.17	565.49	567.46	577.07	563.51	563.54
11/10/2015	564.97	565.40	566.11	565.34	568.92	567.07	563.67	563.76
9/8/2016	564.27	565.37	563.95	565.33	566.18	566.53	563.32	563.49
11/11/2016	563.28	565.11	565.17	565.17	565.44	566.13	563.36	563.39
9/6/2017	565.12	565.48	565.88	565.49	566.60	567.33	563.40	563.49
11/21/2017	565.01	565.51	569.92	565.43	569.24	567.60	563.52	563.60
9/25/2018	564.33	565.34	563.86	569.13	566.20	567.12	563.10	563.14
11/18/2018	563.33	565.19	568.91	568.16	568.85	566.57	563.21	563.25
9/24/2019	564.91	565.35	564.71	565.22	567.90	567.17	562.94	563.03
11/6/2019	564.74	565.40	567.51	565.19	568.85	567.36	563.08	563.14
9/22/2020	563.89	565.36	563.63	565.19	566.49	566.62	561.88	561.98
11/12/2020	563.02	565.17	562.54	564.89	565.75	566.16	562.03	562.09
9/20/2021	564.73	565.48	564.28	565.78	567.75	567.13	562.81	562.90
11/8/2021	565.18	565.54	567.70	565.49	569.17	567.68	562.81	562.90

Table 4B - Groundwater Elevations Data

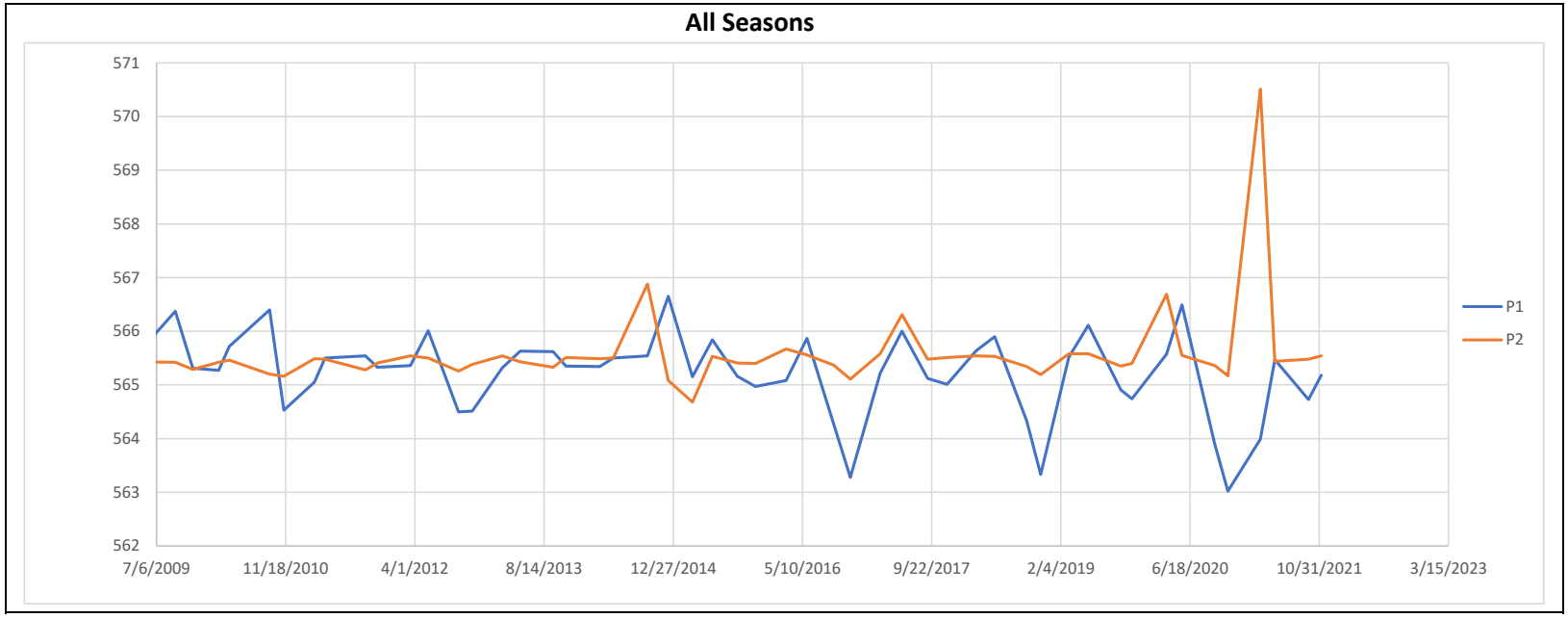


Table 4B - Groundwater Elevations Data

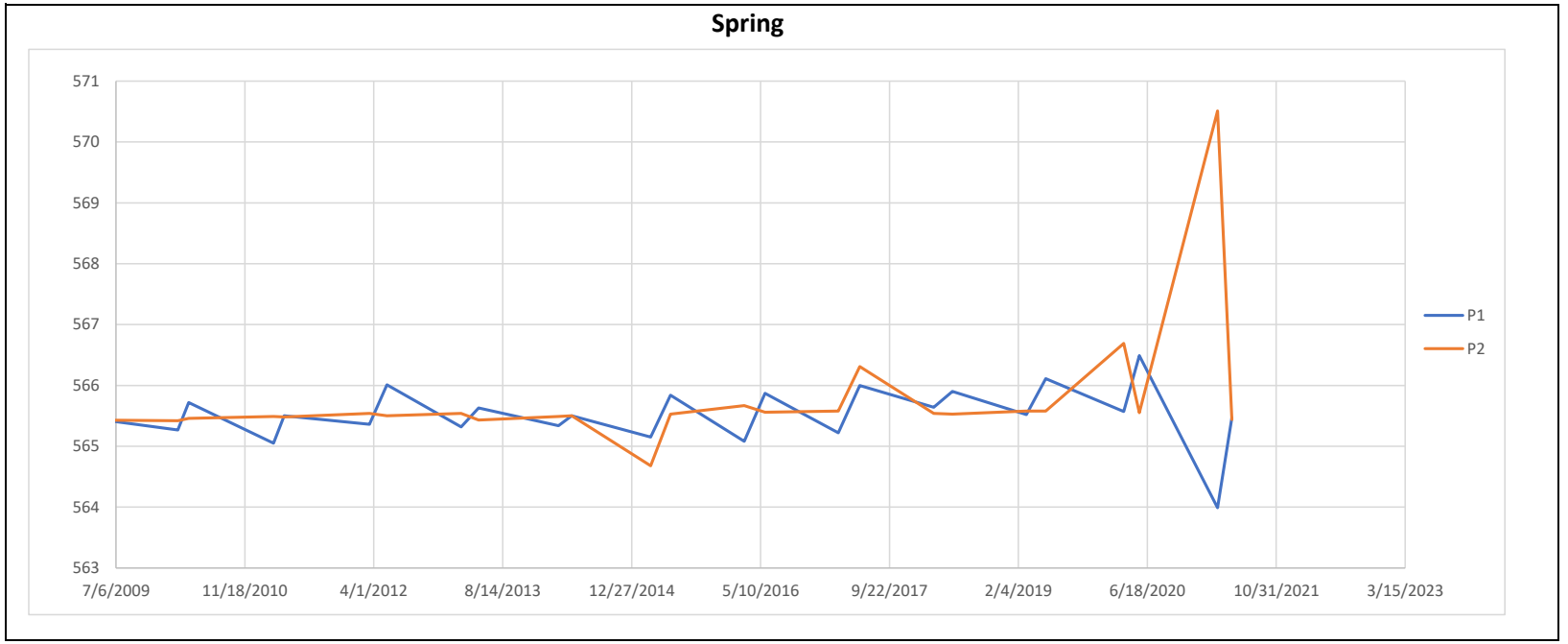


Table 4B - Groundwater Elevations Data

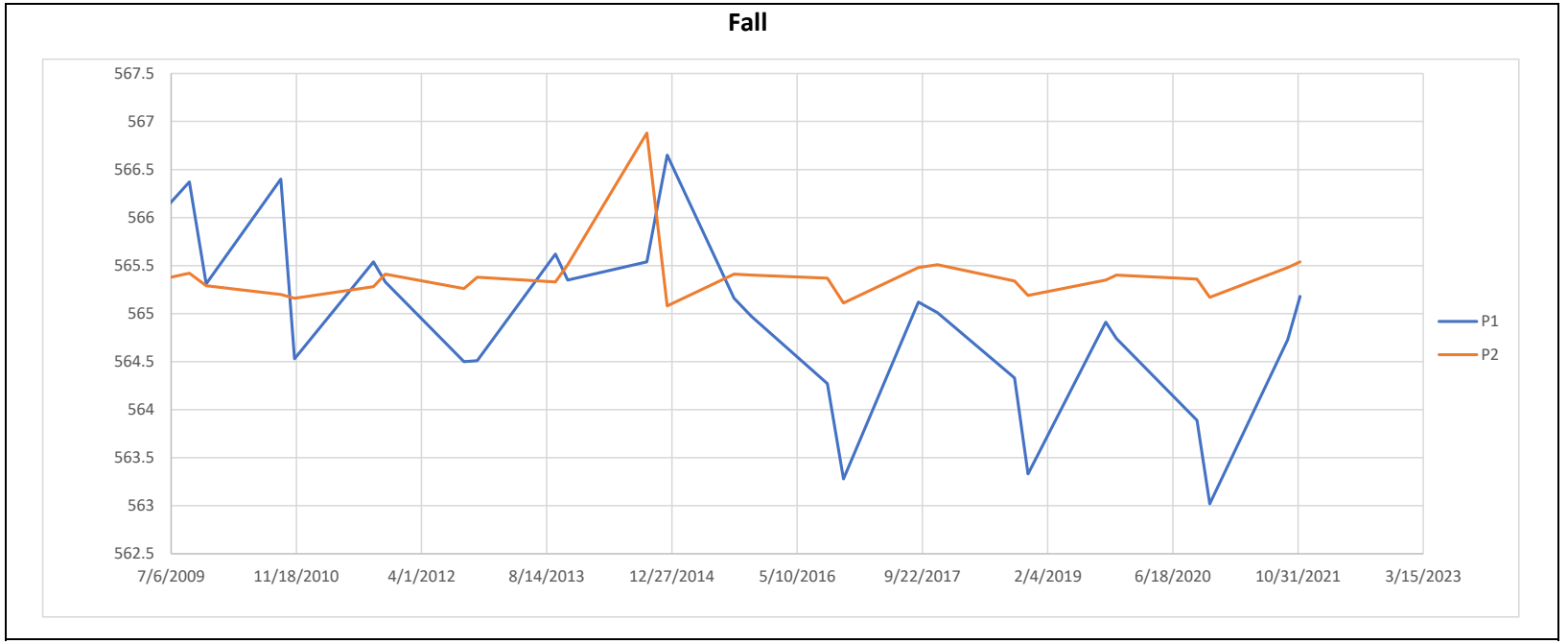


Table 4B - Groundwater Elevations Data

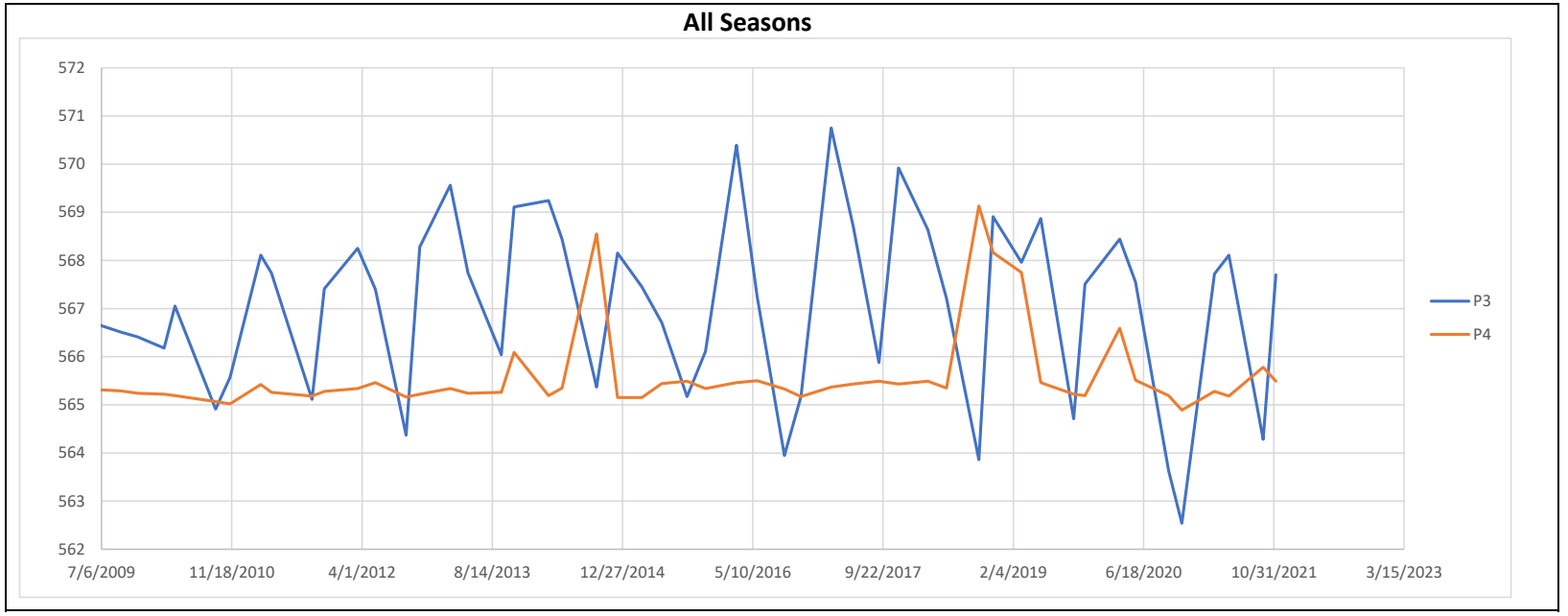


Table 4B - Groundwater Elevations Data

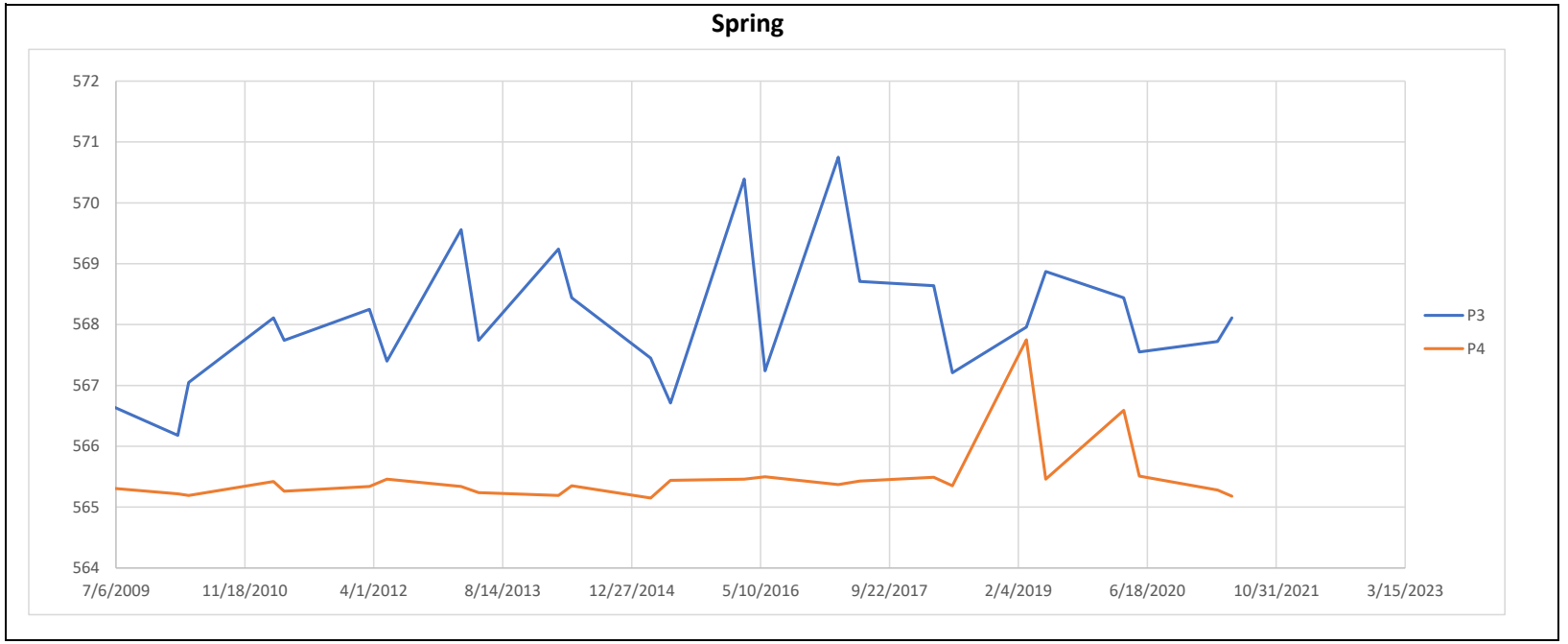


Table 4B - Groundwater Elevations Data

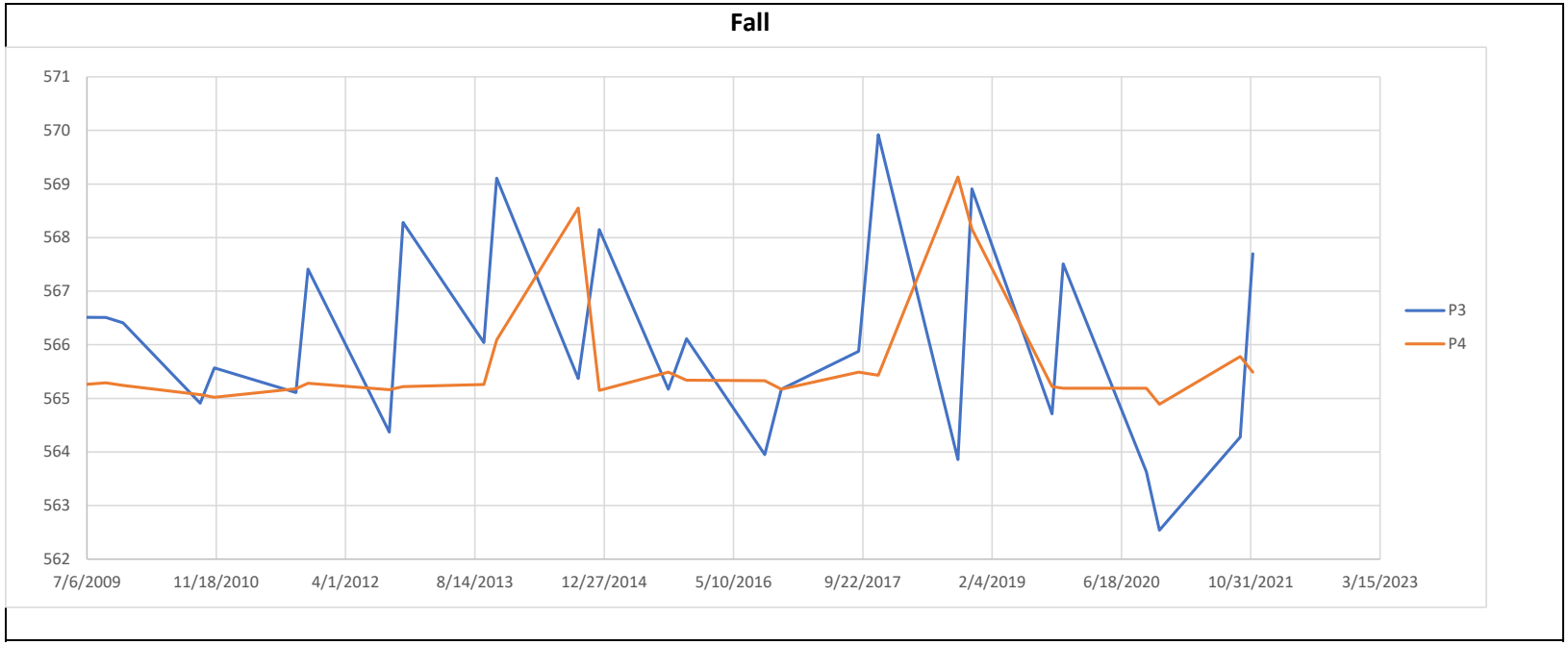


Table 4B - Groundwater Elevations Data

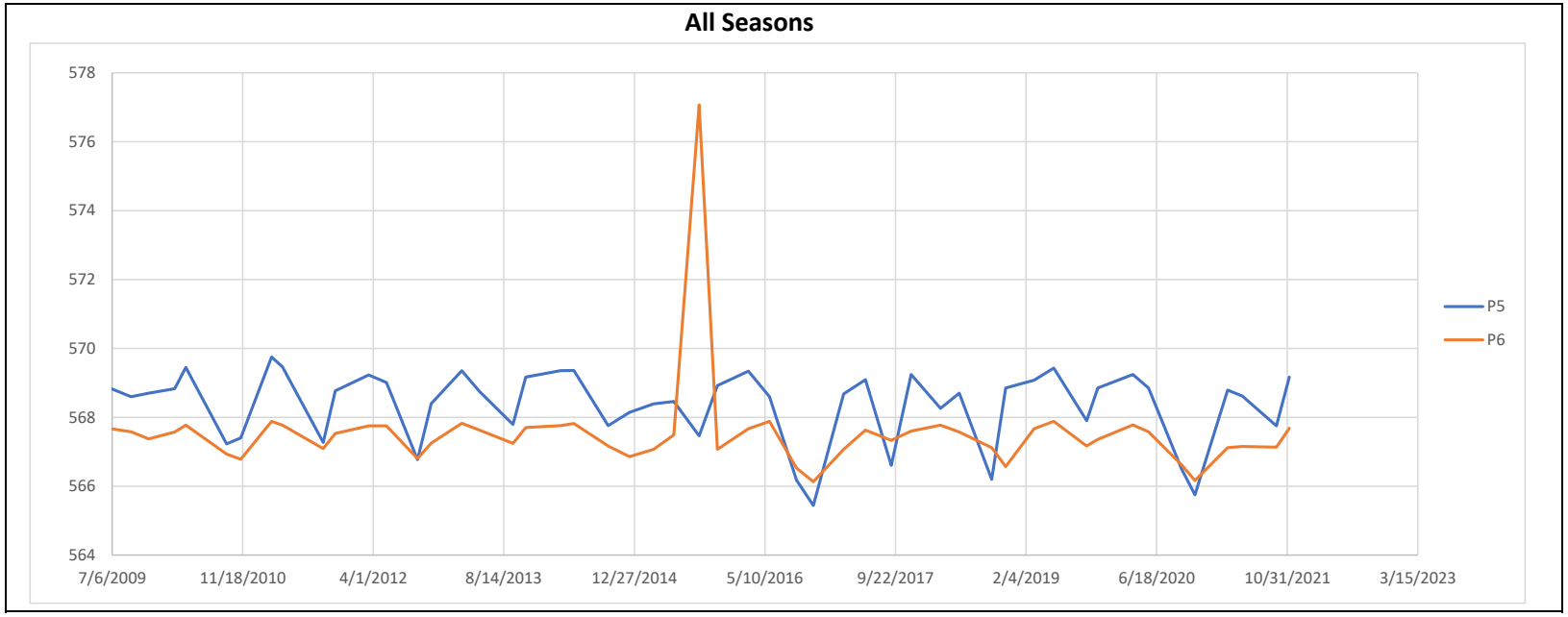


Table 4B - Groundwater Elevations Data

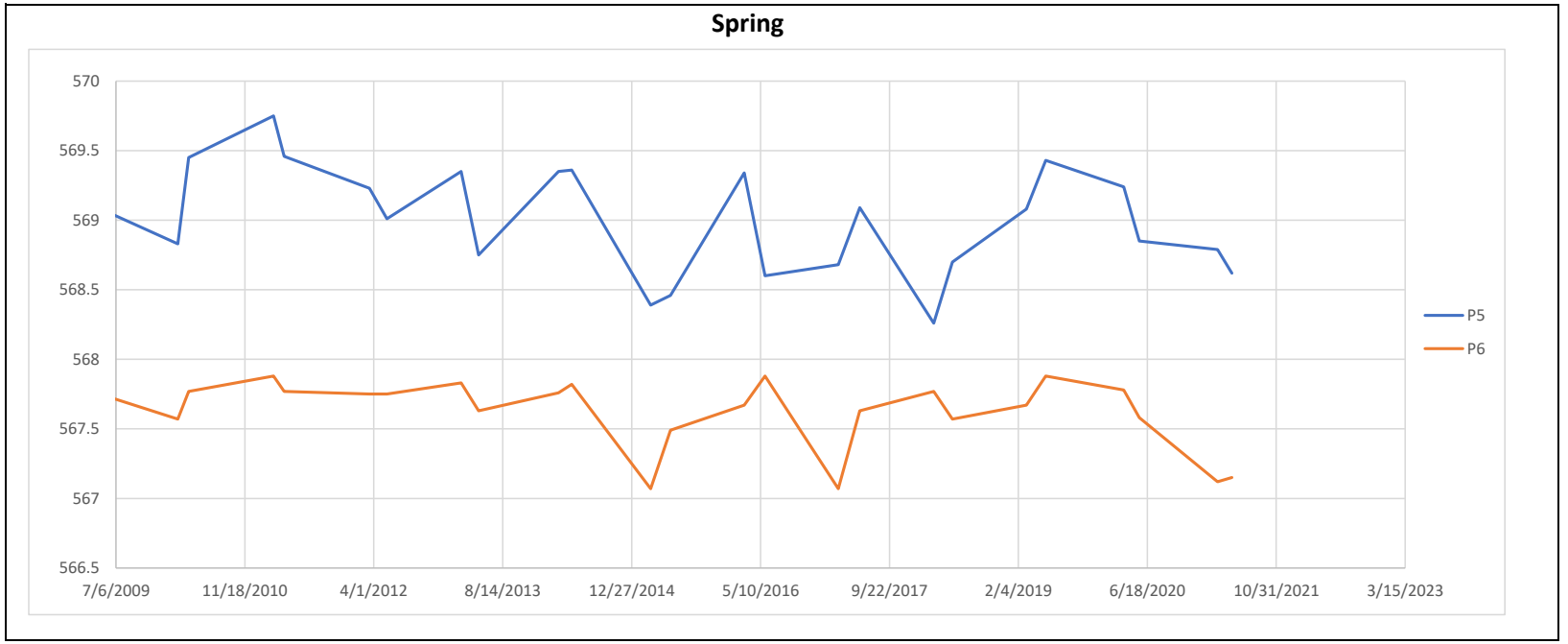


Table 4B - Groundwater Elevations Data

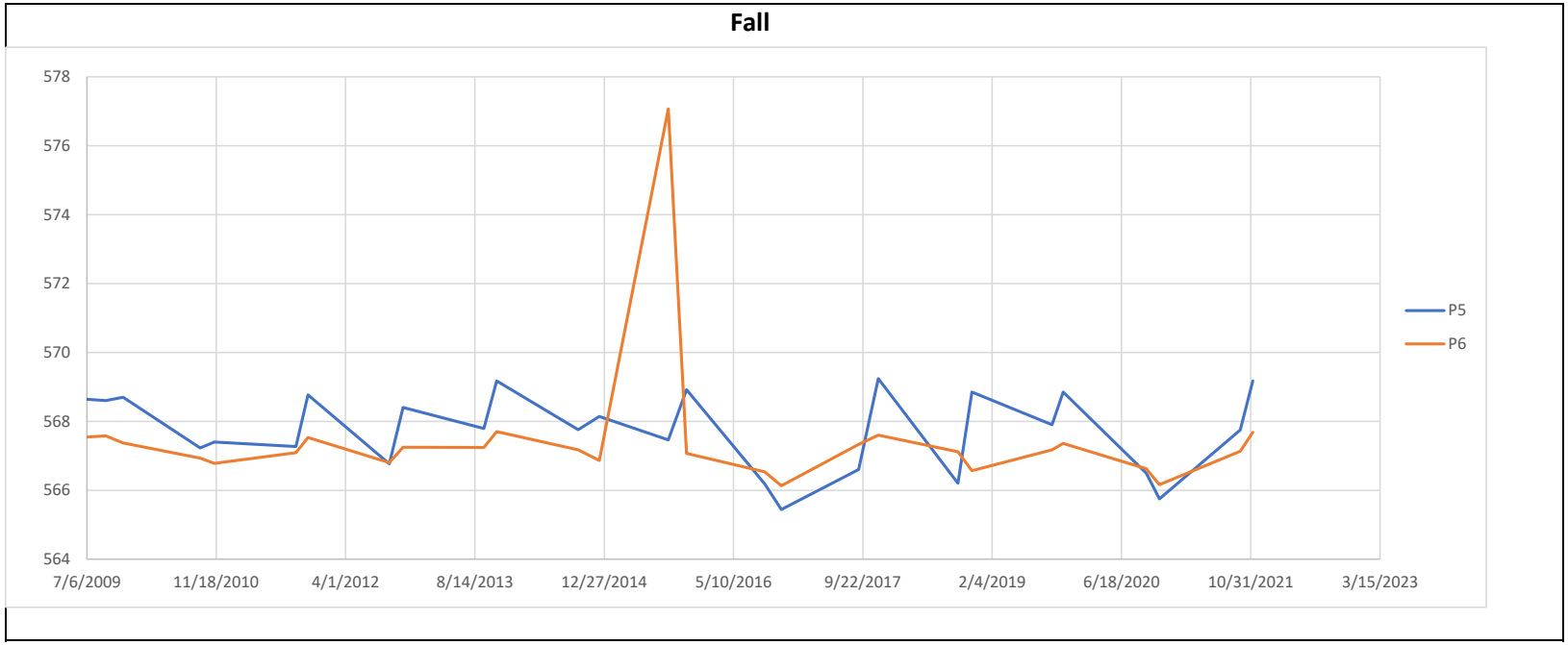
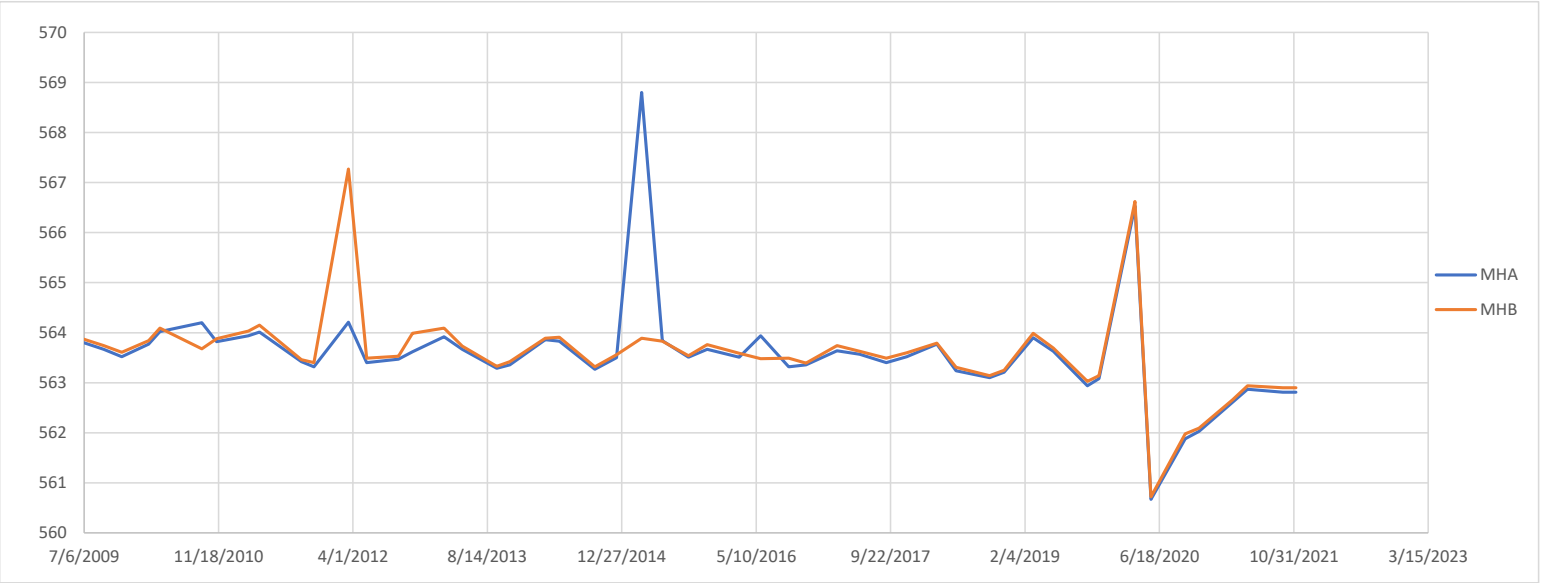


Table 4B - Groundwater Elevations Data



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: 03/17/21 TIME: 0900

INSPECTOR: Max Liffiton COMPANY: SES

WEATHER: cloudy

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	8.28	563.99	
P-2	574.89	4.38	570.51	
P-3	574.16	6.44	567.72	
P-4	576.14	10.86	565.28	
P-5	575.05	6.26	568.79	
P-6	578.28	11.16	567.12	
MANHOLE A	575.22	12.61	562.61	
MANHOLE B	577.34	14.68	562.66	

(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:

Olin

OLIN CORPORATION

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, Tennessee 37312
423/336-4000

SCALE:	DRAWN BY: JRH	DATE: 12-9-2021
0.5 IN = 40 FT.	CHKD. BY: ABC	DATE: 12-15-2021

CHARLES GIBSON SITE
NIAGRA FALLS, NY

GROUNDWATER CONTOUR MAP
PIEZOMETER/MANHOLE LEVELS
SAMPLING EVENT
MARCH 17, 2021

FIG. NO.
1

- MANHOLE
- PIEZOMETER

MANHOLES ARE TO MAINTAIN A WATER LEVEL BELOW 565 FT (AMSL)

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: 5/12/21 TIME: 0845

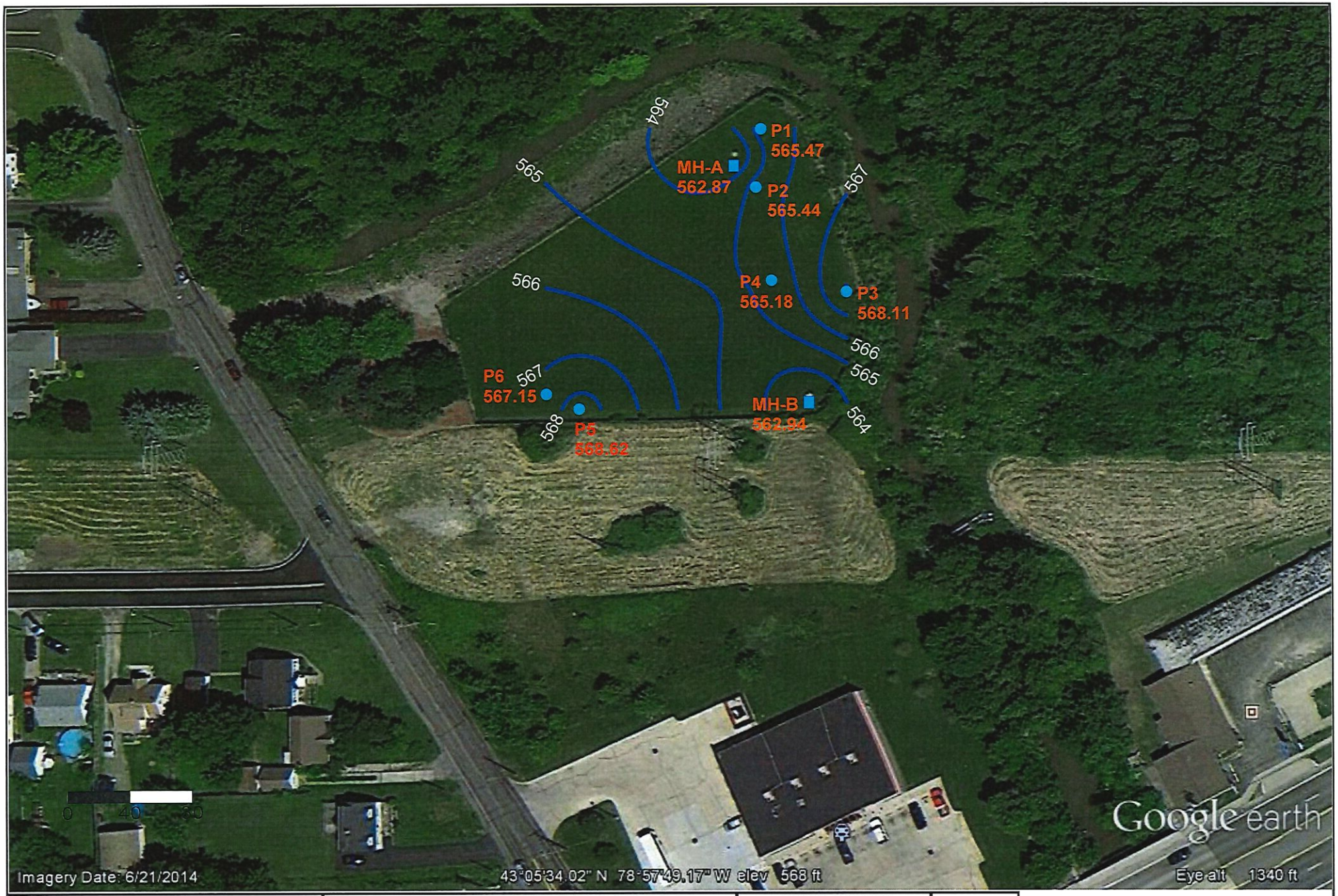
INSPECTOR: Maxwell Liffiton COMPANY: Sevenson

WEATHER: Sunny, 50°F

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS	Total Pz Depth to Bottom (Ft)
P-1	572.72	7.25	565.47	—	14.52
P-2	574.89	9.45	565.44	—	15.03
P-3	574.16	6.05	568.11	—	14.62
P-4	576.14	10.96	565.18	—	16.91
P-5	575.05	6.43	568.62	—	14.06
P-6	578.28	11.13	567.15	—	18.15
MANHOLE A	575.22	12.35	562.87	—	17.85
MANHOLE B	577.34	14.40	562.94	—	20.61

(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: All well covers relabeled with black sharpie.



Olin

OLIN CORPORATION

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, Tennessee 37312
423/336-4000

SCALE:	DRAWN BY: JRH	DATE: 12-17-2021
0.5 IN = 40 FT.	CHKD. BY: ABC	DATE: 1-21-2021

CHARLES GIBSON SITE
NIAGRA FALLS, NY

GROUNDWATER CONTOUR MAP
PIEZOMETER/MANHOLE LEVELS
SAMPLING EVENT
MAY 21, 2021

FIG. NO.
2

- MANHOLE
- PIEZOMETER

MANHOLES ARE TO MAINTAIN A WATER LEVEL BELOW 565 FT (AMSL)

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: 9-20-21 TIME: 12:30

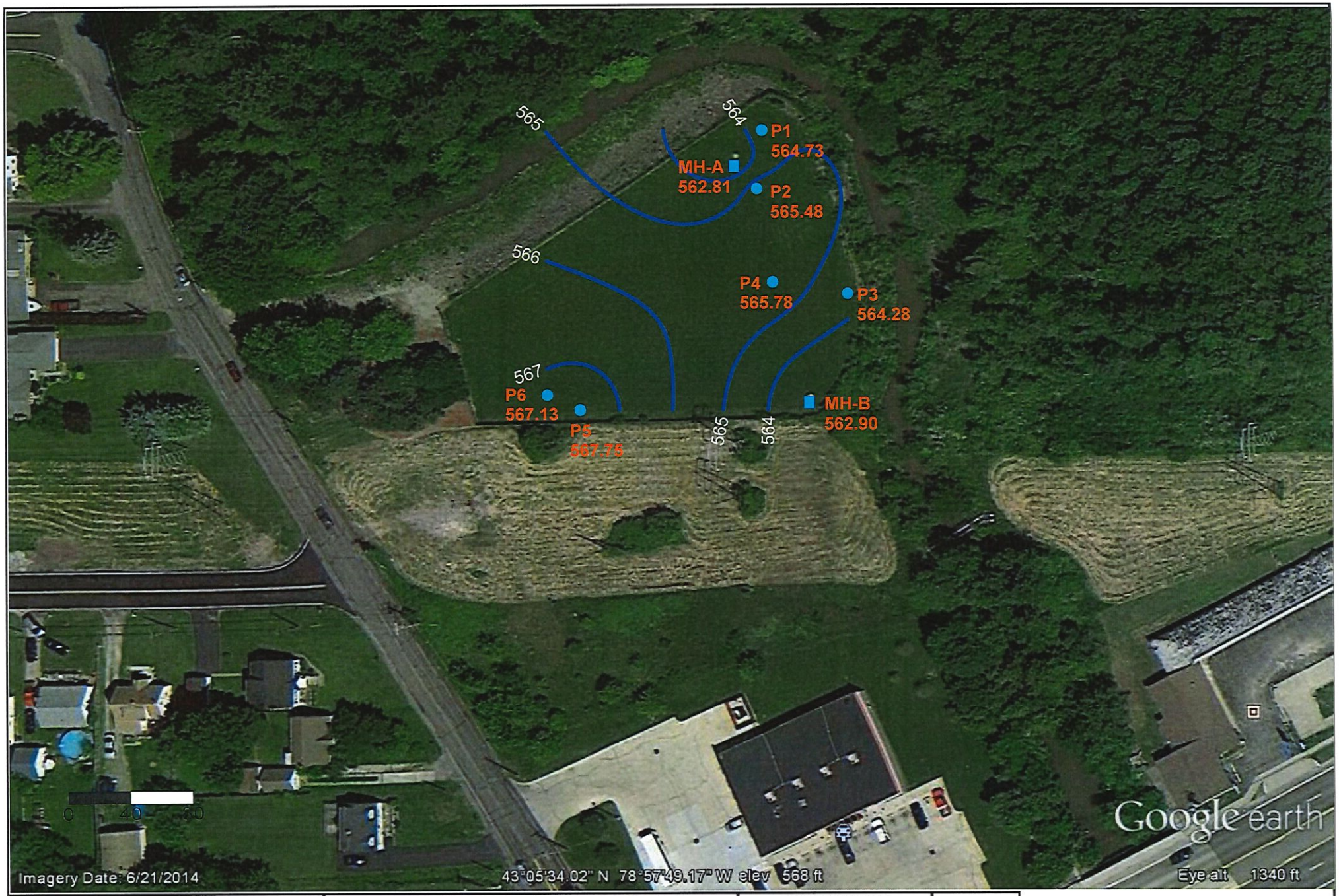
INSPECTOR: M. WALKER COMPANY: SEVERSON

WEATHER: Cloudy 76°F no wind.

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	7.99	564.73	
P-2	574.89	9.41	565.48	
P-3	574.16	9.88	564.28	
P-4	576.14	10.36	565.78	
P-5	575.05	7.30'	567.75	
P-6	578.28	11.15'	567.13	
MANHOLE A	575.22	12.41	562.81	
MANHOLE B	577.34	14.44'	562.90	

(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: ALL PIEZOMETERS WERE MEASURED 2x FOR ACCURACY



Olin

OLIN CORPORATION

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, Tennessee 37312
423/336-4000

SCALE:	DRAWN BY: JRH	DATE: 1-4-2022
0.5 IN = 40 FT.	CHKD. BY: ABC	DATE: 1-10-2022

CHARLES GIBSON SITE
NIAGRA FALLS, NY

GROUNDWATER CONTOUR MAP
PIEZOMETER/MANHOLE LEVELS
SAMPLING EVENT
SEPTEMBER 20, 2021

FIG. NO.
3

- MANHOLE
- PIEZOMETER

MANHOLES ARE TO MAINTAIN A WATER LEVEL BELOW 565 FT (AMSL)

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: 11-8-21 TIME: 0900

INSPECTOR: WALKER, MIKE COMPANY: SEVENSON

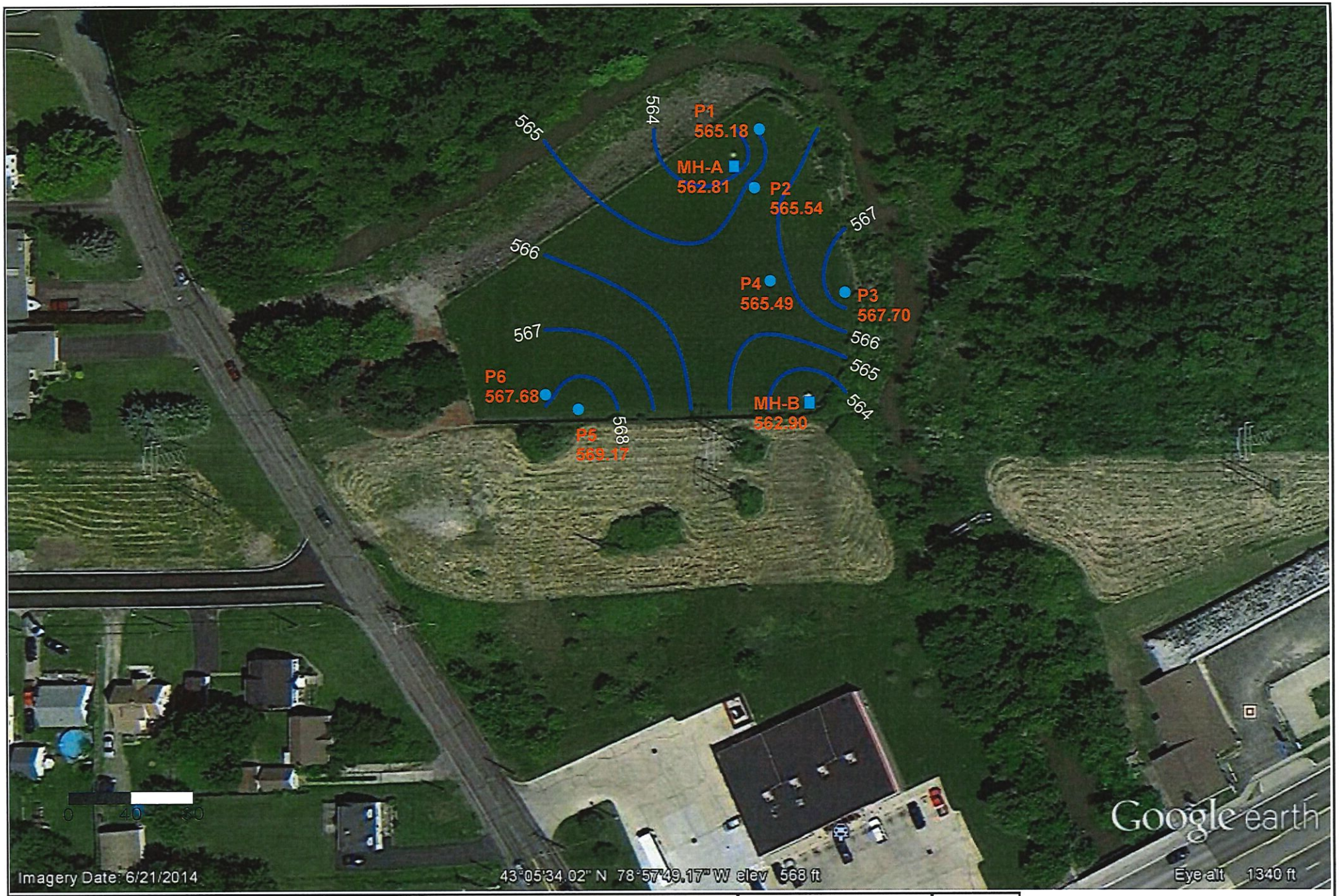
WEATHER: SUNNY 55°F

PIEZOMETER	RISER ELEVATION (INSIDE CASING)	DEPTH TO WATER (FT.)	WATER ELEVATION	COMMENTS
P-1	572.72	7.54	565.18	
P-2	574.89	9.35'	565.54	CRACKED WELL COVER - (ORDERED NEW ONE)
P-3	574.16	6.46'	567.70	
P-4	576.14	10.65'	565.49	
P-5	575.05	5.88'	569.17	
P-6	578.28	10.60'	567.68	
MANHOLE A	575.22	12.41'	562.81	
MANHOLE B	577.34	14.44'	562.90	

(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: THE SITE LOOK GOOD, GRASS COVER IS 6" TALL, NO EVIDENCE of SETTLING OR Rodent Burrows. I FIXED A couple of Boards on the fence that were coming off. Well P-2 HAS A cracked cover, I ordered A REPLACEMENT today.

Mike Walker



Olin

OLIN CORPORATION

OLIN CORPORATION

Environmental Remediation Group
3855 N. Ocoee St., Ste. 200
Cleveland, Tennessee 37312
423/336-4000

SCALE:	DRAWN BY: JRH	DATE: 1-4-2022
0.5 IN = 40 FT.	CHKD. BY: ABC	DATE: 1-10-2022

CHARLES GIBSON SITE
NIAGRA FALLS, NY

GROUNDWATER CONTOUR MAP
PIEZOMETER/MANHOLE LEVELS
SAMPLING EVENT
NOVEMBER 8, 2021

FIG. NO.
4

- MANHOLE
- PIEZOMETER

MANHOLES ARE TO MAINTAIN A WATER LEVEL BELOW 565 FT (AMSL)

March 29, 2021 Service Request No:R2102572

Adam Carringer
Olin Corporation
3855 North Ocoee Street
Suite 200
Cleveland, TN 37312

Laboratory Results for: Charles Gibson

Dear Adam,

Enclosed are the results of the sample(s) submitted to our laboratory March 19, 2021
For your reference, these analyses have been assigned our service request number **R2102572.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7475. You may also contact me via email at Meghan.Pedro@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Meghan Pedro
Project Manager

CC: Randy Morris

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

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Client: Olin Corporation
Project: Charles Gibson
Sample Matrix: Water

Service Request: R2102572
Date Received: 03/19/2021

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Six water samples were received for analysis at ALS Environmental on 03/19/2021. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method 8081B, 03/24/2021: The upper control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analyte(s) in question above the Method Reporting Limit (MRL). Since the exceedance equates to a potential high bias, the data quality was not significantly affected and no further corrective action was taken.

The RPD between the MS and the MSD was greater than the RPD limit. The percent recovery limit was met for both the MS and the MSD. Sample R2102572-003.

Approved by Meghan Pedro Date 03/29/2021

SAMPLE DETECTION SUMMARY

CLIENT ID: MHB 031721			Lab ID: R2102572-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
beta-BHC	0.13	P		0.054	ug/L	8081B

Sample Receipt Information

ALS Environmental—Rochester Laboratory
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Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Olin Corporation **Service Request:**R2102572

Project: Charles Gibson/1259

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R2102572-001	Field Blank 031721	3/17/2021	0947
R2102572-002	MW5 031721	3/17/2021	1000
R2102572-003	MW4 031721	3/17/2021	0900
R2102572-004	MW7 031721	3/17/2021	1030
R2102572-005	MHB 031721	3/17/2021	0910
R2102572-006	MWA3 031721	3/17/2021	1120

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

002999

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: Charles Gibson	Project Number: 1239
Project Manager: Adam Carringer	Report CC: Adam Carringer
Company/Address: Olin Corp 3855 North Ocoee St. CLEVELAND TN 37312	
Phone #: 423 336 4989	Email: ABCarringer@Olin.com
Sampler's Signature:	Sampler's Printed Name: Max Lifton

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: 0

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs • 8260 • 624 • CLP	GC/MS SVOAs • 8270 • 625	GC VOAs • 8021 • 601/602	PESTICIDES • 8081 • 608	PCBs • 8082 • 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
FIELD BLANK 031721		03/17/21	0947		2				2				
MW5 031721		03/17/21	1000		6				6				MS/MSD
MW4 031821		03/18/21	0900		2				2				
MW7 031721		03/17/21	1030		2				2				
MWB 031721		03/17/21	0910		2				2				
MWA3 031721		03/17/21	1120		2				2				
TEMP BLANK		"	—	—	1				1				Provided by Lab

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS
Metals
Shipped in one cooler

See QAPP ☐

TURNAROUND REQUIREMENTS
___ RUSH (SURCHARGES APPLY)
___ 1 day ___ 2 day ___ 3 day
___ 4 day ___ 5 day
X Standard (10 business days-No Surcharge)

REQUESTED REPORT DATE
Standard

REPORT REQUIREMENTS
___ I. Results Only
X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
___ III. Results + QC and Calibration Summaries
___ IV. Data Validation Report with Raw Data

Edata ___ Yes ___ No

INVOICE INFORMATION
PO #
BILL TO: OLIN

STATE WHERE SAMPLES WERE COLLECTED

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature	UPS	Signature	Signature	Signature	Signature
Printed Name: Max Lifton	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm: SEVENSON	Firm	Firm	Firm: ALS	Firm	
Date/Time: 03/18/21 1000	Date/Time	Date/Time	Date/Time: 3/19/21 1015	Date/Time	

Distribution: White - Lab Copy; Yellow - Return to Originator

R2102572 5
Olin Corporation
Charles Gibson

Cooler Receipt and Preservation Check Form

R2102572 5
Olin Corporation
Charles Gibson

Project/Client Olin Folder Number

Cooler received on 3/19/21 by: C

COURIER: ALS (UPS) FEDEX VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y)	N
2	**Custody papers** properly completed (ink, signed)?	(Y)	N
3	Did all bottles arrive in good **condition** (unbroken)?	(Y)	N
4	Circle: (**Wet Ice**) **Dry Ice** **Gel packs** present?	(Y)	N

5a	**Perchlorate** samples have required headspace?	Y	N	(NA)
5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y	N	(NA)
6	Where did the bottles originate?	(ALS/ROC)	CLIENT	
7	Soil VOA received as: Bulk Encore 5035set			(NA)

8. Temperature Readings Date: 3/19/21 Time: 1116 ID: IR#7 (IR#1) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	1.2						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by C on 3/19/21 at 1120
5035 samples placed in storage location: _____ by _____ on _____ at _____ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 3/19/21 Time: 1600 by: dlw

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) ~~NO~~ dlw 3/19/21
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (N/A)
13. Air Samples: Cassettes / Tubes Intact Y / N with MS Y / N Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-						
		HCl	**	**						

**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 90121-06

Explain all Discrepancies/ Other Comments:

~~Locations~~
dlw 3/19/21

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: dlw
PC Secondary Review: MF

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

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REPORT QUALIFIERS AND DEFINITIONS

U	Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.
J	Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).
B	Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.
E	Inorganics- Concentration is estimated due to the serial dilution was outside control limits.
E	Organics- Concentration has exceeded the calibration range for that specific analysis.
D	Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.
*	Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.
H	Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.
#	Spike was diluted out.
+	Correlation coefficient for MSA is <0.995.
N	Inorganics- Matrix spike recovery was outside laboratory limits.
N	Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.
S	Concentration has been determined using Method of Standard Additions (MSA).
W	Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.
P	Concentration >40% difference between the two GC columns.
C	Confirmed by GC/MS
Q	DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).
X	See Case Narrative for discussion.
MRL LOQ	Method Reporting Limit. Also known as: Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.
MDL	Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).
LOD	Limit of Detection. A value at or above the MDL which has been verified to be detectable.
ND	Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Olin Corporation
Project: Charles Gibson/1259
Service Request: R2102572

Sample Name: Field Blank 031721
Lab Code: R2102572-001
Sample Matrix: Water
Date Collected: 03/17/21
Date Received: 03/19/21

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AFELSER

Sample Name: MW5 031721
Lab Code: R2102572-002
Sample Matrix: Water
Date Collected: 03/17/21
Date Received: 03/19/21

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AFELSER

Sample Name: MW4 031721
Lab Code: R2102572-003
Sample Matrix: Water
Date Collected: 03/17/21
Date Received: 03/19/21

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AFELSER

Sample Name: MW7 031721
Lab Code: R2102572-004
Sample Matrix: Water
Date Collected: 03/17/21
Date Received: 03/19/21

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AFELSER

Sample Name: MHB 031721
Lab Code: R2102572-005
Sample Matrix: Water
Date Collected: 03/17/21
Date Received: 03/19/21

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AFELSER

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259		

Sample Name:	MWA3 031721	**Date Collected:**	03/17/21
Lab Code:	R2102572-006	**Date Received:**	03/19/21
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AFELSER

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

Sample Results

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Semivolatile Organic Compounds by GC

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	03/17/21 09:47
Sample Matrix:	Water	**Date Received:**	03/19/21 10:15
Sample Name:	Field Blank 031721	**Units:**	ug/L
Lab Code:	R2102572-001	**Basis:**	NA

Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Prep Method: EPA 3510C

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	0.045	1	03/24/21 18:45	3/23/21	
beta-BHC	ND U	0.045	1	03/24/21 18:45	3/23/21	
delta-BHC	ND U	0.045	1	03/24/21 18:45	3/23/21	
gamma-BHC (Lindane)	ND U	0.045	1	03/24/21 18:45	3/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	28	10 - 164	03/24/21 18:45	
Tetrachloro-m-xylene	35	10 - 147	03/24/21 18:45	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	03/17/21 10:00
Sample Matrix:	Water	**Date Received:**	03/19/21 10:15
Sample Name:	MW5 031721	**Units:**	ug/L
Lab Code:	R2102572-002	**Basis:**	NA

Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Prep Method: EPA 3510C

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	0.050	1	03/24/21 19:04	3/23/21	
beta-BHC	ND U	0.050	1	03/24/21 19:04	3/23/21	
delta-BHC	ND U	0.050	1	03/24/21 19:04	3/23/21	
gamma-BHC (Lindane)	ND U	0.050	1	03/24/21 19:04	3/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	36	10 - 164	03/24/21 19:04	
Tetrachloro-m-xylene	53	10 - 147	03/24/21 19:04	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	03/17/21 09:00
Sample Matrix:	Water	**Date Received:**	03/19/21 10:15
Sample Name:	MW4 031721	**Units:**	ug/L
Lab Code:	R2102572-003	**Basis:**	NA

Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Prep Method: EPA 3510C

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	0.045	1	03/24/21 19:23	3/23/21	
beta-BHC	ND U	0.045	1	03/24/21 19:23	3/23/21	
delta-BHC	ND U	0.045	1	03/24/21 19:23	3/23/21	
gamma-BHC (Lindane)	ND U	0.045	1	03/24/21 19:23	3/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	41	10 - 164	03/24/21 19:23	
Tetrachloro-m-xylene	65	10 - 147	03/24/21 19:23	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	03/17/21 10:30
Sample Matrix:	Water	**Date Received:**	03/19/21 10:15
Sample Name:	MW7 031721	**Units:**	ug/L
Lab Code:	R2102572-004	**Basis:**	NA

Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Prep Method: EPA 3510C

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	0.045	1	03/24/21 20:20	3/23/21	
beta-BHC	ND U	0.045	1	03/24/21 20:20	3/23/21	
delta-BHC	ND U	0.045	1	03/24/21 20:20	3/23/21	
gamma-BHC (Lindane)	ND U	0.045	1	03/24/21 20:20	3/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	31	10 - 164	03/24/21 20:20	
Tetrachloro-m-xylene	47	10 - 147	03/24/21 20:20	

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dba ALS Environmental

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	03/17/21 09:10
Sample Matrix:	Water	**Date Received:**	03/19/21 10:15
Sample Name:	MHB 031721	**Units:**	ug/L
Lab Code:	R2102572-005	**Basis:**	NA

Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Prep Method: EPA 3510C

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	0.054	1	03/24/21 20:39	3/23/21	
beta-BHC	**0.13 P**	0.054	1	03/24/21 20:39	3/23/21	
delta-BHC	ND U	0.054	1	03/24/21 20:39	3/23/21	
gamma-BHC (Lindane)	ND U	0.054	1	03/24/21 20:39	3/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	52	10 - 164	03/24/21 20:39	
Tetrachloro-m-xylene	56	10 - 147	03/24/21 20:39	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	03/17/21 11:20
Sample Matrix:	Water	**Date Received:**	03/19/21 10:15
Sample Name:	MWA3 031721	**Units:**	ug/L
Lab Code:	R2102572-006	**Basis:**	NA

Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Prep Method: EPA 3510C

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	0.049	1	03/24/21 21:17	3/23/21	
beta-BHC	ND U	0.049	1	03/24/21 21:17	3/23/21	
delta-BHC	ND U	0.049	1	03/24/21 21:17	3/23/21	
gamma-BHC (Lindane)	ND U	0.049	1	03/24/21 21:17	3/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	63	10 - 164	03/24/21 21:17	
Tetrachloro-m-xylene	57	10 - 147	03/24/21 21:17	

QC Summary Forms

ALS Environmental—Rochester Laboratory
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Semivolatile Organic Compounds by GC

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Olin Corporation **Service Request:** R2102572
Project: Charles Gibson/1259
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Extraction Method: EPA 3510C

Sample Name	Lab Code	Decachlorobiphenyl 10-164	Tetrachloro-m-xylene 10-147
Field Blank 031721	R2102572-001	28	35
MW5 031721	R2102572-002	36	53
MW4 031721	R2102572-003	41	65
MW7 031721	R2102572-004	31	47
MHB 031721	R2102572-005	52	56
MWA3 031721	R2102572-006	63	57
Method Blank	RQ2102947-05	60	57
Lab Control Sample	RQ2102947-06	63	58
Duplicate Lab Control Sample	RQ2102947-07	63	58
MW4 031721 MS	RQ2102947-01	23	54
MW4 031721 DMS	RQ2102947-02	40	65

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	03/17/21
Sample Matrix:	Water	**Date Received:**	03/19/21
		Date Analyzed:	03/24/21
		Date Extracted:	03/23/21

Duplicate Matrix Spike Summary
Organochlorine Pesticides by Gas Chromatography

Sample Name:	MW4 031721	**Units:**	ug/L
Lab Code:	R2102572-003	**Basis:**	NA
Analysis Method:	8081B		
Prep Method:	EPA 3510C		

		Matrix Spike			Duplicate Matrix Spike					
		RQ2102947-01			RQ2102947-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	ND U	0.268	0.364	74	0.354	0.392	90	27-154	28	30
beta-BHC	ND U	0.254	0.364	70	0.364	0.392	93	32-184	36*	30
delta-BHC	ND U	0.259	0.364	71	0.375	0.392	96	10-182	37*	30
gamma-BHC (Lindane)	ND U	0.292	0.364	80	0.351	0.392	90	43-164	18	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2102572
Project:	Charles Gibson/1259	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	RQ2102947-05	**Basis:**	NA

Organochlorine Pesticides by Gas Chromatography

Analysis Method: 8081B
Prep Method: EPA 3510C

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	0.050	1	03/24/21 17:49	3/23/21	
beta-BHC	ND U	0.050	1	03/24/21 17:49	3/23/21	
delta-BHC	ND U	0.050	1	03/24/21 17:49	3/23/21	
gamma-BHC (Lindane)	ND U	0.050	1	03/24/21 17:49	3/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	60	10 - 164	03/24/21 17:49	
Tetrachloro-m-xylene	57	10 - 147	03/24/21 17:49	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Olin Corporation
Project: Charles Gibson/1259
Sample Matrix: Water

Service Request: R2102572
Date Analyzed: 03/24/21

Duplicate Lab Control Sample Summary
Organochlorine Pesticides by Gas Chromatography

Units:ug/L
Basis:NA

			Lab Control Sample			Duplicate Lab Control Sample				
			RQ2102947-06			RQ2102947-07				
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	8081B	0.293	0.400	73	0.281	0.400	70	36-151	4	30
beta-BHC	8081B	0.300	0.400	75	0.288	0.400	72	55-149	4	30
delta-BHC	8081B	0.306	0.400	76	0.295	0.400	74	29-159	4	30
gamma-BHC (Lindane)	8081B	0.295	0.400	74	0.282	0.400	70	41-149	4	30

Data Evaluation Narrative
Charles Gibson – March 2021 Groundwater and Leachate Sampling Event

SDG: R2102572 – ALS Environmental, Rochester, NY

Deliverables
The data package as submitted to Olin Corporation is complete as stipulated under the Quality Assurance Project Plan (QAPP) for the site. United States Environmental Protection Agency (USEPA) Method 8081B was utilized in laboratory testing of samples.

Sample Integrity
Samples within this sample delivery group (SDG) were submitted to the ALS Environmental Laboratory in Rochester, NY for chlorinated pesticides analysis. The sample cooler temperature measured 1.6°C upon arrival at the laboratory. The specified temperature limit is 4°C ± 2°C. The proper bottles were used, the Chain of Custody was properly relinquished, and the correct analytical method was employed.

Sample Identification
This SDG contains the following water and quality control (QC) samples collected March 17, 2021:

SDG R2102572:

Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID
Field Blank 031721	MW5 031721	MW4 031721	MW7 031721*	MHB 031721	MWA3 031721

* Blind Field Duplicate of MW5 031721.

Chlorinated Pesticides (8081B)
The samples in this SDG were submitted for site-specific chlorinated pesticides (BHCs) analysis by USEPA Method 8081B.

Holding Times:
The extraction and analytical logs indicate that applicable holding times were met for samples submitted for chlorinated pesticide analysis.

Practical Quantitation Limits:
The practical quantitation limits (PQLs) were met for all samples submitted for chlorinated pesticide analysis by USEPA Method 8081B.

Calibration:
The initial and continuing calibration data for this SDG indicates that the applicable calibration criteria were met. The column breakdowns were assessed, and the percent degradation was within QC limits.

Surrogates:
The surrogate recoveries were within applicable QC advisory limits for all samples submitted for chlorinated pesticide analysis.

Blank Summary:
The analytical results of the laboratory method blank and field blank indicate that chlorinated pesticides were not detected.

Laboratory Control Sample (LCS) and LCS Duplicate (LCSD):
The LCS/LCSD spike recoveries and relative percent differences (RPDs) were within applicable QC advisory limits.

Second Column Confirmation:
The laboratory utilized a second column confirmation for the analysis of chlorinated pesticides. The RPDs were within guidelines for all project and quality control samples except for beta-BHC in sample MHB 031721; the RPD was 51. The beta-BHC detection in MHB 031721 was therefore qualified as an estimated detection (J) by professional judgment.

Performance Evaluation Sample (PES):
The results from the PES were within quality control guidelines.

Field Duplicate Sample:
According to the sampler, MW7 031721 was a blind field duplicate of MW5 031721. The sample and field duplicate were non-detect for all BHC compounds.

Matrix Spike/Matrix Spike Duplicate (MS/MSD):
MS/MSD analyses were performed on groundwater sample MW4 031721. All percent recoveries were within control guidelines for both the MS and MSD. The relative percent difference (RPD) between the MS and MSD results was slightly above the laboratory control limit of 30 for beta- and delta-BHC. No data qualification was deemed necessary by professional judgment.

Overall Site Evaluation and Professional Judgment Flagging Changes
The data within this SDG were compared to site data and an edit to the DQE flags was required based on professional judgment. Monitoring period completeness, which is the percentage of analytical results judged valid, including estimated values, was 100 percent for the March 2021 sampling event. Typically, project objectives are met when completeness is 90 percent or better.

Prepared by: *Randy T. Morris* Date: *March 31, 2021*

October 01, 2021 Service Request No:R2109751

Adam Carringer
Olin Corporation
490 Stuart Road
Cleveland, TN 37312

Laboratory Results for: Olin Charles Gibson Site

Dear Adam,

Enclosed are the results of the sample(s) submitted to our laboratory September 21, 2021
For your reference, these analyses have been assigned our service request number **R2109751.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7475. You may also contact me via email at Meghan.Pedro@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Meghan Pedro
Project Manager

CC: Randy Morris

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Olin Corporation
Project: Olin Charles Gibson Site
Sample Matrix: Soil

Service Request: R2109751
Date Received: 09/21/2021

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two soil samples were received for analysis at ALS Environmental on 09/21/2021. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method 8081B, 09/27/2021: The upper control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analyte(s) in question above the Method Reporting Limit (MRL). Since the exceedance equates to a potential high bias, the data quality was not significantly affected and no further corrective action was taken.

Method 8081B, 740349: The reporting limit is elevated for one or more analytes. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored and viscous, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The result(s) are flagged to indicate the matrix interference.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 10/01/2021

SAMPLE DETECTION SUMMARY

CLIENT ID: US-1-092021			Lab ID: R2109751-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	27.2				Percent	ALS SOP

CLIENT ID: MS-1-092021			Lab ID: R2109751-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	27.8				Percent	ALS SOP

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Olin Corporation **Service Request:**R2109751

Project: Olin Charles Gibson Site/1259

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R2109751-001	US-1-092021	9/20/2021	1430
R2109751-002	MS-1-092021	9/20/2021	1445

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM 061202

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

Project Name: OLIN CHARLES GIBSON SITE	Project Number: 1259
Project Manager: ADAM CARLINGTON	Report CC: ADAM CARLINGTON
Company/Address: OLIN CORP. - Corporate Env. Remediation Group ~~3855 North~~ 490 Stuart Rd CLEVELAND, TN 37312	
Phone #: 423-508-2768	Email: ABCARLINGTON@OLIN.COM
Sampler's Signature:	Sampler's Printed Name: MICHAEL WALKER

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

PRESERVATIVE

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
US-1-092021		9-20-21	1430	SED	1				1				
MS-1-092021		9-20-21	1445	SED	1				1				
~~DS-1-092021~~		~~9-20-21~~		~~SED~~	~~1~~				~~1~~				

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS

~~Metals~~

No DS-1-09 2021 Was taken Due to Lack of Material in Sediment trap.

See QAPP ☐

TURNAROUND REQUIREMENTS
- ____ RUSH (SURCHARGES APPLY)
- ____ 1 day ____ 2 day ____ 3 day
- ____ 4 day ____ 5 day
- X Standard (10 business days-No Surcharge)

REQUESTED REPORT DATE _____

REPORT REQUIREMENTS
- ____ I. Results Only
- X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
- ____ III. Results + QC and Calibration Summaries
- ____ IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

INVOICE INFORMATION

PO # _____

BILL TO: OLIN CORP

STATE WHERE SAMPLES WERE COLLECTED New York

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
~~Michael Walker~~					
Signature	Signature	Signature	Signature	Signature	
Printed Name: MICHAEL WALKER	Printed Name: UPS DRIVER	Printed Name	Printed Name	Printed Name	
Firm: SEVERN	Firm: UPS	Firm	Firm	Firm	
Date/Time	Date/Time	Date/Time	Date/Time: 9/21/21 0540	Date/Time	

R2109751 5
Olin Corporation
Olin Charles Gibson Site

Distribution: White - Lab Copy; Yellow - Return to Originator

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM 061202

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 CLEVELAND GIBSON SITE	Project Number: 1254
Project Manager: ADAM CARRINGTON	Report CC: ADAM CARRINGTON
Company/Address: OLIN CORP. - Corporate Env. Remediation Group ~~3855 North~~ 490 Stuart Rd. CLEVELAND, TN 37312	
Phone #: 423-508-2768	Email: ABCARRINGTON@OLIN.COM
Sampler's Signature:	Sampler's Printed Name: MICHAEL WALKER

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

PRESERVATIVE: O

CLIENT SAMPLE ID	FOR OFFICE USE ONLY LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	GC/MS VOAs ○ 8260 ○ 624 ○ CLP	GC/MS SVOAs ○ 8270 ○ 625	GC VOAs ○ 8021 ○ 601/602	PESTICIDES ○ 8081 ○ 608	PCBs ○ 8082 ○ 608	METALS, TOTAL (List in comments below)	METALS, DISSOLVED (List in comments below)	REMARKS/ ALTERNATE DESCRIPTION
DS-1-092021		9-20-21	1430	SED	1				1				
MS-1-092021		9-20-21	1445	SED	1				1				
~~DS-1-092021~~		~~9-20-21~~		~~SED~~	~~1~~				~~1~~				

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS

~~Metals~~

No DS-1-092021 was taken Due to Lack of Material in Sediment trap.

See QAPP ☐

STATE WHERE SAMPLES WERE COLLECTED: New York

TURNAROUND REQUIREMENTS
- ____ RUSH (SURCHARGES APPLY)
- ____ 1 day ____ 2 day ____ 3 day
- ____ 4 day ____ 5 day
- X Standard (10 business days-No Surcharge)

REQUESTED REPORT DATE: _____

REPORT REQUIREMENTS
- ____ I. Results Only
- X II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
- ____ III. Results + QC and Calibration Summaries
- ____ IV. Data Validation Report with Raw Data

Edata ____ Yes ____ No

INVOICE INFORMATION
- PO #:
- BILL TO: OLIN CORP

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: ~~Michael Walker~~	Signature:	Signature:	Signature:	Signature:	Signature:
Printed Name: MICHAEL WALKER	Printed Name: UPS DRIVER	Printed Name:	Printed Name:	Printed Name:	Printed Name:
Firm: SEVENSON	Firm: UPS	Firm:	Firm:	Firm:	Firm:
Date/Time: 9/20/21 / 505pm	Date/Time:	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: White - Lab Copy; Yellow - Return to Originator

R2109751 5
Olin Corporation
Olin Charles Gibson Site

Cooler Receipt and Preservation Check Form

Project/Client Severson/Olin Folder Number

Cooler received on 9/21/21 by: @ COURIER: ALS (UPS) FEDEX VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N (NA)
3	Did all bottles arrive in good **condition** (unbroken)?	(Y) N	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (**Wet Ice**) **Dry Ice Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 9/21/21 Time: 0946 ID: IR#7 (IR#11) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	4.5						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-102 by @ on 9/21/21 at 0950
5035 samples placed in storage location: _____ by _____ on _____ at _____ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 9/22/21 Time: 0952 by: @

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (N/A)
13. Air Samples: Cassettes / Tubes Intact Y / N with MS Y / N Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: ~~[illegible]~~ 062117-SK

Explain all Discrepancies/ Other Comments:

HPROD	BULK
HTR	FLDT
SUB	HGFB
~~ALS~~	LL3541

Labels secondary reviewed by: @
PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

Spike was diluted out.

+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

Rochester Lab ID # for State Accreditations[1]

NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Olin Corporation **Service Request:** R2109751
Project: Olin Charles Gibson Site/1259

Non-Certified Analytes

Certifying Agency: New York Department of Health

Method	Matrix	Analyte
ALS SOP	Soil	Total Solids

Client: Olin Corporation
Project: Olin Charles Gibson Site/1259
Service Request: R2109751

Sample Name: US-1-092021
Lab Code: R2109751-001
Sample Matrix: Soil
Date Collected: 09/20/21
Date Received: 09/21/21

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AMOSES
ALS SOP		KAWONG

Sample Name: MS-1-092021
Lab Code: R2109751-002
Sample Matrix: Soil
Date Collected: 09/20/21
Date Received: 09/21/21

Analysis Method	Extracted/Digested By	Analyzed By
8081B	KSERCU	AMOSES
ALS SOP		KAWONG

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

Sample Results

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2109751
Project:	Olin Charles Gibson Site/1259	**Date Collected:**	09/20/21 14:30
Sample Matrix:	Soil	**Date Received:**	09/21/21 09:40
Sample Name:	US-1-092021	**Units:**	ug/Kg
Lab Code:	R2109751-001	**Basis:**	Dry

Organochlorine Pesticides by Gas Chromatography using Microwave Extraction

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	150	20	09/27/21 16:31	9/24/21	
beta-BHC	ND U	150	20	09/27/21 16:31	9/24/21	
delta-BHC	ND U	150	20	09/27/21 16:31	9/24/21	
gamma-BHC (Lindane)	ND U	150	20	09/27/21 16:31	9/24/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	113	10 - 145	09/27/21 16:31	
Tetrachloro-m-xylene	102	10 - 123	09/27/21 16:31	

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2109751
Project:	Olin Charles Gibson Site/1259	**Date Collected:**	09/20/21 14:45
Sample Matrix:	Soil	**Date Received:**	09/21/21 09:40
Sample Name:	MS-1-092021	**Units:**	ug/Kg
Lab Code:	R2109751-002	**Basis:**	Dry

Organochlorine Pesticides by Gas Chromatography using Microwave Extraction

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	160	10	09/27/21 16:51	9/24/21	
beta-BHC	ND U	160	10	09/27/21 16:51	9/24/21	
delta-BHC	ND U	160	10	09/27/21 16:51	9/24/21	
gamma-BHC (Lindane)	ND U	160	10	09/27/21 16:51	9/24/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	84	10 - 145	09/27/21 16:51	
Tetrachloro-m-xylene	83	10 - 123	09/27/21 16:51	

General Chemistry

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2109751
Project:	Olin Charles Gibson Site/1259	**Date Collected:**	09/20/21 14:30
Sample Matrix:	Soil	**Date Received:**	09/21/21 09:40
Sample Name:	US-1-092021	**Basis:**	As Received
Lab Code:	R2109751-001		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Total Solids	ALS SOP	**27.2**	Percent	-	1	10/01/21 08:55	

Analytical Report

Client:	Olin Corporation	**Service Request:**	R2109751
Project:	Olin Charles Gibson Site/1259	**Date Collected:**	09/20/21 14:45
Sample Matrix:	Soil	**Date Received:**	09/21/21 09:40
Sample Name:	MS-1-092021	**Basis:**	As Received
Lab Code:	R2109751-002		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Q
Total Solids	ALS SOP	**27.8**	Percent	-	1	10/01/21 08:55	

QC Summary Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
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Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: Olin Corporation **Service Request:** R2109751
Project: Olin Charles Gibson Site/1259
Sample Matrix: Soil

SURROGATE RECOVERY SUMMARY

Organochlorine Pesticides by Gas Chromatography using Microwave Extraction

Analysis Method: 8081B
Extraction Method: EPA 3546

Sample Name	Lab Code	Decachlorobiphenyl 10-145	Tetrachloro-m-xylene 10-123
US-1-092021	R2109751-001	113	102
MS-1-092021	R2109751-002	84	83
Method Blank	RQ2111875-04	82	51
Lab Control Sample	RQ2111875-05	83	41
Duplicate Lab Control Sample	RQ2111875-06	81	63
MS-1-092021 MS	RQ2111875-07	76	81
MS-1-092021 DMS	RQ2111875-08	76	92

Client:	Olin Corporation	**Service Request:**	R2109751
Project:	Olin Charles Gibson Site/1259	**Date Collected:**	09/20/21
Sample Matrix:	Soil	**Date Received:**	09/21/21
		Date Analyzed:	09/27/21
		Date Extracted:	09/24/21

Duplicate Matrix Spike Summary
Organochlorine Pesticides by Gas Chromatography using Microwave Extraction

Sample Name:	MS-1-092021	**Units:**	ug/Kg
Lab Code:	R2109751-002	**Basis:**	Dry
Analysis Method:	8081B		
Prep Method:	EPA 3546		

		Matrix Spike			Duplicate Matrix Spike					
		RQ2111875-07			RQ2111875-08					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	ND U	187 J	108	174 *	ND U	89.3	0 *	10-149	NC	30
beta-BHC	ND U	166 J	108	155	ND U	89.3	0 *	10-162	NC	30
delta-BHC	ND U	ND U	108	0 *	ND U	89.3	0 *	10-157	NC	30
gamma-BHC (Lindane)	ND U	ND U	108	0 *	ND U	89.3	0 *	10-170	NC	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Client:	Olin Corporation	**Service Request:**	R2109751
Project:	Olin Charles Gibson Site/1259	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	RQ2111875-04	**Basis:**	Dry

Organochlorine Pesticides by Gas Chromatography using Microwave Extraction

Analysis Method: 8081B
Prep Method: EPA 3546

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
alpha-BHC	ND U	1.8	1	09/27/21 17:51	9/24/21	
beta-BHC	ND U	1.8	1	09/27/21 17:51	9/24/21	
delta-BHC	ND U	1.8	1	09/27/21 17:51	9/24/21	
gamma-BHC (Lindane)	ND U	1.8	1	09/27/21 17:51	9/24/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	82	10 - 145	09/27/21 17:51	
Tetrachloro-m-xylene	51	10 - 123	09/27/21 17:51	

Client: Olin Corporation
Project: Olin Charles Gibson Site/1259
Sample Matrix: Soil

Service Request: R2109751
Date Analyzed: 09/27/21

Duplicate Lab Control Sample Summary
Organochlorine Pesticides by Gas Chromatography using Microwave Extraction

Units:ug/Kg
Basis: Dry

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ2111875-05			RQ2111875-06					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	8081B	3.97	7.01	57	5.25	6.55	80	28-145	28	30
beta-BHC	8081B	5.56	7.01	79	6.00	6.55	92	38-144	8	30
delta-BHC	8081B	5.56	7.01	79	5.93	6.55	91	30-153	7	30
gamma-BHC (Lindane)	8081B	4.54	7.01	65	5.42	6.55	83	32-145	18	30

Data Evaluation Narrative
Charles Gibson – September 2021 Sediment Sampling Event

SDG: R2109751 – ALS Environmental, Rochester, NY

Deliverables
The data package as submitted to Olin Corporation is complete as stipulated under the Quality Assurance Project Plan (QAPP) for the site. United States Environmental Protection Agency (USEPA) Method 8081B was utilized in laboratory testing of samples. The ALS Standard Operating Procedure (SOP) was utilized to obtain percent solids of sediment samples in order to report results on a dry weight basis.

Sample Integrity
Samples within this sample delivery group (SDG) were submitted to the ALS Environmental Laboratory in Rochester, NY for site-specific chlorinated pesticides and percent solids analyses. The sample cooler temperature measured 4.5°C upon arrival at the laboratory. The proper containers were used, the Chain of Custody was properly relinquished, and the correct analytical methods were employed. Note that the downstream location was not sampled due to lack of material in the sediment trap.

Sample Identification
This SDG contains the following sediment samples collected September 20, 2021:

SDG R2109751:

Sample ID	Sample ID
US-1-092021	MS-1-092021*

* Blind Field Duplicate of US-1-092021

Chlorinated Pesticides (8081B)
The samples in this SDG were submitted for site-specific chlorinated pesticides analysis by USEPA Method 8081B.

Holding Times:
The extraction and analytical logs indicate that applicable holding times were met for samples submitted for chlorinated pesticide analysis.

Calibration:
The initial calibration data for this SDG indicates that the applicable calibration criteria were met for samples submitted for chlorinated pesticide analysis. Two of three associated continuing calibration verification (CCV) samples had recoveries above the upper laboratory control limit for 3 of 4 BHC compounds; since no analytes were detected above the method reporting limit (MRL) no data qualification was deemed necessary by professional judgment. The column breakdowns for Endrin and DDT were assessed, and the percent degradation was within QC limits each day that samples were analyzed.

Surrogate Recoveries:
The surrogate recoveries were within laboratory QC guidelines.

Blank Summary:
The analytical results of the laboratory method blank indicate that chlorinated pesticides were not detected.

Laboratory Control Sample (LCS) and LCS Duplicate (LCSD):
The LCS and LCSD spike recoveries as well as the relative percent differences (RPDs) were within QC advisory limits.

Second Column Confirmation:
The laboratory utilized a second column confirmation for the analysis of chlorinated pesticides. The confirmation results were within QC guidelines for the LCS/LCSD and performance evaluation mixture (PEM) samples.

Duplicate Sample:
According to the sampler, MS-1-092021 was a blind field duplicate of US-1-092021. All site-specific pesticides were non-detect in the parent sample and field duplicate.

Reporting Limits:
The reporting limits were elevated for all pesticide compounds analyzed since the sample extracts were diluted either 10X or 20X due to relatively high levels of non-target background concentrations. Extract clean-ups were performed but did not eliminate enough background components to prevent dilution.

Matrix Spike/Matrix Spike Duplicate (MS/MSD):
MS/MSD analyses were performed on project sample MS-1-092021. The recoveries were below the laboratory control limits due to matrix effects described above and the resulting necessary dilutions. No data qualification was deemed necessary on project samples since the LCS/LCSD and PEM recoveries were easily within laboratory control limits.

Percent Total Solids
The two sediment samples were analyzed for Percent Total Solids by the ALS SOP. The relative percent difference (RPD) for the duplicate pair (US-1/MS-1) was 2.2.

Overall Site Evaluation and Professional Judgment Flagging Changes
The data within this SDG were compared to site data and edits to the DQE flags were not required based on professional judgment. Monitoring period completeness, which is the percentage of analytical results judged valid, including estimated values, was 100 percent for the September 2021 sampling event. Typically, project objectives are met when completeness is 90 percent or better.

Prepared by: *Randy T. Morris* Date: *October 29, 2021*