

Gelman Sciences, Inc. d/b/a Pall Life Sciences 642 South Wagner Road Ann Arbor, MI 48103 734.436.4025 phone 734.436.4040 fax

### **CASE NARRATIVE**

Monthly Data Pall Life Sciences Project: 1,4-Dioxane Remediation Date: December 2019

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Gelman Sciences, Inc. d/b/a Pall Life Sciences (PLS) attests to the validity of the laboratory data generated by PLS's Ann Arbor, Michigan Environmental Laboratory facilities reported herein. All analyses performed by PLS's Environmental Laboratory facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. PLS's Environmental group has reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

Some samples were analyzed at Ann Arbor Technical Services (ATS) for 1,4-dioxane due to vacation time and mass spectrometer failure. In the sample analysis report these samples are designate as "O" in the comment section. The balance of the 1,4-dioxane samples and all bromate samples were analyzed at Pall Corporation's Environmental Laboratory. All test results in this report meet all NELAP requirements for parameters for which accreditation are required or available. Any exceptions to NELAP requirements are noted in this report. All exceptions are noted per laboratory standard operating procedure based on EPA Method 1624c. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

The delay is sample analysis was due to a catastrophic autosampler failure that took considerable time to isolate and fix. The manufacturer's representative made major repairs only to find out that these repairs did not entirely fix the problems. Samples were sent out to ATS for analysis after the service engineer was unable to eliminate all problems during his service call.

Calculations are performed before rounding to avoid round-off errors in calculated results. The odd even rule is used for rounding. Holding times were met for all samples analyzed. Proper preservation was observed on all samples unless otherwise detailed in the individual sections below.

## **RECEIPT/ STORAGE**

The samples were received on the days noted in the report for the Month; the samples arrived in good condition, properly preserved and on ice when necessary. Samples that require 1,4-dioxane analysis are collected in hydrochloric HCl acid-preserved vials to a pH of  $\leq$ 2, with the exception of the Pall ozone treatment samples. These samples have chemicals that, when mixed with the HCl acid, cause interferences and trap damage. Every attempt is made to analyze these samples within 24 hours of receipt.

Samples that require Bromate analysis are collected and preserved in the laboratory with ethylene di-amine and refrigerated.

Samples that are delivered to the laboratory the same day as they are collected are likely not to have reached a fully chilled temperature. This is acceptable as long as there is evidence that chilling has begun. All samples are iced or refrigerated at  $4^{\circ}C$  ( $\pm 2^{\circ}C$ ) from the time of collection until sample preparation or analysis.

## 1.4-Dioxane (GC-MS)

All ground water and treated water samples were analyzed for 1,4-Dioxane (GC-MS) in accordance with EPA 1624C, which has been modified to enhance detection limits. Samples that were diluted to bring them within the calibrated range of the instrument are noted with a "D" under the Qualifier Code section of the data report. Reporting limits were adjusted based on each dilution.

Reporting limit for undiluted samples is 1.0ppb (part per billion, micrograms per liter, µg/L). All quality control parameters were within the acceptance limits. All data is reported with two significant figures.

## Bromate (Ion Chromatography)

All surface water and treated samples were analyzed for Bromate (Ion Chromatography) in accordance with EPA 300.1. Surrogates are added to all samples. All quality control parameters were within the acceptance limits with the balance of sample analyzed.

The reporting limit for treated samples is 5.0ppb and for surface samples is 2.0ppb. All data is reported with 2 significant figures.

## Qualifiers

### 1,4-Dioxane Qualifier Codes:

Qualifier Code	Description
nd:	The compound was analyzed for, but was not detected at or above the detection limit indicated.
D:	Analyte value quantified from a dilution, reporting limit is raised to reflect dilution.
E:	The compound result is greater than the upper quantitation limit in the associated calibration curve, reported as estimate.
в:	The sample vials contained air bubbles larger than 5mm, which may affect compound results.
J:	The compound was positively identified; the associated numerical value is the approximate concentration.
M:	Matrix effects, sample required dilution.
R:	The reported value is unusable and rejected due to variance from quality control criteria.
V:	The reported value is considered estimated due to variance from quality control criteria.
H:	Sample was analyzed past 14 day hold time, but within 45 days.
0:	Samples analyzed in outside laboratory.
S:	Samples split with DEQ.

### **Bromate Qualifier Codes:**

Qualifier Code	Description
nd:	The compound was analyzed for, but was not detected at or above the detection limit indicated.
E:	The compound result is greater than the upper quantitation limit in the associated calibration curve.
J:	The compound was positively identified; the associated numerical value is the approximate concentration.
R:	The reported value is unusable and rejected due to variance from quality control criteria.
V:	The reported value is considered estimated due to variance from quality control criteria.
H:	Sample was analyzed past 28 day hold time

Analyst: Susan E.O. Peters Deven Coreters Date: 01-08-20 Jul Bey\_ Date: 1-8-20

Report Checked by: Laurel Beyer

December 2019

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## Sample Analysis Report

## December, 2019

642 South Wagner Road Ann Arbor, MI 48103-9019 US 734.436.4025 phone

Analyst Initials: <u>ອເວ</u> Date: <u>ວເ-ດຣ-</u>ລຸບ

Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
Extraction Wells								
C3								
DOLPH-12-04-19-09:28-1	130	5.0						D
TW-20-12-04-19-09:30-1	880	25.0						D
D2								
LB-4-12-04-19-09:09-1	480	10.0			147			D
TW-21-12-04-19-09:16-1	260	10.0						D
E	•					2		
TW-17-12-11-19-12:00-1	200	10.0						O, D
TW-18-12-04-19-09:19-1	240	5.0						D
TW-19-12-04-19-08:34-1	550	10.0						D
TW-23-12-04-19-08:35-1	440	10.0						D
Marshy								
PW-1-12-04-19-09:26-1	830	10.0					-	D
SW			•		•			•
TW-22-12-04-19-09:38-1	440	10.0						D
TW-28-12-04-19-09:35-1	710	10.0						D
Monitoring Wells	Monitoring Wells							
C3		-						
MW-1 Replacement-12-20-19-14:10-1	2700	40.0						O, D
	L		I	1	L	1	1	100 000

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Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
MW-28-12-19-19-14:15-1	nd	1.0						0
MW-39s-12-12-19-13:43-1	2	1.0						0
D0					•	·	<i></i>	
A2 Cleaning Supply-12-05-19-14:40-1	59	10.0	······································					D
MW-136i-12-02-19-12:30-1	nd	1.0						
MW-136s-12-02-19-13:49-1	nd	1.0						· · ·
MW-137s-12-13-19-13:16-1	nd	1.0						0
MW-138i-12-04-19-13:49-1	7.0	1.0						
MW-138s-12-04-19-12:38-1	nd	1.0	······				ĺ	
MW-139i-12-11-19-11:40-1	nd	1.0						0
MW-139s-12-11-19-10:14-1	nd	1.0						0
MW-140s-12-11-19-12:30-1	nd	1.0						0
MW-41d-12-04-19-10:15-1	20	1.0						
MW-41s-12-04-19-09:45-1	16	1.0						
MW-51-12-12-19-09:40-1	nd	1.0						0
MVV-53d-12-10-19-10:00-1	nd	1.0	,					0
MW-53i-12-10-19-12:28-1	32	1.0						0
MW-53s-12-10-19-11:14-1	nd	1.0						0
MW-61d-12-13-19-10:32-1	6	1.0						0
MW-61s-12-13-19-09:22-1	5	1.0						0
D2								
175 Jackson Plaza-12-11-19-14:38-1	880	10.0						0, D
465 Dupont-12-16-19-09:38-1	1000	20.0						O, D
MW-131s-12-12-19-12:21-1	nd	1.0						0
MW-39d-12-12-19-14:57-1	40	1.0						0
MW-56s-12-20-19-13:13-1	60	1.0						0
MW-62i-12-19-19-12:03-1	nd	1.0	**************************************					0

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Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
MW-62s-12-19-19-13:30-1	nd	1.0						0
MW-BE-1d-12-16-19-11:07-1	740	10.0						O, D
MW-BE-1s-12-16-19-12:21-1	730	20.0						O, D
E							3	
IW-2-12-17-19-09:09-1	440	10.0						0
IW-2-12-17-19-09:30-1	480	10.0						0, D
IW-2-12-17-19-10:40-1	1900	40.0						O, D
IW-2-12-17-19-13:17-1	2100	40.0						0, D
MW-100-12-16-19-13:50-1	2000	40.0	-					O, D
MW-103s-12-10-19-14:10-1	77	1.0						0
MW-112i-12-05-19-11:45-1	11	1.0			47			
MW-112s-12-05-19-10:33-1	nd	1.0						
MW-131d-12-12-19-11:08-1	nd	1.0						0
MW-136d-12-02-19-11:07-1	nd	1.0						
MW-137d-12-13-19-12:05-1	nd	1.0						0
MW-138d-12-03-19-09:57-1	nd	1.0						
MW-139d-12-11-19-10:28-1	nd	1.0						0
MW-140d-12-11-19-13:05-1	nd	1.0						0
MW-56d-12-20-19-11:58-1	nd	1.0						0
MW-62d-12-19-19-10:49-1	nd	1.0						0
MW-76i-12-05-19-13:06-1	92	10.0						D
MW-76s-12-05-19-14:18-1	270	10.0						D
MW-84s-12-10-19-15:49-1	31	1.0						0
Marshy				•	•			
NMW-1s-12-19-19-11:34-1	1900	40.0						O, D
NMW-2s-12-19-19-11:41-1	2100	40.0						O, D

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Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
SH					•		<b></b>	·
MW-5d-12-19-19-12:20-1	11000	200						O, D
SW	• • • • • • • • • • • • • • • • • • •		········		• • • • • • • • • • • • • • • • • • •	<b></b>	1	
MW-45d-12-19-19-14:11-1	410	20.0						0, D
MW-45s-12-19-19-13:44-1	3	1.0				5		0
Surface Water								
Not Applicable								
HC/HR-12-02-19-07:45-1			nd	2.0				
HC/HR-12-03-19-07:43-1			nd	2.0				
HC/HR-12-04-19-07:50-1			nd	2.0				
HC/HR-12-05-19-07:54-1			nd	2.0				
HC/HR-12-06-19-08:05-1			nd	2.0				
HC/HR-12-09-19-07:43-1			nd	2.0				
HC/HR-12-10-19-07:35-1			nd	2.0				
HC/HR-12-11-19-07:40-1			nd	2.0				
HC/HR-12-12-19-07:45-1			nd	2.0				
HC/HR-12-13-19-07:43-1			nd	2.0				
HC/HR-12-16-19-08:00-1			nd	2.0				
HC/HR-12-17-19-08:00-1			nd	2.0				
HC/HR-12-18-19-07:45-1			nd	2.0				
HC/HR-12-19-19-08:30-1			nd	2.0				
HC/HR-12-20-19-07:30-1			nd	2.0				
HC/HR-12-23-19-07:40-1			nd	2.0				
HC/HR-12-24-19-07:44-1			nd	2.0				
HC/HR-12-26-19-07:48-1			nd	2.0				
HC/HR-12-27-19-07:45-1			nd	2.0				

Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
HC/HR-12-30-19-07:40-1			nd	2.0				
HC/HR-12-31-19-10:00-1			nd	2.0				
Treatment System						8.		
OUTFALL-12-01-19-1	5.0	1.0						
OUTFALL-12-01-19-2			7.5	5.0				
OUTFALL-12-02-19-2			6.2	5.0				
OUTFALL-12-02-19-1	5.0	1.0						
OUTFALL-12-03-19-2			6.6	5.0				
OUTFALL-12-03-19-1	5.5	1.0		-				
OUTFALL-12-04-19-2			7.4	5.0				-
OUTFALL-12-04-19-1	4.8	1.0						
OUTFALL-12-05-19-1	5.8	1.0						
OUTFALL-12-05-19-2			7.1	5.0				
OUTFALL-12-08-19-1	5.1	1.0						
OUTFALL-12-08-19-2			7.7	5.0				
OUTFALL-12-09-19-1	4.9	1.0						
OUTFALL-12-09-19-2			8.6	5.0				
OUTFALL-12-10-19-1	4	1.0						0
OUTFALL-12-10-19-2			8.6	5.0				
OUTFALL-12-11-19-2			8.4	5.0				
OUTFALL-12-11-19-1	. 5	1.0						0
OUTFALL-12-12-19-2			8.0	5.0				
OUTFALL-12-19-1	5	1.0						0
OUTFALL-12-15-19-2			7.1	5.0				
OUTFALL-12-15-19-1	5	1.0						0
OUTFALL-12-16-19-2			7.6	5.0				
OUTFALL-12-16-19-1	5	1.0						0

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Sample Name - Date/Time Sampled	1,4-Dioxane Results (ppb)	R.L. (ppb)	Bromate Results (ppb)	R.L. (ppb)	Bromide Results (ppb)	R.L. (ppb)	Comments	Qualifier(s)
OUTFALL-12-17-19-2			8.2	5.0				
OUTFALL-12-17-19-1	6	1.0						0
OUTFALL-12-18-19-2			6.6	5.0				
OUTFALL-12-18-19-1	5	1.0						0
OUTFALL-12-19-19-2			8.0	5.0				
OUTFALL-12-19-19-1	5	1.0						0
OUTFALL-12-22-19-2			7.5	5.0				
OUTFALL-12-22-19-1	5	1.0						0
OUTFALL-12-23-19-2			7.5	5.0				
OUTFALL-12-23-19-1	6	1.0						0
OUTFALL-12-24-19-2			6.1	5.0				
OUTFALL-12-24-19-1	5	1.0						0
OUTFALL-12-25-19-2			7.6	5.0				
OUTFALL-12-25-19-1	5	1.0						0
OUTFALL-12-26-19-2			7.1	5.0				
OUTFALL-12-26-19-1	5	1.0						0
OUTFALL-12-29-19-2			7.6	5.0				
OUTFALL-12-29-19-1	5	1.0						0
OUTFALL-12-30-19-1	5	1.0						0
OUTFALL-12-30-19-2			8.1	5.0				
OUTFALL-12-31-19-2			7.6	5.0				
OUTFALL-12-31-19-1	5	1.0						0
Red Pond-12-02-19-08:05-1	. 340	10.0						D
Red Pond-12-09-19-08:04-1	390	10.0						D
Red Pond-12-16-19-08:21-1	380	10.0						0, D
Red Pond-12-23-19-07:59-1	340	10.0						0, D
Red Pond-12-30-19-08:01-1	380	10.0						0, D

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#### Data Transmittal Cover Page

Project Name:	Pall Corporation
ATS Project Number:	G001-002
ATS Report Number(s):	Org_SRF_0103201

Project Description: This data report contains the results of 3 water samples, received by ATS on 1/3/20, to be analyzed for 1,4-Dioxane.

veo centry that the sample analyses for this report have been conducted in accordance with guidelines provided in the referenced standard test method, and are consistent with dealled procedures described in a written Standard Operating Procedure specific to the ATS Laboratories, as erequired by USEPA. Laboratory data sheets, SOPs, and QAQC Information are available for inspection and audit at the laboratory upon request. Unless specifically noted on the data report, all applicable sample preservation and holding time requirements have been met. We certify that the sample analyses for this report have been conducted in accordance with guidelines provided

teciplent:	Ms. Sue Peters		Email: FAX Number:	Sue_Peters@Pall.com
o. of Page	es (including cover pg.):	9		
rom:	Sarah Stubblefield	Email:	Sarah.Stubblefie	Id@AnnArborTechnicalServices.com
	Senior Chemist / Lab Manager	FAX Number:	734-995-3731	
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dditional M	lessage:			

Date: 1/8/20

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#### **Data Deliverables**

This data package constitutes a Level II package; other data report packages (Level I, Level IV DVP, EPA R5 EDD) are available upon request. There were no hardcopy data summary sheets generated for this project.

#### Sample Analysis

<u>1.4-Dioxane Analysis (GC/MS)</u>: Samples were analyzed in accordance with US EPA method 1624 (Volatile Organic Compounds by Isotope Dilution Gas Chromatography – Mass Spectrometry). An initial calibration with at least five levels was used to quantitate 1,4-Dioxane. Samples were reported to project specific reporting limits.

Anomalies Noted: None

#### Analytical QA/QC Summary

#### Calibration Verification

Method calibration was verified through the running of a mid-level initial calibration verification (CV) standard at a frequency of every 24 hours. All verification standards met the acceptance criteria with the following exceptions:
 • None

#### Instrument Blanks

Instrument blanks were analyzed at a frequency of every 24 hours. All blanks met the acceptance criteria with the following exceptions: • None

#### **OA/OC Batch Summary**

Laboratory Reagent Blanks

A laboratory reagent blank (LRB) was analyzed with each QA/QC batch. The LRB's met the acceptance criteria with the following exceptions: None

Laboratory Fortified Blanks and Matrix Spikes

A laboratory fortified blank (LFB) / laboratory control sample (LCS) was analyzed with each QA/QC batch. The LCS/LFB's met the acceptance criteria with the following exceptions: None

A matrix spike (MS) and matrix spike duplicate (MSD) was analyzed with each QA/QC batch. The MS/MSD met the acceptance criteria with the following exceptions: None

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LABORATORY OPERATIONS CASE NARRATIVE

#### ATS Project Number: G001-002 Report Date: 1/8/20

SRF / SDG Numbers: 0103201

#### Case Narrative Summary

This case narrative applies to the following 3 samples that were received at Ann Arbor Technical Services, Inc. (ATS) on 1/3/20, and associated matrix-specific QA/QC:

Samples					
Client Sample Identification	Date	Time	Time	Analysis	Matrix
Outfall	12/31/19	na	Standard	1,4-Dloxane	Treated Water
Outfall	1/1/20	na	Standard	1,4-Dioxane	Treated Water
Outfail	1/2/20	na	Standard	1,4-Dloxane	Treated Water

Upon receipt, samples were scheduled for the following analyses:

alysis	Number of Samples
1,4-Dioxane by US EPA 1624	<ul> <li>3 + 1 Matrix Spike / 1 Matrix Spike Dupli</li> </ul>

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#### Sample Receipt and Chain of Custody Records

Samples were delivered directly to ATS by Pall Corporation staff. Samples were received with proper chain of custody records included. Sample condition and anomalies, if any, are presented in the "Chain of Custody and Sample Receipt Documentation" section of this report.

#### Data Review and Approval

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All data contained in this report have been generated in accordance with guidelines provided in the referenced standard test method, and are consistent with detailed procedures described in a written standard operating procedures (SOPs) specific to the ATS Laboratory, as required by US EPA. All data are peer and management reviewed to ensure compliance with the above referenced SOP's and project specifications. In addition all data conform to the laboratory's Quality Assurance / Quality Control Manuals.

A single QA/QC batch is defined as no more than 20 samples excluding method blanks (MB, LRB), fortified blanks (BS, LFB, LCS), matrix spikes (MS, SFK), and duplicates whether spiked or native (MSD, SPK DUP, DUP, LR). G001-002.20/CN\_0103201.doc

Consultants in Chemistry & Environmental Science 290 South Wagner Road, Ann Arbor, Michigan 48103 Tel 734/995-0995 Fax 734/995-3731

#### Matrix Duplicates

A replicate analysis was analyzed with each QA/QC batch. All replicates met the acceptance criteria with the following exceptions: ing exceptions: None

#### Sample Dilutions

Samples containing compounds at concentrations above the initial calibration curve were diluted and reanalyzed for those compounds. The following samples were diluted for 1,4-Dioxane: None

/ January 8, 2020

/ January 8, 2020

Markalitong

Mark T. DeLong (Quality Assurance Coordinator)

D

Philip B. Simon (Laboratory Director)



An Arbor, Mich Tel Talvisson University of the Stephen Stephen Labor Wisconsin Labor	igan 48103 5 Fax, 734/995-3731 Iony ID: 8604 ratory ID: 898321720				Data	Organic Summa	Analysis ry Sheet
For: Ms. Sue Peters	×		ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/8/20			
642 South Wagner Road			ATS SRF:	0103201			
Ann Arbor, MI 48103							
Sample Identification:	Outfall						
Sample Date:	12/31/19						
Sample Time:	na						
Sampled By:	Client						
Laboratory Receipt Date:	1/3/20						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Timo	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.005	0.001	1/6/20	13:16	JEB

A Solution And	South Wagner Road Arbor, Michigan 48103 734/995-0995 Fax, 734/995-3731 Ngan Laboratory ID: 9904 consin Laboratory ID: 998321720
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for: Ms. Sue Peters		ATS Project:	Pall Corporation			#G001-002
Pall Corporation		Report Date:	1/8/20			
642 South Wagner Road		ATS SRF:	0103201			
Ann Arbor, MI 48103						
Sample Identification:	Outfall					
Sample Date:	1/1/20					
Sample Time:	na					
Sampled By:	Client					
Laboratory Receipt Date:	1/3/20					
Sample Matrix	Water					
				Analysis	Analysis	Analyzed

Parameter	Method	Units	Result	Reporting Limit	Date	Time	By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.005	0.001	1/6/20	15:43	JEB

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.

d. ----

X1G001-002.20/DRG\_SRF\_0103201

A Sille For: Ms. Sue Paters Pall Corporation 642 South Wagner Road Ann Arbor, MI 48103

Sample Identification: Outfall

Organic Analysis Data Summary Sheet ATS Project: Pall Corporation Report Date: 1/8/20 ATS SRF: 0103201 #G001-002

rev. 1/8/20

Organic Ana	atysis						1.222.00	
Parameter		Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Samp	le Matrix:	Water						
Labor	atory Receipt Date:	1/3/20						
Samp	led By:	Client						
Samp	le Time:	na						
Samp	le Date:	1/2/20						

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.

X1G001-002.20/ORG\_SRF\_0103201

rev. 1/8/20



### Quality Assurance / Quality Control Data Summary

QC Batch Number: QCORG0106201 Parameter: 1,4-Dioxane (EPA 1624)

ATS Project: Pall Corporation Report Date: 1/8/20 #G001-002

Results of QA Samples run concurrently with project samples REPLICATE ANALYSIS

-3731

21720

Sample	Replicate #1	Replicate #2	Mean	Relative Range (percent)
#G001-002 Outfall 12/31/19 Matrix Spike	0.015 mg/L	0.015 mg/L	0.015 mg/L	0.9
SPIKES and/or QC CHECK SAMPLES				
Sample/Analyte	Known Concentration	Spike Concentration	Analyzed Concentration	Recovery (percent)
#G001-002				
Laboratory Fortified Blank 1/6/20	<0.001 mg/L	0.010 mg/L	0.008 mg/L	82.1*
Outfall 12/31/19 Matrix Spike	0.005 mg/L	0.010 mg/L	0.015 mg/L	101.5
Outfall 12/31/19 Matrix Spike Duplicate	0.005 mg/L	0.010 mg/L	0.015 mg/L	102.8
				9
BLANK ANALYSIS				
Sample		Analyzed C	Concentration	QC Decision
#G001-002 Laboratory Reagent Blank 1/8/20	12	<0.0	01 mg/L	Acceptable
Comments:		Control Limits:		
Calculations performed prior to rounding.	ī	Recoveries		
Outside standard control limits.		Laboratory Control Sam	pla Recovery (85 - 115%)	

Relative Range Replicates ( <20%)

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.



#### Data Transmittal Cover Page

Emall:

FAX Number: 734-995-3731

FAX Number:

Project Name: ATS Project Number: ATS Report Number(s):

e: Pall Corporation r: G001-002 ): Org\_SRF\_1220191

Project Description:

This data report contains the results of 35 water samples, received by ATS on 12/20/19, to be analyzed for 1,4-Dioxane.

Sue Peters@Pall.com

Sarah.Stubblefield@AnnArborTechnicalServices.com

We certify that the sample analyses for this report have been conducted in accordance with guidelines provided in the referenced standard test method, and are consistent with detailed procedures described in a written Standard Operating Procedure specific to the ATS Laboratories, as required by USEPA. Laboratory data sheets, SOPs, and QA/QC information are available for inspection and audit at the laboratory up request. Unless specifically noted on the data report, all applicable sample preservation and holding time requirements have been met.

Emall:

Signed

No. of Pages (including cover pg.): 44

From: Sarah Stubblefield Senior Chemist / Lab Manager

.

Recipient: Ms. Sue Peters

Additional Message:

Dates

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1/3/20

IF YOU DO NOT RECEIVE ALL PAGES OF THIS TRANSMITTAL, PLEASE CALL 734-995-0995.

This material is intended only for the use of the individual or entity to whom it is addressed, and may contain information that is privileged and contidential. If you are not the intended recipient or the agent responsible for delivering this material to the hinanded recipient, you are hretely notified that any designations, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by Helphone. Thank you.

X:\G001-002.19\Data\_Transmittal\_Cover\_Page SLS

Client Sample cation	Sample Date	Sample Time	Turn Around Time	Analysis	Matrix
MW-BE-1D	12/16/19	11:07	Standard	1,4-Dioxane	Groundwater
MW-BE-1S	12/16/19	12:21	Standard	1,4-Dioxane	Groundwater
MW-100	12/16/19	13.50	Standard	1,4-Dioxane	Groundwater
Outfall	12/16/19	na	Standard	1,4-Dioxane	Treated Water
TW-2	12/17/19	9:09	Standard	1,4-Dioxane	Groundwater
IW-2	12/17/19	9:30	Standard	1,4-Dioxane	Groundwater
IW-2	12/17/19	10:40	Standard	1,4-Dioxane	Groundwater
IW-2	12/17/19	13:17	Standard	1,4-Dioxane	Groundwater

Upon receipt, samples were scheduled for the following analyses:

Ал	alysis	Number of Samples
	1,4-Dioxane by US EPA 1624	<ul> <li>35 + 2 Matrix Spike / 2 Matrix Spike Duplicate</li> </ul>

#### Sample Receipt and Chain of Custody Records

Samples were delivered directly to ATS by Pall Corporation staff. Samples were received with proper chain of custody records included. Sample condition and anomalies, if any, are presented in the "Chain of Custody and Sample Receipt Documentation" section of this report.

#### Data Review and Approval

All data contained in this report have been generated in accordance with guidelines provided in the referenced standard test method, and are consistent with detailed procedures described in a written standard operating procedures (SOP3) specific to the ATS Laboratory, as required by US EPA. All data are peer and management reviewed to ensure compliance with the above referenced SOP's and project specifications. In addition all data conform to the laboratory's Quality Assurance / Quality Control Manuals.

A single QA/QC batch is defined as no more than 20 samples excluding method blanks (MB, LRB), fortified blanks (BS, LFB, LCS), matrix spikes (MS, SPK), and duplicates whether spiked or native (MSD, SPK DUP, DUP, LR).

#### Data Deliverables

This data package constitutes a Level II package; other data report packages (Level I, Level IV DVP, EPA R5 EDD) are available upon request. There were no hardcopy data summary sheets generated for this project.

CHAIN OF CUSTODY RECORD

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Pall Corp. 642 South Wagner Road, Ann Arbor Michigan, Sue Peters

01-03-19 16101

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Pall Corp

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11

#### LABORATORY OPERATIONS CASE NARRATIVE

ATS Project Number: G001-002 Report Date: 1/3/20 SRF / SDG Numbers: 1220191

#### Case Narrative Summary

This case narrative applies to the following 35 samples that were received at Ann Arbor Technical Services, Inc. (ATS) on 12/20/19, and associated matrix-specific QA/QC:

Client S Ication	ample	Sample Date	Sample Time	Turn Around Time	Analysis	Matrix
MW-53 E		12/10/19	10:00	Standard	1,4-Dioxane	Groundwater
MW-53 S		12/10/19	11:14	Standard	1,4-Dioxane	Groundwater
MW-531		12/10/19	12:28	Standard	1,4-Dioxane	Groundwater
MW-103	s	12/10/19	14:10	Standard	1,4-Dioxane	Groundwater
MW-84 5		12/10/19	15:49	Standard	1,4-Dioxane	Groundwater
Outfail		12/10/19	na	Standard	1,4-Dioxane	Treated Water
TW-17		12/11/19	12:00	Standard	1,4-Dioxane	Groundwater
MW-139	s	12/11/19	10:14	Standard	1,4-Dioxane	Groundwater
MW-139	D	12/11/19	10:28	Standard	1,4-Dioxane	Groundwater
MW-139	1	12/11/19	11:40	Standard	1,4-Dloxane	Groundwater
MW-140	s	12/11/19	12:30	Standard	1,4-Dioxane	Groundwater
MW-140	D	12/11/19	13:05	Standard	1,4-Dloxane	Groundwater
175 Jack	son Plaza	12/11/19	14:38	Standard	1,4-Dloxane	Groundwater
Outfall		12/11/19	na	Standard	1,4-Dioxane	Treated Water
MW-51		12/12/19	9:40	Standard	1,4-Dloxane	Groundwater
MW-131	D	12/12/19	11:08	Standard	1,4-Dioxane	Groundwater
MW-131	s	12/12/19	12:21	Standard	1,4-Dioxane	Groundwater
MW-39 S		12/12/19	13:43	Standard	1,4-Dioxane	Groundwater
MW-39 D		12/12/19	14:57	Standard	1,4-Dioxane	Groundwater
Outfall		12/12/19	na	Standard	1,4-Dioxane	Treated Water
MW-61 S		12/13/19	9 22	Standard	1,4-Dioxane	Groundwater
MW-61 0		12/13/19	10:32	Standard	1,4-Dioxane	Groundwater
MW-137	D	12/13/19	12:05	Standard	1,4-Dioxane	Groundwater
MW-137	S	12/13/19	13:16	Standard	1,4-Dioxane	Groundwater
Outfall		12/15/19	na	Standard	1,4-Dioxane	<b>Treated Water</b>
Red Pon		12/16/19	8:21	Standard	1,4-Dioxane	Groundwater
465 DuPo	ent	12/16/19	9:38	Standard	1,4-Dioxane	Groundwater





#### Sample Analysis

<u>1.4-Dioxane Analysis (IGC/MS)</u>: Samples were analyzed in accordance with US EPA method 1624 (Volatile Organic Compounds by Isotope Dilution Gas Chromatography – Mass Spectrometry). An initial calibration with at least five levels was used to quantitate 1,4-Dioxane. Samples were reported to project specific reporting limits.

Anomalies Noted: None

#### Analytical QA/QC Summary

Calibration Verification

Method calibration was verified through the running of a mid-level initial calibration verification (CV) standard at a frequency of every 24 hours. All verification standards met the acceptance criteria with the following exceptions:

None

#### Instrument Blanks

Instrument blanks were analyzed at a frequency of every 24 hours. All blanks met the acceptance criteria with the following exceptions: • None

#### **OA/QC** Batch Summary

#### Laboratory Reagent Blanks

A laboratory reagent blank (LRB) was analyzed with each QA/QC batch. The LRB's met the acceptance criteria with the following exceptions:
 None

#### Laboratory Fortified Blanks and Matrix Spikes

- A laboratory fortified blank (LFB) / laboratory control sample (LCS) was analyzed with each QA/QC batch. The LCS/LFB's met the acceptance criteria with the following exceptions: • None
- A matrix spike (MS) and matrix spike duplicate (MSD) was analyzed with each QA/QC batch. The MS/MSD met the acceptance criteria with the following exceptions: A mause the acceptance of None

#### Matrix Duplicates

A replicate analysis was analyzed with each QA/QC batch. All replicates met the acceptance criteria with the following exceptions:
 None

G001-002.19/CN 1220191.doc



200 South Wagne Am Arbor, Michy Tel: 73295-0095 Michigan Labora Wasensin Labora	r Road gan 48103 Faz, 734/995-3731 ory ID: 9904 story ID: 998321720				C Data	Organic A Summar	Analysis y Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			1
Ann Arbor, MI 48103							
Sample Identification:	MW-53d						
Sample Date:	12/10/19						
Sample Time:	10:00 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1.4-Dioxane	EPA 1624	mg/L	<0.001	0.001	12/27/19	13:56	JEB

Sample Dilutions

Samples containing compounds at concentrations above the initial calibration curve were diluted and reanalyzed for those compounds. The following samples were diluted for 1,4-Dioxane:

TW-17 12/11/19
175 Jackson Plaza 12/11/19
Red Pond 12/16/19
465 DuPont 12/16/19
MW-BE-1D 12/16/19

• MW-BE-1S 12/16/19

Markalidong

/ January 3, 2020

/ January 3, 2020

• MW-100 12/16/19

MW-100 12/10/19
 IW-2 12/17/19 (9:09AM)
 IW-2 12/17/19 (9:30AM)
 IW-2 12/17/19 (10:40AM)
 IW-2 12/17/19 (1:17 PM)

Mark T. DeLong (Quality Assurance Coordinator)

Philip B. Simon (Laboratory Director)

G001-002.19/CN 1220191.doc



290 South Wagner Road Ann Arbor, Michigan 4810 Tel. 734/985-0905 Fax. 734 Hichigan Laboratory ID: 9

For: Ms. Sue Peters

**Organic Analysis Data Summary Sheet** ATS Project: Pall Corporation #G001-002 Report Date: 1/3/20 ATS SRF: 1220191

Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-53s						
Sample Date:	12/10/19						
Sample Time:	11:14 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	<0.001	0.001	12/27/19	14:40	JEB

Comments All methods reference USEPA methods unless otherwise noted. Comments All methods reference USEPA methods unless otherwise noted.

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A TAYLOR AND A TAY	lagner Road Richigan 48163 0995 Fax, 734/985-3731 boratory ID: 9664 aboratory ID: 968321720				Data	Organic / Summa	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identificatio	n: <u>MW-53i</u>						
Sample Date:	12/10/19						
Sample Time:	12:28 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1 d.Diovana	EPA 1624	mall	0.032	0.001	1207/10	45.24	100



or: Ms. Sue Peters		14	ATS Project:	Pall Corporation	#G001-002
Pall Corporation			Report Date:	1/3/20	
642 South Wagner Road			ATS SRF:	1220191	
Ann Arbor, MI 48103					
Sample Identification	MW-103s		-		
Sample Date:	12/10/19				
Sample Time:	2:10 PM				
Sampled By:	Client				
Laboratory Receipt Date:	12/20/19				
Sample Matrix:	Water				

Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.077	0.001	12/27/19	16:08	JEB

Comments All methods reference USEPA methods unless otherwise noted.

X1G001-002.19/SRF\_1220191/ORG\_SRF\_1220191

rev. 1/3/20

Am Arbor, Michigan Laborat Wessenia Laborat Wessenia Laborat	P A040 pan 48103 Fax, 734995-3731 locy ID: 9804 abory ID: 998321720				C Data	Organic / Summa	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-84s						
Sample Date:	12/10/19						
Sample Time:	3:49 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.031	0.001	12/27/19	16.51	JEB

ASIL	290 South Wagner Road Ann Arbor, Michigan 48103 Tel. 734395-0995 Fax. 734995-3731 Michigan Laboratory ID: 9604
AN MER TOWER STREET NE	Michigan Laboratory ID: 9604 Wisconsin Laboratory ID: 998321720

X1G001-002.19.5RF\_1220191/ORG\_SRF\_1220191

Comments All methods reference USEPA methods unless otherwise noted.

## Organic Analysis Data Summary Sheet ATS Project: Pall Corporation Report Date: 1/3/20 ATS SRF: 1220191 #G001-002

rev. 1/3/20

For:	Ms. Sue Peters
	Pall Corporation
	642 South Wagner Road
	Ann Arbor, MI 48103

Sample Identification:	Outfall						
Sample Date:	12/10/19						
Sample Time:	na						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.004	0.001	12/27/19	17:35	JEB

Comments All methods reference USEPA methods unless otherwise noted.

X1G001-002.19/5RF\_1220191/ORG\_SRF\_1220191

Comments All methods reference USEPA methods unless otherwise noted, Sample analyzed at native pH.

rev. 1/3/20

200 South Wagner Ann Arbor, Michi The Tak 734 798 6098 Michigan Labora Wisconsin Labora	r Road pan 45103 Fax, 734/995-3731 ory ID: 9864 atory ID: 988321729				C Data	Organic / Summai	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	_TW-17						
Sample Date:	12/11/19						
Sample Time:	12:00 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Timo	Analyzed By
Organic Analysis						1000000	
1,4-Dioxane	EPA 1624	mg/L	0.20	0.01	12/27/19	11:45	JEB



For:

Organic Analysis Data Summary Sheet

Ms. Sue Peters		ATS Project:	Pall Corporation		#G001-002
Pall Corporation		Report Date:	1/3/20		
642 South Wagner Road		ATS SRF:	1220191		
Ann Arbor, MI 48103					
Sample Identification:	MW-139s				
Sample Date:	12/11/19				
Sample Time:	10:14 AM				
Sampled By:	Client				
aboratory Receipt Date:	12/20/19				
Sample Matrix:	Water				
					88 83 850

Parameter	Method	Units	Result	Reporting Limit	Date	Time	By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	<0.001	0.001	12/27/19	18:19	JEB

Comments All methods reference USEPA methods unless otherwise noted.		Comments All methods reference USEPA methods unless otherwise noted.
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And Andrey, Michael	r Road Jan 48103 Fax, 734996-3731 Fax, 734996-3731 ory ID: 9904 tlory ID: 998321720				C Data	)rganic / Summai	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-139d						
Sample Date:	12/11/19						
Sample Time:	10:28 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	<0.001	0.001	12/27/19	19:03	JEB

X1G001-002.19/SRF\_1220191IORG\_SRF\_1220191

rev. 1/3/20

AS Ann Arb Tel. 734 Michigan 48103 5-0995 Fax, 734 5-3731

## Organic Analysis Data Summary Sheet ATS Project: Pall Corporation Report Date: 1/3/20 ATS SRF: 1220191 #G001-002

For: Ms. Sue Peters Pall Corporation 642 South Wagner Road Ann Arbor, MI 48103

Sample Identification:	MW-139i						
Sample Date:	12/11/19						
Sample Time:	11:40 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1.4-Dioxane	EPA 1624	mg/L	<0.001	0.001	12/27/19	19:47	JEB

Comments All methods reference USEPA methods unless otherwise noted.

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X1G001-002.19/SRF\_1220191/ORG\_SRF\_1220191

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For: Ms. Sue Peters		ATS Project	Pall Corporation			#G001-002		For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
642 South Wagner Road		ATS SRF.	1/3/20					Pall Corporation 642 South Wagner Road			Report Date: ATS SRF:	1/3/20 1220191			-
Ann Arbor, MI 48103								Ann Arbor, MI 48103							
Sample Identification:	MW-140s							Sample Identification:	175 JACKSON PLA	74					
Sample Date:	12/11/19							Samela Dalas	175 SACKSON PLA						
Sample Time:	12:30 PM							Sample Time:	2:38 PM						
Laboratory Receipt Date:	12/20/19							Sampled By: Laboratory Receipt Date:	Client 12/20/19						
Sample Matrix:	Water							Sample Matrix	Water						
Parameter	Method	Inite Result	Reporting Limit	Analysis	Analysis	Analyzed		Provide a second se				Reporting Limit	Analysis	Analysis	Analyzed
Organic Analysis		Tresur		Date				Organic Analysis	Method	Units	Result		Date	Time	Ву
1,4-Dioxane	EPA 1624 r	ng/L. <0.001	0.001	12/27/19	20:30	JEB		1,4-Dioxane	EPA 1624	mg/L	0.88	0.01	12/27/19	21:58	JEB
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Comments															
All methods reference USEPA methods u	nless otherwise noted.							Comments All methods reference USEPA methods ur	niess otherwise noted.						
X1G001-002.19/SRF_1220191/ORG_SRF_12201	191				rev. 1/3	/20		X10001-002 19/SRF 1220191/0RG SRF 12201	101					ney 1/3	120
<i>2</i>															
200 South Wagner R Ann Arbor, Michigan	load 1 48103							250 South Wagner Ro	bad						
Avvander a server an extension Caboratory Wisconsin Laboratory Wisconsin Laboratory	ID: 9964 rD: 9964 ry ID: 998321720			Or Data S	ganic Ar	nalysis Sheet		Tel. 734 795-0995 Fa	x, 734/995-3731 ID: 9604				Or	ganic Ar	nalysis
				Data O	annary	511001		The contain Laborator,					Data S	ummary	Sheet
For: Ms. Sue Peters Pall Corporation		ATS Project: Report Date:	Pall Corporation 1/3/20			#G001-002		For: Ms. Sue Peters		/	TS Project:	Pall Corporation		-	#G001-002
642 South Wagner Road		ATS SRF:	1220191		_			642 South Wagner Road		F	ATS SRF:	1220191			
Auto Arbor, MI 48103								Ann Arbor, MI 48103							
Sample Identification:	MW-140d							Sample Identification: 0	OUTFALL						
Sample Date:	12/11/19							Sample Date: 1	2/11/19						
Sample Time: 1 Sampled By: 0	1:05 PM Client						2	Sample Time: n	na Seet						
Laboratory Receipt Date: 1	12/20/19							Laboratory Receipt Date: 1	2/20/19						
and the second s								Samola Matrix V	Valor						

Method Units Result Reporting Limit Analysis Analysis Analyzed Date Time By Parameter Organic Analysis 1,4-Dioxane EPA 1624 21:14 JEB mg/L <0.001 0.001 12/27/19

12/20/19 Water Sample Matrix Method Units Result Reporting Limit Date Time Analyzed By Parameter Organic Analysis 1,4-Dioxane . . EPA 1624 mg/L 0.005 0.001 12/27/19 22:42 JEB

Comments All methods reference USEPA methods unless otherwise noted.

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.

Am Arbor, Mach Am Arbor, Mach Tra, Takyas cost Michigan Labora Wascensin Labora	ar No4d Igan 48103 6 Fax, 734995-3731 fary ID: 9604 ntory ID: 998321720				( Data	Organic / Summa	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-51						
Sample Date:	12/12/19						
Sample Time:	9:40 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Timo	Analyzed By
Organic Analysis							M
1,4-Dioxana	EPA 1624	mg/L	<0.001	0.001	12/27/19	23:25	JEB



For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-131d						
Sample Date:	12/12/19						
Sample Time:	11:08 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	<0.001	0.001	12/28/19	0.09	JEB

Comments All methods reference USEPA methods unless otherwise noted.

XNG001-002.19/SRF\_1220191/OR0\_SRF\_1220191

200 South Wagner Road Ann Arbar, Michigan 48103 Tel, 734995-0395 Faz, 734995-3731 Michigan Laboratory ID: 8004 Wisconstruct Liboratory ID: 8004 Wisconstruct Liboratory ID: 8004 Organic Analysis Data Summary Sheet For: Ms. Sue Peters Pall Corporation 642 South Wagner Road Ann Arbor, MI 48103 ATS Project: Pail Corporation Report Date: 1/3/20 ATS SRF: 1220191 #G001-002 Sample Identification: MW-131s Sample Date: Sample Time: Sampled By: Laboratory Receipt Date; Sample Matric; 12/12/19 12:21 PM Client 12/20/19 Water Analysis Analyzed

Parameter	Method	Units	Result	Reporting Limit	Date	Time	By
Organic Analysis							,
1,4-Dioxane	EPA 1624	mg/L	<0.001	0.001	12/28/19	0.52	JEB

Comments All methods reference USEPA methods unless otherwise noted.

X1G001-002.19.SRF\_12201911ORG\_SRF\_1220191

293 South Wagner Raad The TAPOPORT Raad The TAPOPORT Face TAPOPORT

Organic Analysis Data Summary Sheet #G001-002

rev. 1/3/20

For: Ms. Sue Peters Pall Corporation 642 South Wagner Road Ann Arbor, MI 48103

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e Peters		ATS Project:	Pall Corporation	#G
rporation		Report Date:	1/3/20	
uth Wagner Road		ATS SRF:	1220191	
bor, MI 48103				
Sample Identification:	MW-39s			
Date:	12/12/19			
Time:	1:43 PM			
d By:	Client			
ory Receipt Date:	12/20/19			

Drganic Analysis	F						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Sample Matrix:	Water						
Laboratory Receipt Date:	12/20/19						
Sampled By:	Client						
Sample Time:	1:43 PM						
Sample Date:	12/12/19						

Comments All methods reference USEPA methods unless otherwise noted.

X1G001-002.19/SRF\_1220191/ORG\_SRF\_1220191

rev. 1/3/20

Comments All methods reference USEPA methods unless otherwise noted

X1G001-602.195RF\_1220191/ORG\_SRF\_1220191



X1/G001-002.19/SRF\_122019110RG\_SRF\_1220191

Organic Analysis Data Summary Sheet

For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-39d						
Sample Date:	12/12/19						
Sample Time:	2:57 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							150
1,4-Dioxane	EPA 1624	mg/L	0.040	0.001	12/28/19	2:20	JEB



Organic Analysis Data Summary Sheet

For: Ms. Sue Peters Pall Corporation 642 South Wagner Road Ann Arbor, MI 48103

## ATS Project: Pall Corporation Report Date: 1/3/20 ATS SRF: 1220191 #G001-002

Sample Identification:	MW-61s						
Sample Date:	12/13/19						
Sample Time:	9:22 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis 1.4-Dioxane	EPA 1624	mg/L	0.005	0.001	12/30/19	17:33	JEB

Comments All methods reference USEPA methods unless otherwise noted.	Comments All methods reference USEPA method	s unles:

rev. 1/3/20

200 South Without And Address Michine And Address Michine Michigana Laborati Without Laborati			Organic Analysis Data Summary Sheet	
For: Ms. Sue Peters		ATS Project:	Pall Corporation	#G001-002
Pall Corporation		Report Date:	1/3/20	
642 South Wagner Road		ATS SRF:	1220191	
Ann Arbor, MI 48103				
Sample Identification:	OUTFALL			
Sample Date:	12/12/19			
Sample Time:	na			6
Sampled By:	Client			
Laboratory Receipt Date:	12/20/19			
Sample Matrix	Water			

our pie mana								
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By	
Organic Analysis 1,4-Dioxane	EPA 1624	mg/L	0.005	0.001	12/30/19	11:48	JEB	

otherwise noted.

X1G001-002.19/SRF\_1220191/ORG\_SRF\_1220191

rev. 1/3/20

#G001-002

299 South Wagner Road Ann Arbor, Michigan 48103 Tel. 734935-6985 Fax, 734995-3731 Michigan Laboratory ID: 9804

## Organic Analysis Data Summary Sheet

For: Ms. Sue Peters		
Pall Corporation		
642 South Wagner Road		
Ann Arbor, MI 48103		
Sample Identification:	MW-61d	

Organic Analysis 1,4-Dioxane	EPA 1624	mg/L	0.006	0.001	12/30/19	18:17	JEB
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Tíme	Analyzed By
Sample Matric	Water						
Laboratory Receipt Date:	12/20/19						
Sampled By:	Client						
Sample Time:	10:32 AM						
Sample Date:	12/13/19						

ATS Project: Pall Corporation Report Date: 1/3/20 ATS SRF: 1220191

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.

X/IG001-002.19/SRF\_1220191/ORG\_SRF\_1220191

Comments All methods reference USEPA methods unless otherwise noted.

20 South Wagner Tel 734795-093 Michigan Laborat Wisconsin Laborat	r Road gan 48103 Fax, 734/995-3731 ory ID: 998321720 story ID: 998321720				C Data	)rganic A Summar	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-137d						
Sample Date:	12/13/19						
Sample Time:	12:05 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
-	Halland	Halta	Recult	Reporting Limit	Analysis	Analysis	Analyzed By
Parameter	method	Units	result				
Organic Analysis		1.00		0.001	1000/10	15-21	IEB



For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-137s						
Sample Date:	12/13/19						
Sample Time:	1:16 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	<0.001 ·	0.001	12/30/19	19:00	JEB

Comments All methods reference USEPA methods unless otherwise noted.

X1G601-002.19/SRF\_122019110RG\_SRF\_1220191

200 South Wagne Am Abor, Michigan Tell Starberge Michigan Labora Wascensin Labora		)rganic / Summai	Analysis ry Sheet				
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Sample Identification:	OUTFALL						
Sample Date:	12/15/19						
Sample Time:	na						
Sampled By:	Client	18					
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.005	0.001	12/30/19	19:44	JEB

Comments All methods reference USEPA methods unless otherwise noted.

X1G001-002.19/SRF\_12201911ORG\_SRF\_1220191

rev. 1/3/20



# Organic Analysis Data Summary Sheet

For: Ms. Sue Peters			ATS Project:	Pail Corporation			#0001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	RED POND						
Sample Date:	12/16/19						
Sample Time:	8:21 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis					0.122	1000	100
1,4-Dioxane	EPA 1624	mg/L	0.38	0.01	12/30/19	20.28	JEB

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.

X1G001-002 19.5RF\_122019110RG\_5RF\_1220191

rev. 1/3/20

rev. 1/3/20

Comments All methods reference USEPA methods unless otherwise noted.

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For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	465 DUPONT						
Sample Date:	12/16/19						
Sample Time:	9:38 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	1.0	0.02	12/30/19	21:12	JEB



For

Organic Analysis Data Summary Sheet

For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-BE-1d						
Sample Date:	12/16/19						
Sample Time:	11:07 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxana	EPA 1624	mg/L	0.74	0.01	12/30/19	21:55	JEB

 Comments Ni melhods reference USEPA melhods unless otherwise noted.		Comments Al methods reference USEPA methods unless otherwise noted.			
X10001-002.1958F_1201910RG_5FF_120191	rev, 1/3/20	X102001-00211958FF_122019100R0_58FF_1220191			

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For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-BE-1s						
Sample Date:	12/16/19						
Sample Time:	12:21 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dloxane	EPA 1624	mg/L	0.73	0.02	12/30/19	22:39	JEB

15 alle Ann Arb Tel. 734

# Organic Analysis Data Summary Sheet

rev. 1/3/20

For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	MW-100						
Sample Date:	12/16/19						
Sample Time:	1:50 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	2.0	0.04	12/30/19	23:23	JEB

Comments All methods reference USEPA methods unless otherwise noted.

Comments All methods reference USEPA methods unless otherwise noted.

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X1G001-002.19/SRF\_1220191/ORG\_SRF\_1220191

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rev. 1/3/20

Am Arber, Michigan Tel. 734995-095 Michigan Laboral Wesonsin Laboral			Organic Analysis Data Summary Sheet				
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	OUTFALL		d				
Sample Date:	12/16/19						
Sample Time:	na						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1.4-Dioxane	EPA 1624	mg/L	0.005	0.001	12/31/19	0:06	JEB



For: Ms. Sue Peters		ATS Project:	Pall Corporation			#G001-002
Pall Corporation		Report Date:	1/3/20			
642 South Wagner Road		ATS SRF:	1220191			
Ann Arbor, MI 48103						
Sample Identification:	IW-2					
Sample Date:	12/17/19					
Sample Time:	9:09 AM					
Sampled By:	Client					
Laboratory Receipt Date:	12/20/19					
Sample Matrix:	Water					
	Mathod	Unite Posult	Reporting Limit	Analysis	Analysis	Analyzed By

Parameter	Method	Units	Result	Reporting Limit	Date	Time	Ву
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.44	0.01	12/31/19	0.50	JEB

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.

rev. 1/3/20 XNG001-002.19/SRF\_1220191/JORG\_SRF\_1220191

1 juli Ann An Tel. 73 Organic Analysis Data Summary Sheet 3731 For: Ms. Sue Peters Pall Corporation 642 South Wagner Road Ann Arbor, MI 48103 ATS Project: Pall Corporation Report Date: 1/3/20 ATS SRF: 1220191 #G001-002 Sample Identification: IW-2 12/17/19 9:30 AM Client 12/20/19 Water Sample Date: Sample Time: Sampled By: Laboratory Receipt Date: Sample Matrix: Analysis Date Analysis Analyzed Time By Reporting Limit Parameter Organic Analysis 1,4-Dioxane Method Units Result EPA 1624 0.48 0.01 12/31/19 1:34 **JEB** mg/L

290 South We Ann Arbor, M Tel. 734/995-0

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X1G001-002.19/SRF\_122019110RG\_SRF\_1220191

Comments All methods reference USEPA methods unless otherwise noted.

# Organic Analysis Data Summary Sheet

rev. 1/3/20

For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	IW-2						
Sample Date:	12/17/19						
Sample Time:	10:40 AM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	1.9	0.04	12/31/19	23:43	JEB

Comments All methods reference USEPA methods unless otherwise noted.

Comments All methods reference USEPA methods unless otherwise noted.

X1G001-002.19/SRF\_1220191/ORG\_SRF\_1220191

20 South Wagne Ann Arbor, Michi Tel, 734/956-0035 Michigan Laborat Wisconsin Laborat	rr Road gan 43103 i Fax, 734/995-3731 lory ID: 5604 atory ID: 598321720				C Data	)rganic <i>A</i> Summar	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation			#G001-002
Pall Corporation			Report Date:	1/3/20			
642 South Wagner Road			ATS SRF:	1220191			
Ann Arbor, MI 48103							
Sample Identification:	IW-2						
Sample Date:	12/17/19						
Sample Time:	1:17 PM						
Sampled By:	Client						
Laboratory Receipt Date:	12/20/19						
Sample Matrix:	Water						
Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1.4-Dioxane	EPA 1624	mg/L	2.1	0.04	1/1/20	0.27	JEB



#### **Quality Assurance / Quality Control** Data Summary

ATS Project: Pall Corporation Report Date: 1/3/20 #G001-002

QC Batch Number: QCORG1227191 Parameter: 1,4-Dioxane (EPA 1624)

Results of QA Samples run concurrently with project samples

				Relative
Sample	Replicate #1	Replicate #2	Mean	Range
		2000 C		(percent)
10001 000				
TUL17 12/10/19 Matrix Snike	0.64 mg/L	0.70 ma/L	0.67 mg/L	8.8
			100000-000	
1 au				
		_		
SPIKES and/or QC CHECK SAMPLES				
	Known	Spike	Analyzed	Recovery
Sample/Analyte	Concentration	Concentration	Concentration	(percent)
#0001.003				
I aboratory Fortified Blank 12/27/19	<0.001 ma/	0.010 mg/L	0.011 mg/L	107.2
TW-17 12/10/19 Malrix Solke	0.20 mg/L	0.50 mg/L	0.64 mg/L	89.4
TW-17 12/10/19 Matrix Spike Duplicate	0.20 mg/L	0.50 mg/L	0.70 mg/L	101.3
			0.0000000000	
BLANK ANALYSIS		Analyzed	Concentration	OC Decision
Jampie		Analyzeu		
1G001-002				

Control Limits: Recoveries Leboratory Control Sample Recovery (85 - 115%) Matrix Spike Recovery (80 - 120%) Relative Range Replicates (+20%)

rev 1/3/20

Comments All methods reference USEPA methods unless otherwise noted.

X4G001-002.19/SRF\_1220191\ORG\_SRF\_1220191

rev. 1/3/20

#G001-002

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Comments: Calculations performed prior to rounding.

-0995 Fax. 734 1995-3731 8321720

#### Quality Assurance / Quality Control Data Summary

ATS Project: Pall Corporation Report Date: 1/3/20

C Batch Number: QCORG1230191 Parameter: 1,4-Dioxane (EPA 1624)

Results of QA Samples run concurrently with project samples

Sample	Replicate #1	Replicate #2	Mean	Relative Range (percent)
#G001-002 MW-137d 12/13/19 Matrix Spike	0.010 mg/L	0.009 mg/L	0.010 mg/l.	17.4
		a)		
SPIKES and/or QC CHECK SAMPLES				
Sample/Analyte	Known Concentration	Spike Concentration	Analyzed Concentration	Recovery (percent)
#G001-002 Laboratory Fortified Blank 12/30/19 MW-137d 12/13/19 Matrix Spike MW-137d 12/13/19 Matrix Spike Duplicate	<0.001 mg/L <0.001 mg/L <0.001 mg/L	0.010 mg/L 0.010 mg/L 0.010 mg/L	0.010 mg/L 0.010 mg/L 0.009 mg/L	105.9 104.4 87.7
BLANK ANALYSIS		Analyzed	Concentration	QC Decision
#G001-002		Allalyzed	201 mail	Acceptable

Calculations performed prior to rounding.

Control Limits:

Laboratory Control Sample Recovery (85 - 115%) Matrix Spike Recovery (80 - 120%) Relative Range Replicates ( <20%)

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Comments:

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Control interest         Description         Control interest         Control interest           Build Corp         Other Manufactor Barris Data (Control Accessing profession)         Other Manufactor Barris Data (Control Accessing Profesin) <td< td=""><td></td><td>Mi Sandi Viryan And An Anna, Yahiya Giti Katalaran Katalaran Katalaran Mi Sandi Viryan And An Anna Katalaran Katalaran Mi Sandi Viryan And</td><td>445-1214 14 16147720</td><td></td><td></td><td></td><td>CHAIN OF CUSTODY R</td><td>ecoi</td><td>t0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Prox 1 5.</td></td<>		Mi Sandi Viryan And An Anna, Yahiya Giti Katalaran Katalaran Katalaran Mi Sandi Viryan And An Anna Katalaran Katalaran Mi Sandi Viryan And	445-1214 14 16147720				CHAIN OF CUSTODY R	ecoi	t0												Prox 1 5.
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#### Data Transmittal Cover Page

Project Name:	Pall Corporation
ATS Project Number:	G001-002
ATS Report Number(s):	Org_SRF_0103201

This data report contains the results of 3 water samples, received by ATS on 1/3/20, to be analyzed for 1,4-Dioxane. Project Description:

We certify that the sample analyses for this report have been conducted in accordance with guidelines provided we carruy nau toe sample analyses tor this report nave open consource in accounted with guidelines provided in the referenced standard test method, and are consistent with detailed procedures described in a written Standard Openating Procedure specific to the ATS Laboratories, as required by USEPA. Laboratory data sheets, SOPs, and ADOC Information are available for inspection and audit at the laboratory provide na requised specifically noted on the data report, all applicable sample preservation and holding time requirements have been met

Recipient:	Ms. Sue Peters		Email: <u>Sue Peters@Pail.com</u> FAX Number:
lo. of Pag	es (including cover pg.):	9	
rom:	Sarah Stubblefield	Email:	Sarah.Stubblefield@AnnArborTechnicalServices.com
	Senior Chemist / Lab Manager	FAX Number:	734-995-3731
Additional	Message:		
Additlonal	Messago:		
Additional	Message:		

1/8/20 Date

IF YOU DO NOT RECEIVE ALL PAGES OF THIS TRANSMITTAL, PLEASE CALL 734-995-0995.

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Signed:

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#### Data Deliverables

This data package constitutes a Level II package; other data report packages (Level I, Level IV DVP, EPA R5 EDD) are available upon request. There were no hardcopy data summary sheets generated for this project.

#### Sample Analysis

<u>1.4-Dioxane Analysis (GC/MS)</u>: Samples were analyzed in accordance with US EPA method 1624 (Volatile Organic Compounds by Isotope Dilution Gas Chromatography – Mass Spectrometry). An initial calibration with at least five levels was used to quantitate 1,4-Dioxane. Samples were reported to project specific reporting limits.

Anomalies Noted: • None

### Analytical QA/QC Summary

#### Calibration Verification

Method calibration was verified through the running of a mid-level initial calibration verification (CV) standard at a frequency of every 24 hours. All verification standards met the acceptance criteria with the following exceptions:

None

#### Instrument Blanks

Instrument blanks were analyzed at a frequency of every 24 hours. All blanks met the acceptance criteria with the following exceptions:
 None

### **QA/QC Batch Summary**

Laboratory Reagent Blanks

A laboratory reagent blank (LRB) was analyzed with each QA/QC batch. The LRB's met the acceptance criteria with the following exceptions: None

#### Laboratory Fortified Blanks and Matrix Spikes

A laboratory fortified blank (LFB) / laboratory control sample (LCS) was analyzed with each QA/QC batch. The LCS/LFB's met the acceptance criteria with the following exceptions: • None

A matrix spike (MS) and matrix spike duplicate (MSD) was analyzed with each QA/QC batch. The MS/MSD met the acceptance criteria with the following exceptions: • None



CASE NARRATIVE

ATS Project Number: G001-002 Report Date: 1/8/20 SRF / SDG Numbers: 0103201

#### Case Narrative Summary

This case narrative applies to the following 3 samples that were received at Ann Arbor Technical Services, Inc. (ATS) on 1/3/20, and associated matrix-specific QA/QC:

Samples	1000				
Client Sample Identification	Date	Time	Turn Around Time	Analysis	Matrix
Outfall	12/31/19	na	Standard	1,4-Dioxane	Treated Water
Outfall	1/1/20	na	Standard	1,4-Dioxane	Treated Water
Outfall	1/2/20	na	Standard	1,4-Dioxane	Treated Water

Upon receipt, samples were scheduled for the following analyses:

Analysis	Number of Samples
<ul> <li>1,4-Dloxane by US EPA 1624</li> </ul>	<ul> <li>3 + 1 Matrix Spike / 1 Matrix Spike Duplicate</li> </ul>

#### Sample Receipt and Chain of Custody Records

Samples were delivered directly to ATS by Pall Corporation staff. Samples were received with proper chain of custody records included. Sample condition and anomalies, if any, are presented in the "Chain of Custody and Sample Receipt Documentation" section of this report.

#### Data Review and Approval

All data contained in this report have been generated in accordance with guidelines provided in the referenced standard test method, and are consistent with detailed procedures described in a written standard operating procedures (SOPs) specifie to the ATS Laboratory, as required by US EPA. All data are peer and management reviewed to ensure compliance with the above referenced SOP's and project specifications. In addition all data conform to the laboratory's Quality Assurance / Quality Control Manuals.

A single QA/QC batch is defined as no more than 20 samples excluding method blanks (MB, LRB), fortified blanks (BS, LFB, LCS), matrix spikes (MS, SPK), and duplicates whether spiked or native (MSD, SPK DUP, DUP, LR). G001-002.20/CN\_0103201.doc

Consultants in Chemistry & Environmental Science 290 South Wagner Road, Ann Arbor, Michigan 48103 Tel 734/995-0995 Fax 734/995-3731

#### Matrix Duplicates

A replicate analysis was analyzed with each QA/QC batch. All replicates met the acceptance criteria with the following exceptions: • None

#### Sample Dilutions

Samples containing compounds at concentrations above the initial calibration curve were diluted and reanalyzed for those compounds. The following samples were diluted for 1,4-Dioxane: • None

/ January 8, 2020

Markalitong

Mark T. DeLong (Quality Assurance Coordinator)

/ January 8, 2020 Philip B. Simon (Laboratory Director)





20 South Wagne Ann Arbor, Michig Tel, 734095 4095 Michigan Laborat Wassensin Laborat	r Road pan 48103 Fax, 734/995-3731 ary ID: 6004 story ID: 698321720				C Data	Organic / Summa	Analysis ry Sheet
For: Ms. Sue Peters			ATS Project:	Pall Corporation	1		#G001-002
Pall Corporation			Report Date:	1/8/20			
642 South Wagner Road			ATS SRF:	0103201			
Ann Arbor, MI 48103							
Sample Identification:	Outfall						
Sample Date:	12/31/19						
Sample Time:	na						
Sampled By:	Client						
Laboratory Receipt Date:	1/3/20						
Sample Matrix:	Water						
Paramotor	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.005	0.001	1/6/20	13:16	JEB

Michigan Laboratory ID: 996321720	Asily	210 South Wagner Road Ann Arbor, Michigan 48103 Tet, 734/95-0998 Fax, 734/995-3731 Michigan Laboratory IC: 9604 Wisconsin Laboratory IC: 980321720
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Organic Analysis Data Summary Sheet

For: Ms. Sue Peters Pall Corporation 642 South Wagner Road Ann Arbor, MI 48103

Sample Date: Sample Time: Sampled By: Laboratory Receipt Date: Sample Matrix:

## ATS Project: Pall Corporation Report Date: 1/8/20 ATS SRF: 0103201 #G001-002 Sample Identification: Outfall 1/1/20 na Client 1/3/20 Water Analysis Analysis Analyzed

Parameter	Method	Units	Result	Reporting Limit	Date	Time	By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.005	0.001	1/6/20	15:43	JEB

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.

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#G001-002

Organic Analysis Data Summary Sheet

Zio South Wagne Am Abor, Michigan Tel: 73795-0035 Michigan Laborat Wisconsin Laborat	r Road gan 48103 Faz, 734/995-3731 ory ID: 9904 story ID: 998321720		
For: Ms. Sue Peters		ATS Project:	Pall Corporation
Pall Corporation		Report Date:	1/8/20
642 South Wagner Road		ATS SRF:	0103201
Ann Arbor, MI 48103			
Sample Identification:	Outfall		
Sample Date:	1/2/20		
Samola Tima:			

Sample Turie.	114						
Sampled By:	Client						
Laboratory Receipt Date:	1/3/20						
Sample Matrix:	Water						
				Perceting Limit	Analysis	Analysis	Analyzed
Parameter	Method	Units	Result	Keporting Linit	Date	Time	By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.007	0.001	1/6/20	16:27	JEB

Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at netive pH.

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Comments All methods reference USEPA methods unless otherwise noted. Sample analyzed at native pH.



#### Quality Assurance / Quality Control Data Summary

C Batch Number: QCORG0106201 Parameter: 1,4-Dioxane (EPA 1624)

ATS Project: Pall Corporation Report Date: 1/8/20 #G001-002

Results of QA Samples run concurrently with project samples

Sample	Replicate #1	Replicate #2	Relative Range (percent)	
#G001-002 Outfall 12/31/19 Makix Spike	0.015 mg/L	0.015 mg/L	0.015 mg/L	0.9
				1
SPIKES and/or QC CHECK SAMPLES				
Sample/Analyte	Known Concentration	Spike Concentration	Analyzed Concentration	Recovery (percent)
IG001-002 Laboratory Fortified Blank 1/8/20 Outfall 12/31/19 Matrix Spike Outfall 12/31/19 Matrix Spike Duplicate	<0.001 mg/L 0.005 mg/L 0.005 mg/L	0.010 mg/L 0.010 mg/L 0.010 mg/L	0.008 mg/L 0.015 mg/L 0.015 mg/L	82.1* 101.5 102.8
BLANK ANALYSIS				
Sample		Analyzed C	Concentration	QC Decision
G001-002 Laboratory Reagent Blank 1/6/20		<0.0	01 mg/L	Acceptable

Comments: Calculations performed prior to rounding. \* Outside standard control limits.

Laboratory Centrol Sample Recovery (85 - 115%) Laboratory Centrol Sample Recovery (85 - 115%) Matrix Spike Recovery (80 - 120%) Realtwo Rango RepTcates ( <0%)

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