

RECEIVED

CASE NARRATIVE

Monthly Data Pall Life Sciences

Project: 1,4-Dioxane Remediation

Date: April 2018

MAY 15 2018

DEQ . RRD
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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.

The majority of the samples were analyzed by Pall Corporation's Environmental Laboratory for 1,4-dioxane and bromate. One drinking water sample from 697 S. Wagner Road was analyzed by Ann Arbor Technical Services (ATS). ATS is a Michigan DEQ certified drinking water laboratory. The 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 quarterly barium sample was sent to ATS for analysis. Sample data can be found in the Barium section of this narrative. In addition samples from April 27th and April 30th were analyzed by ATS for 1,4-dioxane. To provide timely turn-around these samples were sent to ATS due to the absence of PLS's chemist. Any samples analyzed by ATS have and "O" as a qualifier on all reports.

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 ≤ 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.

The barium sample was taken as a composite sample, preserved with nitric acid, and refrigerated before and after being sent to ATS for analysis.

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°C ($\pm 2^\circ\text{C}$) 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 1ppb (part per billion, micrograms per liter, µg/L). All quality control parameters were within the acceptance limits.

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.

Barium

A composite Outfall001 sample was sent to ATS for total barium analysis in accordance with EPA200.7. Barium samples are analyzed quarterly in compliance with PLS NPDES permit. The results were less than the permitted level of 440µg/L at 260µg/L. Sample was analyzed on 04/26/18 with a reporting limit of 1µg/L.

Qualifiers

1,4-Dioxane Qualifier Codes:

<u>Qualifier Code</u>	<u>Description</u>
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.
B:	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 28 days.
O:	Samples analyzed in outside laboratory.
S:	Samples split with DEQ.

Bromate Qualifier Codes:

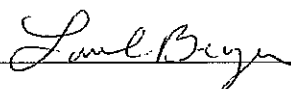
<u>Qualifier Code</u>	<u>Description</u>
nd:	The compound was analyzed for, but was not detected at or above the detection limit indicated.
E:	The compound result is greater than the upper quantitation limit in the associated calibration curve.
J:	The compound was positively identified; the associated 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



Date: 05-11-18

Report Checked by: Laurel Beyer



Date: 9/11/18



Sample Analysis Report

April, 2018

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

Analyst Initials: _____
Date: _____

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)
Residential Wells								
Not Determined								
697 South Wagner Rd-04-18-18-09:20-1	nd	1.0						O
Extraction Wells								
C3								
DOLPH-04-02-18-10:17-1	100	10.0						D
TW-1-04-11-18-14:28-1	70	1.0						
TW-14-04-11-18-13:58-1	38	1.0						
TW-20-04-02-18-13:49-1	900	25.0						D
TW-3-04-11-18-14:22-1	nd	1.0						
D2								
LB-4-04-19-18-14:35-1	520	10.0						D
TW-21-04-02-18-10:12-1	210	10.0						D
TW-9-04-11-18-14:02-1	670	25.0						D
E								
TW-12-04-11-18-14:45-1	21	1.0						
TW-17-04-11-18-13:54-1	390	10.0						D
TW-18-04-19-18-14:47-1	280	5.0						D
TW-19-04-02-18-11:58-1	740	10.0						D
TW-23-04-02-18-12:00-1	450	10.0						D
Marshy								

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)
PW-1-04-02-18-13:40-1	780	10.0						D
SW								
TW-22-04-24-18-14:35-1	420	10.0						D
TW-8-04-02-18-14:13-1	740	10.0						D
Monitoring Wells								
C3								
MW-22-04-18-18-10:22-1	420	5.0						D
D0								
A2 Cleaning Supply-04-04-18-10:45-1	84	1.0						
MW-136i-04-19-18-12:44-1	nd	1.0						
MW-136s-04-19-18-13:56-1	nd	1.0						
MW-137s-04-18-18-12:27-1	nd	1.0						
MW-138i-04-10-18-14:00-1	8.2	1.0						
MW-138s-04-10-18-11:19-1	nd	1.0						
MW-139i-04-10-18-16:52-1	nd	1.0						
MW-139s-04-10-18-15:38-1	nd	1.0						
MW-140s-04-18-18-15:14-1	nd	1.0						
MW-141s-04-09-18-12:00-1	1.7	1.0						
MW-41d-04-25-18-15:10-1	25	1.0						
MW-41s-04-25-18-15:00-1	18	1.0						
MW-53d-04-03-18-10:48-1	nd	1.0						
MW-53i-04-03-18-13:29-1	34	1.0						
MW-53s-04-03-18-12:09-1	nd	1.0						
MW-93-04-19-18-15:28-1	4.5	1.0						
D2								
MW-117-04-04-18-17:27-1	nd	1.0						

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)
MW-120s-04-06-18-13:41-1	nd	1.0						
MW-121s-04-05-18-10:23-1	nd	1.0						
MW-126s-04-27-18-14:06-1	nd	1.0						O
MW-129i-04-05-18-14:23-1	nd	1.0						
MW-129s-04-05-18-13:05-1	nd	1.0						
MW-130s-04-27-18-09:32-1	nd	1.0						O
MW-131s-04-27-18-11:27-1	nd	1.0						O
MW-54d-04-06-18-12:18-1	nd	1.0						
MW-54s-04-06-18-11:04-1	nd	1.0						
E								
MW-103s-04-04-18-13:12-1	68	5.0						D
MW-112i-04-03-18-16:20-1	9.6	1.0						
MW-112s-04-03-18-15:00-1	nd	1.0						
MW-120d-04-20-18-14:43-1	nd	1.0						
MW-121d-04-05-18-11:41-1	2.4	1.0						
MW-126d-04-27-18-15:20-1	nd	1.0						O
MW-129d-04-05-18-15:44-1	nd	1.0						
MW-130d-04-20-18-11:48-1	nd	1.0						
MW-131d-04-27-18-12:43-1	nd	1.0						O
MW-136d-04-19-18-11:25-1	nd	1.0						
MW-137d-04-18-18-11:11-1	nd	1.0						
MW-138d-04-10-18-12:38-1	nd	1.0						
MW-139d-04-10-18-18:11-1	nd	1.0						
MW-140d-04-18-18-13:56-1	nd	1.0						
MW-141d-04-09-18-11:20-1	4.1	1.0						
MW-76i-04-04-18-14:34-1	110	1.0						
MW-76s-04-04-18-15:51-1	280	5.0						D

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-84s-04-04-18-11:37-1	56	10.0						D
SH								
MW-25s-04-18-18-10:51-1	190	1.0						
MW-5d-04-18-18-11:10-1	7700	100.0						D
Surface Water								
Not Applicable								
HC/HR-04-02-18-09:20-1			nd	2.0				
HC/HR-04-03-18-09:16-1			nd	2.0				
HC/HR-04-04-18-09:00-1			nd	2.0				
HC/HR-04-05-18-09:02-1			nd	2.0				
HC/HR-04-06-18-10:00-1			nd	2.0				
HC/HR-04-09-18-09:19-1			nd	2.0				
HC/HR-04-10-18-08:42-1			nd	2.0				
HC/HR-04-11-18-09:05-1			nd	2.0				
HC/HR-04-12-18-09:12-1			nd	2.0				
HC/HR-04-13-18-09:22-1			nd	2.0				
HC/HR-04-16-18-09:09-1			nd	2.0				
HC/HR-04-17-18-08:34-1			nd	2.0				
HC/HR-04-18-18-07:40-1			nd	2.0				
HC/HR-04-19-18-09:08-1			nd	2.0				
HC/HR-04-20-18-08:43-01			nd	2.0				
HC/HR-04-23-18-09:52-1			nd	2.0				
HC/HR-04-24-18-08:42-1			nd	2.0				
HC/HR-04-25-18-09:55-1			nd	2.0				
HC/HR-04-26-18-09:52-1			nd	2.0				
HC/HR-04-27-18-08:52-1			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-04-30-18-08:48-1			nd	2.0				
Treatment System								
OUTFALL-04-01-18-1	5.2	1.0						
OUTFALL-04-01-18-2			7.6	5.0				
OUTFALL-04-02-18-2			8.0	5.0				
OUTFALL-04-02-18-1	5.5	1.0						
OUTFALL-04-03-18-2			7.6	5.0				
OUTFALL-04-03-18-1	4.4	1.0						
OUTFALL-04-04-18-2			7.7	5.0				
OUTFALL-04-04-18-1	5.1	1.0						
OUTFALL-04-05-18-2			7.9	5.0				
OUTFALL-04-05-18-1	5.9	1.0						
OUTFALL-04-08-18-1	6.5	1.0						
OUTFALL-04-08-18-2			7.6	5.0				
OUTFALL-04-09-18-1	6.1	1.0						
OUTFALL-04-09-18-2			7.1	5.0				
OUTFALL-04-10-18-1	6.2	1.0						
OUTFALL-04-10-18-2			8.5	5.0				
OUTFALL-04-11-18-1	6.5	1.0						
OUTFALL-04-11-18-2			7.9	5.0				
OUTFALL-04-12-18-1	5.5	1.0						
OUTFALL-04-12-18-2			7.2	5.0				
OUTFALL-04-15-18-1	6.0	1.0						
OUTFALL-04-15-18-2			8.4	5.0				
OUTFALL-04-16-18-1	6.7	1.0						
OUTFALL-04-16-18-2			7.8	5.0				
OUTFALL-04-18-18-1	5.1	1.0						

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)
OUTFALL-04-18-18-2			8.4	5.0				
OUTFALL-04-19-18-1	5.6	1.0						
OUTFALL-04-19-18-01			8.7	5.0				
OUTFALL-04-22-18-1	5.5	1.0						
OUTFALL-04-22-18-2			7.6	5.0				
OUTFALL-04-23-18-1	5.9	1.0						
OUTFALL-04-23-18-2			7.9	5.0				
OUTFALL-04-24-18-1	6.0	1.0						
OUTFALL-04-24-18-2			9.2	5.0				
OUTFALL-04-25-18-1	6.0	1.0						
OUTFALL-04-25-18-2			9.4	5.0				
OUTFALL-04-26-18-1	5.5	1.0						
OUTFALL-04-26-18-2			8.9	5.0				
OUTFALL-04-29-18-1	6	1.0						O
OUTFALL-04-29-18-2			8.2	5.0				
OUTFALL-04-30-18-1	5	1.0						O
OUTFALL-04-30-18-2			8.4	5.0				
Red Pond-04-02-18-09:30-1	330	10.0						D
Red Pond-04-09-18-07:05-1	450	10.0						D
Red Pond-04-16-18-10:49-1	420	10.0						D
Red Pond-04-23-18-08:27-1	420	10.0						D
Red Pond-04-30-18-08:24-1	360	10.0						O, D

PLS Qualifier Codes:

- 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.
O: Samples analyzed in outside laboratory.



LABORATORY OPERATIONS SAMPLE DELIVERY GROUP (SDG) CASE NARRATIVE

ATS Project Number: G001-002
Report Date: 4/30/18
SDG Number: 0420181

SDG Summary

This case narrative applies to the following samples that were received by Ann Arbor Technical Services, Inc. (ATS) on 4/20/18, and associated matrix-specific QA/QC:

Samples

Client Sample Identification	Sample Date	Analysis	Matrix
697 South Wagner Road	4/18/18	1,4-Dioxane	Drinking Water
Outfall	4/6/18	Barium	Treated Water

Upon receipt, samples were scheduled for the following analyses:

- 1,4-Dioxane by EPA method 1624 (select samples)
- Total Barium by EPA method 200.7 (select samples)

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 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 procedure (SOP) specific to the ATS Laboratory, as required by USEPA. 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.

G001-002.18\SRF_0420181.doc

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



290 South Wagner Road
 Ann Arbor, Michigan 48103
 Tel. 734/995-0995 Fax. 734/995-3731
 Michigan Laboratory ID: 9604
 Wisconsin Laboratory ID: 998321720

Data Transmittal Cover Page

Project Name: Pall Corporation
ATS Project Number: G001-002
ATS Report Number(s): SRF_0420181

Project Description: This data report contains the results of two water samples, received by ATS on 4/20/18, to be analyzed for 1,4-Dioxane and Barium.

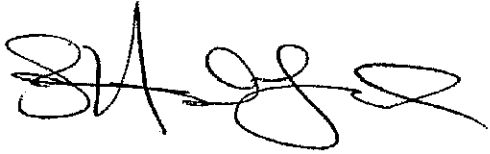
We certify that the sample analyses for this report have been conducted in accordance with guidelines provided in the referenced standard test method, and are consistent with detailed procedures described in a written Standard Operating Procedure specific to the ATS Laboratories, as required by USEPA.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

Recipient: Ms. Sue Peters **Email:** Sue_Peters@Pall.com
FAX Number: _____

No. of Pages (including cover pg.): 9

From: Sarah Stubblefield **Email:** Sarah.Stubblefield@AnnArborTechnicalServices.com
Senior Chemist / Lab Manager **FAX Number:** 734-995-3731

Additional Message: Email Copy: Ms. Laurel Beyer (Laurel_Beyer@Pall.com)

Date: 4/30/18 **Signed:** 

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

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Sample Analysis

1,4-Dioxane Analysis (GC/MS): Samples were analyzed in accordance with 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.

Metals Analysis: Samples were analyzed in accordance with USEPA method 200.7 (Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry). An initial calibration with at least five levels was used to quantitate individual metals. 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 12 hours (GC/MS) or every ten samples (ICP/AES). All verification standards met the acceptance criteria with the following exceptions:

- None

Instrument Blanks

Instrument blanks were analyzed at a frequency of every 12 hours (GC/MS) or every ten samples (ICP/AES). 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

SDG CASE NARRATIVE

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Matrix Duplicates

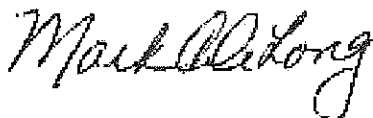
A replicate analysis was analyzed with each QA/QC batch. All replicates met the acceptance criteria with the following exceptions:

- None

Sample Dilutions

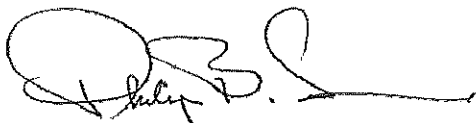
Samples containing compounds at concentrations above the initial calibration curve were diluted and reanalyzed for those compounds. The following samples were diluted:

- None



/ April 30, 2018

Mark T. DeLong (Quality Assurance Coordinator)



/ April 30, 2018

Philip B. Simon (Laboratory Director)



290 South Wagner Road
Ann Arbor, Michigan 48103
Tel. 734/995-0995 Fax. 734/995-3731
Michigan Laboratory ID: 9604
Wisconsin Laboratory ID: 998321720

Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
Report Date: 4/30/18
ATS SRF: 0420181

Sample Identification: 697 South Wagner Road drinking water

Sample Date: 4/18/18
Sample Time: 9:20 AM
Sampled By: Client
Laboratory Receipt Date: 4/20/18
Sample Matrix: Drinking 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	4/25/18	12:07	SLS

Comments

All methods reference USEPA methods unless otherwise noted.



290 South Wagner Road
 Ann Arbor, Michigan 48103
 Tel. 734/995-0995 Fax. 734/995-3731
 Michigan Laboratory ID: 9604
 Wisconsin Laboratory ID: 998321720

Inorganic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
 Report Date: 4/30/18
 ATS SRF: 0420181

Sample Identification: Outfall 001

Sample Date: 4/6/18
 Sample Time: na
 Sampled By: Client
 Laboratory Receipt Date: 4/20/18
 Sample Matrix: Treated Water

Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Metals Analysis							
Total Barium	EPA 200.7	mg/L	0.26	0.001	4/26/18	18:07	DMS

Comments

All methods reference USEPA methods unless otherwise noted.



290 South Wagner Road
Ann Arbor, Michigan 48103
Tel. 734/995-0995 Fax. 734/995-3731
Michigan Laboratory ID: 9604
Wisconsin Laboratory ID: 998321720

Quality Assurance / Quality Control Data Summary

QC Batch Number: QCORG0425181-G
Parameter: 1,4-Dioxane (EPA 1624)

ATS Project: Pall Corporation #G001-002
Report Date: 4/30/18

Results of QA Samples run concurrently with project samples

REPLICATE ANALYSIS

Sample	Replicate #1	Replicate #2	Mean	Relative Range (percent)
#A100-000 AA Tap 4/25/18 Matrix Spike	0.010 mg/L	0.010 mg/L	0.010 mg/L	2.2

SPIKES and/or QC CHECK SAMPLES

Sample/Analyte	Known Concentration	Spike Concentration	Analyzed Concentration	Recovery (percent)
#A100-000, #G001-002 Laboratory Fortified Blank 4/25/18	<0.001 mg/L	0.010 mg/L	0.009 mg/L	90.8
#A100-000 AA Tap 4/25/18 Matrix Spike	<0.001 mg/L	0.010 mg/L	0.056 mg/L	100.3
AA Tap 4/25/18 Matrix Spike Duplicate	<0.001 mg/L	0.010 mg/L	0.056 mg/L	102.6

BLANK ANALYSIS

Sample	Analyzed Concentration	QC Decision
#A100-000, #G001-002 Laboratory Reagent Blank 4/25/18	<0.001 mg/L	Acceptable

Comments:

Calculations performed prior to rounding.

Control Limits:

Recoveries

Laboratory Fortified Blank (85 - 115 %)

Matrix Spike <5ppb (70 - 130 %)

Matrix Spike >5ppb (80 - 120 %)

Relative Range

Replicates <2ppb (<50%)

Replicates >2 ppb (<30%)



290 South Wagner Road
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 Michigan Laboratory ID: 9604
 Wisconsin Laboratory ID: 998321720

Quality Assurance / Quality Control Data Summary

QC Batch Number: QCINORG0427181-G
 Parameter: Barium (EPA 200.7)

ATS Project: Pall Corporation #G001-002
 Report Date: 4/30/18

Results of QA Samples run concurrently with project samples

REPLICATE ANALYSIS

Sample	Replicate #1	Replicate #2	Mean	Relative Range (percent)
#A002-000 Effluent 4/24/18 Matrix Spike	2.0 mg/L	2.0 mg/L	2.0 mg/L	0.7

SPIKES and/or QC CHECK SAMPLES

Sample/Analyte	Known Concentration	Spike Concentration	Analyzed Concentration	Recovery (percent)
#A002-000, #G001-002, #H002-HTI, #R002-001 Laboratory Fortified Blank 4/27/18	<0.001 mg/L	4.0 mg/L	3.8 mg/L	96.0
Outfall 001 1/26/18 Matrix Spike	0.055 mg/L	2.0 mg/L	2.0 mg/L	97.1
Outfall 001 1/26/18 Matrix Spike Duplicate	0.055 mg/L	2.0 mg/L	2.0 mg/L	97.8

BLANK ANALYSIS

Sample	Analyzed Concentration	QC Decision
#A002-000, #G001-002, #H002-HTI, #R002-001 Laboratory Reagent Blank 4/27/18	<0.001 mg/L	Acceptable

Comments:

Calculations performed prior to rounding.

Control Limits:

Recoveries

Laboratory Fortified Blank (85 - 115 %)

Matrix Spike (75 - 125 %)

Relative Range

Replicates (<20%)



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Michigan Laboratory ID: 9604
Wisconsin Laboratory ID: 998321720

Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
Report Date: 5/8/18
ATS SRF: 0430181

Sample Identification: RP

Sample Date: 4/30/18
Sample Time: 8:24 AM
Sampled By: Client
Laboratory Receipt Date: 4/30/18
Sample Matrix: Ground Water

Parameter	Method	Units	Result	Reporting Limit	Analysis Date	Analysis Time	Analyzed By
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	0.36	0.01	5/1/18	18:25	JEB

Comments

All methods reference USEPA methods unless otherwise noted.
na - Indicates not applicable / not available.



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Michigan Laboratory ID: 9604
Wisconsin Laboratory ID: 998321720

Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
Report Date: 5/8/18
ATS SRF: 0430181

Sample Identification: MW-130S

Sample Date: 4/27/18
Sample Time: 9:32 AM
Sampled By: Client
Laboratory Receipt Date: 4/30/18
Sample Matrix: Ground 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	5/1/18	15:29	JEB

Comments

All methods reference USEPA methods unless otherwise noted.
na - Indicates not applicable / not available.



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Michigan Laboratory ID: 9804
Wisconsin Laboratory ID: 998321720

Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
Report Date: 5/8/18
ATS SRF: 0430181

Sample Identification: MW-131S

Sample Date: 4/27/18
Sample Time: 11:27 AM
Sampled By: Client
Laboratory Receipt Date: 4/30/18
Sample Matrix: Ground Water

<u>Parameter</u>	<u>Method</u>	<u>Units</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Analysis Date</u>	<u>Analysis Time</u>	<u>Analyzed By</u>
Organic Analysis							
1,4-Dioxane	EPA 1624	mg/L	<0.001	0.001	5/1/18	17:41	JEB

Comments

All methods reference USEPA methods unless otherwise noted.
na - Indicates not applicable / not available.



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Michigan Laboratory ID: 9604
Wisconsin Laboratory ID: 998321720

Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
Report Date: 5/8/18
ATS SRF: 0430181

Sample Identification: MW-131D

Sample Date: 4/27/18
Sample Time: 12:43 PM
Sampled By: Client
Laboratory Receipt Date: 4/30/18
Sample Matrix: Ground 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	5/1/18	14:45	JEB

Comments

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na - Indicates not applicable / not available.



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 Wisconsin Laboratory ID: 998321720

Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
 Report Date: 5/8/18
 ATS SRF: 0430181

Sample Identification: MW-126D

Sample Date: 4/27/18
 Sample Time: 3:20 PM
 Sampled By: Client
 Laboratory Receipt Date: 4/30/18
 Sample Matrix: Ground 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	5/1/18	16:13	JEB

Comments

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 na - indicates not applicable / not available.



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Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
Report Date: 5/8/18
ATS SRF: 0430181

Sample Identification: MW-126S

Sample Date: 4/27/18
Sample Time: 2:06 PM
Sampled By: Client
Laboratory Receipt Date: 4/30/18
Sample Matrix: Ground 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	5/1/18	16:57	JEB

Comments

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na - Indicates not applicable / not available.



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Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
 Report Date: 5/1/18
 ATS SRF: 0501181 (Rush)

Sample Identification: Outfall

Sample Date: 4/30/18
 Sample Time: na
 Sampled By: Client
 Laboratory Receipt Date: 5/1/18
 Sample Matrix: Treated 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	5/1/18	12:04	JEB

Comments

All methods reference USEPA methods unless otherwise noted.
 na - Indicates not applicable / not available.
 Sample analyzed at native pH.



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Organic Analysis Data Summary Sheet

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

ATS Project: Pall Corporation #G001-002
 Report Date: 5/2/18
 ATS SRF: 0502181 (Rush)

Sample Identification: Outfall

Sample Date: 5/1/18
 Sample Time: na
 Sampled By: Client
 Laboratory Receipt Date: 5/2/18
 Sample Matrix: Treated 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	5/2/18	11:55	JEB

Comments

All methods reference USEPA methods unless otherwise noted.
 na - Indicates not applicable / not available.
 Sample analyzed at native pH.



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Quality Assurance / Quality Control Data Summary

QC Batch Number: QCORG0430181

ATS Project: Pall Corporation

#G001-002

Parameter: 1,4-Dioxane (EPA 1624)

Report Date: 5/8/18

Results of QA Samples run concurrently with project samples

REPLICATE ANALYSIS

Sample	Replicate #1	Replicate #2	Mean	Relative Range (percent)
#G001-002 Outfall 4/29/18 Matrix Spike	0.016 mg/L	0.015 mg/L	0.016 mg/L	8.8

SPIKES and/or QC CHECK SAMPLES

Sample/Analyte	Known Concentration	Spike Concentration	Analyzed Concentration	Recovery (percent)
#G001-002 Laboratory Fortified Blank 4/30/18	<0.001 mg/L	0.010 mg/L	0.009 mg/L	86.3
Outfall 4/29/18 Matrix Spike	0.006 mg/L	0.010 mg/L	0.016 mg/L	92.7
Outfall 4/29/18 Matrix Spike Duplicate	0.006 mg/L	0.010 mg/L	0.015 mg/L	88.4

BLANK ANALYSIS

Sample	Analyzed Concentration	QC Decision
#G001-002 Laboratory Reagent Blank 4/30/18	<0.001 mg/L	Acceptable

Comments:

Calculations performed prior to rounding.

Control Limits:

Recoveries

Laboratory Fortified Blank (80 - 120 %)

Matrix Spike <5ppb (70 - 130 %)

Matrix Spike >5ppb (80 - 120 %)

Relative Range

Replicates <2ppb (<50%)

Replicates >2 ppb (<30%)



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Quality Assurance / Quality Control Data Summary

QC Batch Number: QCORG0501181
 Parameter: 1,4-Dioxane (EPA 1624)

ATS Project: Pall Corporation #G001-002
 Report Date: 5/8/18

Results of QA Samples run concurrently with project samples

REPLICATE ANALYSIS

Sample	Replicate #1	Replicate #2	Mean	Relative Range (percent)
#G001-002 Outfall 4/30/18 Matrix Spike	0.015 mg/L	0.016 mg/L	0.016 mg/L	4.6

SPIKES and/or QC CHECK SAMPLES

Sample/Analyte	Known Concentration	Spike Concentration	Analyzed Concentration	Recovery (percent)
#G001-002 Laboratory Fortified Blank 5/1/18	<0.001 mg/L	0.010 mg/L	0.008 mg/L	81.8
Outfall 4/30/18 Matrix Spike	0.005 mg/L	0.010 mg/L	0.015 mg/L	103.0
Outfall 4/30/18 Matrix Spike Duplicate	0.005 mg/L	0.010 mg/L	0.016 mg/L	110.3

BLANK ANALYSIS

Sample	Analyzed Concentration	QC Decision
#G001-002 Laboratory Reagent Blank 5/1/18	<0.001 mg/L	Acceptable

Comments:

Calculations performed prior to rounding.

Control Limits:

Recoveries

- Laboratory Fortified Blank (80 - 120 %)
- Matrix Spike <5ppb (70 - 130 %)
- Matrix Spike >5ppb (80 - 120 %)

Relative Range

- Replicates <2ppb (<50%)
- Replicates >2 ppb (<30%)