November 27, 2019

Mr. Allan Batka
United States Environmental Protection Agency
Region 5 (WU-16J)
77 West Jackson Blvd.
Chicago, Illinois 60604

Re: RIES Monthly Report (in conformance with MI-163-1W-C010 & MI-163-1W-C011)

Dear Mr. Batka:

Republic Industrial and Energy Solutions, LLC. ["RIES", formerly Environmental Geo-Technologies, LLC ("EGT")] hereby timely submits its seventy-second Monthly Report ("MR") in conformance with the requirements of its two EPA UIC permits (#s MI-163-1W-C010 & MI-163-1W-C011).

RIES is providing all of the attached information in the same sequence as required by both subject permits, i.e. Part II.D.1 (a-i), Part III, Attachment A, and Part III, Attachment E.G.2 & E.I. As for last month, there are a few computerized sheets absent from this report because the computer systems continue to be upgraded, and once completed, I will forward them (both September & October 2019 summary sheets) on to you. RIES did not accept any F039 waste in October, 2019 so no Page A-3 of 3 laboratory analyses are necessary to be submitted as part of this MR.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

We trust that you find this report satisfactory, however, if you have any questions or comments, please feel free to contact us.

Sincerely,

Richard J. Powals, P.E.

cc: J. Frost (RIES)

att.

rjp112719/RIESEPAMonthlyReport-October, 2019

Republic Industrial and Energy Solutions
28470 Citrin Drive
Romulus, MI 48174
734 946.1000
www.republicservices.com

November 27, 2019

Mr. Allan Batka
United States Environmental Protection Agency
Region 5 (WU-16J)
77 West Jackson Blvd.
Chicago, Illinois 60604

Re: RIES Monthly Report (in conformance with MI-163-1W-C010 & MI-163-1W-C011)

Dear Mr. Batka:

Republic Industrial and Energy Solutions, LLC. ["RIES", formerly Environmental Geo-Technologies, LLC ("EGT")] hereby timely submits its seventy-second Monthly Report ("MR") in conformance with the requirements of its two EPA UIC permits (#s MI-163-1W-C010 & MI-163-1W-C011).

RIES is providing all of the attached information in the same sequence as required by both subject permits, i.e. Part II.D.1 (a-i), Part III, Attachment A, and Part III, Attachment E.G.2 & E.I. As for last month, there are a few computerized sheets absent from this report because the computer systems continue to be upgraded, and once completed, I will forward them (both September & October 2019 summary sheets) on to you. RIES did not accept any F039 waste in October, 2019 so no Page A-3 of 3 laboratory analyses are necessary to be submitted as part of this MR.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Sincerely,

Richard J. Powals, P.E.

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att.

rjp112719/RIESEPAMonthlyReport-October, 2019

Republic Industrial and Energy Solutions
28470 Citrin Drive
Romulus, MI 48174
734 946.1000
www.republicservices.com

AVERAGE INJECTION RATE

Calculation of Average Injection Rate

CURRENT REPORTING YEAR 2019

CURRENT REPORTING MONTH OCTOBER

Date (month, year) of the first injection into either well at the Citrin Road Facility

Nov 2013

CURRENT MONTH (all volumes in gallons)

	Injected Waste	Injected Non-Waste	Total injected
MI-163-1W-C010 , Well #1-12			
Current Month	0	0	0
Since facility first injected			14,521,647
MI-163-1W-C011, Well #2-12			
Current Month	0	0	0
Since facility first injected			4,648,736
		Lifetime Combined	19,170,383

Conversion factors

365.25 days per year ÷ 12 months per year = 30.4375 days per month

30.4375 days per month × 1440 minutes per day = 43,830 minutes per month

Calculations

Whole number of months of injection 70

_____ lifetime number of months of injection × 43,830 minutes/month

= 3,068,100 minutes of injection

Lifetime combined injected volume 19,170,383 ÷ 3,068,100 minutes of injection

= 6.2 gpm average injection rate

Circle Chart Index

Environmental Geo-Technologies, LLC 28470 Citrin Drive Romulus, MI 48174

Chart Recorder #1

Channel #1

Blue Pen - Well 1 Injection Pressure (chart value x 30)

Channel #2

Red Pen – Well 1 Annulus Pressure (chart value x 30)

Channel #3

Green Pen – Well 1 Flow Rate (chart value x 4)

Channel #4

Black Pen – Well 1 Annulus Tank Level (chart value x 0)

Chart Recorder #2

Channel #1

Blue Pen – Well 2 Injection Pressure (chart value x 30)

Channel #2

Red Pen – Well 2 Annulus Pressure (chart value x 30)

Channel #3

Green Pen – Well 2 Flow Rate (chart value x 4)

Channel #4

Black Pen – Well 2 Annulus Tank Level (chart value x 0)

Chart Recorder #3

Channel #1

Blue Pen – Injection pH Well 1 & 2 (chart value ÷ 3.3)

Channel #2

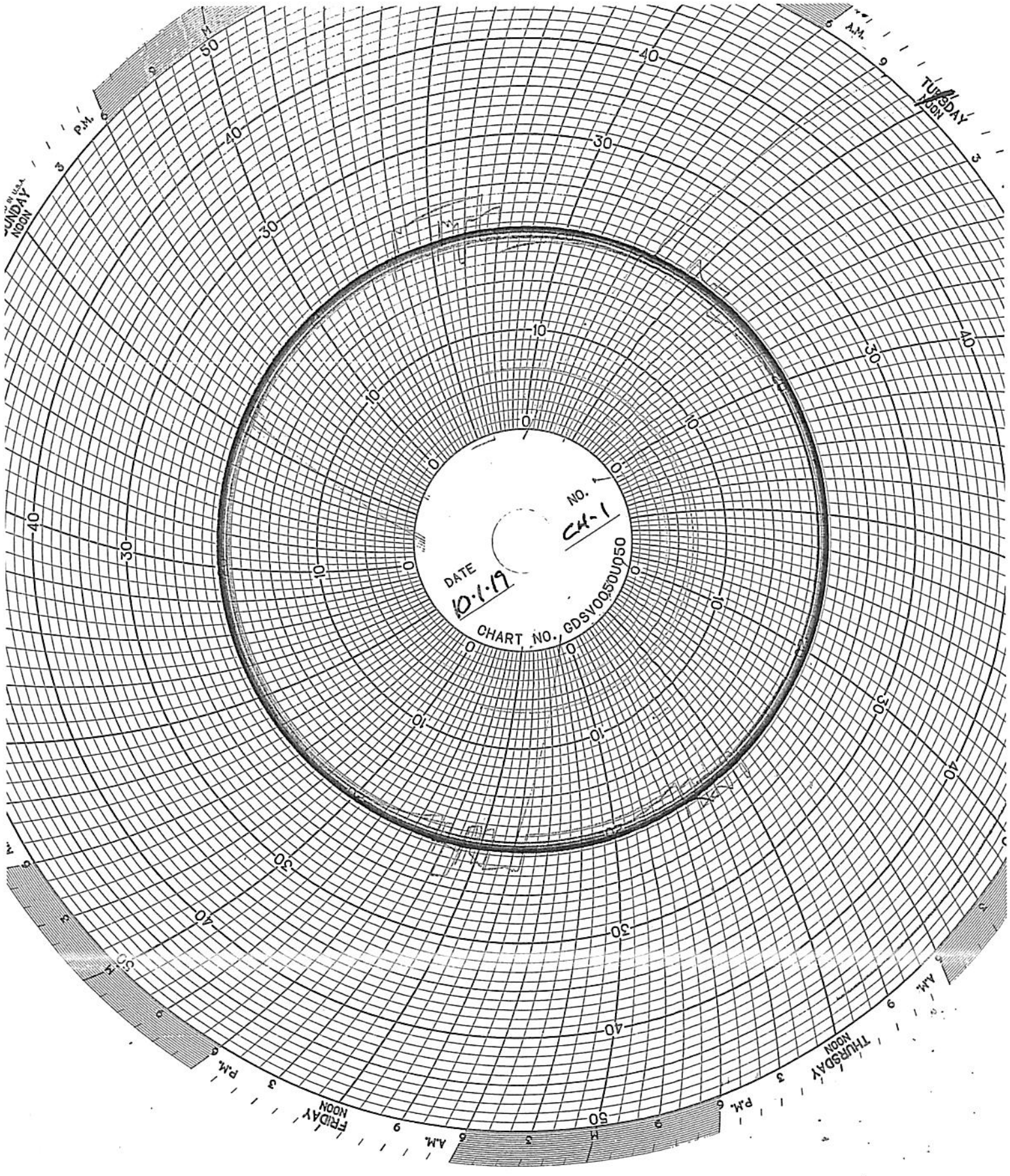
Red Pen – Well 1 Monthly Volume (chart value x 100,000)

Channel #3

Green Pen – Well 2 Monthly Volume (chart value x 100,000)

Channel #4

Black Pen – Temperature (chart value x 0)


NO. 1
CH-1
DATE
10·1·19
CHART NO. GDSV0050UP50
SUNDAY NOON
MONDAY NOON
TUESDAY NOON
WEDNESDAY NOON
THURSDAY NOON
FRIDAY NOON
A.M.
P.M.

WELL 2 DATA

Circle Chart Index

Environmental Geo-Technologies, LLC 28470 Citrin Drive Romulus, MI 48174

Chart Recorder #1

Channel #1

Blue Pen - Well 1 Injection Pressure (chart value x 30)

Channel #2

Red Pen – Well 1 Annulus Pressure (chart value x 30)

Channel #3

Green Pen – Well 1 Flow Rate (chart value x 4)

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Channel #1

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Red Pen – Well 2 Annulus Pressure (chart value x 30)

Channel #3

Green Pen – Well 2 Flow Rate (chart value x 4)

Channel #4

Black Pen – Well 2 Annulus Tank Level (chart value x 0)

Chart Recorder #3

Channel #1

Blue Pen – Injection pH Well 1 & 2 (chart value ÷ 3.3)

Channel #2

Red Pen – Well 1 Monthly Volume (chart value x 100,000)

Channel #3

Green Pen – Well 2 Monthly Volume (chart value x 100,000)

Channel #4

Black Pen – Temperature (chart value x 0)

PRINTED IN U.S.A.
SUNDAY
NOON
A.M.
FRIDAY
NOON
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A.M.
THURSDAY
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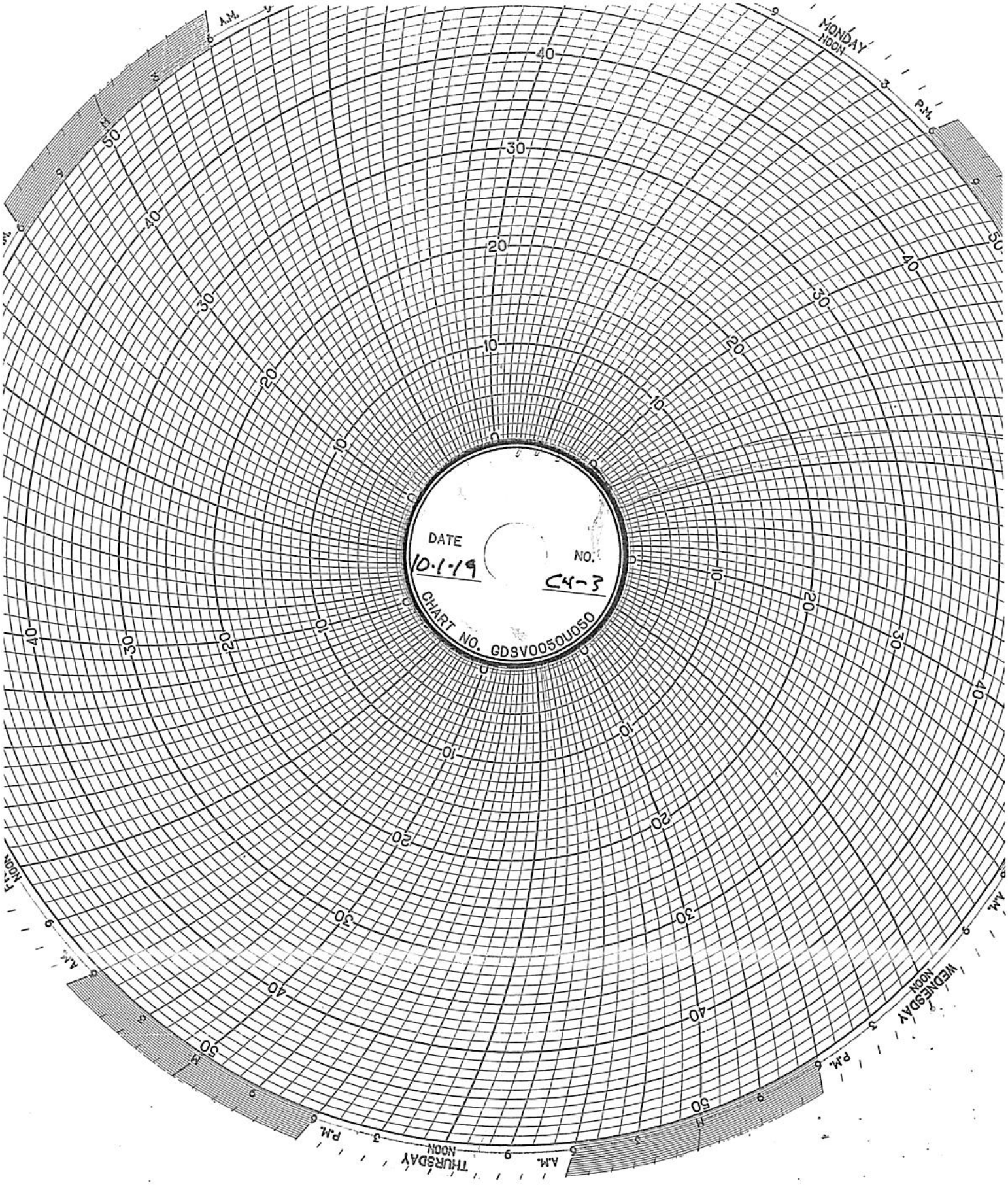
P.M.
DATE
10·1·19
NO.
CH-2
CHART NO. GDSV0050U050


MONDAY
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THURSDAY
NOON
P.M.
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DATE
10-1-19
NO.
C4-3
CHART NO. GDSV0050U050

MAINTENANCE LOG

UIC Monthly Maintenance Log

No Maintenance This Month

CORROSION MONITORING

CORROSION MONITORING COUPONS VISUAL DESCRIPTION

Oct, 2019

Fiberglass Coupon

The coupon is dark orange (rust) in color with similar semi-smooth textures on both sides. Its cut edges appear sanded. The coupon is free of pits, cracks, swelling, wicking and blemishes. There is no change in this coupon since last month.

Hastelloy Coupon

This coupon is identified as C276 with Serial Number 5. The coupon is silver in color with a lightly sandblasted texture. It is clean and free of pits, cracks, and blemishes. There appears to be no effect on this coupon.

Stainless Steel Coupon

No change since last month. There has been no significant pumping on the well 1 and no significant exposure to hazardous waste since October of 2018.

CORROSION MONITORING PLAN
COUPON SUMMARY

Date	Hastelloy (C267)	Stainless Steel (316L)	Fiberglass (Redbox)	
12/19/2013	13.330 g	10.848 g	7.309 g	Initial Mass @ start up
2/21/2014	13.329 g	10.846 g	7.306 g	
3/10/2014	13.327 g	10.845 g	7.300 g	
4/18/2014	13.324 g	10.841 g	7.272 g	
5/30/2014	13.328 g	10.818 g	7.226 g	
6/30/2014	13.321 g	10.337 g	7.196 g	
7/11/2014	13.323 g	10.304 g	7.196 g	
8/12/2014	13.328 g	10.045 g	7.182 g	
9/17/2014	13.321 g	9.997 g	7.090 g	
10/30/2014	13.321 g	9.387 g	7.075 g	
11/21/2014	13.320 g	9.386 g	7.069 g	
12/19/2014	13.321 g	9.315 g	7.084 g	
1/12/2015	13.321 g	9.289 g	7.063 g	
2/23/2015	13.339 g	9.286 g	7.005 g	New hastelloy coupon
3/31/2015	13.339 g	9.286 g	7.005 g	
4/27/2015	13.335 g	9.130 g	6.852 g	
5/21/2015	13.336 g	9.124 g	6.809 g	
6/12/2015	13.334 g	9.126 g	6.819 g	
7/27/2015	13.337 g	9.127 g	6.818 g	
8/26/2015	13.337 g	9.022 g	6.780 g	
9/21/2015	13.336 g	8.987 g	6.792 g	
10/19/2015	13.335 g	8.985 g	6.797 g	
11/16/2015	13.334 g	8.982 g	6.788 g	
12/17/2015	13.334 g	8.933 g	6.791 g	
1/29/2016	13.334 g	8.931 g	6.788 g	
2/16/2016	13.332 g	8.799 g	6.757 g	
3/31/2016	13.339 g	9.286 g	7.005 g	
4/22/2016	13.333 g	8.590 g	6.744 g	
5/31/2015	13.334 g	6.084 g	6.784 g	
6/30/2016	13.328 g	10.942 g	6.793 g	New stainless steel coupon
8/3/2016	13.326 g	10.529 g	6.743 g	
8/29/2016	13.325 g	10.020 g	6.723 g	
10/27/2016	13.325 g	8.765 g	6.708 g	
11/29/2016	13.327 g	8.571 g	6.740 g	
12/12/2016	13.323 g	8.223 g	6.717 g	
1/3/2017	13.325 g	8.059 g	6.712 g	
2/28/2017	13.324 g	7.634 g	6.727 g	
3/24/2017	13.325 g	7.370 g	6.732 g	
4/28/2017	13.325 g	6.736 g	6.736 g	
5/11/2017	13.323 g	7.352 g	6.689 g	
6/12/2017	13.323 g	7.357 g	6.689 g	
7/5/2017	13.323 g	7.355 g	6.689 g	
8/30/2017	13.324 g	7.353 g	18.105 g	New Fiberglass coupon
9/28/2017	13.325 g	7.352 g	18.060 g	
10/11/2017	13.324 g	7.350 g	18.038 g	
11/16/2017	13.325 g	7.363 g	18.047 g	
12/12/2017	13.326 g	7.308 g	18.307 g	

CORROSION MONITORING COUPONS BASELINE VISUAL DESCRIPTION

November 4, 2013

Fiberglass

The fiberglass coupon is Red Box 2000 type and is 2-1/2 inches long by 1/2 inch wide and 1/4 inches thick. It is a dark orange (rust) in color with a glossy shine on one side a polished look on the opposite side and the cut edges look sanded.

Hastelloy

The hastelloy coupon is identified as C276 with serial number 1. The dimensions of the coupon are 3 inches long by 1/2 inch wide and 1/4 inch thick. The coupon is silver in color with a lightly sandblasted surface.

Stainless Steel

The stainless steel coupon is identified as 316L with serial number C1562. The dimensions of the coupon are 3 inches long by 1/2 inch wide and 1/4 inch thick. The coupon is silver in color with a lightly sandblasted surface.

GHESQUIERE PLASTIC TESTING, INC.

20450 HARPER AVENUE
HARPER WOODS, MI 48225
PHONE (313) 885-3535
FAX (313) 885-1771

Report Date: November 15, 2013
Test Date: October 15 - November 14, 2013

Report #1310-77651
Performed for:
Environmental Geo-Technologies
28470 Citrin Drive
Romulus, MI 48174

Attention: Mr. Don Anderson

WORK REQUESTED:

Perform Barcol Hardness test on sample submitted.

DESCRIPTION OF SAMPLE:

Sample submitted was identified as a fiberglass test coupon.

(P. O. #Credit Card).

WORK PERFORMED:

Test specimen was prepared as necessary and conditioned for a minimum of 24 hours at standard laboratory conditions prior to testing.

Barcol Hardness test was performed in accordance with the procedures of ASTM D2583-13. One specimen was tested.

RESULTS:

The following determination was made based upon the above test:

BARCOL HARDNESS

	Hardness
Specimen 1	90

Specimen is being returned with this report for further evaluation.

GHESQUIERE PLASTIC TESTING, INC.

M. W. Ghesquiere
President

MWG/kni

GHESQUIERE PLASTIC TESTING, INC.

20450 HARPER AVENUE
HARPER WOODS, MI 48225
PHONE (313) 885-3535
FAX (313) 885-1771

Report Date: February 17, 2014
Test Date: February 14 - 17, 2014

Report #1402-78036
Performed for:
Environmental Geo-Technologies
28470 Citrin Drive
Romulus, MI 48174

Attention: Mr. Don Anderson

WORK REQUESTED:

Perform Barcol Hardness test on sample submitted.

DESCRIPTION OF SAMPLE:

Sample submitted was identified as a fiberglass test coupon.

(P. O. #Credit Card).

WORK PERFORMED:

Test specimen was prepared as necessary and conditioned for a minimum of 24 hours at standard laboratory conditions prior to testing.

Barcol Hardness test was performed in accordance with the procedures of ASTM D2583-13. One specimen was tested.

RESULTS:

The following determination was made based upon the above test:

BARCOL HARDNESS

	Hardness
Specimen 1	90

Specimen was returned to the client on February 17, 2014.

GHESQUIERE PLASTIC TESTING, INC.

M. W. Ghesquiere
President

MWG/dm

TOTAL 1 PAGES

GHESQUIERE PLASTIC TESTING, INC.

20450 HARPER AVENUE
HARPER WOODS, MI 48225
PHONE (313) 885-3535
FAX (313) 885-1771

Report Date: June 16, 2014
Test Date: June 13 - 16, 2014

Report #1406-78499
Performed for:
Environmental Geo-Technologies, LLC
28470 Citrin Drive
Romulus, MI 48174

Attention: Mr. Don Anderson

WORK REQUESTED:

Perform Barcol Hardness test on sample submitted.

DESCRIPTION OF SAMPLE:

Sample submitted was identified as a fiberglass test coupon.

(P. O. #Credit Card).

WORK PERFORMED:

Test specimen was prepared as necessary and conditioned for a minimum of 24 hours at standard laboratory conditions prior to testing.

Barcol Hardness test was performed in accordance with the procedures of ASTM D2583-13. One specimen was tested.

RESULTS:

The following determination was made based upon the above test:

BARCOL HARDNESS

	Hardness
Specimen 1	85

Specimen was returned to the client June 16, 2014.

GHESQUIERE PLASTIC TESTING, INC.

M. W. Ghesquiere
President

MWG/dm

October 2, 2014

▪ TEST REPORT ▪

PN 118325

PO Attn:John Frost

PLASTICS TESTING DEPARTMENT

Prepared For:

John Frost
Environmental Geo-Technologies, LLC
28470 Citrin Drive
Romulus, MI 48174

Prepared By: _____
Melissa Martin
Sr. Project Technician

Approved By: _____
Jim Drummond
Physical & Plastics Testing, Manager

October 2, 2014

John Frost
Environmental Geo-Technologies, LLC

SUBJECT: Barcol Hardness on one material.
PO# Attn;John Frost

RECEIVED: One small section identified as; Fiberglass Coupon.

BARCOL HARDNESS ASTM D 2583-13a

	Results
Barcol Hardness, Instant	97

Prepared By: _____
Melissa Martin
Sr. Project Technician

Approved By: _____
Scott W. Yates
Plastics Testing Assistant Manager

st

October 22, 2015

▪ TEST REPORT ▪

PN 125322
PO 00154

PLASTICS TESTING DEPARTMENT

Prepared For:

John Frost
Environmental Geo-Technologies, LLC
28470 Citrin Drive
Romulus, MI 48174

Prepared By: _____
Melissa Martin
Sr. Project Technician

Approved By: _____
Jim Drummond, Sr.
Physical & Plastic Testing, Manager

October 22, 2015

John Frost
Environmental Geo-Technologies, LLC

SUBJECT: Barcol Hardness on one material.

RECEIVED: One small section identified as; Fiberglass Coupon.

BARCOL HARDNESS ASTM D 2583-13a
Instant Reading

	Results
Barcol Hardness, Instant	96

Prepared By: Melissa Martin
Sr. Project Technician

Approved By: Scott W. Yates
Plastics Testing Assistant Manager

tc

December 12, 2016

▪TEST REPORT▪

PN 132662
PO

PLASTICS TESTING DEPARTMENT

Prepared For:

John Frost
Environmental Geo-Technologies, LLC
28470 Citrin Drive
Romulus, MI 48174

Prepared By: _____
Melissa Martin
Senior Project Technician

Approved By: _____
Jim Drummond
Physical Testing, Manager

Rev 041916

December 12, 2016

John Frost
Environmental Geo-Technologies, LLC

SUBJECT: Barcol Hardness on one (1) material.

RECEIVED: One (1) small section identified as; Fiberglass Coupon.

BARCOL HARDNESS ASTM D 2583-13a
Instant Reading

	RESULTS
Barcol Hardness, Instant	96

Prepared By: Melissa Martin
Senior Project Technician

Approved By: Scott Yates
Plastics Testing, Assistant Manager

wk

ARDL is ISO 17025 accredited by A2LA for the test methods listed on the certificates referenced on page one. NOTE: Non-ISO 17025 accredited test methods are designated with the ^ symbol to differentiate from ISO 17025 accredited methods in the body of the test report.

December 13, 2017

▪TEST REPORT▪

PN 139140

PO#

PLASTIC TESTING DEPARTMENT

Prepared For:

John Frost
Environmental Geo-Technologies, LLC
28470 Citrin Drive
Romulus, MI 48174

Prepared By:_____
Melissa Martin
Sr Project Technician

Approved By:_____
Jim Drummond
Rubber & Plastic Testing, Manager

www.ardl.com | 2887 Gilchrist Rd. | Akron, Ohio 44305 | answers@ardl.com | Toll Free (800) 830-ARDL
Fax (330) 794-6610 | Worldwide (330) 794-6600

December 13, 2017

John Frost
Environmental Geo-Technologies, LLC

SUBJECT: Barcol Hardness on one material.

RECEIVED: One small section identified as; Fiberglass Coupon.

BARCOL HARDNESS ASTM D 2583-13a
Instant Reading

	Results
Barcol Hardness, Instant	96

Prepared By: Melissa Martin
Sr Project Technician

Approved By: Scott Yates
Plastics Testing, Assistant Manager

sc

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INJECTION FINGERPRINTS

WASTE STREAMS
CHARACTERIZATIONS

ENVIRONMENTAL GEO-TECHNOLOGIES, LLC
28470 Citrin Dr, Romulus, MI 48174. Telephone 734 946 1000. Fax 734 946 1002

Generator Waste Profile
Profile # 01422

GENERATOR INFORMATION

Name: [redacted] USEPA ID # [redacted]

Facility Address: [redacted] SIC/NAICS Code: [redacted] State Code: ______

City: [redacted] State: [redacted] Zip Code: [redacted]

Contact: [redacted] Title: [redacted] Phone: [redacted] Fax: [redacted]

BILLING INFORMATION ☐ **SAME AS ABOVE**

Company Name: [redacted]

Address: [redacted]

City: [redacted] State: [redacted] Zip Code: [redacted]

Attention: [redacted] Phone: [redacted] Fax: [redacted]

WASTE INFORMATION

Name of Waste/Common Chemical Name: Manganese phosphate solution

Process Generating Waste (Please *be specific, incomplete information may delay the approval process)*: generated from plating baths used to plate automotive fasteners

USEPA / STATE WASTE IDENTIFICATION

1. This waste is considered to be: ☐ Non Hazardous Liquid Industrial Waste ☒ Hazardous Waste
2. Regulated by TSCA? ☒ Yes ☐ No (PCBs, etc.)
3. List ALL Applicable Waste Codes: D002

PHYSICAL CHARACTERISTICS OF WASTE

Color:	Suspended Solids	Layers:	Specific Gravity:	
☐ White/Clear ☐ Black/Brown ☒ Other green	☒ 0-1 % ☐ 3-5 % ☐ 1-3 % ☐ > 5%	☐ Multi-Layered ☐ Bi-Layered ☒ Single Phase	☐ <0.8 ☒ 1.0 – 1.2 ☐ 0.8 –1.0 ☐ 1.3 – 1.4 Exact / Other ______	accepted 10/26/19

pH: ☐ NA ☐ ≤ 2 ☒ 2 – 4 ☐ 4 – 6 ☐ 6 – 8 ☐ 8 – 10 ☐ 10 – 12.5 ☐ ≥12.5

Liquid Flash Point: ☐ <73°F ☐ 73 – 100°F ☐ 101 – 140°F ☐ 141 – 200°F ☐ >200°F ☒ None ☐ Closed Cup ☐ Open Cup

VOC CONCENTRATION - 0 ppm **PPM (MUST BE COMPLETED)**

TOTAL COMPOSITION OF WASTE - *MUST BE EQUAL TO OR GREATER THAN 100% (LIST EACH CONSTITUENT >/= 0.1%)*

CONSTITUENT	MAX - MIN	CONSTITUENT	MAX - MIN
Phosphoric	1 - 10 %		- %
Nitric Acid	1 - 10 %		- %
Manganese Dihydrogen phosphate	20 - 40 %		- %
Nickel (II) Nitrate	<1 %		- %
	- %		- %

Metals: Indicate if this waste contains any of the following metals,. If Generator knowledge-provide backup

☐ Lab Analysis ☐ Generator Knowledge ☐ TCLP ☐ TOTAL

	Not Present	Concentration		Not Present	Concentration
PCB	☒	____ppm	Aromatic Amine	☒	____ ppm
Dioxins	☒	____ppm	Pesticides	☒	____ ppm
Cyanides Reactive	☒	____ppm	Rodenticides	☒	____ ppm
Cyanides Total	☒	____ppm	Fungicides	☒	____ ppm
Sulfides Reactive	☒	____ppm			
Sulfides Total	☒	____ppm			

Arsenic (As)	D004	☐ < 5 ppm	____ ppm
Barium (Ba)	D005	☐ <100 ppm	____ ppm
Cadmium (Cd)	D006	☒ < 1 ppm	____ ppm
Chromium (Cr)	D007	☒ < 5 ppm	____ ppm
Lead (Pb)	D008	☒ < 5 ppm	____ ppm
Mercury (Hg)	D009	☒ < 0.2 ppm	____ ppm
Selenium (Se)	D010	☐ < 1 ppm	____ ppm
Silver (Ag)	D011	☐ < 5 ppm	____ ppm

TCLP Organics D012 – D043 above regulatory limits: Present ☐ Not Present ☒

IS WASTE ANY OF THE FOLLOWING? *At Least One Box Must Be Checked.*

☐ Radioactive ☐ Water Reactive ☐ Oxidizer ☐ Shock Sensitive ☐ Reactive (other) ☐ DOT Explosives
☐ NIOSH Human-Positive Carcinogens ☐ NESHAP Wastes (Benzene, etc.) ☐ Biological ☒ None Apply

SHIPPING INFORMATION

1. Is this a DOT Hazardous Material (49CFR 172.101 & 173 Subpart D)? ☒Yes ☐No
2. Reportable Quantity (RQ) in pounds _____
3. DOT Shipping Name ____Corrosive liquid, acidic, inorganic_____ Hazard Class _8___ UN/NA _3264___

PG __II___ ERG _____ Hazardous Constituents for "n.o.s."_____

4. Method of Shipment: ☒Bulk Tanker ☐Vac truck ☐Rail Car ☐Drums ☐Totes
5. Number of Units to Ship Now: _____4500gal_____ 6. Anticipated Volume / Units per Year: _____ or ☒ One Time
6. Special Handling Requirements including PPE:_____

CERTIFICATION STATEMENT

I hereby represent and warrant that I have personally examined and am familiar with the information contained and submitted in this and all attached documents. Based on my inquiry and personal knowledge of those individuals responsible for supplying or obtaining the information, the information contained herein is true, accurate, and complete to the best of my knowledge and belief. Furthermore, no material fact has been omitted as to make this information misleading. I understand that others may rely on this representation and warranty in the handling and processing of the waste material described herein. If this box is checked ☐, I request Environmental Geo-Technologies not to correct any inconsistencies. Any corrections Environmental Geo-Technologies makes will be consistent with the results of the sample characterization and/or regulatory requirements.

Printed Name: [redacted] Title: [redacted]

Generator's Signature: [redacted] Date: [redacted]

GENERATOR'S CHAIN OF CUSTODY RECORD INSTRUCTIONS:

PLEASE collect a representative 1-quart sample o the waste described in the above referenced GENERATORS WASTE PROFILE REPORT using an appropriate container. A representative sample is one obtained using any of the applicable sampling methods cited in 40 CFR 261-Appendix 1. Fill in the sampling information in the spaces provided below. If you have problems obtaining a representative sample of your waste, please contact your Environmental Geo-Technologies representative.

1. Scooped into Bottle 2. From Plate tank
   SAMPLING METHOD COLLECTION POINT
3. [redacted]
   SAMPLE COLLECTOR'S NAME, TITLE, EMPLOYER

4. Sample No. 1 Preservation: Yes ☐ No ☒

5. CHAIN OF CUSTODY *Each person who handles the sample must sign below when the sample passes from one to another.*

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[redacted]					

Safety Data Sheet

Product Trade Name: PHOS DIP® M-22 **ID:** PHDIPM22

* * * Section 1 - Chemical Product and Company Identification * * *

Product Trade Name: PHOS DIP® M-22

Manufacturer Information

Heatbath Corporation
P.O. Box 51048
Indian Orchard, MA 01151-5048

Contact Phone: (413) 452-2000
8:00 AM - 5:00 PM

CHEMTREC Emergency Phone: (800) 424-9300
24 Hours

CHEMTREC International: (703) 527-3887

Recommended Use: Chemical for producing manganese phosphate coating on steel

Restrictions on Use: See Incompatibility, Section 10

* * * Section 2 - Hazards Identification * * *

OSHA Hazard Communication Standard: Considered a Hazardous Substance by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). Classified as Dangerous Goods for transport purposes.

Hazard Classification: Acute Aquatic Hazard Category 3 | Acute Toxicity (Oral) Category 4 | Carcinogen Category 1A | Chronic Aquatic Hazard Category 3 | Metal Corrosion Category 1 | Reproductive Toxicity Category 1B | Respiratory Sensitizer Category 1A | Serious Eye Damage Category 1 | Skin Corrosion/Irritation Category 1A | Skin Sensitizer Category 1 | STOT - RE Category 2 | STOT - SE (Resp. Irr.) Category 3

Labeling:

Signal Word: DANGER!

Hazard Statements: May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation. May cause cancer. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

PREVENTION: Obtain special instructions before use. Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. [In case of inadequate ventilation] wear respiratory protection Keep only in original packaging. Do not eat, drink or smoke when using this product. Avoid release to the environment. Contaminated work clothing should not be allowed out of the workplace.

FIRST AID/IN CASE OF FIRE: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/ attention. Immediately call a POISON CENTER/doctor/... Specific treatment (see advice in Section 4). If experiencing respiratory symptoms: Call a POISON CENTER/doctor/... IF ON SKIN: Wash with plenty of water/... If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage. IF SWALLOWED: Call a POISON CENTER/ doctor/...if you feel unwell.

STORAGE: Store locked up. Store in a well-ventilated place. Keep container tightly closed.

DISPOSAL: Dispose of contents/container in accordance with all local, regional, national and/or international regulations.

Hazards Not Otherwise Classified: N.A.

Percent of Ingredients of Unknown Toxicity: N.A.

* * * Section 3 - Composition / Information on Ingredients * * *

HAZARDOUS INGREDIENT	CAS #	PERCENT
PHOSPHORIC ACID	7664-38-2	1 - 10% (T.S.)
NITRIC ACID	7697-37-2	1 - 10% (T.S.)
MANGANESE DIHYDROGEN PHOSPHATE	18718-07-5	20 - 40% (T.S.)
NICKEL (II) NITRATE	13138-45-9	<1% (T.S.)

T.S. = Trade Secret
*per CFR 29, Part 1910.1200; ingredients listed only if deemed hazardous and comprise 1% or greater of the composition (0.1% or greater for carcinogens).

Component Related Regulatory Information: This product may be regulated, have exposure limits or other information identified.

* * * Section 4 - First Aid Measures * * *

If this product comes in contact with the eyes: Immediately hold eyelids apart and flush the eye continuously with running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. If skin or hair contact occurs: Immediately flush body and clothes with large amounts of water, using safety shower if available. Quickly remove all contaminated clothing, including footwear. Wash skin and hair with running water. If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. For advice, contact a Poisons Information Centre or a doctor at once. Urgent hospital treatment is likely to be needed. If swallowed do NOT induce vomiting.

* * * Section 5 - Fire Fighting Measures * * *

Flash Point: None.

Flammable Limits: None.

Upper Flammable Limit N.A.

Lower Flammable Limit N.A.

Extinguishing Media, PPE and Guidance for FireFighter: Water spray or fog. Foam. Alert Fire Department and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course.

Fire and Explosion Hazards: Non combustible. Not considered to be a significant fire risk. Acids may react with metals to produce hydrogen, a highly flammable and explosive gas. Hazardous fumes may be released under thermal decomposition.

Decomposition Products: Oxides of nitrogen and phosphorus under thermal decomposition.

* * * Section 6 - Accidental Release Measures * * *

Containment and Clean up procedures must be conducted in accordance with all local, state, and federal regulations.

Containment and Clean-Up Procedures: Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material. Check regularly for spills and leaks. Clean up all spills immediately. Clear area of personnel and move upwind. Alert Fire Department and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus.

* * * Section 7 - Handling and Storage * * *

Handling and Storage Procedures: Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Emptied containers of this product may contain hazardous vapors and residue. Clean thoroughly before reusing or discarding. Do not use a welding torch to cut container. Do not use for water or food storage.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Exposure Guidelines:

A. General Product Information: Follow all applicable exposure limits. Keep formation of airborne mists to a minimum.

B. Component Exposure Limits:

CAS #	HAZARDOUS INGREDIENT	OSHA PEL(mg/m3)	ACGIH TLV(mg/m3)
18718-07-5	Manganese Dihydrogen Phosphate	5.0 STEL (as Mn)	0.2 (as Mn)
13138-45-9	Nickel Nitrate	1.0 (as NI)	0.1 (as NI)
7697-37-2	Nitric Acid	2.0 ppm	2.0 ppm
7664-38-2	Phosphoric Acid	1	1

*OSHA-PEL and ACGIH-TLV are 8-Hour TWA unless otherwise noted.
*per CFR 29, Part 1910.1200: ingredients listed only if deemed hazardous and comprise 1% or greater of the composition (0.1% or greater for carcinogens).

Engineering Controls: Set up ventilation to effectively remove and prevent buildup of any dust, vapor or mist generated from the handling of this product.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face Protective Equipment: Wear appropriate eye protection to prevent eye contact.

Skin Protection: Wear appropriate personal protective clothing to prevent skin contact. The worker should immediately wash the skin when it becomes contaminated. Remove wet or significantly contaminated work clothing and replace.

Respiratory Protection: If ventilation is not sufficient to effectively prevent buildup of dust, mists or vapors, provide appropriate NIOSH/MSHA respiratory protection.

Personal Protective Equipment: Provide eyewash fountains in areas where there is any possibility that workers could be exposed to the substance; this is irrespective of the recommendation involving the wearing of eye protection.

Provide facilities for quickly drenching the body within the immediate work area for emergency use where there is a possibility of exposure. Depending on the specific circumstances, a deluge shower, a sink or hose could be considered adequate.

* * * Section 9 - Physical & Chemical Properties * * *

Physical State: Liquid
Color: Green liquid.

pH: <1.0
Specific Gravity: 1.37
Evaporation Rate: N.E.
Solubility Water: completely miscible.
Vapor Density: N.E.
Vapor Pressure: N.E.
Octanol-Water Coefficient: N.E.

Boiling Point: >212 F
Melting Point: Not Available
Flash Point: Not Available
Auto-Ignition Temperature: N.E.
Decomposition Temperature: N.E.
Flammability Limits - Low: N.A.
Hi: N.A.

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability: Contact with alkaline material liberates heat Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerization will not occur. Solutions of hydrogen peroxide slowly decompose, releasing oxygen, and so are often stabilized by the addition of acetanilide, etc.

Conditions to Avoid: None

Incompatibility: strong alkali, sulfides, cyanides.

Decomposition Products: See section 5

Hazardous Polymerization: Will not occur.

* * * Section 11 - Toxicological Information * * *

Route of Exposure: Eye/skin contact, inhalation.

Acute Toxicity:

A: General Product Information

Eye Contact: If applied to the eyes, this material causes severe eye damage. Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely. Hydrogen peroxide concentrations above 10% are corrosive to the eye and may cause corneal ulceration even days after exposure.

Skin Contact: Skin contact with the material may be harmful; systemic effects may result following absorption. Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Skin Absorption: No information available for this product.

Ingestion: Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and esophagus. Immediate pain and difficulties in swallowing and speaking may also be evident. Poisonings rarely occur after oral administration of manganese salts because they are poorly absorbed from the gut.

Inhalation: Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful. The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage.

Chronic Hazards: Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Studies show that inhaling this substance for over a long period (e.g. in an occupational setting) may increase the risk of cancer. Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.

Medical Conditions Aggravated by Exposure: The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's edema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.

Carcinogenicity:

a: Component Carcinogenicity:

Nickel Nitrate.

NTP:	Yes.	**IARC:**	Yes.
OSHA:	No.		

* * * Section 12 - Ecological Information * * *

Ecotoxicity:

A: General Product Information

No information available for this product.

B. Component Analysis - Ecotoxicity - Aquatic Toxicity:

Phosphoric Acid: LC50 (Mosquito Fish) = 138 mg/L/96H.

Persistance and Mobility: No information available for this product

Environmental: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters. Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

Mobility in Soil: No information available.

* * * Section 13 - Disposal Considerations * * *

Wastes must be tested using methods described in 40 CFR Part 261. It is the generator's responsibility to determine if the waste meets applicable definitions of hazardous wastes. State and local regulations may differ from Federal disposal regulations. Dispose of waste material according to Local, State, Federal and Provincial Environmental Regulations.

* * * Section 14 - Transportation Information * * *

US DOT Information: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (NITRIC ACID, PHOSPHORIC ACID), 8, PG II

Marine Pollutant: No

IMDG Classification: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, PHOSPHORIC ACID), 8, PGII

IATA Classification: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, PHOSPHORIC ACID), 8, ,PGII

The data provided in this section is for information only and may not be specific for the package size or mode of transportation. See package label for further details.

* * * Section 15 - Regulatory Information * * *

US Federal Regulations

A: General Product Information
No additional information available.

B: Component Analysis
This material may contain chemicals, requiring identification under SARA Section 302 (40 CFR 355 Appendix A, SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

HAZARDOUS COMPONENT	CERCLA RQ LBS.	SECT 302 TPQ LBS.	SECT 313* TOXIC	Maximum %
Manganese Dihydrogen Phosphate	N.A.	N.A.	Yes	40
Nickel Nitrate	100	N.A.	Yes	<1.0
Nitric Acid	1000	1000	Yes	10
Phosphoric Acid	5000	N.A.	No	10

Sara 311/312 Hazards:		
	Immediate (Acute)	TRUE
	Chronic*	TRUE
	Fire	TRUE
	Sudden Release-of-Pressure	FALSE
	Reactive	TRUE

State Regulations

A: General Product Information
No additional information available.

Other Regulations

A: General Product Information
All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis - Inventory

*** Section 16 - Other Information ***

Revision Date:
Rev. 1, June 1, 2015

Key/Legend:

ACGIH =	American Conference of Governmental Industrial Hygienists	NFPA =	National Fire Protection Association
CERCLA =	Comprehensive Environmental Response, Compensation and Liability Act	NIOSH =	National Institute for Occupational Safety and Health
EPA =	Environmental Protection Agency	NTP =	National Toxicology Program
HMIS =	Hazardous Material Identification System	OSHA =	Occupational Safety and Health Administration
IARC =	International Agency for Research on Cancer	SARA =	Superfund Amendments and Reauthorization Act
MSHA =	Mine Safety and Health Administration	TSCA =	Toxic Substance Control Act

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Heatbath Corporation bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

This is the end of SDS for PHOS DIP® M-22.