REMEDIAL ACTION DESIGN REPORT

JAGEMANN PLATING
1324 S. 26TH STREET
MANITOWOC, WISCONSIN
BRRTS# 02-36-555544

November 10, 2022

Prepared For:

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Senior Engineer

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CERTIFICATIONS

I, R. Scott Powell, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

R. Scott Powell, Senior Engineer, E-49589-6
Signature, Title, and P.E. No.

P.E. stamp

I, Brian Kappen, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Senior Geologist
Signature and Title

11/10/2022
Date

Document Reference:

Remedial Action Design Report
Jagemann Plating
1324 S. 26th Street
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1.0 INTRODUCTION

EnviroForensics, LLC (EnviroForensics) has prepared this Remedial Action Design Report on behalf of Jagemann Plating Co., Inc. (Jagemann) for the facility located at 1324 S. 26th Street, Manitowoc, Wisconsin (Site). This report meets the guidelines for designing remedial actions set forth in Wisconsin Administrative Code Chapter NR 724 and other associated Chapter NR 700 series rules. This report follows a *Remedial Injection Request* dated May 26, 2022, and approval letter from the Wisconsin Department of Natural Resources (WDNR) dated June 13, 2022.

Jagemann has occupied the Site since 1945. The Site encompasses approximately 4.58 acres between S. 26th Street to the east and Canadian National rail lines to the west. Improvements include several connected industrial buildings and paved driveway, parking, and loading areas. The general layout of the Site, including Site features, and the surrounding area, is depicted on **Figure 1**.

The data collected during the site investigation indicate that soil, groundwater, and soil vapor at the Site contain impacts as a result of historic releases of chlorinated solvents and plating solution that occurred during past operations. The primary contaminants of concern at the Site are chlorinated volatile organic compounds (CVOCs) including trichloroethene (TCE) and its associated degradation products including cis-1,2-dichloroethene and vinyl chloride. The source of CVOC contamination is beneath a former parts cleaning area in the south-central part of the facility. A secondary contaminant of concern is chromium, which has been detected at elevated concentrations in water collected from two basement sumps. The extent of chromium impacts appears to be limited to an area around the basement beneath the southeast part of the facility. The nature and extent of impacts in all subsurface media has been delineated to the point remedial action can proceed, and exposure pathways have been assessed and mitigated as needed. Previously completed vapor intrusion mitigation activities were detailed in the *Interim Action Documentation Report and Operation, Maintenance & Monitoring Plan* dated November 5, 2021.

1.1 Site Hydrogeology

Soil encountered during investigation activities consisted primarily of silty clay and silt. Native sediments in the area consist of glacial till of the Two Rivers Member of the Kewaunee Formation. The Two Rivers Member consists primarily of pebbly and cobbly, sandy silt.

Bedrock in the vicinity of the Site consists of Silurian-aged dolomite. Bedrock was not encountered during the completion of the soil borings at the Site. Bedrock is anticipated to be more than 100 feet below ground.

The shallow water table is encountered at the Site within the native sediments at an average depth of 4.5 feet below ground surface (bgs). The average hydraulic gradient across the Site is 0.018 ft/ft. The groundwater flow direction as indicated by measurements in site monitoring wells is toward the northeast. The Manitowoc River at its closest point is approximately 1 mile to the northeast. Lake Michigan is approximately 1.37 miles east of the Site.

1.2 Selected Remedial Action

Remedial action options for the Site are limited due to:

- The low permeability of the native silt/clay sediment;
- Access to contaminant source areas covered by plating equipment; and
- Potential actions causing costly interferences with on-going operations.

The remedial technology selected for groundwater is a combination of *in-situ* chemical reduction (ISCR) and enhanced reductive dechlorination (ERD) implemented by injection. *In-situ* remediation of groundwater impacts beneath the building floor represents a practicable and cost-effective approach. Specifically, injection of an amendment solution within accessible areas outside and inside the building around plating equipment is an appropriate treatment for the type and depth of contamination present at the Site.

2.0 PILOT STUDY

A pilot study was performed during summer 2022 to assess the feasibility of injection and potential performance of the proposed remedial solution. The pilot study design was presented in the May 26, 2022 *Remediation Injection Request*. The objectives of the study were to:

- Assess the feasibility of subsurface injection in the low permeability soil;
- Evaluate initial performance (i.e. reduction in TCE concentrations); and
- Collect data to design a large-scale source area treatment.

A remedial approach combining ISCR and ERD implemented via injection was selected for testing because:

- ISCR/ERD are proven methods for treatment of chlorinated ethenes like TCE, and hexavalent chromium (if present);
- It is appropriate for the magnitude of volatile organic compound (VOC) concentrations identified at the source area; and
- Direct-push injection tooling can easily reach the contaminated depth interval.

ISCR/ERD amendments produced by Regenesis, Inc. were selected for the pilot study purposes because of their smaller particle size compared to similar amendments produced by other manufacturers, and their documented effectiveness at similar sites. The specific injectable remediation products proposed for testing consist of colloidal zero-valent iron (S-Micro ZVI) and an organic emulsion (3DME). These amendments are designed to produce and maintain reducing conditions in the subsurface and provide electron donors for the dechlorination of VOCs from TCE to ethene, a harmless end product. Reducing conditions also promote the conversion of hexavalent chromium to stable and immobile trivalent chromium precipitates. Technical information sheets for the Regenesis products are presented in **Appendix A**.

2.1 Injection Activities

The pilot study injection activities occurred July 18-19, 2022. A drilling contractor advanced five (5) direct-push injection points around existing monitoring wells MW-1 and MW-14 as shown on **Figure 2**. The points were positioned at incremental distances from the nearest monitoring

well (4, 7, and 10 feet), and injection started with the furthest point. Specialized direct-push tooling was advanced to a depth of 15 feet below ground surface (bgs) at each injection location, and a high-pressure pump was used to inject the remedial solution every two (2) feet up to 5 feet bgs as the tooling was retracted. The solution was prepared in 275-gallon totes with a sump pump providing continuous mixing to ensure a homogeneous solution.

The volume of solution injection into each point ranged from 125 to 150 gallons. Flow rate and pressure were measured continuously. The injection pressure averaged approximately 50 pounds per square inch (psi) at a corresponding average injection rate of approximately 5 gallons per minute (gpm). Daylighting occurred only at location PT-2. In response, the pressure was gradually reduced to 20 psi which resulted in a flow rate of 1 gpm.

Groundwater in the nearest monitoring well (i.e., either MW-1 or MW-14) was inspected visually for color changes during injections, and a water quality meter was used to measure changes in oxidation-reduction potential (ORP). The presence of the solution was detected in both MW-1 and MW-14 within the first 15 minutes while injecting into the furthest injection point from each well.

2.2 Groundwater Monitoring

Performance monitoring was conducted by collecting samples from MW-1 and MW-14 as follows:

- June 16 (baseline monitoring). Samples were collected for analysis of volatile organic compounds (VOCs); ethene, ethane, and methane; and total organic carbon (TOC).
- July 18 (baseline monitoring). Samples were collected for analysis of ethene, ethane, and methane; and TOC
- August 22 (34 days after injections). Samples were collected for analysis of VOCs; ethene, ethane, and methane; and TOC.
- October 6 (79 days after injections). Samples were collected for VOCs; ethene, ethane, and methane; and TOC.

Baseline and post-injection laboratory reports are provided in **Appendix B**. Baseline and post-injection groundwater sample analytical data are summarized in the table below.

Performance Monitoring Data Summary

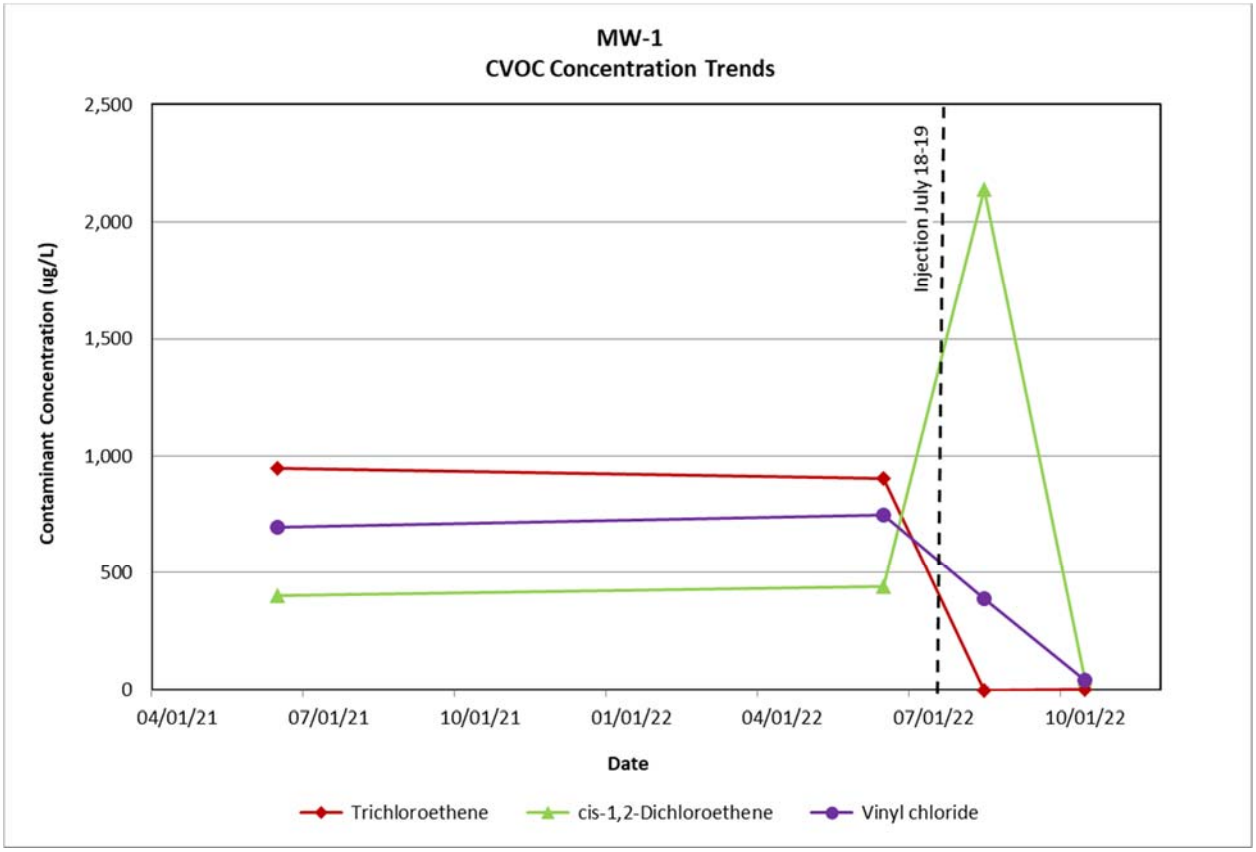
(All concentrations reported in units of micrograms per liter except as noted).

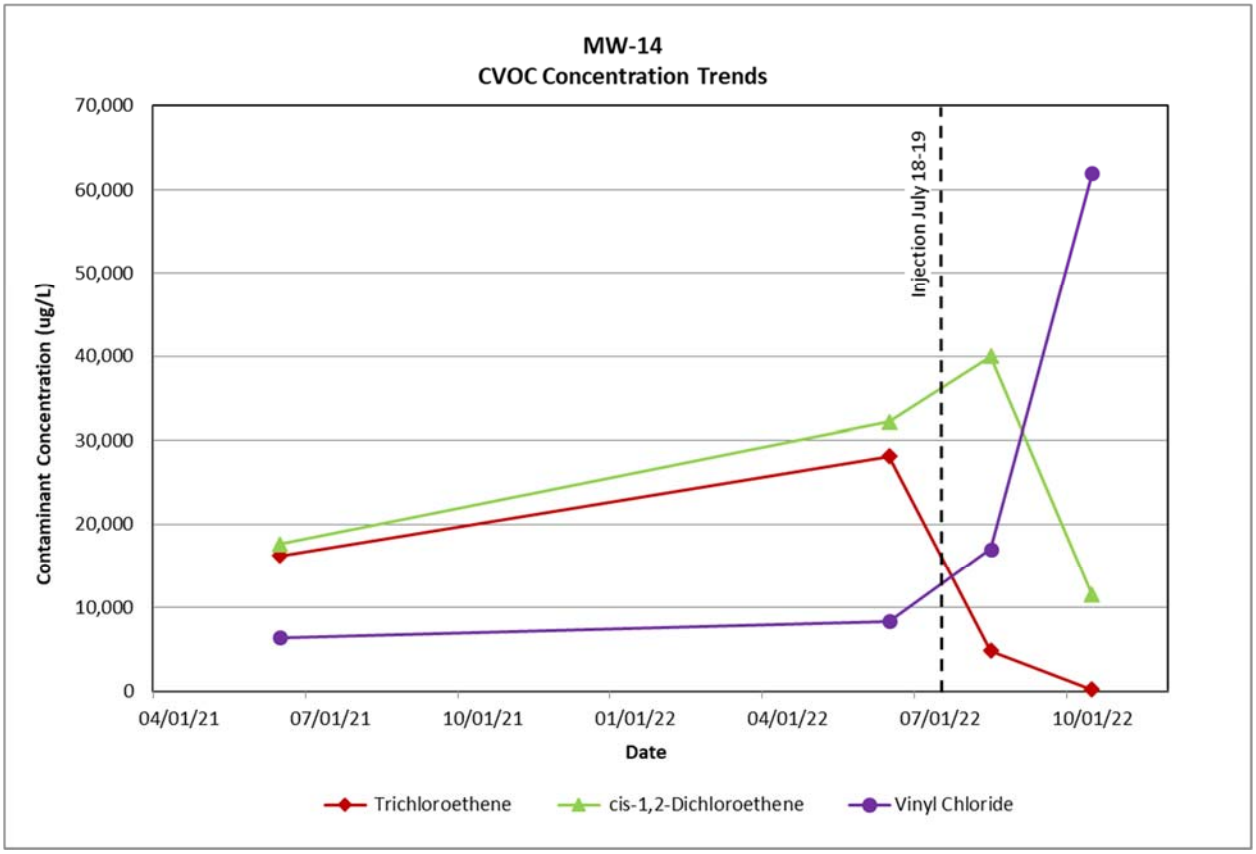
Monitoring Well Sample ID	Date Sampled	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl chloride	Ethane	Ethene	Methane	Total Organic Carbon (mg/L)
MW-1	6/16/2022	902	442	41.6	750	--	--	--	--
	7/18/2022	--	--	--	--	90.6	26.9	1,090	30
	8/22/2022	<3.8	2,140	47	390	37.8	9.58	428	1,380
	10/6/2022	0.40	46	99	41	191	3.38	112	406
MW-14	6/16/2022	28,100	32,200	2,530	8,300	--	--	--	--
	7/18/2022	--	--	--	--	5,190	283	2,720	8.98
	8/22/2022	4,800	40,000	810	17,000	3,400	249	1,400	1,770
	10/6/2022	<190	11,500	880	62,000	3,260	103	391	799

EnviroForensics makes the following observations and conclusions with respect to the performance monitoring data:

- The concentration of the parent compound (TCE) had decreased by at least 99% at 79 days after injections at both monitoring locations.
- The expected increase in daughter products (cis-1,2-DCE and vinyl chloride) as TCE breaks down is evident in the first round of monitoring data at both locations.
- The second round data for MW-1 indicates advanced dechlorination, with TCE reduced to just above the detection limit and daughter products substantially reduced following the initial spike.
- The second round data at MW-14 shows continued conversion of cis-1,2-DCE to vinyl chloride.
- Non-toxic dechlorination end products ethane and ethene continue to be produced in relatively high concentrations.
- Sufficient organic carbon was introduced to sustain the breakdown at both monitoring locations.

The charts below illustrate the CVOC concentration changes.





Evaluation of the pilot study data indicated that:

- Injection of a remedial solution into the silty soil is possible at pressures below 100 psi;
- A radius of influence (ROI) of at least 8 feet is achievable; and
- Large-scale injection of the amendment solution would significantly accelerate reductive dechlorination processes throughout the CVOC plume.

3.0 REMEDIAL ACTION PLAN

EnviroForensics will implement a large scale injection of an ISCR/ERD amendment solution to treat CVOC contamination in groundwater. Combining these technologies promotes both biological and abiotic degradation pathways, and creates strongly reducing conditions in the treatment area for an extended timeframe. The target compounds for treatment are TCE, cis-1,2-dichloroethene, and vinyl chloride, identified in Site groundwater at concentrations up to 70, 160, and 40 milligrams per liter (mg/L), respectively.

3.1 Remediation Objective

The objective of groundwater remediation is to reduce total CVOCs concentrations by at least 90% compared to pre-remediation values. Residual CVOC concentrations are likely to remain above regulatory standards in the most impacted areas; therefore, EnviroForensics anticipates that a combination of engineering and institutional controls will be utilized to complete Site closure while ensuring the adequate protection of public health, safety, and welfare, and the environment.

3.2 Permitting

EnviroForensics included preliminary large-scale injection design information in the Remediation Injection Request document, which was approved by WDNR. Wisconsin Pollutant Discharge Elimination System permit coverage for discharge to groundwater was authorized for the pilot study and remains valid. A copy of the approval letter is provided in **Appendix C**.

3.3 Injection Plan

A site-specific health and safety plan will be followed during the remediation activities. Buried utilities will be identified, traced, and marked prior to injection activities. There are no public or private water wells near the Site.

The injections will occur in around the southern part of the facility as shown on **Figure 3,** targeting areas with the highest contaminant concentrations in groundwater. Only certain areas are accessible because the target remediation area contains active metal plating lines and ancillary equipment. The accessible areas are highlighted on **Figure 3**.

The injection solution will be a combination of the following products, manufactured by Regenesis:

- 3-D Microemulsion (3DME®), an electron donor to promote ERD.
- Sulfidated Zero-Valent Iron (S-Micro ZVI), a colloidal ISCR reagent.
- Bio-DeChlor INOCULUM Plus (BDI Plus), an enriched culture of dechlorinating microbes.

The 3DME and S-micro ZVI products are shipped in plastic totes or drums, and the BDI-Plus is shipped in a pressurized keg within a cooler. All products will be shipped directly to the site and stored indoors until the injection plan is implemented.

The number of points, spacing, mixing specifications, and volume added to each point has been determined based on contaminant mass estimates, site-specific hydrogeological parameters, and the pilot study results. Mixing will be performed in trailer-mounted tanks with precise metering controls and continuous agitation to ensure a homogeneous solution. The remedial solution will be delivered to injection points using pneumatic pumps. The injection points will consist of direct-push rods connected to a specialized 2-foot long section with screen or small diameter openings. At each location the solution will be injected from the bottom to the top of the borehole, with a target injection interval of 4 - 14 feet.

The amendment solution will be injected into a total of 111 points positioned between existing metal plating lines and ancillary equipment. As shown on **Figure 3**, two treatment "lines" oriented east-west and one treatment line oriented north-south will consist of two rows of staggered injections points. Another north-south treatment line further to the west will consist of a single row of injection points. The target injection volume for the areas with two rows of injection points will be 155 gallons of solution at each point, consisting of:

- 3 gallons S-Micro ZVI
- 7 gallons 3DME
- 0.2 liters BDI Plus
- 145 gallons potable water from municipality

The target injection volume for the area with a single row of injection points will be 167 gallons of solution at each point, consisting of:

- 4 gallons S-Micro ZVI
- 10 gallons 3DME
- 0.3 liters BDI Plus
- 153 gallons potable water from municipality

In total, this plan calls for 17,288 gallons of remedial solution injected into 111 points. The actual volume of solution injected will be recorded on an hourly basis each day for reporting purposes. The endpoint for injection will be delivery of the design volume of solution into the target treatment zone, distributed across at least 90% of the proposed injection points. In the event of solution daylighting or access limitations at a given injection point, the prescribed volume of solution will be redistributed to adjacent points.

The tooling will be removed from each location after the prescribed volume of solution is injected, and the boreholes will be abandoned in accordance with NR 141.25 Wis. Adm. Code and patched with concrete.

3.4 Performance Monitoring

Groundwater monitoring will be conducted to evaluate the performance of the ISCR/ERD remedy. Following completion of large-scale injection activities, a quarterly groundwater monitoring program will be implemented that will include groundwater elevation measurements, groundwater quality measurements, and sample collection for laboratory analysis. The monitoring program is summarized on **Table 1**.

The duration of quarterly monitoring will depend on CVOC concentration trends identified through ongoing data evaluation; however, a minimum of eight (8) quarterly monitoring events are anticipated to comply with NR 726.09(e) Wis. Adm. Code. Purging and sampling will be completed using new, disposable bailers. Field parameters including pH, specific conductivity, temperature, ORP, and dissolved oxygen will be measured during purging and recorded on a sampling form. The wells and piezometers will be purged using low-flow methods, or . Samples will be collected the following day.

One (1) duplicate sample and one (1) equipment blank will be collected for every 10 or fewer investigative samples, and one (1) trip blank sample will be analyzed per sample cooler for quality assurance/quality control purposes. Samples will be transmitted to a state-certified laboratory and analyzed for the following parameters as specified on **Table 1**:

- VOCs (Method 8260).
- Ethene, Ethane, Methane (Method 8015)
- Total Organic Carbon (Method 5310B)
- Dehalococcoides population and functional genes (Microbial Insights Methods)
- Chromium (Method 200.7)
- Hexavalent chromium (Method SM3500)

Investigation-derived media (IDM), including purge water and decontamination fluids, will be containerized in a 55-gallon drum and subsequently disposed of by Jagemann in the Site's wastewater treatment plant.

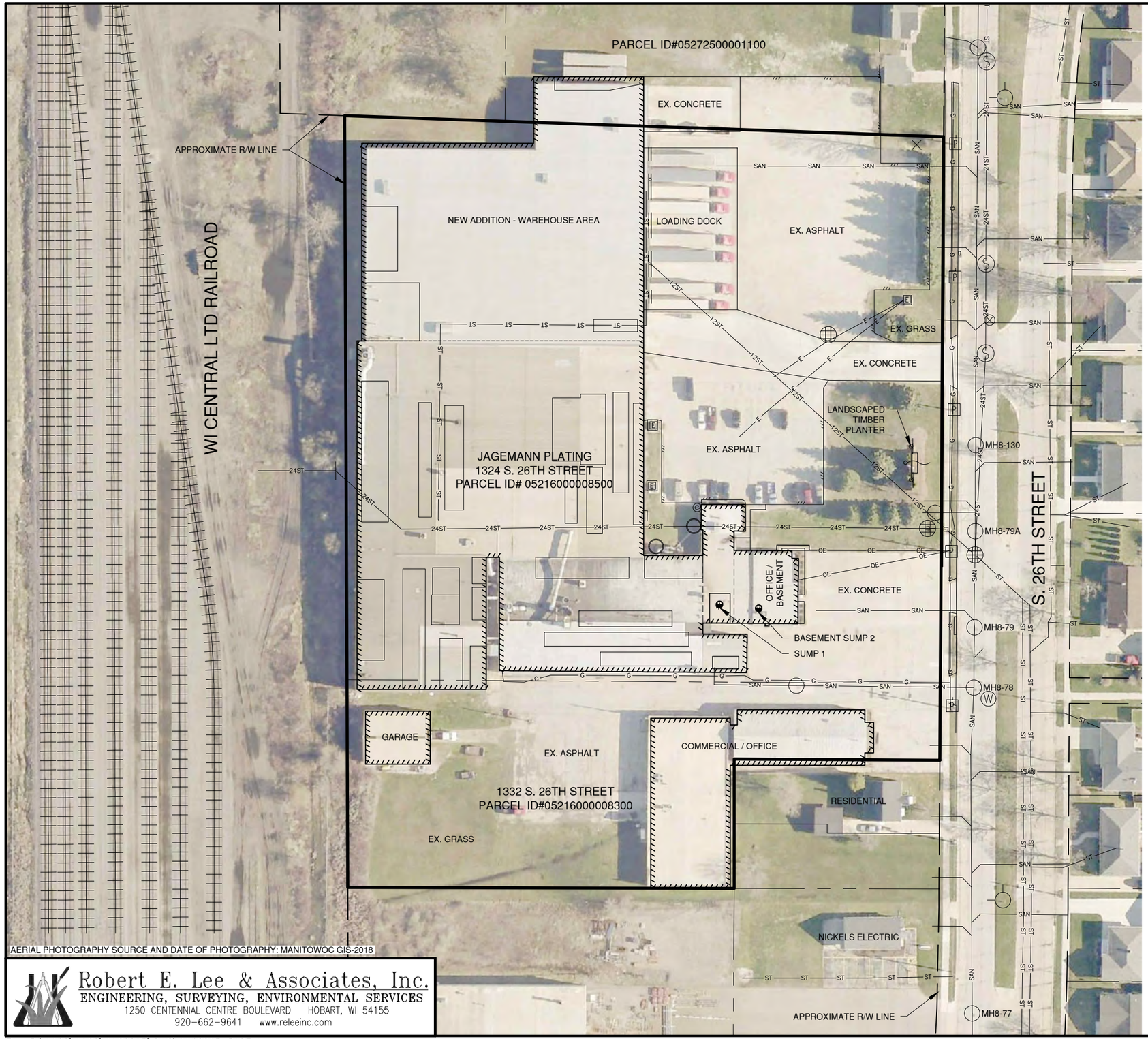
3.5 Implementation Schedule

Injection activities are scheduled to begin on November 28, 2022 and take seven (7) days to complete. Remediation performance monitoring is scheduled to begin in February 2023 and continue on a quarterly basis.

3.6 Reporting

Documentation of remedial activities will be submitted within 60 days of completion of the injections in accordance with NR 724.15. EnviroForensics will evaluate and summarize the groundwater analytical data to assess subsurface conditions and the effectiveness of the treatment. Performance monitoring data will be described in Remediation Site Operation, Maintenance, Monitoring and Optimization Reports submitted on a semi-annual basis, as required.

FIGURES



AERIAL PHOTOGRAPHY SOURCE AND DATE OF PHOTOGRAPHY: MANITOWOC GIS-2018

Robert E. Lee & Associates, Inc.
ENGINEERING, SURVEYING, ENVIRONMENTAL SERVICES
1250 CENTENNIAL CENTRE BOULEVARD HOBART, WI 54155
920-662-9641 www.releeinc.com

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Plot Date: Jun 07, 2021 – 3:19pm

NORTH

0' 80' 160'

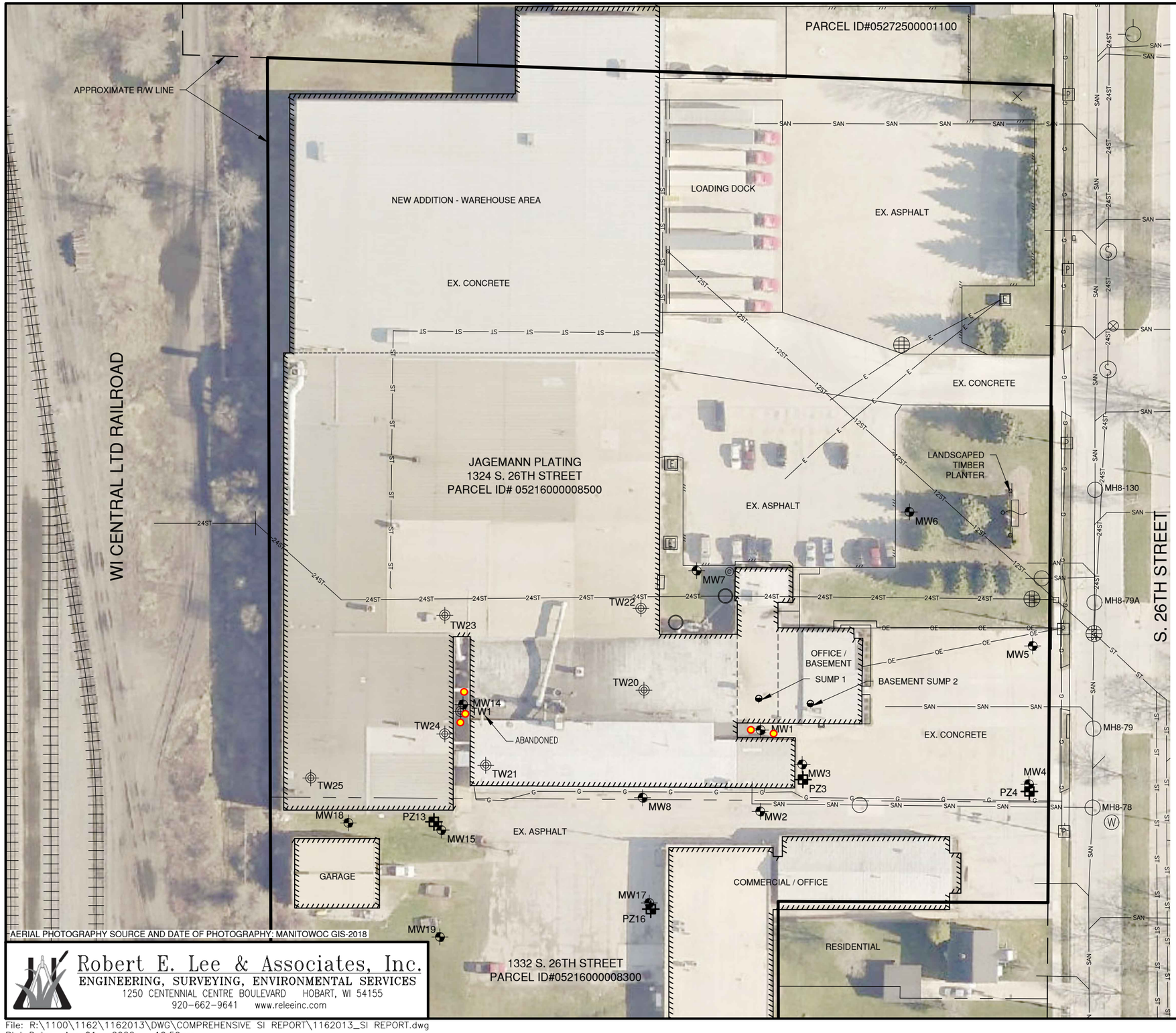
SCALE IN FEET

LEGEND

- SUMP
- EX. SANITARY MANHOLE
- EX. STORM SEWER MANHOLE
- EX. STORM SEWER CATCH BASIN
- EX. FIRE HYDRANT
- EX. WATER VALVE
- EX. WATER MANHOLE
- EX. ELECTRIC PEDESTAL
- EX. POWER POLE
- EX. STORM SEWER
- EX. SANITARY SEWER
- EX. WATERMAIN
- EX. GAS LINE
- EX. ELECTRIC LINE
- EX. TELEPHONE LINE
- EX. FIBER OPTICS LINE
- PROPERTY LINE
- RIGHT OF WAY LINE
- SITE BOUNDARY LINE

JAGEMANN PLATING COMPANY
1324 S. 26TH STREET
MANITOWOC, WI

FIGURE 1
DETAILED SITE MAP



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NORTH

0' 60' 120'

SCALE IN FEET

LEGEND

- MW1 — MONITORING WELL LOCATION
- TW1 — TEMPORARY WELL LOCATION
- PZ1 — PIEZOMETER LOCATION
- SUMP
- EX. SANITARY MANHOLE
- EX. STORM SEWER MANHOLE
- EX. STORM SEWER CATCH BASIN
- EX. FIRE HYDRANT
- EX. WATER VALVE
- EX. WATER MANHOLE
- EX. ELECTRIC PEDESTAL
- EX. POWER POLE
- EX. STORM SEWER
- EX. SANITARY SEWER
- EX. WATERMAIN
- EX. GAS LINE
- EX. ELECTRIC LINE
- EX. TELEPHONE LINE
- EX. FIBER OPTICS LINE
- PROPERTY LINE
- RIGHT OF WAY LINE
- SITE BOUNDARY LINE
- Pilot Study Injection Point

JAGEMANN PLATING COMPANY
1324 S. 26TH STREET
MANITOWOC, WI

PILOT STUDY INJECTION POINT LOCATIONS

FIGURE 2

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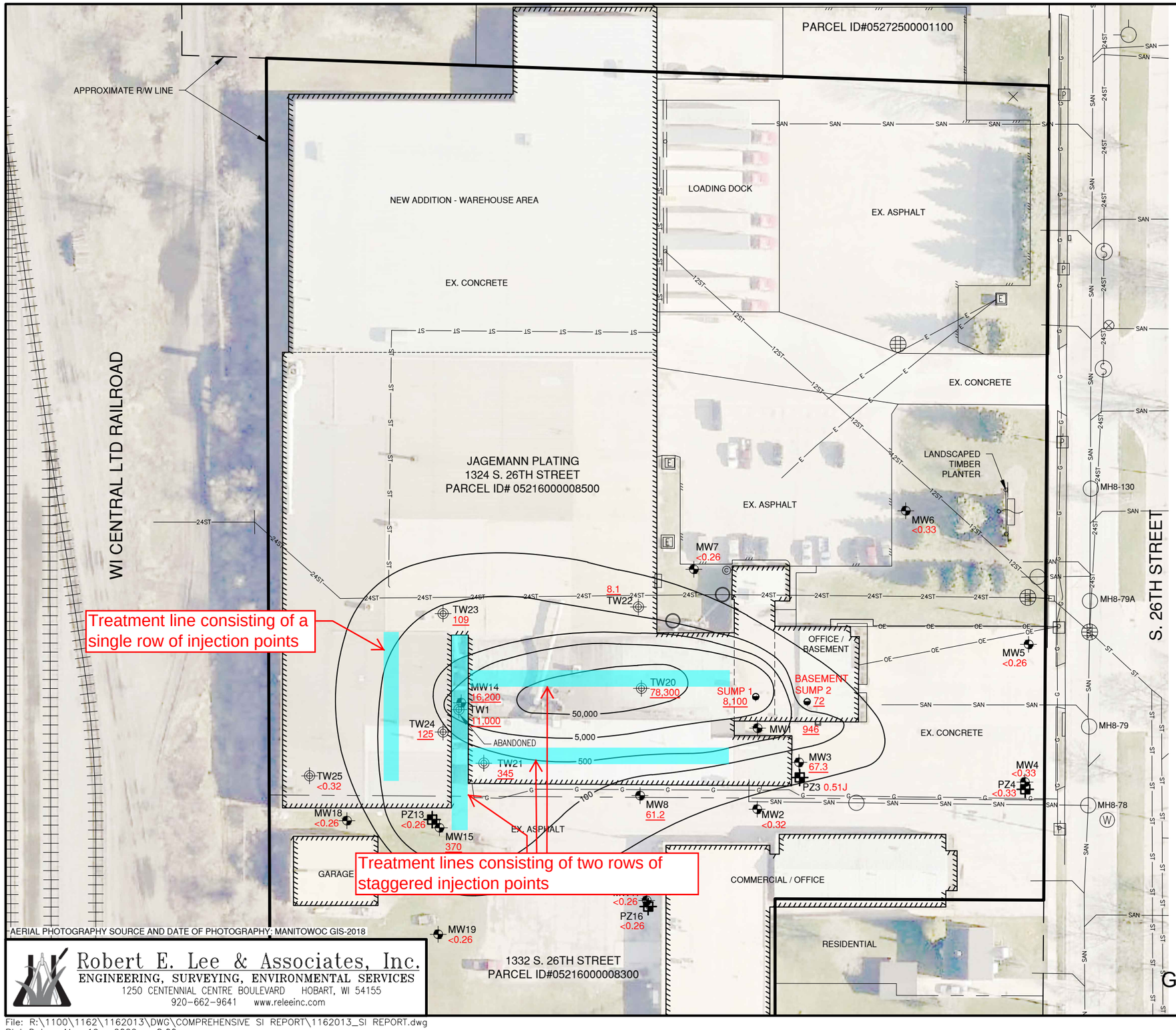

NORTH

0' 60' 120'

SCALE IN FEET

LEGEND

MW1	MONITORING WELL LOCATION
TW1	TEMPORARY WELL LOCATION
PZ1	PIEZOMETER LOCATION
	SUMP
	EX. SANITARY MANHOLE
	EX. STORM SEWER MANHOLE
	EX. STORM SEWER CATCH BASIN
	EX. FIRE HYDRANT
	EX. WATER VALVE
	EX. WATER MANHOLE
	EX. ELECTRIC PEDESTAL
	EX. POWER POLE
ST	EX. STORM SEWER
SAN	EX. SANITARY SEWER
W	EX. WATERMAIN
G	EX. GAS LINE
E	EX. ELECTRIC LINE
T	EX. TELEPHONE LINE
F	EX. FIBER OPTICS LINE
	PROPERTY LINE
	RIGHT OF WAY LINE
	SITE BOUNDARY LINE
500	TCE ISOCONENTRATION LINE (ug/L)
109	CONCENTRATION OF TCE (ug/L) IN GROUNDWATER
8,100	EXCEEDS CH. NR140 ENFORCEMENT STANDARD (ES= 5 ug/L)
125	EXCEEDS CH. NR140 PREVENTIVE ACTION LIMIT (PAL= 0.5 mg/L)

NOTE: CONCENTRATIONS LISTED ARE BASED ON THE MOST RECENT DATA COLLECTED.

JAGEMANN PLATING COMPANY
1324 S. 26TH STREET
MANITOWOC, WI

FIGURE 3
REMEDIAL INJECTION LAYOUT AND GROUNDWATER MONITORING LOCATIONS

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Plot Date: May 19, 2022 – 8:00am

TABLE

TABLE 1

REMEDIATION PERFORMANCE MONITORING PROGRAM

Jagemann Plating

Manitowoc, Wisconsin

Parameter	VOCs	Ethene/Ethane/ Methane	TOC	DHC Population/ Functional Genes	Chromium	Hexavalent Chromium
MW-1	Q	Q	Q	A		
MW-3	Q	Q				
MW-8	Q	Q				
MW-14	Q	Q	Q	A		
MW-15	Q	Q				
TW-20	Q	Q	Q	A		
TW-21	Q	Q	Q	A		
TW-22	Q	Q				
TW-23	Q	Q				
TW-24	Q	Q				
Sump 1	Q				A	A
Sump 2	Q				A	A

Notes:

Monitoring will occur for eight (8) consecutive quarters, with the first monitoring event performed approximately 2 months after injections

Q = Sample collected for analysis quarterly

A = Sample collected for analysis annually

DHC = Dehalococcoides

TOC = Total organic carbon

VOCs = Volatile Organic Compounds

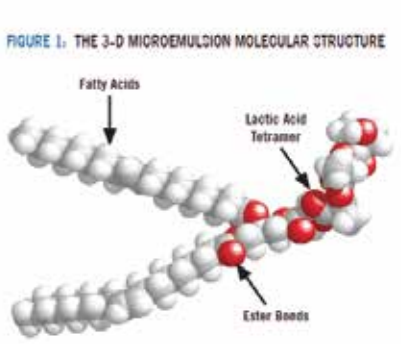
APPENDIX A

Remedial Product Technical Descriptions

3-D Microemulsion® Factory Emulsified Technical Description

3-D Microemulsion (3DME®) is comprised of a patented molecular structure containing oleic acids (i.e., oil component) and lactates/polylactates, which are molecularly bound to one another (figure 1). The 3DME molecule contains both a soluble (hydrophilic) and in-soluble (lipophilic) region. These two regions of the molecule are designed to be balanced in size and relative strength. The balanced hydrophilic/lipophilic regions of 3DME result in an electron donor with physical properties allowing it to initially adsorb to the aquifer material in the area of application, then slowly redistribute via very small 3DME "bundles" called micelles. These 3DME micelles spontaneously form within sections of the aquifer where concentrations of 3DME reach several hundred parts per million. The micelles' small size and mobility allow it to move with groundwater flow through the aquifer matrix, passing easily through the pore throats in between soil grains resulting in the further redistribution of 3DME within the aquifer. This allows for advective distribution of the oleic acids which are otherwise insoluble and unable to distribute in this manner, allowing for increased persistence of the lactate/polylactates component due to their initial attachment to the oleic acids.

Example of 3-D Microemulsion



Due to its patented molecular structure, 3DME offers far greater transport when compared to blended emulsified vegetable oil (EVO) products, which fail to distribute beyond the limits of pumping. 3DME also provides greater persistence when compared to soluble substrates such as lactates or simple sugars. The 3DME molecular structures capitalize on the best features of the two electron-donor types while at the same time, minimize their limitations. 3DME is delivered to the site as a ready-to-apply emulsion that is simply diluted with water to generate a large volume of a 3DME colloidal suspension.

Suspension of 3DME generated by this mixing range from micelles on the order of .02 microns to .05 microns in diameter, to "swollen" micelles, (termed "microemulsions") which are on the order of .05 to 5 microns in diameter. Once injected into the subsurface in high volumes, the colloidal suspension mixes and dilutes in existing pore waters. The micelles/microemulsions on the injection front will then begin to sorb onto the surfaces of soils as a result of zeta potential attraction and organic matter within the soils themselves. As the sorption continues, the 3DME will "coat" pore surfaces developing a layer of molecules and in some cases a bilayer. This sorption process continues as the micelles/microemulsion moves outward and disassociates into their hydrophilic/hydrophobic components. The specialized chemistry of 3DME results in a staged release of electron donors: free lactate (immediate); polylactate esters (mid-range) and free fatty acids & fatty acid esters (long-term). Material longevity of three years or greater has been seen at most sites as determined from biogeochemical analyses.

For a list of treatable contaminants with the use of 3DME, view the Range of Treatable Contaminants Guide

Chemical Composition

- Hydrogen Release Compound Partitioning Electron Donor – CAS #823190-10-9
- Sodium Lactate – CAS# 72-17-3
- Water – CAS# – 7732-18-5

3-D Microemulsion® Factory Emulsified Technical Description

Properties

- Density – Approximately 1.0 grams per cubic centimeter (relative to water)
- pH – Neutral (approximately 6.5 to 7.5 standard units)
- Solubility – Soluble in Water
- Appearance – White emulsion
- Odor – Not detectable
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage
Store in original tightly closed container
Store in a cool, dry, well-ventilated place
Store away from incompatible materials
Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass

Handling
Avoid contact with eyes, skin, and clothing
Provide adequate ventilation
Wear appropriate personal protective equipment
Observe good industrial hygiene practices

Applications

- 3DME is diluted with water prior to application. Resulting emulsion has viscosity similar to water.
- Easily injects into formation through direct push injection points, injection wells or other injection delivery systems.

Application instructions for this product are contained here 3DME FE Application Instructions.

Health and Safety

Material is food grade and relatively safe to handle. We recommend avoiding contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including vinyl or rubber gloves, and eye protection are recommended when handling this product. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: SDS-3DME FE.

REGENESIS®

www.regenesis.com

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1011 Calle Sombra, San Clemente CA 92673
949.366.8000

European Headquarters
The Tramshed, Beehive Yard
Walcot St, Bath BA1 5BB, United Kingdom

S-MicroZVI Specification Sheet

S-MicroZVI Technical Description

S-MicroZVI™ is an *In Situ* Chemical Reduction (ISCR) reagent that promotes the destruction of many organic pollutants and is most commonly used with chlorinated hydrocarbons. It is engineered to provide an optimal source of micro-scale zero valent iron (ZVI) that is both easy to use and delivers enhanced reactivity with the target contaminants via multiple pathways. S-MicroZVI can destroy many chlorinated contaminants through a direct chemical reaction (**see Figure 1**). S-MicroZVI will also stimulate anaerobic biological degradation by rapidly creating a reducing environment that is favorable for reductive dechlorination.

Sulfidated ZVI

S-MicroZVI is composed of colloidal, sulfidated zero-valent iron particles suspended in glycerol using proprietary environmentally acceptable dispersants. The passivation technique of sulfidation, completed using proprietary processing methods, provides unparalleled reactivity with chlorinated hydrocarbons like PCE and TCE and increases its stability and longevity by minimizing undesirable side reactions.

S-MicroZVI is Best in Class For

- ☑ Longevity
- ☑ Reactivity
- ☑ Transport

In addition to superior reactivity, S-MicroZVI is designed for easy handling that is unmatched by any ZVI product on the market. Shipped as a liquid suspension, S-MicroZVI requires no powder feeders, no thickening with guar, and pneumatic or hydraulic fracturing is not mandatory. When diluted with water prior to application, the resulting suspension is easy to inject using either direct push or permanent injection wells.

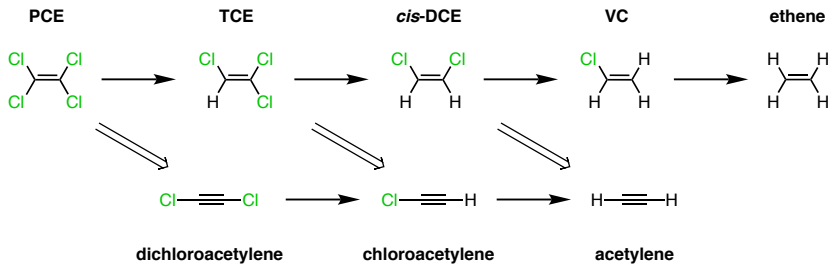

Figure 1: *Chlorinated ethene degradation pathways and products. The top pathway with single line arrows represent the reductive dechlorination (hydrogenolysis) pathway. The lower pathway with downward facing double line arrows represent the beta-elimination pathway.*

To see a list of treatable contaminants, view the S-MicroZVI treatable contaminants guide.

S-MicroZVI Specification Sheet

Chemical Composition

Iron, powders CAS 7439-89-6

Iron (II) sulfide CAS 1317-37-9

Glycerol CAS 56-81-8

Properties

Physical State: Liquid

Form: Viscous metallic suspension

Color: Dark gray

Odor: Slight

pH: Typically 7-9 as applied

Density: 15 lb/gal

Storage and Handling Guidelines

Storage:

- Use within four weeks of delivery
- Store in original containers
- Store at temperatures below 95F°
- Store away from incompatible materials

Handling:

- Never mix with oxidants or acids
- Wear appropriate personal protective equipment
- Do not taste or swallow
- Observe good industrial hygiene practices

Applications

S-MicroZVI is diluted with water on site and easily applied into the subsurface through low-pressure injections. S-MicroZVI can also be mixed with products like 3-D Microemulsion® or PlumeStop® prior to injection.

Health and Safety

The material is relatively safe to handle; however, avoid contact with eyes, skin and clothing. OSHA Level D personal protection equipment including: vinyl or rubber gloves and eye protection are recommended when handling this product. Please review the Safety Data Sheet for additional storage, and handling requirements here: S-MicroZVI SDS.

www.regenesis.com

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BDI PLUS® Technical Description

Bio-Dechlor INOCULUM Plus (BDI PLUS®) is an enriched natural consortium containing species of Dehalococcoides sp. (DHC). BDI PLUS has been shown to simulate the rapid and complete dechlorination of chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) to non-toxic end products, ethene, carbon dioxide and water.

The culture also contains microbes capable of dehalogenating halomethanes (e.g., carbon tetrachloride and chloroform) and haloethanes (e.g., 1,1,1-TCA and 1,1-DCA) as well as mixtures of these contaminants.

Species of Dehalococcoides sp. (DHC)

For a list of treatable contaminants with the use of BDI PLUS, view the Range of Treatable Contaminants Guide

Chemical Composition

- Non-hazardous, naturally-occurring, non-altered anaerobic microbes and enzymes in a water-based medium.

Properties

- Appearance – Murky, yellow to grey water
- Odor – Musty
- pH 6.0 to 8.0
- Density – Approximately 1.0 grams per cubic centimeter (0.9 to 1.1 g/cc)
- Solubility – Soluble in Water
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage
Store in original tightly closed container
Store away from incompatible materials
Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass
Store in a cool, dry area at 4-5°C (39 - 41°F)
Material may be stored for up to 3 weeks at 2-4°C without aeration

Handling
Avoid prolonged exposure
Observe good industrial hygiene practices
Wear appropriate personal protective equipment

BDI PLUS® Technical Description

Applications

- BDI PLUS is delivered to the site in liquid form and is designed to be injected directly into the saturated zone requiring treatment.
- Most often diluted with de-oxygenated water prior to injection into either hydraulic push injection points or properly constructed injection wells.
- The typical dilution rate of the injected culture is 10 gallons of deoxygenated water to 1 liter of standard BDI PLUS culture.

Application instructions for this product are contained here BDI PLUS Application Instructions.

Health and Safety

Material is non-hazardous and relatively safe to handle; however avoid contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including: vinyl or rubber gloves and safety goggles or a splash shield are recommended when handling this product. An eyewash station is recommended. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: BDI PLUS SDS.

REGENESIS

www.regenesis.com
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APPENDIX B

Pilot Study Laboratory Reports

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

June 27, 2022

Nicole Laplant
ROBERT E. LEE & ASSOCIATES, IN
1250 Centennial Centre Blvd
Oneida, WI 54155

RE: Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Dear Nicole Laplant:

Enclosed are the analytical results for sample(s) received by the laboratory on June 17, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Brian Basten
brian.basten@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Bruce Meissner, Robert E. Lee & Associates, Inc
Lori Rogers, Robert E Lee

Pace Analytical Services, LLC
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(920)469-2436

CERTIFICATIONS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40246740001	**MW-1**	Water	06/16/22 15:15	06/17/22 08:45
40246740002	**MW-14**	Water	06/16/22 16:20	06/17/22 08:45
40246740003	**TW-20**	Water	06/16/22 17:00	06/17/22 08:45
40246740004	**TRIP BLANK**	Water	06/16/22 17:20	06/17/22 08:45

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SAMPLE ANALYTE COUNT

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40246740001	**MW-1**	EPA 6010D	TXW	1
		EPA 8260	LAP	64
		SM 3500-Cr B	HNT	1
40246740002	**MW-14**	EPA 6010D	TXW	1
		EPA 8260	LAP	64
		SM 3500-Cr B	HNT	1
40246740003	**TW-20**	EPA 6010D	TXW	1
		EPA 8260	LAP	64
		SM 3500-Cr B	HNT	1
40246740004	**TRIP BLANK**	EPA 8260	LAP	64

PASI-G = Pace Analytical Services - Green Bay

Pace Analytical Services, LLC
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SUMMARY OF DETECTION

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40246740001	**MW-1**					
EPA 6010D	Chromium, Dissolved	3.3J	ug/L	10.0	06/23/22 16:24	
EPA 8260	1,1-Dichloroethane	4.9J	ug/L	10.0	06/21/22 17:14	
EPA 8260	1,1-Dichloroethene	24.8	ug/L	10.0	06/21/22 17:14	
EPA 8260	Trichloroethene	902	ug/L	10.0	06/21/22 17:14	
EPA 8260	Vinyl chloride	750	ug/L	10.0	06/21/22 17:14	
EPA 8260	cis-1,2-Dichloroethene	442	ug/L	10.0	06/21/22 17:14	
EPA 8260	trans-1,2-Dichloroethene	41.6	ug/L	10.0	06/21/22 17:14	
40246740002	**MW-14**					
EPA 8260	1,1-Dichloroethene	150J	ug/L	250	06/21/22 16:54	
EPA 8260	Trichloroethene	28100	ug/L	250	06/21/22 16:54	
EPA 8260	Vinyl chloride	8300	ug/L	250	06/21/22 16:54	
EPA 8260	cis-1,2-Dichloroethene	32200	ug/L	250	06/21/22 16:54	
EPA 8260	trans-1,2-Dichloroethene	2530	ug/L	250	06/21/22 16:54	
40246740003	**TW-20**					
EPA 6010D	Chromium, Dissolved	4.5J	ug/L	10.0	06/23/22 16:28	
EPA 8260	1,1-Dichloroethane	406J	ug/L	625	06/21/22 16:34	
EPA 8260	1,1-Dichloroethene	687	ug/L	625	06/21/22 16:34	
EPA 8260	Trichloroethene	69200	ug/L	625	06/21/22 16:34	
EPA 8260	Vinyl chloride	40100	ug/L	625	06/21/22 16:34	
EPA 8260	cis-1,2-Dichloroethene	160000	ug/L	625	06/21/22 16:34	
EPA 8260	trans-1,2-Dichloroethene	2050	ug/L	625	06/21/22 16:34	

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Sample: MW-1 **Lab ID: 40246740001** Collected: 06/16/22 15:15 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP, Dissolved	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Chromium, Dissolved	**3.3J**	ug/L	10.0	2.5	1	06/23/22 05:57	06/23/22 16:24	7440-47-3	
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<3.6**	ug/L	10.0	3.6	10		06/21/22 17:14	630-20-6	
1,1,1-Trichloroethane	**<3.0**	ug/L	10.0	3.0	10		06/21/22 17:14	71-55-6	
1,1,2,2-Tetrachloroethane	**<3.8**	ug/L	10.0	3.8	10		06/21/22 17:14	79-34-5	
1,1,2-Trichloroethane	**<3.4**	ug/L	50.0	3.4	10		06/21/22 17:14	79-00-5	
1,1-Dichloroethane	**4.9J**	ug/L	10.0	3.0	10		06/21/22 17:14	75-34-3	
1,1-Dichloroethene	**24.8**	ug/L	10.0	5.8	10		06/21/22 17:14	75-35-4	
1,1-Dichloropropene	**<4.1**	ug/L	10.0	4.1	10		06/21/22 17:14	563-58-6	
1,2,3-Trichlorobenzene	**<10.2**	ug/L	50.0	10.2	10		06/21/22 17:14	87-61-6	
1,2,3-Trichloropropane	**<5.6**	ug/L	50.0	5.6	10		06/21/22 17:14	96-18-4	
1,2,4-Trichlorobenzene	**<9.5**	ug/L	50.0	9.5	10		06/21/22 17:14	120-82-1	
1,2,4-Trimethylbenzene	**<4.5**	ug/L	10.0	4.5	10		06/21/22 17:14	95-63-6	
1,2-Dibromo-3-chloropropane	**<23.7**	ug/L	50.0	23.7	10		06/21/22 17:14	96-12-8	
1,2-Dibromoethane (EDB)	**<3.1**	ug/L	10.0	3.1	10		06/21/22 17:14	106-93-4	
1,2-Dichlorobenzene	**<3.3**	ug/L	10.0	3.3	10		06/21/22 17:14	95-50-1	
1,2-Dichloroethane	**<2.9**	ug/L	10.0	2.9	10		06/21/22 17:14	107-06-2	
1,2-Dichloropropane	**<4.5**	ug/L	10.0	4.5	10		06/21/22 17:14	78-87-5	
1,3,5-Trimethylbenzene	**<3.6**	ug/L	10.0	3.6	10		06/21/22 17:14	108-67-8	
1,3-Dichlorobenzene	**<3.5**	ug/L	10.0	3.5	10		06/21/22 17:14	541-73-1	
1,3-Dichloropropane	**<3.0**	ug/L	10.0	3.0	10		06/21/22 17:14	142-28-9	
1,4-Dichlorobenzene	**<8.9**	ug/L	10.0	8.9	10		06/21/22 17:14	106-46-7	
2,2-Dichloropropane	**<41.8**	ug/L	50.0	41.8	10		06/21/22 17:14	594-20-7	
2-Chlorotoluene	**<8.9**	ug/L	50.0	8.9	10		06/21/22 17:14	95-49-8	
4-Chlorotoluene	**<8.9**	ug/L	50.0	8.9	10		06/21/22 17:14	106-43-4	
Benzene	**<3.0**	ug/L	10.0	3.0	10		06/21/22 17:14	71-43-2	
Bromobenzene	**<3.6**	ug/L	10.0	3.6	10		06/21/22 17:14	108-86-1	
Bromochloromethane	**<3.6**	ug/L	50.0	3.6	10		06/21/22 17:14	74-97-5	
Bromodichloromethane	**<4.2**	ug/L	10.0	4.2	10		06/21/22 17:14	75-27-4	
Bromoform	**<38.0**	ug/L	50.0	38.0	10		06/21/22 17:14	75-25-2	
Bromomethane	**<11.9**	ug/L	50.0	11.9	10		06/21/22 17:14	74-83-9	
Carbon tetrachloride	**<3.7**	ug/L	10.0	3.7	10		06/21/22 17:14	56-23-5	
Chlorobenzene	**<8.6**	ug/L	10.0	8.6	10		06/21/22 17:14	108-90-7	
Chloroethane	**<13.8**	ug/L	50.0	13.8	10		06/21/22 17:14	75-00-3	
Chloroform	**<11.8**	ug/L	50.0	11.8	10		06/21/22 17:14	67-66-3	
Chloromethane	**<16.4**	ug/L	50.0	16.4	10		06/21/22 17:14	74-87-3	
Dibromochloromethane	**<26.4**	ug/L	50.0	26.4	10		06/21/22 17:14	124-48-1	
Dibromomethane	**<9.9**	ug/L	50.0	9.9	10		06/21/22 17:14	74-95-3	
Dichlorodifluoromethane	**<4.6**	ug/L	50.0	4.6	10		06/21/22 17:14	75-71-8	
Diisopropyl ether	**<11.0**	ug/L	50.0	11.0	10		06/21/22 17:14	108-20-3	
Ethylbenzene	**<3.3**	ug/L	10.0	3.3	10		06/21/22 17:14	100-41-4	
Hexachloro-1,3-butadiene	**<27.4**	ug/L	50.0	27.4	10		06/21/22 17:14	87-68-3	
Isopropylbenzene (Cumene)	**<10.0**	ug/L	50.0	10.0	10		06/21/22 17:14	98-82-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Sample: MW-1 **Lab ID: 40246740001** Collected: 06/16/22 15:15 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
Methyl-tert-butyl ether	**<11.3**	ug/L	50.0	11.3	10		06/21/22 17:14	1634-04-4	
Methylene Chloride	**<3.2**	ug/L	50.0	3.2	10		06/21/22 17:14	75-09-2	
Naphthalene	**<11.3**	ug/L	50.0	11.3	10		06/21/22 17:14	91-20-3	
Styrene	**<3.6**	ug/L	10.0	3.6	10		06/21/22 17:14	100-42-5	
Tetrachloroethene	**<4.1**	ug/L	10.0	4.1	10		06/21/22 17:14	127-18-4	
Toluene	**<2.9**	ug/L	10.0	2.9	10		06/21/22 17:14	108-88-3	
Trichloroethene	**902**	ug/L	10.0	3.2	10		06/21/22 17:14	79-01-6	
Trichlorofluoromethane	**<4.2**	ug/L	10.0	4.2	10		06/21/22 17:14	75-69-4	
Vinyl chloride	**750**	ug/L	10.0	1.7	10		06/21/22 17:14	75-01-4	
cis-1,2-Dichloroethene	**442**	ug/L	10.0	4.7	10		06/21/22 17:14	156-59-2	
cis-1,3-Dichloropropene	**<3.6**	ug/L	10.0	3.6	10		06/21/22 17:14	10061-01-5	
m&p-Xylene	**<7.0**	ug/L	20.0	7.0	10		06/21/22 17:14	179601-23-1	
n-Butylbenzene	**<8.6**	ug/L	10.0	8.6	10		06/21/22 17:14	104-51-8	
n-Propylbenzene	**<3.5**	ug/L	10.0	3.5	10		06/21/22 17:14	103-65-1	
o-Xylene	**<3.5**	ug/L	10.0	3.5	10		06/21/22 17:14	95-47-6	
p-Isopropyltoluene	**<10.4**	ug/L	50.0	10.4	10		06/21/22 17:14	99-87-6	
sec-Butylbenzene	**<4.2**	ug/L	10.0	4.2	10		06/21/22 17:14	135-98-8	
tert-Butylbenzene	**<5.9**	ug/L	10.0	5.9	10		06/21/22 17:14	98-06-6	
trans-1,2-Dichloroethene	**41.6**	ug/L	10.0	5.3	10		06/21/22 17:14	156-60-5	
trans-1,3-Dichloropropene	**<34.6**	ug/L	50.0	34.6	10		06/21/22 17:14	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		10		06/21/22 17:14	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	70-130		10		06/21/22 17:14	2199-69-1	
Toluene-d8 (S)	100	%	70-130		10		06/21/22 17:14	2037-26-5	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B								
	Pace Analytical Services - Green Bay								
Chromium, Hexavalent	**<0.0073**	mg/L	0.024	0.0073	1		06/21/22 13:35		

Sample: MW-14 **Lab ID: 40246740002** Collected: 06/16/22 16:20 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP, Dissolved	Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
	Pace Analytical Services - Green Bay								
Chromium, Dissolved	**<2.5**	ug/L	10.0	2.5	1	06/23/22 05:57	06/23/22 16:26	7440-47-3	
8260 MSV	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<88.8**	ug/L	250	88.8	250		06/21/22 16:54	630-20-6	
1,1,1-Trichloroethane	**<75.6**	ug/L	250	75.6	250		06/21/22 16:54	71-55-6	
1,1,2,2-Tetrachloroethane	**<94.5**	ug/L	250	94.5	250		06/21/22 16:54	79-34-5	
1,1,2-Trichloroethane	**<86.1**	ug/L	1250	86.1	250		06/21/22 16:54	79-00-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Sample: MW-14 **Lab ID: 40246740002** Collected: 06/16/22 16:20 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,1-Dichloroethane	**<73.9**	ug/L	250	73.9	250		06/21/22 16:54	75-34-3	
1,1-Dichloroethene	**150J**	ug/L	250	146	250		06/21/22 16:54	75-35-4	
1,1-Dichloropropene	**<103**	ug/L	250	103	250		06/21/22 16:54	563-58-6	
1,2,3-Trichlorobenzene	**<255**	ug/L	1250	255	250		06/21/22 16:54	87-61-6	
1,2,3-Trichloropropane	**<139**	ug/L	1250	139	250		06/21/22 16:54	96-18-4	
1,2,4-Trichlorobenzene	**<238**	ug/L	1250	238	250		06/21/22 16:54	120-82-1	
1,2,4-Trimethylbenzene	**<112**	ug/L	250	112	250		06/21/22 16:54	95-63-6	
1,2-Dibromo-3-chloropropane	**<592**	ug/L	1250	592	250		06/21/22 16:54	96-12-8	
1,2-Dibromoethane (EDB)	**<77.3**	ug/L	250	77.3	250		06/21/22 16:54	106-93-4	
1,2-Dichlorobenzene	**<81.5**	ug/L	250	81.5	250		06/21/22 16:54	95-50-1	
1,2-Dichloroethane	**<72.9**	ug/L	250	72.9	250		06/21/22 16:54	107-06-2	
1,2-Dichloropropane	**<112**	ug/L	250	112	250		06/21/22 16:54	78-87-5	
1,3,5-Trimethylbenzene	**<89.3**	ug/L	250	89.3	250		06/21/22 16:54	108-67-8	
1,3-Dichlorobenzene	**<87.8**	ug/L	250	87.8	250		06/21/22 16:54	541-73-1	
1,3-Dichloropropane	**<76.2**	ug/L	250	76.2	250		06/21/22 16:54	142-28-9	
1,4-Dichlorobenzene	**<223**	ug/L	250	223	250		06/21/22 16:54	106-46-7	
2,2-Dichloropropane	**<1040**	ug/L	1250	1040	250		06/21/22 16:54	594-20-7	
2-Chlorotoluene	**<222**	ug/L	1250	222	250		06/21/22 16:54	95-49-8	
4-Chlorotoluene	**<224**	ug/L	1250	224	250		06/21/22 16:54	106-43-4	
Benzene	**<73.9**	ug/L	250	73.9	250		06/21/22 16:54	71-43-2	
Bromobenzene	**<90.2**	ug/L	250	90.2	250		06/21/22 16:54	108-86-1	
Bromochloromethane	**<89.4**	ug/L	1250	89.4	250		06/21/22 16:54	74-97-5	
Bromodichloromethane	**<104**	ug/L	250	104	250		06/21/22 16:54	75-27-4	
Bromoform	**<950**	ug/L	1250	950	250		06/21/22 16:54	75-25-2	
Bromomethane	**<298**	ug/L	1250	298	250		06/21/22 16:54	74-83-9	
Carbon tetrachloride	**<92.3**	ug/L	250	92.3	250		06/21/22 16:54	56-23-5	
Chlorobenzene	**<214**	ug/L	250	214	250		06/21/22 16:54	108-90-7	
Chloroethane	**<345**	ug/L	1250	345	250		06/21/22 16:54	75-00-3	
Chloroform	**<296**	ug/L	1250	296	250		06/21/22 16:54	67-66-3	
Chloromethane	**<409**	ug/L	1250	409	250		06/21/22 16:54	74-87-3	
Dibromochloromethane	**<661**	ug/L	1250	661	250		06/21/22 16:54	124-48-1	
Dibromomethane	**<248**	ug/L	1250	248	250		06/21/22 16:54	74-95-3	
Dichlorodifluoromethane	**<114**	ug/L	1250	114	250		06/21/22 16:54	75-71-8	
Diisopropyl ether	**<275**	ug/L	1250	275	250		06/21/22 16:54	108-20-3	
Ethylbenzene	**<81.3**	ug/L	250	81.3	250		06/21/22 16:54	100-41-4	
Hexachloro-1,3-butadiene	**<684**	ug/L	1250	684	250		06/21/22 16:54	87-68-3	
Isopropylbenzene (Cumene)	**<250**	ug/L	1250	250	250		06/21/22 16:54	98-82-8	
Methyl-tert-butyl ether	**<282**	ug/L	1250	282	250		06/21/22 16:54	1634-04-4	
Methylene Chloride	**<79.9**	ug/L	1250	79.9	250		06/21/22 16:54	75-09-2	
Naphthalene	**<282**	ug/L	1250	282	250		06/21/22 16:54	91-20-3	
Styrene	**<89.1**	ug/L	250	89.1	250		06/21/22 16:54	100-42-5	
Tetrachloroethene	**<102**	ug/L	250	102	250		06/21/22 16:54	127-18-4	
Toluene	**<72.0**	ug/L	250	72.0	250		06/21/22 16:54	108-88-3	
Trichloroethene	**28100**	ug/L	250	79.9	250		06/21/22 16:54	79-01-6	
Trichlorofluoromethane	**<105**	ug/L	250	105	250		06/21/22 16:54	75-69-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Sample: MW-14 **Lab ID: 40246740002** Collected: 06/16/22 16:20 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
Vinyl chloride	**8300**	ug/L	250	43.6	250		06/21/22 16:54	75-01-4	
cis-1,2-Dichloroethene	**32200**	ug/L	250	118	250		06/21/22 16:54	156-59-2	
cis-1,3-Dichloropropene	**<89.5**	ug/L	250	89.5	250		06/21/22 16:54	10061-01-5	
m&p-Xylene	**<175**	ug/L	500	175	250		06/21/22 16:54	179601-23-1	
n-Butylbenzene	**<214**	ug/L	250	214	250		06/21/22 16:54	104-51-8	
n-Propylbenzene	**<86.3**	ug/L	250	86.3	250		06/21/22 16:54	103-65-1	
o-Xylene	**<86.9**	ug/L	250	86.9	250		06/21/22 16:54	95-47-6	
p-Isopropyltoluene	**<261**	ug/L	1250	261	250		06/21/22 16:54	99-87-6	
sec-Butylbenzene	**<106**	ug/L	250	106	250		06/21/22 16:54	135-98-8	
tert-Butylbenzene	**<147**	ug/L	250	147	250		06/21/22 16:54	98-06-6	
trans-1,2-Dichloroethene	**2530**	ug/L	250	132	250		06/21/22 16:54	156-60-5	
trans-1,3-Dichloropropene	**<866**	ug/L	1250	866	250		06/21/22 16:54	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		250		06/21/22 16:54	460-00-4	
1,2-Dichlorobenzene-d4 (S)	96	%	70-130		250		06/21/22 16:54	2199-69-1	
Toluene-d8 (S)	101	%	70-130		250		06/21/22 16:54	2037-26-5	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B								
	Pace Analytical Services - Green Bay								
Chromium, Hexavalent	**<0.018**	mg/L	0.061	0.018	2.5		06/21/22 13:36		D3

Sample: TW-20 **Lab ID: 40246740003** Collected: 06/16/22 17:00 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP, Dissolved	Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
	Pace Analytical Services - Green Bay								
Chromium, Dissolved	**4.5J**	ug/L	10.0	2.5	1	06/23/22 05:57	06/23/22 16:28	7440-47-3	
8260 MSV	Analytical Method: EPA 8260								
	Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<222**	ug/L	625	222	625		06/21/22 16:34	630-20-6	
1,1,1-Trichloroethane	**<189**	ug/L	625	189	625		06/21/22 16:34	71-55-6	
1,1,2,2-Tetrachloroethane	**<236**	ug/L	625	236	625		06/21/22 16:34	79-34-5	
1,1,2-Trichloroethane	**<215**	ug/L	3120	215	625		06/21/22 16:34	79-00-5	
1,1-Dichloroethane	**406J**	ug/L	625	185	625		06/21/22 16:34	75-34-3	
1,1-Dichloroethene	**687**	ug/L	625	364	625		06/21/22 16:34	75-35-4	
1,1-Dichloropropene	**<256**	ug/L	625	256	625		06/21/22 16:34	563-58-6	
1,2,3-Trichlorobenzene	**<636**	ug/L	3120	636	625		06/21/22 16:34	87-61-6	
1,2,3-Trichloropropane	**<347**	ug/L	3120	347	625		06/21/22 16:34	96-18-4	
1,2,4-Trichlorobenzene	**<594**	ug/L	3120	594	625		06/21/22 16:34	120-82-1	
1,2,4-Trimethylbenzene	**<280**	ug/L	625	280	625		06/21/22 16:34	95-63-6	
1,2-Dibromo-3-chloropropane	**<1480**	ug/L	3120	1480	625		06/21/22 16:34	96-12-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
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ANALYTICAL RESULTS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Sample: TW-20 **Lab ID: 40246740003** Collected: 06/16/22 17:00 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,2-Dibromoethane (EDB)	**<193**	ug/L	625	193	625		06/21/22 16:34	106-93-4	
1,2-Dichlorobenzene	**<204**	ug/L	625	204	625		06/21/22 16:34	95-50-1	
1,2-Dichloroethane	**<182**	ug/L	625	182	625		06/21/22 16:34	107-06-2	
1,2-Dichloropropane	**<280**	ug/L	625	280	625		06/21/22 16:34	78-87-5	
1,3,5-Trimethylbenzene	**<223**	ug/L	625	223	625		06/21/22 16:34	108-67-8	
1,3-Dichlorobenzene	**<219**	ug/L	625	219	625		06/21/22 16:34	541-73-1	
1,3-Dichloropropane	**<190**	ug/L	625	190	625		06/21/22 16:34	142-28-9	
1,4-Dichlorobenzene	**<558**	ug/L	625	558	625		06/21/22 16:34	106-46-7	
2,2-Dichloropropane	**<2610**	ug/L	3120	2610	625		06/21/22 16:34	594-20-7	
2-Chlorotoluene	**<556**	ug/L	3120	556	625		06/21/22 16:34	95-49-8	
4-Chlorotoluene	**<559**	ug/L	3120	559	625		06/21/22 16:34	106-43-4	
Benzene	**<185**	ug/L	625	185	625		06/21/22 16:34	71-43-2	
Bromobenzene	**<226**	ug/L	625	226	625		06/21/22 16:34	108-86-1	
Bromochloromethane	**<224**	ug/L	3120	224	625		06/21/22 16:34	74-97-5	
Bromodichloromethane	**<260**	ug/L	625	260	625		06/21/22 16:34	75-27-4	
Bromoform	**<2370**	ug/L	3120	2370	625		06/21/22 16:34	75-25-2	
Bromomethane	**<745**	ug/L	3120	745	625		06/21/22 16:34	74-83-9	
Carbon tetrachloride	**<231**	ug/L	625	231	625		06/21/22 16:34	56-23-5	
Chlorobenzene	**<535**	ug/L	625	535	625		06/21/22 16:34	108-90-7	
Chloroethane	**<862**	ug/L	3120	862	625		06/21/22 16:34	75-00-3	
Chloroform	**<739**	ug/L	3120	739	625		06/21/22 16:34	67-66-3	
Chloromethane	**<1020**	ug/L	3120	1020	625		06/21/22 16:34	74-87-3	
Dibromochloromethane	**<1650**	ug/L	3120	1650	625		06/21/22 16:34	124-48-1	
Dibromomethane	**<619**	ug/L	3120	619	625		06/21/22 16:34	74-95-3	
Dichlorodifluoromethane	**<285**	ug/L	3120	285	625		06/21/22 16:34	75-71-8	
Diisopropyl ether	**<688**	ug/L	3120	688	625		06/21/22 16:34	108-20-3	
Ethylbenzene	**<203**	ug/L	625	203	625		06/21/22 16:34	100-41-4	
Hexachloro-1,3-butadiene	**<1710**	ug/L	3120	1710	625		06/21/22 16:34	87-68-3	
Isopropylbenzene (Cumene)	**<625**	ug/L	3120	625	625		06/21/22 16:34	98-82-8	
Methyl-tert-butyl ether	**<706**	ug/L	3120	706	625		06/21/22 16:34	1634-04-4	
Methylene Chloride	**<200**	ug/L	3120	200	625		06/21/22 16:34	75-09-2	
Naphthalene	**<706**	ug/L	3120	706	625		06/21/22 16:34	91-20-3	
Styrene	**<223**	ug/L	625	223	625		06/21/22 16:34	100-42-5	
Tetrachloroethene	**<255**	ug/L	625	255	625		06/21/22 16:34	127-18-4	
Toluene	**<180**	ug/L	625	180	625		06/21/22 16:34	108-88-3	
Trichloroethene	**69200**	ug/L	625	200	625		06/21/22 16:34	79-01-6	
Trichlorofluoromethane	**<262**	ug/L	625	262	625		06/21/22 16:34	75-69-4	
Vinyl chloride	**40100**	ug/L	625	109	625		06/21/22 16:34	75-01-4	
cis-1,2-Dichloroethene	**160000**	ug/L	625	295	625		06/21/22 16:34	156-59-2	
cis-1,3-Dichloropropene	**<224**	ug/L	625	224	625		06/21/22 16:34	10061-01-5	
m&p-Xylene	**<438**	ug/L	1250	438	625		06/21/22 16:34	179601-23-1	
n-Butylbenzene	**<536**	ug/L	625	536	625		06/21/22 16:34	104-51-8	
n-Propylbenzene	**<216**	ug/L	625	216	625		06/21/22 16:34	103-65-1	
o-Xylene	**<217**	ug/L	625	217	625		06/21/22 16:34	95-47-6	
p-Isopropyltoluene	**<652**	ug/L	3120	652	625		06/21/22 16:34	99-87-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Sample: TW-20 **Lab ID: 40246740003** Collected: 06/16/22 17:00 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
sec-Butylbenzene	**<265**	ug/L	625	265	625		06/21/22 16:34	135-98-8	
tert-Butylbenzene	**<366**	ug/L	625	366	625		06/21/22 16:34	98-06-6	
trans-1,2-Dichloroethene	**2050**	ug/L	625	330	625		06/21/22 16:34	156-60-5	
trans-1,3-Dichloropropene	**<2160**	ug/L	3120	2160	625		06/21/22 16:34	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		625		06/21/22 16:34	460-00-4	
1,2-Dichlorobenzene-d4 (S)	95	%	70-130		625		06/21/22 16:34	2199-69-1	
Toluene-d8 (S)	98	%	70-130		625		06/21/22 16:34	2037-26-5	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Pace Analytical Services - Green Bay								
Chromium, Hexavalent	**<0.073**	mg/L	0.24	0.073	10		06/21/22 13:36		D3

Sample: TRIP BLANK **Lab ID: 40246740004** Collected: 06/16/22 17:20 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
1,1,1,2-Tetrachloroethane	**<0.36**	ug/L	1.0	0.36	1		06/21/22 11:41	630-20-6	
1,1,1-Trichloroethane	**<0.30**	ug/L	1.0	0.30	1		06/21/22 11:41	71-55-6	
1,1,2,2-Tetrachloroethane	**<0.38**	ug/L	1.0	0.38	1		06/21/22 11:41	79-34-5	
1,1,2-Trichloroethane	**<0.34**	ug/L	5.0	0.34	1		06/21/22 11:41	79-00-5	
1,1-Dichloroethane	**<0.30**	ug/L	1.0	0.30	1		06/21/22 11:41	75-34-3	
1,1-Dichloroethene	**<0.58**	ug/L	1.0	0.58	1		06/21/22 11:41	75-35-4	
1,1-Dichloropropene	**<0.41**	ug/L	1.0	0.41	1		06/21/22 11:41	563-58-6	
1,2,3-Trichlorobenzene	**<1.0**	ug/L	5.0	1.0	1		06/21/22 11:41	87-61-6	
1,2,3-Trichloropropane	**<0.56**	ug/L	5.0	0.56	1		06/21/22 11:41	96-18-4	
1,2,4-Trichlorobenzene	**<0.95**	ug/L	5.0	0.95	1		06/21/22 11:41	120-82-1	
1,2,4-Trimethylbenzene	**<0.45**	ug/L	1.0	0.45	1		06/21/22 11:41	95-63-6	
1,2-Dibromo-3-chloropropane	**<2.4**	ug/L	5.0	2.4	1		06/21/22 11:41	96-12-8	
1,2-Dibromoethane (EDB)	**<0.31**	ug/L	1.0	0.31	1		06/21/22 11:41	106-93-4	
1,2-Dichlorobenzene	**<0.33**	ug/L	1.0	0.33	1		06/21/22 11:41	95-50-1	
1,2-Dichloroethane	**<0.29**	ug/L	1.0	0.29	1		06/21/22 11:41	107-06-2	
1,2-Dichloropropane	**<0.45**	ug/L	1.0	0.45	1		06/21/22 11:41	78-87-5	
1,3,5-Trimethylbenzene	**<0.36**	ug/L	1.0	0.36	1		06/21/22 11:41	108-67-8	
1,3-Dichlorobenzene	**<0.35**	ug/L	1.0	0.35	1		06/21/22 11:41	541-73-1	
1,3-Dichloropropane	**<0.30**	ug/L	1.0	0.30	1		06/21/22 11:41	142-28-9	
1,4-Dichlorobenzene	**<0.89**	ug/L	1.0	0.89	1		06/21/22 11:41	106-46-7	
2,2-Dichloropropane	**<4.2**	ug/L	5.0	4.2	1		06/21/22 11:41	594-20-7	
2-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		06/21/22 11:41	95-49-8	
4-Chlorotoluene	**<0.89**	ug/L	5.0	0.89	1		06/21/22 11:41	106-43-4	
Benzene	**<0.30**	ug/L	1.0	0.30	1		06/21/22 11:41	71-43-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
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ANALYTICAL RESULTS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Sample: TRIP BLANK **Lab ID: 40246740004** Collected: 06/16/22 17:20 Received: 06/17/22 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260 Pace Analytical Services - Green Bay								
Bromobenzene	**<0.36**	ug/L	1.0	0.36	1		06/21/22 11:41	108-86-1	
Bromochloromethane	**<0.36**	ug/L	5.0	0.36	1		06/21/22 11:41	74-97-5	
Bromodichloromethane	**<0.42**	ug/L	1.0	0.42	1		06/21/22 11:41	75-27-4	
Bromoform	**<3.8**	ug/L	5.0	3.8	1		06/21/22 11:41	75-25-2	
Bromomethane	**<1.2**	ug/L	5.0	1.2	1		06/21/22 11:41	74-83-9	
Carbon tetrachloride	**<0.37**	ug/L	1.0	0.37	1		06/21/22 11:41	56-23-5	
Chlorobenzene	**<0.86**	ug/L	1.0	0.86	1		06/21/22 11:41	108-90-7	
Chloroethane	**<1.4**	ug/L	5.0	1.4	1		06/21/22 11:41	75-00-3	
Chloroform	**<1.2**	ug/L	5.0	1.2	1		06/21/22 11:41	67-66-3	
Chloromethane	**<1.6**	ug/L	5.0	1.6	1		06/21/22 11:41	74-87-3	
Dibromochloromethane	**<2.6**	ug/L	5.0	2.6	1		06/21/22 11:41	124-48-1	
Dibromomethane	**<0.99**	ug/L	5.0	0.99	1		06/21/22 11:41	74-95-3	
Dichlorodifluoromethane	**<0.46**	ug/L	5.0	0.46	1		06/21/22 11:41	75-71-8	
Diisopropyl ether	**<1.1**	ug/L	5.0	1.1	1		06/21/22 11:41	108-20-3	
Ethylbenzene	**<0.33**	ug/L	1.0	0.33	1		06/21/22 11:41	100-41-4	
Hexachloro-1,3-butadiene	**<2.7**	ug/L	5.0	2.7	1		06/21/22 11:41	87-68-3	
Isopropylbenzene (Cumene)	**<1.0**	ug/L	5.0	1.0	1		06/21/22 11:41	98-82-8	
Methyl-tert-butyl ether	**<1.1**	ug/L	5.0	1.1	1		06/21/22 11:41	1634-04-4	
Methylene Chloride	**<0.32**	ug/L	5.0	0.32	1		06/21/22 11:41	75-09-2	
Naphthalene	**<1.1**	ug/L	5.0	1.1	1		06/21/22 11:41	91-20-3	
Styrene	**<0.36**	ug/L	1.0	0.36	1		06/21/22 11:41	100-42-5	
Tetrachloroethene	**<0.41**	ug/L	1.0	0.41	1		06/21/22 11:41	127-18-4	
Toluene	**<0.29**	ug/L	1.0	0.29	1		06/21/22 11:41	108-88-3	
Trichloroethene	**<0.32**	ug/L	1.0	0.32	1		06/21/22 11:41	79-01-6	
Trichlorofluoromethane	**<0.42**	ug/L	1.0	0.42	1		06/21/22 11:41	75-69-4	
Vinyl chloride	**<0.17**	ug/L	1.0	0.17	1		06/21/22 11:41	75-01-4	
cis-1,2-Dichloroethene	**<0.47**	ug/L	1.0	0.47	1		06/21/22 11:41	156-59-2	
cis-1,3-Dichloropropene	**<0.36**	ug/L	1.0	0.36	1		06/21/22 11:41	10061-01-5	
m&p-Xylene	**<0.70**	ug/L	2.0	0.70	1		06/21/22 11:41	179601-23-1	
n-Butylbenzene	**<0.86**	ug/L	1.0	0.86	1		06/21/22 11:41	104-51-8	
n-Propylbenzene	**<0.35**	ug/L	1.0	0.35	1		06/21/22 11:41	103-65-1	
o-Xylene	**<0.35**	ug/L	1.0	0.35	1		06/21/22 11:41	95-47-6	
p-Isopropyltoluene	**<1.0**	ug/L	5.0	1.0	1		06/21/22 11:41	99-87-6	
sec-Butylbenzene	**<0.42**	ug/L	1.0	0.42	1		06/21/22 11:41	135-98-8	
tert-Butylbenzene	**<0.59**	ug/L	1.0	0.59	1		06/21/22 11:41	98-06-6	
trans-1,2-Dichloroethene	**<0.53**	ug/L	1.0	0.53	1		06/21/22 11:41	156-60-5	
trans-1,3-Dichloropropene	**<3.5**	ug/L	5.0	3.5	1		06/21/22 11:41	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		06/21/22 11:41	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	70-130		1		06/21/22 11:41	2199-69-1	
Toluene-d8 (S)	100	%	70-130		1		06/21/22 11:41	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

QC Batch: 419169
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET Dissolved
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40246740001, 40246740002, 40246740003

METHOD BLANK: 2413835 Matrix: Water
Associated Lab Samples: 40246740001, 40246740002, 40246740003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<2.5	10.0	06/23/22 15:44	

LABORATORY CONTROL SAMPLE: 2413836

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	250	255	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2413837 2413838

Parameter	Units	40246743001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	<2.5	250	250	250	258	100	103	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

QC Batch: 418738
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40246740001, 40246740002, 40246740003, 40246740004

METHOD BLANK: 2411724 Matrix: Water
Associated Lab Samples: 40246740001, 40246740002, 40246740003, 40246740004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.36	1.0	06/21/22 07:58	
1,1,1-Trichloroethane	ug/L	<0.30	1.0	06/21/22 07:58	
1,1,2,2-Tetrachloroethane	ug/L	<0.38	1.0	06/21/22 07:58	
1,1,2-Trichloroethane	ug/L	<0.34	5.0	06/21/22 07:58	
1,1-Dichloroethane	ug/L	<0.30	1.0	06/21/22 07:58	
1,1-Dichloroethene	ug/L	<0.58	1.0	06/21/22 07:58	
1,1-Dichloropropene	ug/L	<0.41	1.0	06/21/22 07:58	
1,2,3-Trichlorobenzene	ug/L	<1.0	5.0	06/21/22 07:58	
1,2,3-Trichloropropane	ug/L	<0.56	5.0	06/21/22 07:58	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	06/21/22 07:58	
1,2,4-Trimethylbenzene	ug/L	<0.45	1.0	06/21/22 07:58	
1,2-Dibromo-3-chloropropane	ug/L	<2.4	5.0	06/21/22 07:58	
1,2-Dibromoethane (EDB)	ug/L	<0.31	1.0	06/21/22 07:58	
1,2-Dichlorobenzene	ug/L	<0.33	1.0	06/21/22 07:58	
1,2-Dichloroethane	ug/L	<0.29	1.0	06/21/22 07:58	
1,2-Dichloropropane	ug/L	<0.45	1.0	06/21/22 07:58	
1,3,5-Trimethylbenzene	ug/L	<0.36	1.0	06/21/22 07:58	
1,3-Dichlorobenzene	ug/L	<0.35	1.0	06/21/22 07:58	
1,3-Dichloropropane	ug/L	<0.30	1.0	06/21/22 07:58	
1,4-Dichlorobenzene	ug/L	<0.89	1.0	06/21/22 07:58	
2,2-Dichloropropane	ug/L	<4.2	5.0	06/21/22 07:58	
2-Chlorotoluene	ug/L	<0.89	5.0	06/21/22 07:58	
4-Chlorotoluene	ug/L	<0.89	5.0	06/21/22 07:58	
Benzene	ug/L	<0.30	1.0	06/21/22 07:58	
Bromobenzene	ug/L	<0.36	1.0	06/21/22 07:58	
Bromochloromethane	ug/L	<0.36	5.0	06/21/22 07:58	
Bromodichloromethane	ug/L	<0.42	1.0	06/21/22 07:58	
Bromoform	ug/L	<3.8	5.0	06/21/22 07:58	
Bromomethane	ug/L	<1.2	5.0	06/21/22 07:58	
Carbon tetrachloride	ug/L	<0.37	1.0	06/21/22 07:58	
Chlorobenzene	ug/L	<0.86	1.0	06/21/22 07:58	
Chloroethane	ug/L	<1.4	5.0	06/21/22 07:58	
Chloroform	ug/L	<1.2	5.0	06/21/22 07:58	
Chloromethane	ug/L	<1.6	5.0	06/21/22 07:58	
cis-1,2-Dichloroethene	ug/L	<0.47	1.0	06/21/22 07:58	
cis-1,3-Dichloropropene	ug/L	<0.36	1.0	06/21/22 07:58	
Dibromochloromethane	ug/L	<2.6	5.0	06/21/22 07:58	
Dibromomethane	ug/L	<0.99	5.0	06/21/22 07:58	
Dichlorodifluoromethane	ug/L	<0.46	5.0	06/21/22 07:58	
Diisopropyl ether	ug/L	<1.1	5.0	06/21/22 07:58	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

METHOD BLANK: 2411724 Matrix: Water
Associated Lab Samples: 40246740001, 40246740002, 40246740003, 40246740004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/L	<0.33	1.0	06/21/22 07:58	
Hexachloro-1,3-butadiene	ug/L	<2.7	5.0	06/21/22 07:58	
Isopropylbenzene (Cumene)	ug/L	<1.0	5.0	06/21/22 07:58	
m&p-Xylene	ug/L	<0.70	2.0	06/21/22 07:58	
Methyl-tert-butyl ether	ug/L	<1.1	5.0	06/21/22 07:58	
Methylene Chloride	ug/L	<0.32	5.0	06/21/22 07:58	
n-Butylbenzene	ug/L	<0.86	1.0	06/21/22 07:58	
n-Propylbenzene	ug/L	<0.35	1.0	06/21/22 07:58	
Naphthalene	ug/L	<1.1	5.0	06/21/22 07:58	
o-Xylene	ug/L	<0.35	1.0	06/21/22 07:58	
p-Isopropyltoluene	ug/L	<1.0	5.0	06/21/22 07:58	
sec-Butylbenzene	ug/L	<0.42	1.0	06/21/22 07:58	
Styrene	ug/L	<0.36	1.0	06/21/22 07:58	
tert-Butylbenzene	ug/L	<0.59	1.0	06/21/22 07:58	
Tetrachloroethene	ug/L	<0.41	1.0	06/21/22 07:58	
Toluene	ug/L	<0.29	1.0	06/21/22 07:58	
trans-1,2-Dichloroethene	ug/L	<0.53	1.0	06/21/22 07:58	
trans-1,3-Dichloropropene	ug/L	<3.5	5.0	06/21/22 07:58	
Trichloroethene	ug/L	<0.32	1.0	06/21/22 07:58	
Trichlorofluoromethane	ug/L	<0.42	1.0	06/21/22 07:58	
Vinyl chloride	ug/L	<0.17	1.0	06/21/22 07:58	
1,2-Dichlorobenzene-d4 (S)	%	96	70-130	06/21/22 07:58	
4-Bromofluorobenzene (S)	%	99	70-130	06/21/22 07:58	
Toluene-d8 (S)	%	101	70-130	06/21/22 07:58	

LABORATORY CONTROL SAMPLE: 2411725

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	57.9	116	70-134	
1,1,2,2-Tetrachloroethane	ug/L	50	48.1	96	69-130	
1,1,2-Trichloroethane	ug/L	50	47.9	96	70-130	
1,1-Dichloroethane	ug/L	50	48.9	98	70-130	
1,1-Dichloroethene	ug/L	50	50.9	102	74-131	
1,2,4-Trichlorobenzene	ug/L	50	49.2	98	68-130	
1,2-Dibromo-3-chloropropane	ug/L	50	45.6	91	64-137	
1,2-Dibromoethane (EDB)	ug/L	50	49.0	98	70-130	
1,2-Dichlorobenzene	ug/L	50	49.7	99	70-130	
1,2-Dichloroethane	ug/L	50	50.8	102	70-137	
1,2-Dichloropropane	ug/L	50	45.3	91	80-121	
1,3-Dichlorobenzene	ug/L	50	53.6	107	70-130	
1,4-Dichlorobenzene	ug/L	50	50.7	101	70-130	
Benzene	ug/L	50	48.2	96	70-130	
Bromodichloromethane	ug/L	50	50.3	101	70-130	
Bromoform	ug/L	50	55.3	111	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

LABORATORY CONTROL SAMPLE: 2411725

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/L	50	32.7	65	21-147	
Carbon tetrachloride	ug/L	50	59.9	120	80-146	
Chlorobenzene	ug/L	50	52.4	105	70-130	
Chloroethane	ug/L	50	41.0	82	52-165	
Chloroform	ug/L	50	53.9	108	80-123	
Chloromethane	ug/L	50	32.5	65	51-122	
cis-1,2-Dichloroethene	ug/L	50	48.6	97	70-130	
cis-1,3-Dichloropropene	ug/L	50	51.1	102	70-130	
Dibromochloromethane	ug/L	50	53.8	108	70-130	
Dichlorodifluoromethane	ug/L	50	23.6	47	25-121	
Ethylbenzene	ug/L	50	52.4	105	80-120	
Isopropylbenzene (Cumene)	ug/L	50	53.1	106	70-130	
m&p-Xylene	ug/L	100	101	101	70-130	
Methyl-tert-butyl ether	ug/L	50	52.2	104	70-130	
Methylene Chloride	ug/L	50	51.3	103	70-130	
o-Xylene	ug/L	50	50.2	100	70-130	
Styrene	ug/L	50	50.4	101	70-130	
Tetrachloroethene	ug/L	50	55.0	110	70-130	
Toluene	ug/L	50	49.9	100	80-120	
trans-1,2-Dichloroethene	ug/L	50	53.3	107	70-130	
trans-1,3-Dichloropropene	ug/L	50	50.4	101	70-130	
Trichloroethene	ug/L	50	52.6	105	70-130	
Trichlorofluoromethane	ug/L	50	52.5	105	65-160	
Vinyl chloride	ug/L	50	36.1	72	63-134	
1,2-Dichlorobenzene-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2412553 2412554

Parameter	Units	40246723002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<0.30	50	50	55.9	57.7	112	115	70-134	3	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.38	50	50	46.2	48.3	92	97	61-135	5	20	
1,1,2-Trichloroethane	ug/L	<0.34	50	50	46.5	49.9	93	100	70-130	7	20	
1,1-Dichloroethane	ug/L	<0.30	50	50	47.5	49.6	95	99	70-130	4	20	
1,1-Dichloroethene	ug/L	<0.58	50	50	49.0	50.9	98	102	71-130	4	20	
1,2,4-Trichlorobenzene	ug/L	<0.95	50	50	47.3	50.1	95	100	68-131	6	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.4	50	50	44.2	48.0	88	96	51-141	8	20	
1,2-Dibromoethane (EDB)	ug/L	<0.31	50	50	46.4	50.1	93	100	70-130	8	20	
1,2-Dichlorobenzene	ug/L	<0.33	50	50	47.8	51.6	96	103	70-130	8	20	
1,2-Dichloroethane	ug/L	<0.29	50	50	50.0	52.3	100	105	70-137	4	20	
1,2-Dichloropropane	ug/L	<0.45	50	50	44.1	46.8	88	94	80-121	6	20	
1,3-Dichlorobenzene	ug/L	<0.35	50	50	50.5	54.4	101	109	70-130	7	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2412553 2412554

Parameter	Units	40246723002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,4-Dichlorobenzene	ug/L	<0.89	50	50	48.7	52.6	97	105	70-130	8	20	
Benzene	ug/L	<0.30	50	50	46.6	48.6	93	97	70-130	4	20	
Bromodichloromethane	ug/L	<0.42	50	50	49.3	51.5	99	103	70-130	4	20	
Bromoform	ug/L	<3.8	50	50	51.4	55.7	103	111	70-133	8	20	
Bromomethane	ug/L	<1.2	50	50	35.3	39.3	71	79	21-149	11	22	
Carbon tetrachloride	ug/L	<0.37	50	50	57.5	59.3	115	119	80-146	3	20	
Chlorobenzene	ug/L	<0.86	50	50	49.2	53.2	98	106	70-130	8	20	
Chloroethane	ug/L	<1.4	50	50	41.2	41.1	82	82	52-165	0	20	
Chloroform	ug/L	<1.2	50	50	53.0	55.2	106	110	80-123	4	20	
Chloromethane	ug/L	<1.6	50	50	31.3	32.1	63	64	42-125	2	20	
cis-1,2-Dichloroethene	ug/L	<0.47	50	50	47.9	50.3	96	101	70-130	5	20	
cis-1,3-Dichloropropene	ug/L	<0.36	50	50	49.6	51.8	99	104	70-130	4	20	
Dibromochloromethane	ug/L	<2.6	50	50	51.1	53.9	102	108	70-130	5	20	
Dichlorodifluoromethane	ug/L	<0.46	50	50	21.7	22.8	43	46	25-121	5	20	
Ethylbenzene	ug/L	<0.33	50	50	49.3	52.2	99	104	80-121	6	20	
Isopropylbenzene (Cumene)	ug/L	<1.0	50	50	50.2	53.1	100	106	70-130	6	20	
m&p-Xylene	ug/L	<0.70	100	100	97.0	103	97	103	70-130	6	20	
Methyl-tert-butyl ether	ug/L	<1.1	50	50	50.4	53.5	101	107	70-130	6	20	
Methylene Chloride	ug/L	<0.32	50	50	50.2	52.6	100	105	70-130	5	20	
o-Xylene	ug/L	<0.35	50	50	49.0	51.8	98	104	70-130	6	20	
Styrene	ug/L	<0.36	50	50	47.7	52.0	95	104	70-132	9	20	
Tetrachloroethene	ug/L	<0.41	50	50	52.6	54.8	105	110	70-130	4	20	
Toluene	ug/L	<0.29	50	50	47.6	50.3	95	101	80-120	5	20	
trans-1,2-Dichloroethene	ug/L	<0.53	50	50	52.9	55.4	106	111	70-130	5	20	
trans-1,3-Dichloropropene	ug/L	<3.5	50	50	48.1	51.7	96	103	70-130	7	20	
Trichloroethene	ug/L	<0.32	50	50	50.2	52.8	100	106	70-130	5	20	
Trichlorofluoromethane	ug/L	<0.42	50	50	50.0	52.0	100	104	65-160	4	20	
Vinyl chloride	ug/L	<0.17	50	50	34.6	36.0	69	72	60-137	4	20	
1,2-Dichlorobenzene-d4 (S)	%						99	100	70-130			
4-Bromofluorobenzene (S)	%						99	98	70-130			
Toluene-d8 (S)	%						99	101	70-130			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

QC Batch: 418917
QC Batch Method: SM 3500-Cr B
Analysis Method: SM 3500-Cr B
Analysis Description: Chromium, Hexavalent by 3500
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40246740001, 40246740002, 40246740003

METHOD BLANK: 2412352 Matrix: Water
Associated Lab Samples: 40246740001, 40246740002, 40246740003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	<0.0073	0.024	06/21/22 13:25	

LABORATORY CONTROL SAMPLE: 2412353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.3	0.30	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2412383 2412384

Parameter	Units	40246467001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	<0.0073	0.3	0.3	0.039	0.038	13	12	90-110	2	20	M0

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1162-013 JAGEMANN PLATING
Pace Project No.: 40246740

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40246740001	**MW-1**	EPA 3010A	419169	EPA 6010D	419248
40246740002	**MW-14**	EPA 3010A	419169	EPA 6010D	419248
40246740003	**TW-20**	EPA 3010A	419169	EPA 6010D	419248
40246740001	**MW-1**	EPA 8260	418738		
40246740002	**MW-14**	EPA 8260	418738		
40246740003	**TW-20**	EPA 8260	418738		
40246740004	**TRIP BLANK**	EPA 8260	418738		
40246740001	**MW-1**	SM 3500-Cr B	418917		
40246740002	**MW-14**	SM 3500-Cr B	418917		
40246740003	**TW-20**	SM 3500-Cr B	418917		

40246740

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at https://info.pacelabs.com/hubfs/pas-standard-terms.pdf.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	ROBERT E. LEE & ASSOCIATES, INC.	Report To:	Cody Applekamp	Attention:	Jaci Erdmann
Address:	1250 Centennial Centre Blvd	Copy To:	Nicole LaPlant	Company Name:	Robert E. Lee + Associates.
Oneida, WI 54155				Address:	
Email:	capplekamp@releeinc.com	Purchase Order #:		Pace Quote:	
Phone:	906-396-8289 Fax:	Project Name:	Jagemann Plating	Pace Project Manager:	brian.basten@pacelabs.com,
Requested Due Date:		Project #:	1162-013	Pace Profile #:	

Regulatory Agency	State / Location
	WI

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	VOC by 8260	Hexavalent Chromium	Total Chromium	Trip BLANK	Residual Chlorine (Y/N)	
	Requested Analysis Filtered (Y/N)																	N	Y	Y	N			
1	MW-1	WT	G	—	—	6-16	1515		5	X		X	X						X	X	X			001
2	MW-14	WT	G	—	—	6-16	1620		5	X		X	X						X	X	X			002
3	TW-20	WT	G	—	—	6-16	1700		5	X		X	X						X	X	X			003
4	TRIP BLANK	WT	G	—	—	6-16	1720		2				X									X		004
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Lori Rogers 6/17	8:28			06/17/22	08:27				
		06/17 08:45		Tanya Pace	06/17/22	0845	1	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jonah DeBruyne

SIGNATURE of SAMPLER: Jonah DeBruyne DATE Signed: 06-17-22

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Sample Preservation Receipt Form

Client Name: REL Project # 40246740

All containers needing preservation have been checked and noted below: ☑Yes ☐No ☐N/A Initial when completed: TP Date/ Time:

Lab Lot# of pH paper: 10023112 Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN							
001										1		1					3													X		2.5 / 5 / 10
002										1		1					3													X		2.5 / 5 / 10
003										1		1					3													X		2.5 / 5 / 10
004																	2															2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : ☐Yes ☑No ☐N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9A	40 mL clear ascorbic	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	
BG3U	250 mL clear glass unpres						

Page 1 of 2

Sample Condition Upon Receipt Form (SCUR)

Project #: WO#: 40246740

Client Name: REL

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☑ Pace Other:

Tracking #:

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Thermometer Used SR - 110 **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 1 /Corr: 1

Person examining contents: Date: 6/17/22 /Initials: TP

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Labeled By Initials: MH

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD:	☑Yes ☑No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☑Yes ☐No ☐N/A	12.
Trip Blank Present:	☑Yes ☐No ☐N/A	13.
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased): 483		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample login

Synergy Environmental Lab, LLC.

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

BRIAN KAPPEN
ENVIROFORENSICS
N16 W 23390 STONERIDGE DR
WAUKESHA WI 53188

Report Date *15-Aug-22*

Project Name JAGEMANN PLATING **Invoice #** E41212
Project # 200032

Lab Code 5041212A
Sample ID 200032 MW-1
Sample Matrix Water
Sample Date 7/18/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
GASES										
Ethane	90.6	ug/l	0.5	1.5	1	8015		7/28/2022	MJR	1
Ethene	26.9	ug/l	0.5	1.5	1	8015		7/28/2022	MJR	1
Methane	1090	ug/l	1	3	1	8015		7/28/2022	MJR	1
Wet Chemistry										
General										
Total Organic Carbon	30000	ug/l	102	340	1	SM 5310B		7/27/2022	SL	1

Lab Code 5041212B
Sample ID 200032 MW-14
Sample Matrix Water
Sample Date 7/18/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
GASES										
Ethane	5190	ug/l	5	15	10	8015		7/28/2022	MJR	1
Ethene	283	ug/l	0.5	1.5	1	8015		7/28/2022	MJR	1
Methane	2720	ug/l	10	30	10	8015		7/28/2022	MJR	1
Wet Chemistry										
General										
Total Organic Carbon	8980	ug/l	102	340	1	SM 5310B		7/27/2022	SL	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

SL denotes sub contract lab - Certification #399089350

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

www.synergy-lab.net
1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • mrsynergy@wi.twcbc.com

Chain # 44204

Page 1 of 1

Sample Handling Request

___ Rush Analysis Date Required: ___
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #

QUOTE #: 8242

Project #: 200032

Sampler: (signature) RCR

Project (Name / Location): Jagemann Plating - Manitowoc

Reports To: Brian Kappen	Invoice To: Accounts Payable
Company EnviroForensics	Company
Address N16W23390 Stone Ridge Dr Suite C	Address
City State Zip Waukesha, WI	City State Zip
Phone 262-290-4001	Phone
Email bkappen@enviroforensics.com	Email accountspayable@enviroforensics.com

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	LEAD	NITRATE/NITRITE	OIL & GREASE	PAH (EPA 8270)	PCB	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	TOTAL SUSPENDED SOLIDS	VOC DW (EPA 524.2)	VOC (EPA 8260)	VOC AIR (TO - 15)	8-RCRA METALS	Ethene, Ethane, Methane	Total Organic Carbon	PID/ FID
504121.2 A	200032-MW-1	7-18-22	930	N	3	GW	HCL															X	X		
B	200032-MW-14	7-18-22	1015	N	3	GW	HCL															X	X		

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge, etc.)

Sample Integrity - To be completed by receiving lab.

Method of Shipment: client

Temp. of Temp. Blank: ___ °C On Ice: X

Cooler seal intact upon receipt: X Yes ___ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
[signature]	1225	7/19/22			

Received in Laboratory By: client Time: 17:25 Date: 7/19/22

Synergy Environmental Lab, INC.

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

BRIAN KAPPEN
ENVIROFORENSICS
N16 W 23390 STONERIDGE DR
WAUKESHA WI 53188

Report Date *08-Sep-22*

Project Name JAGEMANN PLATING **Invoice #** E41353
Project # 200032

Lab Code 5041353A
Sample ID 200032-MW-1
Sample Matrix Water
Sample Date 8/22/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
GASES										
Ethane	37.8	ug/l	0.5	1.5	1	8015		8/24/2022	MJR	1
Ethene	9.58	ug/l	0.5	1.5	1	8015		8/24/2022	MJR	1
Methane	428	ug/l	1	3	1	8015		8/24/2022	MJR	1
VOC's										
Benzene	< 3	ug/l	3	12.5	10	8260B		8/27/2022	CJR	1
Bromobenzene	< 3.4	ug/l	3.4	14	10	8260B		8/27/2022	CJR	1
Bromodichloromethane	< 3.6	ug/l	3.6	14.7	10	8260B		8/27/2022	CJR	1
Bromoform	< 4.2	ug/l	4.2	17.2	10	8260B		8/27/2022	CJR	1
tert-Butylbenzene	< 3.7	ug/l	3.7	14.9	10	8260B		8/27/2022	CJR	1
sec-Butylbenzene	< 3.3	ug/l	3.3	13.4	10	8260B		8/27/2022	CJR	1
n-Butylbenzene	< 7.1	ug/l	7.1	29	10	8260B		8/27/2022	CJR	1
Carbon Tetrachloride	< 3.4	ug/l	3.4	13.9	10	8260B		8/27/2022	CJR	1
Chlorobenzene	< 2.9	ug/l	2.9	11.9	10	8260B		8/27/2022	CJR	1
Chloroethane	< 6.2	ug/l	6.2	25.4	10	8260B		8/27/2022	CJR	1
Chloroform	< 3.3	ug/l	3.3	13.3	10	8260B		8/27/2022	CJR	1
Chloromethane	< 7.4	ug/l	7.4	30.3	10	8260B		8/27/2022	CJR	1
2-Chlorotoluene	< 3.4	ug/l	3.4	13.7	10	8260B		8/27/2022	CJR	1
4-Chlorotoluene	< 4	ug/l	4	16.3	10	8260B		8/27/2022	CJR	1
1,2-Dibromo-3-chloropropane	< 7.4	ug/l	7.4	30.1	10	8260B		8/27/2022	CJR	1
Dibromochloromethane	< 3.6	ug/l	3.6	14.6	10	8260B		8/27/2022	CJR	1
1,4-Dichlorobenzene	< 4.9	ug/l	4.9	20.1	10	8260B		8/27/2022	CJR	1
1,3-Dichlorobenzene	< 3.5	ug/l	3.5	14.4	10	8260B		8/27/2022	CJR	1
1,2-Dichlorobenzene	< 4	ug/l	4	16.5	10	8260B		8/27/2022	CJR	1
Dichlorodifluoromethane	< 3	ug/l	3	12.3	10	8260B		8/27/2022	CJR	1
1,2-Dichloroethane	< 4.3	ug/l	4.3	17.5	10	8260B		8/27/2022	CJR	1
1,1-Dichloroethane	< 4.3	ug/l	4.3	17.4	10	8260B		8/27/2022	CJR	1
1,1-Dichloroethene	7.1 "J"	ug/l	4.3	17.6	10	8260B		8/27/2022	CJR	1
cis-1,2-Dichloroethene	2140	ug/l	16	64.5	50	8260B		9/2/2022	CJR	1

Project Name JAGEMANN PLATING **Invoice #** E41353
Project # 200032

Lab Code 5041353A
Sample ID 200032-MW-1
Sample Matrix Water
Sample Date 8/22/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
trans-1,2-Dichloroethene	47	ug/l	5	20.2	10	8260B		8/27/2022	CJR	1
1,2-Dichloropropane	< 3.9	ug/l	3.9	15.8	10	8260B		8/27/2022	CJR	1
1,3-Dichloropropane	< 3.8	ug/l	3.8	15.5	10	8260B		8/27/2022	CJR	1
trans-1,3-Dichloropropene	< 4.1	ug/l	4.1	16.7	10	8260B		8/27/2022	CJR	1
cis-1,3-Dichloropropene	< 4.1	ug/l	4.1	16.7	10	8260B		8/27/2022	CJR	1
Di-isopropyl ether	< 4.8	ug/l	4.8	19.6	10	8260B		8/27/2022	CJR	1
EDB (1,2-Dibromoethane)	< 3.9	ug/l	3.9	15.9	10	8260B		8/27/2022	CJR	1
Ethylbenzene	< 3.3	ug/l	3.3	13.7	10	8260B		8/27/2022	CJR	1
Hexachlorobutadiene	< 8.1	ug/l	8.1	34.4	10	8260B		8/27/2022	CJR	1
Isopropylbenzene	< 3.4	ug/l	3.4	13.8	10	8260B		8/27/2022	CJR	1
p-Isopropyltoluene	< 4.7	ug/l	4.7	19.1	10	8260B		8/27/2022	CJR	1
Methylene chloride	< 7.9	ug/l	7.9	32.3	10	8260B		8/27/2022	CJR	1
Methyl tert-butyl ether (MTBE)	< 4.7	ug/l	4.7	19.1	10	8260B		8/27/2022	CJR	1
Naphthalene	< 14	ug/l	14	55.6	10	8260B		8/27/2022	CJR	1
n-Propylbenzene	< 3.9	ug/l	3.9	16	10	8260B		8/27/2022	CJR	1
1,1,2,2-Tetrachloroethane	< 4.3	ug/l	4.3	17.7	10	8260B		8/27/2022	CJR	1
1,1,1,2-Tetrachloroethane	< 5.5	ug/l	5.5	22.5	10	8260B		8/27/2022	CJR	1
Tetrachloroethene	< 4.7	ug/l	4.7	19.1	10	8260B		8/27/2022	CJR	1
Toluene	< 3.3	ug/l	3.3	13.5	10	8260B		8/27/2022	CJR	1
1,2,4-Trichlorobenzene	< 6.3	ug/l	6.3	25.7	10	8260B		8/27/2022	CJR	1
1,2,3-Trichlorobenzene	< 14	ug/l	14	59.4	10	8260B		8/27/2022	CJR	1
1,1,1-Trichloroethane	< 3.3	ug/l	3.3	13.4	10	8260B		8/27/2022	CJR	1
1,1,2-Trichloroethane	< 4.2	ug/l	4.2	17.2	10	8260B		8/27/2022	CJR	1
Trichloroethene (TCE)	< 3.8	ug/l	3.8	15.5	10	8260B		8/27/2022	CJR	1
Trichlorofluoromethane	< 3.3	ug/l	3.3	13.5	10	8260B		8/27/2022	CJR	1
1,2,4-Trimethylbenzene	< 3.5	ug/l	3.5	14.4	10	8260B		8/27/2022	CJR	1
1,3,5-Trimethylbenzene	< 4.1	ug/l	4.1	16.6	10	8260B		8/27/2022	CJR	1
Vinyl Chloride	390	ug/l	1.5	6.1	10	8260B		8/27/2022	CJR	1
m&p-Xylene	< 6.4	ug/l	6.4	26.3	10	8260B		8/27/2022	CJR	1
o-Xylene	< 3.7	ug/l	3.7	15.1	10	8260B		8/27/2022	CJR	1
SUR - Toluene-d8	97	REC %			10	8260B		8/27/2022	CJR	1
SUR - Dibromofluoromethane	98	REC %			10	8260B		8/27/2022	CJR	1
SUR - 1,2-Dichloroethane-d4	103	REC %			10	8260B		8/27/2022	CJR	1
SUR - 4-Bromofluorobenzene	98	REC %			10	8260B		8/27/2022	CJR	1
Wet Chemistry										
General										
Total Organic Carbon	1380	mg/l	160	530	500	SM 5310B		8/29/2022	SL	1

Project Name JAGEMANN PLATING **Invoice #** E41353
Project # 200032

Lab Code 5041353B
Sample ID 200032-MW-14
Sample Matrix Water
Sample Date 8/22/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
GASES										
Ethane	3400	ug/l	1	3	2	8015		8/24/2022	MJR	1
Ethene	249	ug/l	1	3	2	8015		8/24/2022	MJR	1
Methane	1400	ug/l	2	6	2	8015		8/24/2022	MJR	1
VOC's										
Benzene	< 60	ug/l	60	250	200	8260B		8/27/2022	CJR	1
Bromobenzene	< 68	ug/l	68	280	200	8260B		8/27/2022	CJR	1
Bromodichloromethane	< 72	ug/l	72	294	200	8260B		8/27/2022	CJR	1
Bromoform	< 84	ug/l	84	344	200	8260B		8/27/2022	CJR	1
tert-Butylbenzene	< 74	ug/l	74	298	200	8260B		8/27/2022	CJR	1
sec-Butylbenzene	< 66	ug/l	66	268	200	8260B		8/27/2022	CJR	1
n-Butylbenzene	< 142	ug/l	142	580	200	8260B		8/27/2022	CJR	1
Carbon Tetrachloride	< 68	ug/l	68	278	200	8260B		8/27/2022	CJR	1
Chlorobenzene	< 58	ug/l	58	238	200	8260B		8/27/2022	CJR	1
Chloroethane	< 124	ug/l	124	508	200	8260B		8/27/2022	CJR	1
Chloroform	< 66	ug/l	66	266	200	8260B		8/27/2022	CJR	1
Chloromethane	< 148	ug/l	148	606	200	8260B		8/27/2022	CJR	1
2-Chlorotoluene	< 68	ug/l	68	274	200	8260B		8/27/2022	CJR	1
4-Chlorotoluene	< 80	ug/l	80	326	200	8260B		8/27/2022	CJR	1
1,2-Dibromo-3-chloropropane	< 148	ug/l	148	602	200	8260B		8/27/2022	CJR	1
Dibromochloromethane	< 72	ug/l	72	292	200	8260B		8/27/2022	CJR	1
1,4-Dichlorobenzene	< 98	ug/l	98	402	200	8260B		8/27/2022	CJR	1
1,3-Dichlorobenzene	< 70	ug/l	70	288	200	8260B		8/27/2022	CJR	1
1,2-Dichlorobenzene	< 80	ug/l	80	330	200	8260B		8/27/2022	CJR	1
Dichlorodifluoromethane	< 60	ug/l	60	246	200	8260B		8/27/2022	CJR	1
1,2-Dichloroethane	< 86	ug/l	86	350	200	8260B		8/27/2022	CJR	1
1,1-Dichloroethane	140 "J"	ug/l	86	348	200	8260B		8/27/2022	CJR	1
1,1-Dichloroethene	430	ug/l	86	352	200	8260B		8/27/2022	CJR	1
cis-1,2-Dichloroethene	40000	ug/l	64	258	200	8260B		8/27/2022	CJR	1
trans-1,2-Dichloroethene	810	ug/l	100	404	200	8260B		8/27/2022	CJR	1
1,2-Dichloropropane	< 78	ug/l	78	316	200	8260B		8/27/2022	CJR	1
1,3-Dichloropropane	< 76	ug/l	76	310	200	8260B		8/27/2022	CJR	1
trans-1,3-Dichloropropene	< 82	ug/l	82	334	200	8260B		8/27/2022	CJR	1
cis-1,3-Dichloropropene	< 82	ug/l	82	334	200	8260B		8/27/2022	CJR	1
Di-isopropyl ether	< 96	ug/l	96	392	200	8260B		8/27/2022	CJR	1
EDB (1,2-Dibromoethane)	< 78	ug/l	78	318	200	8260B		8/27/2022	CJR	1
Ethylbenzene	< 66	ug/l	66	274	200	8260B		8/27/2022	CJR	1
Hexachlorobutadiene	< 162	ug/l	162	688	200	8260B		8/27/2022	CJR	1
Isopropylbenzene	< 68	ug/l	68	276	200	8260B		8/27/2022	CJR	1
p-Isopropyltoluene	< 94	ug/l	94	382	200	8260B		8/27/2022	CJR	1
Methylene chloride	< 158	ug/l	158	646	200	8260B		8/27/2022	CJR	1
Methyl tert-butyl ether (MTBE)	< 94	ug/l	94	382	200	8260B		8/27/2022	CJR	1
Naphthalene	< 280	ug/l	280	1112	200	8260B		8/27/2022	CJR	1
n-Propylbenzene	< 78	ug/l	78	320	200	8260B		8/27/2022	CJR	1
1,1,2,2-Tetrachloroethane	< 86	ug/l	86	354	200	8260B		8/27/2022	CJR	1
1,1,1,2-Tetrachloroethane	< 110	ug/l	110	450	200	8260B		8/27/2022	CJR	1
Tetrachloroethene	< 94	ug/l	94	382	200	8260B		8/27/2022	CJR	1
Toluene	< 66	ug/l	66	270	200	8260B		8/27/2022	CJR	1
1,2,4-Trichlorobenzene	< 126	ug/l	126	514	200	8260B		8/27/2022	CJR	1
1,2,3-Trichlorobenzene	< 280	ug/l	280	1188	200	8260B		8/27/2022	CJR	1
1,1,1-Trichloroethane	< 66	ug/l	66	268	200	8260B		8/27/2022	CJR	1

Project Name JAGEMANN PLATING **Invoice #** E41353
Project # 200032

Lab Code 5041353B
Sample ID 200032-MW-14
Sample Matrix Water
Sample Date 8/22/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 84	ug/l	84	344	200	8260B		8/27/2022	CJR	1
Trichloroethene (TCE)	4800	ug/l	76	310	200	8260B		8/27/2022	CJR	1
Trichlorofluoromethane	< 66	ug/l	66	270	200	8260B		8/27/2022	CJR	1
1,2,4-Trimethylbenzene	< 70	ug/l	70	288	200	8260B		8/27/2022	CJR	1
1,3,5-Trimethylbenzene	< 82	ug/l	82	332	200	8260B		8/27/2022	CJR	1
Vinyl Chloride	17000	ug/l	30	122	200	8260B		8/27/2022	CJR	1
m&p-Xylene	< 128	ug/l	128	526	200	8260B		8/27/2022	CJR	1
o-Xylene	< 74	ug/l	74	302	200	8260B		8/27/2022	CJR	1
SUR - Toluene-d8	97	REC %			200	8260B		8/27/2022	CJR	1
SUR - 1,2-Dichloroethane-d4	95	REC %			200	8260B		8/27/2022	CJR	1
SUR - 4-Bromofluorobenzene	98	REC %			200	8260B		8/27/2022	CJR	1
SUR - Dibromofluoromethane	95	REC %			200	8260B		8/27/2022	CJR	1
Wet Chemistry										
General										
Total Organic Carbon	1770	mg/l	160	530	500	SM 5310B		8/29/2022	SL	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

SL denotes sub contract lab - Certification #399089350

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature

Synergy Environmental Lab, LLC.

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

BRIAN KAPPEN
ENVIROFORENSICS
N16 W 23390 STONERIDGE DR
WAUKESHA WI 53188

Report Date *24-Oct-22*

Project Name JAGEMANN PLATING **Invoice #** E41557
Project # 200032

Lab Code 5041557A
Sample ID 200032-MW-1
Sample Matrix Water
Sample Date 10/6/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
GASES										
Ethane	191	ug/l	0.5	1.5	1	8015		10/24/2022	MJR	1
Ethene	3.38	ug/l	0.5	1.5	1	8015		10/24/2022	MJR	1
Methane	112	ug/l	1	3	1	8015		10/24/2022	MJR	1
VOC's										
Benzene	< 0.3	ug/l	0.3	1.25	1	8260B		10/17/2022	CJR	1
Bromobenzene	< 0.34	ug/l	0.34	1.4	1	8260B		10/17/2022	CJR	1
Bromodichloromethane	< 0.36	ug/l	0.36	1.47	1	8260B		10/17/2022	CJR	1
Bromoform	< 0.42	ug/l	0.42	1.72	1	8260B		10/17/2022	CJR	1
tert-Butylbenzene	< 0.37	ug/l	0.37	1.49	1	8260B		10/17/2022	CJR	1
sec-Butylbenzene	< 0.33	ug/l	0.33	1.34	1	8260B		10/17/2022	CJR	1
n-Butylbenzene	< 0.71	ug/l	0.71	2.9	1	8260B		10/17/2022	CJR	1
Carbon Tetrachloride	< 0.34	ug/l	0.34	1.39	1	8260B		10/17/2022	CJR	1
Chlorobenzene	< 0.29	ug/l	0.29	1.19	1	8260B		10/17/2022	CJR	1
Chloroethane	< 0.62	ug/l	0.62	2.54	1	8260B		10/17/2022	CJR	1
Chloroform	< 0.33	ug/l	0.33	1.33	1	8260B		10/17/2022	CJR	1
Chloromethane	< 0.74	ug/l	0.74	3.03	1	8260B		10/17/2022	CJR	1
2-Chlorotoluene	< 0.34	ug/l	0.34	1.37	1	8260B		10/17/2022	CJR	1
4-Chlorotoluene	< 0.4	ug/l	0.4	1.63	1	8260B		10/17/2022	CJR	1
1,2-Dibromo-3-chloropropane	< 0.74	ug/l	0.74	3.01	1	8260B		10/17/2022	CJR	1
Dibromochloromethane	< 0.36	ug/l	0.36	1.46	1	8260B		10/17/2022	CJR	1
1,4-Dichlorobenzene	< 0.49	ug/l	0.49	2.01	1	8260B		10/17/2022	CJR	1
1,3-Dichlorobenzene	< 0.35	ug/l	0.35	1.44	1	8260B		10/17/2022	CJR	1
1,2-Dichlorobenzene	< 0.4	ug/l	0.4	1.65	1	8260B		10/17/2022	CJR	1
Dichlorodifluoromethane	< 0.3	ug/l	0.3	1.23	1	8260B		10/17/2022	CJR	1
1,2-Dichloroethane	< 0.43	ug/l	0.43	1.75	1	8260B		10/17/2022	CJR	1

Project Name JAGEMANN PLATING **Invoice #** E41557
Project # 200032

Lab Code 5041557A
Sample ID 200032-MW-1
Sample Matrix Water
Sample Date 10/6/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1-Dichloroethane	10.9	ug/l	0.43	1.74	1	8260B		10/17/2022	CJR	1
1,1-Dichloroethene	< 0.43	ug/l	0.43	1.76	1	8260B		10/17/2022	CJR	1
cis-1,2-Dichloroethene	46	ug/l	0.32	1.29	1	8260B		10/17/2022	CJR	1
trans-1,2-Dichloroethene	99	ug/l	0.5	2.02	1	8260B		10/17/2022	CJR	1
1,2-Dichloropropane	< 0.39	ug/l	0.39	1.58	1	8260B		10/17/2022	CJR	1
1,3-Dichloropropane	< 0.38	ug/l	0.38	1.55	1	8260B		10/17/2022	CJR	1
trans-1,3-Dichloropropene	< 0.41	ug/l	0.41	1.67	1	8260B		10/17/2022	CJR	1
cis-1,3-Dichloropropene	< 0.41	ug/l	0.41	1.67	1	8260B		10/17/2022	CJR	1
Di-isopropyl ether	< 0.48	ug/l	0.48	1.96	1	8260B		10/17/2022	CJR	1
EDB (1,2-Dibromoethane)	< 0.39	ug/l	0.39	1.59	1	8260B		10/17/2022	CJR	1
Ethylbenzene	< 0.33	ug/l	0.33	1.37	1	8260B		10/17/2022	CJR	1
Hexachlorobutadiene	< 0.81	ug/l	0.81	3.44	1	8260B		10/17/2022	CJR	1
Isopropylbenzene	< 0.34	ug/l	0.34	1.38	1	8260B		10/17/2022	CJR	1
p-Isopropyltoluene	< 0.47	ug/l	0.47	1.91	1	8260B		10/17/2022	CJR	1
Methylene chloride	< 0.79	ug/l	0.79	3.23	1	8260B		10/17/2022	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.47	ug/l	0.47	1.91	1	8260B		10/17/2022	CJR	1
Naphthalene	< 1.4	ug/l	1.4	5.56	1	8260B		10/17/2022	CJR	1
n-Propylbenzene	< 0.39	ug/l	0.39	1.6	1	8260B		10/17/2022	CJR	1
1,1,2,2-Tetrachloroethane	< 0.43	ug/l	0.43	1.77	1	8260B		10/17/2022	CJR	1
1,1,1,2-Tetrachloroethane	< 0.55	ug/l	0.55	2.25	1	8260B		10/17/2022	CJR	1
Tetrachloroethene	< 0.47	ug/l	0.47	1.91	1	8260B		10/17/2022	CJR	1
Toluene	< 0.33	ug/l	0.33	1.35	1	8260B		10/17/2022	CJR	1
1,2,4-Trichlorobenzene	< 0.63	ug/l	0.63	2.57	1	8260B		10/17/2022	CJR	1
1,2,3-Trichlorobenzene	< 1.4	ug/l	1.4	5.94	1	8260B		10/17/2022	CJR	1
1,1,1-Trichloroethane	0.53 "J"	ug/l	0.33	1.34	1	8260B		10/17/2022	CJR	1
1,1,2-Trichloroethane	< 0.42	ug/l	0.42	1.72	1	8260B		10/17/2022	CJR	1
Trichloroethene (TCE)	0.40 "J"	ug/l	0.38	1.55	1	8260B		10/17/2022	CJR	1
Trichlorofluoromethane	< 0.33	ug/l	0.33	1.35	1	8260B		10/17/2022	CJR	1
1,2,4-Trimethylbenzene	< 0.35	ug/l	0.35	1.44	1	8260B		10/17/2022	CJR	1
1,3,5-Trimethylbenzene	< 0.41	ug/l	0.41	1.66	1	8260B		10/17/2022	CJR	1
Vinyl Chloride	41	ug/l	0.15	0.61	1	8260B		10/17/2022	CJR	1
m&p-Xylene	< 0.64	ug/l	0.64	2.63	1	8260B		10/17/2022	CJR	1
o-Xylene	< 0.37	ug/l	0.37	1.51	1	8260B		10/17/2022	CJR	1
SUR - Dibromofluoromethane	97	REC %			1	8260B		10/17/2022	CJR	1
SUR - 1,2-Dichloroethane-d4	102	REC %			1	8260B		10/17/2022	CJR	1
SUR - 4-Bromofluorobenzene	101	REC %			1	8260B		10/17/2022	CJR	1
SUR - Toluene-d8	104	REC %			1	8260B		10/17/2022	CJR	1
Wet Chemistry										
General										
Total Organic Carbon	406	mg/l	93.6	312	100	SM 5310B		10/13/2022	SL	1

Project Name JAGEMANN PLATING **Invoice #** E41557
Project # 200032

Lab Code 5041557B
Sample ID 200032-MW-14
Sample Matrix Water
Sample Date 10/6/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
GASES										
Ethane	3260	ug/l	1	3	2	8015		10/24/2022	MJR	1
Ethene	103	ug/l	0.5	1.5	1	8015		10/24/2022	MJR	1
Methane	391	ug/l	1	3	1	8015		10/24/2022	MJR	1
VOC's										
Benzene	< 150	ug/l	150	625	500	8260B		10/15/2022	CJR	1
Bromobenzene	< 170	ug/l	170	700	500	8260B		10/15/2022	CJR	1
Bromodichloromethane	< 180	ug/l	180	735	500	8260B		10/15/2022	CJR	1
Bromoform	< 210	ug/l	210	860	500	8260B		10/15/2022	CJR	1
tert-Butylbenzene	< 185	ug/l	185	745	500	8260B		10/15/2022	CJR	1
sec-Butylbenzene	< 165	ug/l	165	670	500	8260B		10/15/2022	CJR	1
n-Butylbenzene	< 355	ug/l	355	1450	500	8260B		10/15/2022	CJR	1
Carbon Tetrachloride	< 170	ug/l	170	695	500	8260B		10/15/2022	CJR	1
Chlorobenzene	< 145	ug/l	145	595	500	8260B		10/15/2022	CJR	1
Chloroethane	< 310	ug/l	310	1270	500	8260B		10/15/2022	CJR	1
Chloroform	< 165	ug/l	165	665	500	8260B		10/15/2022	CJR	1
Chloromethane	< 370	ug/l	370	1515	500	8260B		10/15/2022	CJR	1
2-Chlorotoluene	< 170	ug/l	170	685	500	8260B		10/15/2022	CJR	1
4-Chlorotoluene	< 200	ug/l	200	815	500	8260B		10/15/2022	CJR	1
1,2-Dibromo-3-chloropropane	< 370	ug/l	370	1505	500	8260B		10/15/2022	CJR	1
Dibromochloromethane	< 180	ug/l	180	730	500	8260B		10/15/2022	CJR	1
1,4-Dichlorobenzene	< 245	ug/l	245	1005	500	8260B		10/15/2022	CJR	1
1,3-Dichlorobenzene	< 175	ug/l	175	720	500	8260B		10/15/2022	CJR	1
1,2-Dichlorobenzene	< 200	ug/l	200	825	500	8260B		10/15/2022	CJR	1
Dichlorodifluoromethane	< 150	ug/l	150	615	500	8260B		10/15/2022	CJR	1
1,2-Dichloroethane	< 215	ug/l	215	875	500	8260B		10/15/2022	CJR	1
1,1-Dichloroethane	< 215	ug/l	215	870	500	8260B		10/15/2022	CJR	1
1,1-Dichloroethene	< 215	ug/l	215	880	500	8260B		10/15/2022	CJR	1
cis-1,2-Dichloroethene	11500	ug/l	160	645	500	8260B		10/15/2022	CJR	1
trans-1,2-Dichloroethene	880 "J"	ug/l	250	1010	500	8260B		10/15/2022	CJR	1
1,2-Dichloropropane	< 195	ug/l	195	790	500	8260B		10/15/2022	CJR	1
1,3-Dichloropropane	< 190	ug/l	190	775	500	8260B		10/15/2022	CJR	1
trans-1,3-Dichloropropene	< 205	ug/l	205	835	500	8260B		10/15/2022	CJR	1
cis-1,3-Dichloropropene	< 205	ug/l	205	835	500	8260B		10/15/2022	CJR	1
Di-isopropyl ether	< 240	ug/l	240	980	500	8260B		10/15/2022	CJR	1
EDB (1,2-Dibromoethane)	< 195	ug/l	195	795	500	8260B		10/15/2022	CJR	1
Ethylbenzene	< 165	ug/l	165	685	500	8260B		10/15/2022	CJR	1
Hexachlorobutadiene	< 405	ug/l	405	1720	500	8260B		10/15/2022	CJR	1
Isopropylbenzene	< 170	ug/l	170	690	500	8260B		10/15/2022	CJR	1
p-Isopropyltoluene	< 235	ug/l	235	955	500	8260B		10/15/2022	CJR	1
Methylene chloride	< 395	ug/l	395	1615	500	8260B		10/15/2022	CJR	1
Methyl tert-butyl ether (MTBE)	< 235	ug/l	235	955	500	8260B		10/15/2022	CJR	1
Naphthalene	< 700	ug/l	700	2780	500	8260B		10/15/2022	CJR	1
n-Propylbenzene	< 195	ug/l	195	800	500	8260B		10/15/2022	CJR	1
1,1,2,2-Tetrachloroethane	< 215	ug/l	215	885	500	8260B		10/15/2022	CJR	1

Project Name JAGEMANN PLATING **Invoice #** E41557
Project # 200032

Lab Code 5041557B
Sample ID 200032-MW-14
Sample Matrix Water
Sample Date 10/6/2022

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,1,2-Tetrachloroethane	< 275	ug/l	275	1125	500	8260B		10/15/2022	CJR	1
Tetrachloroethene	< 235	ug/l	235	955	500	8260B		10/15/2022	CJR	1
Toluene	< 165	ug/l	165	675	500	8260B		10/15/2022	CJR	1
1,2,4-Trichlorobenzene	< 315	ug/l	315	1285	500	8260B		10/15/2022	CJR	1
1,2,3-Trichlorobenzene	< 700	ug/l	700	2970	500	8260B		10/15/2022	CJR	1
1,1,1-Trichloroethane	< 165	ug/l	165	670	500	8260B		10/15/2022	CJR	1
1,1,2-Trichloroethane	< 210	ug/l	210	860	500	8260B		10/15/2022	CJR	1
Trichloroethene (TCE)	< 190	ug/l	190	775	500	8260B		10/15/2022	CJR	1
Trichlorofluoromethane	< 165	ug/l	165	675	500	8260B		10/15/2022	CJR	1
1,2,4-Trimethylbenzene	< 175	ug/l	175	720	500	8260B		10/15/2022	CJR	1
1,3,5-Trimethylbenzene	< 205	ug/l	205	830	500	8260B		10/15/2022	CJR	1
Vinyl Chloride	62000	ug/l	75	305	500	8260B		10/15/2022	CJR	1
m&p-Xylene	< 320	ug/l	320	1315	500	8260B		10/15/2022	CJR	1
o-Xylene	< 185	ug/l	185	755	500	8260B		10/15/2022	CJR	1
SUR - Toluene-d8	100	REC %			500	8260B		10/15/2022	CJR	1
SUR - 1,2-Dichloroethane-d4	100	REC %			500	8260B		10/15/2022	CJR	1
SUR - 4-Bromofluorobenzene	99	REC %			500	8260B		10/15/2022	CJR	1
SUR - Dibromofluoromethane	93	REC %			500	8260B		10/15/2022	CJR	1
Wet Chemistry										
General										
Total Organic Carbon	799	mg/l	187	624	200	SM 5310B		10/13/2022	SL	1

"J" Flag: Analyte detected between LOD and LOQ LOD Limit of Detection LOQ Limit of Quantitation

Code	*Comment*
1	Laboratory QC within limits.

SL denotes sub contract lab - Certification #399089350

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature

CHAIN OF CUSTODY RECORD

Synergy Environmental Lab, Inc.

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1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • mrsynergy@wi.twcbc.com

Chain # 42105

Page 1 of 1

Sample Handling Request

____ Rush Analysis Date Required: _____
(Rushes accepted only with prior authorization)
X Normal Turn Around

Lab I.D. #	
QUOTE # :	8242
Project #:	200032
Sampler: (signature)	

Project (Name / Location):	Jagemann Plating		
Reports To:	B. Kappen	Invoice To:	Accounts Payable
Company	Enviroforensics LLC	Company	Enviroforensics LLC
Address		Address	
City State Zip		City State Zip	
Phone	414-326-4412	Phone	317-972-7870
Email	bKappen@enviroforensics.com	Email	accountspayable@enviroforensics.com

Lab I.D.	Sample I.D.	Collection Date	Collection Time	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation
541557 A	200032-MW-1	10-6-22	1055	N	5	GW.	HCL
B	200532-MW-14	10-6-22	1105	N	5	GW	HCL

Analysis Requested / **Other Analysis**

DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	LEAD	NITRATE/NITRITE	OIL & GREASE	PAH (EPA 8270)	PCB	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	TOTAL SUSPENDED SOLIDS	VOC DW (EPA 524.2)	VOC (EPA 8260)	VOC AIR (TO - 15)	8-RCRA METALS	Total organic Carbon	Ethene, Ethane, Methane						PID/ FID
												X			X	X						
												X			X	X						

Comments/Special Instructions (*Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge, etc.)

PO # 2022-0456

Sample Integrity - To be completed by receiving lab.

Method of Shipment: CS

Temp. of Temp. Blank: _____ °C On Ice: Y

Cooler seal intact upon receipt: X Yes ___ No

Relinquished By: (sign)	Time	Date	Received By: (sign)	Time	Date
TLR	1200	10-7-22	CS Logistics	1200	10-7-22

Received in Laboratory By: _____ Time: 800 Date: 10/8/22

APPENDIX C

WDNR Injection Request Approval Letter

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Oshkosh Service Center
625 E CTY Y, Suite 700
Oshkosh WI 54901

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

June 13, 2022

Jagemann Plating Co., Inc.
Attn: Mike Jagemann
1324 S 26th Street
Manitowoc WI 54220
Via Email Mail Only to mjagemann@jagemannplating.com

Subject: Infiltration/Injection Temporary Exemption Request for
Jagemann Plating Co., Inc., 1324 S 26th Street, Manitowoc, WI
DNR BRRTS Activity #02-36-555544, FID #: 436041980
WPDES Permit Site ID: 83449

Dear Mr. Jagemann:

The purpose of this letter is to approve a temporary exemption for the injection of a remedial material into groundwater at the site identified above in accordance with Wisconsin Administrative (Wis. Admin.) Code § 140.28(5). The Wisconsin Department of Natural Resources (DNR) received a request for a temporary exemption to inject 3-D Microemulsion (3DME®, Sulfidated Zero-Valent Iron (S-Micro ZVI) and Bio-Dechlor Inoculum (BDI) into groundwater at the Jagemann Plating Co., Inc. site was received from your consultant, EnviroForensics, on May 26, 2022. The DNR also received a complete electronic Notice of Intent (eNOI) and Discharge Management Plan for the *Contaminated Groundwater from Remedial Action Operations* Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-0046566-07-0 on May 26, 2022. A review fee of $700.00 was submitted on June 8, 2022. This temporary exemption approval is intended to provide assurances to Jagemann Plating Co., Inc. that the environmental cleanup being conducted in response to a discharge of hazardous substances on the site is being conducted in accordance with Wisconsin Statutes (Wis. Stat.) § 292.12.

The purpose of this injection plan is to pilot test a combination of chemical additives into the groundwater to reduce the mass of chlorinated volatile organic compounds (CVOCs) and hexavalent chromium in groundwater. A pilot test is planned in two small areas of the site in the vicinity of MW-1 and MW-14. A total of five injection points are proposed and injection will be performed at a depth of 5-15 feet below ground surface. Approximately 135 gallons of a S-Micro ZVI, 3DME and potable water mixture will be injected into each of the injection points. Groundwater monitoring at 1- and 3-months post injection will be performed to evaluate the effectiveness of the pilot test. If positive, a full-scale injection plan will be submitted in a Remedial Action Design Report (the site investigation is not currently complete for the site; therefore, any remedial work completed will be considered an interim action until the site investigation is finished).

DETERMINATION ON THE NR 812 INJECTION PROHIBITION

The proposed injection for remedial activity is approved by the DNR and is therefore not prohibited under Wis. Admin. Code § NR 812.05.

NR 140 TEMPORARY EXEMPTION

DNR approval is granted to Jagemann Plating Co., Inc. for a temporary exemption in accordance with Wis. Admin. Code § 140.28(5) for the injection of 3DME®, S-Micro ZVI and BDI to groundwater on the Jagemann Plating Co., Inc. property, with terms and conditions. Based on the information provided, it appears the requirements for a temporary exemption for the injection of a remedial material for which a groundwater quality standard has not been established under Wis. Admin. Code § NR 140.28(1)(d) have been or will be met, in accordance with Wis. Admin. Code § NR 140.28(5)(c) and (d).

The expiration date of the temporary exemption shall be 4 years from the date of this letter. DNR approval is granted with the following terms and conditions:

A. Prerequisites for the DNR Granting a Temporary Exemption. Wis. Admin. Code § NR 140.28(5)(c):
   1. The remedial action for restoring contaminated soil or groundwater, and any infiltrated or injected contaminated water and remedial materials, shall achieve the applicable response objectives required by Wis. Admin. Code § NR 140.24(2) or § NR 140.26(2) within a reasonable period of time.
   2. The type, concentration and volume of substances or remedial material to be infiltrated or injected shall be minimized to the extent that is necessary for restoration of the contaminated soil or groundwater and be approved by the DNR prior to use.
   3. Any infiltration or injection of contaminated water or remedial material into soil or groundwater shall not significantly increase the threat to public health or welfare, or to the environment.
   4. No uncontaminated or contaminated groundwater, substance or remedial material shall be infiltrated or injected into an area where a floating non-aqueous liquid is present in the contaminated soil or groundwater.
   5. There will be no expansion of soil or groundwater contamination, or migration of any infiltrated or injected contaminated water or remedial material, beyond the edge of previously contaminated areas, except that infiltration or injection into previously uncontaminated areas may be allowed if the DNR determines that expansion into adjacent, previously uncontaminated areas is necessary for the restoration of the contaminated soil or groundwater, and the requirements of Wis. Admin. Code § NR 140.18(1) will be met.
   6. All necessary federal, state and local licenses, permits and other approvals are obtained and compliance with all applicable environmental protection requirements is required. Coverage under the *Contaminated Groundwater from Remedial Action Operations* WPDES General Permit No. WI-0046566-07-0 is required for this action.

B. Specific Requirements. Wis. Admin. Code § NR 140.28(6)(b) and (c):
   1. The remedial materials to be injected to the groundwater shall be limited to 3DME®, S-Micro ZVI and BDI and clean water as needed.
   2. The remedial material and injection project shall be as described in the May 26, 2022 Remediation Injection Request.
   3. Jagemann Plating Co., Inc. shall notify the DNR of field activities no less than one (1) week before implementation.
   4. In the monitoring plan, include screening for soil vapor as a best management practice.
   5. Remediation progress reports shall be submitted with the semiannual progress reports. The progress reports shall include the groundwater monitoring results. The first report should be submitted not more than 180 days after the first injection. Recommendations as to the next phase of sampling and/or the need for additional treatment shall be included in a future report. This report shall be submitted as soon as the necessary information is available and must be submitted prior to the expiration date of this temporary approval.

6. Any significant changes based on information from the injection groundwater monitoring reports or results shall be submitted to the DNR for approval prior to the changes being implemented at the site. This includes, but is not limited to, adjustments to the volume/mass of the media injected, additional injection points, number of injection events and/or changes in the type of remediation media used in the injection points.
7. Modifications to the sampling schedule may be requested.
8. In the event of future injection activities, the responsible party may apply for an extension of this approval. A request for an extension of this approval must be received by the DNR before the expiration date of the temporary exemption. Additional review fees may be required if significant changes are proposed in an extension request. Please contact the DNR for additional information.
9. Any extension approvals will be dependent on DNR review of site-specific data or any other information it deems necessary.
10. Upon completion of the project, the injection holes must be abandoned in accordance with Wis. Admin. Code § NR 141.25 and later topped off with grout or native soils if settling occurs, unless converted to Wis. Admin. Code ch. NR 141 compliant monitoring wells, or an alternative method approved by the DNR project manager.
11. Monitoring Conditions:
    a. The actual volume injected must be recorded on an hourly basis for each day of the project.
    b. The baseline monitoring must be performed prior to the first injection event, for the following groundwater parameters, at the following wells:
        i. Volatile organic compounds (VOCs), hexavalent chromium, total chromium, methane, ethane/ethene, total organic carbon, dissolved oxygen, electrical conductivity, pH, temperature, total dissolved solids, and oxygen reduction potential.
        ii. at monitoring wells: MW-1 and MW-14.
    c. After completion of the injection phase of the remedial action (between 30 to 40 days), all monitoring wells shall be sampled for the parameters listed in 11.b.i. Post-injection sampling for hexavalent chromium and/or total chromium is only needed if found during the baseline monitoring.
    d. A site-specific Health and Safety Plan shall be followed.
    e. The injection shall be performed at less than 100 pounds per square inch (psi) at a rate which prohibits solution mounding in the aquifer and plume disfigurement.

Failure to adhere to the terms and conditions of this temporary exemption may result in the DNR requiring revisions to the remedial action design, operation or monitoring procedures, or the revocation of this temporary exemption approval and the implementation of an alternative remedial action to restore soil or groundwater quality.

WPDES PERMIT APPROVAL

The DNR determined that the proposed injection/infiltration discharge to groundwater from Jagemann Plating Co., Inc., located at 1324 S 26th Street in Manitowoc, Wisconsin, is eligible for coverage and is hereby authorized under the *Contaminated Groundwater from Remedial Action Operations* WPDES General Permit No. WI-0046566-07-0. This determination was based on review of a complete eNOI and discharge management plan submitted by Brian Kappen, EnviroForensics, Inc., and received on May 26, 2022. Download the permit and fact sheet from the DNR General Permits web page at dnr.wisconsin.gov/topic/Wastewater/GeneralPermits.html.

The DNR is also approving the discharge management plan that was submitted with the eNOI in accordance with the *Contaminated Groundwater from Remedial Action Operations* WPDES General Permit No. WI-0046566-07-0. The discharge management plan satisfies the requirements in Section 3 of the general permit.

The proposed injection/infiltration discharge to groundwater is eligible for coverage and is hereby authorized under the *Contaminated Groundwater from Remedial Action Operations* WPDES General Permit No. WI-0046566-07-0 in accordance with Wis. Admin. Code § NR 205.08, subject to the following general permit conditions:

1. Coverage Effective Date: Coverage at your facility will become effective under this permit upon the date of this letter until permit coverage termination, revocation or reissuance of the general permit. This permit applies only to the discharge activities and sites described in the eNOI for the above referenced project.
2. Discharge Management Plan: The permittee shall operate consistent with the approved discharge management plan. A copy of the discharge management plan shall be retained by the permittee and this plan shall be made available upon DNR inspection or submitted to the DNR upon request. Permittees shall notify the DNR when the discharge management plan is amended to determine if the amendment requires DNR approval.
3. Reporting: The permittee is exempt from monitoring and reporting under this general permit and shall follow the terms and conditions of the remedial action plan approval under Wis. Admin. Code ch. NR 724 and the temporary exemption granted under Wis. Admin. Code § NR 140.28(5).
4. Coverage Termination: Once the project is completed, please complete and submit a *Notice of Termination* (Form 3400-221) to the DNR, available at dnr.wi.gov/topic/wastewater/GeneralPermits.html.
5. Change of Authorized Representative: If you plan on changing the authorized representative contact for the facility or you want to assign a new person to be a duly authorized representative to submit specific permit documents on your behalf, please complete and submit a *Delegation of Signature Authority* (Form 3400-220) to the DNR, available at dnr.wi.gov/topic/wastewater/GeneralPermits.html.
6. Facility Changes: If there have been or will be any changes in facility operations that result in new or different wastewater discharges to the waters of the state, please contact the DNR consistent with Section 7.1.6 of the general permit. If reapplication is necessary, please complete a notice of intent (NOI) form for the applicable general permit to verify that your discharge is eligible for that general permit. NOI forms are available at dnr.wi.gov/topic/wastewater/GeneralPermits.html.
7. Compliance with Permit Conditions: You are responsible for compliance with the general permit requirements and conditions listed above and all other applicable requirements and conditions contained in the general permit. **To assure you remain in compliance and avoid any enforcement action, please carefully read the general permit.**

LEGAL AUTHORITIES AND APPEAL RIGHTS FOR WPDES GENERAL PERMIT

Wis. Stat. § 283.35(1) authorizes the DNR to issue a general permit applicable to a designated area of the state authorizing discharges from specified categories or classes of point sources located within that area. Upon the request of the owner or operator of a point source, the DNR shall withdraw the point source from the coverage of a general permit and issue an individual WPDES permit for that source in accordance with Wis. Stat. § 283.35(2). Additionally, the DNR may withdraw a point source from the coverage of a general permit and issue an individual WPDES permit if that source meets any of the factors listed in Wis. Stat. § 283.35(3). Issuance of such an individual permit will provide for a public comment period and potentially a public informational hearing and/or an adjudicatory hearing. In lieu of general permit withdrawal, the DNR may refer any violation of a general permit to the Department of Justice for enforcement under Wis. Stat. § 283.91, pursuant to Wis. Stat. § 283.89. To remain in compliance and avoid any enforcement action, please read your permit carefully.

To challenge the reasonableness of or necessity for any term or condition of an issued, reissued or modified general permit, Wis. Stat. § 283.63 and Wis. Admin. Code ch. NR 203 require that you file a verified petition for

review with the Secretary of the Department of Natural Resources within 60 days after notice of the permit decision was issued by the DNR. For other permit-related decisions, such as the decision to confer general permit coverage to your facility, that are not reviewable pursuant to Wis. Stat. § 283.63, it may be possible for permittees or other persons to obtain an administrative review pursuant to Wis. Stat. § 227.42 and Wis. Admin. Code § NR 2.05(5) or a judicial review pursuant to Wis. Stat. § 227.52. If you choose to pursue one of these options, you should know that Wisconsin Statutes and Administrative Code establish time periods within which requests to review DNR decisions must be filed.

If you have questions regarding this letter, please contact me at (920) 808-0170 or Kevin.McKnight@wisconsin.gov.

Sincerely,

Kevin D. McKnight
Hydrogeologist/Project Manager, Northeast Region
Remediation & Redevelopment Program

cc:
Tauren Beggs, DNR, Remediation & Redevelopment Program –Tauren.Beggs@wisconsin.gov
Rob Hoverman, EnviroForensics, LLC – rhoverman@enviroforensics.com
Brian Austin, DNR, Drinking and Groundwater Program - Brian.Austin@wisconsin.gov
Bill Phelps, DNR, Drinking and Groundwater Program - William.Phelps@wisconsin.gov
David Haas, DNR Water Quality Program – David.Haas@wisconsin.gov